Nevada
Environmental
Restoration
Project

DOE/NV--733

Closure Report for Corrective Action Unit 110: Areas 3 RWMS U-3ax/bl Disposal Unit Nevada Test Site, Nevada

Controlled Copy No.:____ UNCONTROLLED

Revision: 1

August 2001

Environmental Restoration
Division

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

Available for sale to the public, in paper, from:

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161-0002
Telephone: (800) 553-6847
Fax: (703) 605-6900
E-mail: orders@ntis.fedworld.gov
Online ordering: http://www.ntis.gov/ordering.htm

Available electronically at http://www.doe.gov/bridge

Available for a processing fee to the U.S. Department of Energy and its contractors, in paper, from:

U.S. Department of Energy
Office of Scientific and Technical Information
P.O. Box 62
Oak Ridge, TN 37831-0062
Telephone: (865) 576-8401
Fax: (865) 576-5728
E-mail: reports@adonis.osti.gov

DOE/NV–733

CLOSURE REPORT FOR CORRECTIVE ACTION UNIT 110: AREA 3 RWMS U-3ax/bl DISPOSAL SITE NEVADA TEST SITE, NEVADA

Prepared for the
U. S. Department of Energy
National Nuclear Security Administration
Nevada Operations Office
Work Performed Under Contract No. DE-AC08-96NV11718

Controlled Copy No.: UNCONTROLLED

Revision: 1

August 2001

THIS PAGE INTENTIONALLY LEFT BLANK

DOE/NV–733

CLOSURE REPORT FOR CORRECTIVE ACTION UNIT 110: AREA 3 RWMS U-3ax/bl DISPOSAL SITE NEVADA TEST SITE, NEVADA

Revision 1

Approved by: Kevin Cabble for Date: 8-9-01
Janet L. Appenzeller-Wing, Project Manager
Industrial Sites Project

Approved by: Robert M. Bangerter Jr. for Date: 8/10/01
Runore C. Wycoff, Division Director
Nevada Environmental Restoration Project

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

FIGURES

ACRONYMS AND ABBREVIATIONS

ac	Acre
CAU	Corrective Action Unit
cm	centimeter
CP	Closure Plan
CR	Closure Report
DCN	Design Change Notice
DOE	U.S. Department of Energy
DOE/NV	U.S. Department of Energy, Nevada Operations Office
DQO	Data Quality Objective
EPA	U. S. Environmental Protection Agency
FFACO	Federal Facility Agreement and Consent Order
ft	feet/foot
ft^3	cubic feet
ha	hectare
in	inch
kg	Kilograms
lb	Pound

ACRONYMS AND ABBREVIATIONS (CONTINUED)

m	meter
m^3	cubic meters
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NTS	Nevada Test Site
PVC	Polyvinyl Chloride
QAP	Quality Assurance Plan
RCRA	Resource Conservation and Recovery Act
RWMS	Radioactive Waste Management Site
TDR	Time-Domain Reflectometry
yd^3	cubic yards
yr	year

EXECUTIVE SUMMARY

The Area 3 U-3ax/bl Disposal Unit, Corrective Action Unit (CAU) 110, which consists of one Corrective Action Site 03-23-04, was closed in accordance with the reissued (November 2000) Resource Conservation and Recovery Act (RCRA) Part B operational permit NEV HW009 (NDEP, 2000) and the Federal Facility Agreement and Consent Order (Nevada Division of Environmental Protection [NDEP] et al., 1996). The U-3ax/bl is a historic disposal unit within the Area 3 Radioactive Waste Management Site located on the Nevada Test Site (NTS). The unit, which was formed by excavating the area between two subsidence craters (U-3ax and U-3bl), was operationally closed in 1987. The U-3ax/bl disposal unit was closed under the RCRA, as a hazardous waste landfill.

Existing records indicate that, from July 1968 to December 1987, U-3ax/bl received 2.3×10^5 cubic meters (8.12×10^6 cubic feet) of waste. NTS nuclear device testing generated approximately 95 percent of the total waste volume disposed of in U-3ax/bl; 80 percent of the total volume was generated from the Waste Consolidation Project (Elletson and Johnejack, 1995).

Area 3 is located in Yucca Flat, within the northeast quadrant of the NTS. The Yucca Flat watershed is a structurally closed basin encompassing an area of approximately 780 square kilometers (300 square miles). The structural geomorphology of Yucca Flat is typical of the Basin and Range Physiographic Province. Yucca Flat lies in one of the most arid regions of the country. Water balance calculations for Area 3 indicate that it is continuously in a state of moisture deficit.

The U-3ax/bl Disposal Unit was closed in place by installing a RCRA equivalent cover. Following cover construction, a fence was installed around the cover to prevent accidental damage to the cover.

Closure of CAU 110 was completed using a NDEP approved Closure Plan, Revision 0, dated August 2000 (U.S. Department of Energy, Nevada Operations Office [DOE/NV], 2000). The closure plan was based on the recommendations presented in the characterization report (DOE/NV, 1999). The Area 3 U-3ax/bl Disposal Unit, CAU 110, was closed in the following manner:

- The Area 3 U-3ax/bl Waste Disposal Unit was closed in place by installing a monolayer vegetative cover. Following cover construction, a fence was constructed around the cover to prevent accidental damage to the cover.

Closure activities were certified by an independent registered professional engineer. Post-closure monitoring will consist of site inspections to determine the condition of the engineered cover and cover performance monitoring using Time-Domain Reflectometry arrays to monitor moisture migration in the cover. Any identified maintenance and repair requirements will be remedied within 60 working days of discovery and documented in writing at the time of repair. Results of all inspections/repairs for a given year will be addressed in a single report submitted annually to the NDEP. Soil moisture will be monitored within the cover for a period of at least two years prior to establishing performance criteria for NDEP regulatory purposes.

1.0 INTRODUCTION

This Closure Report (CR) has been prepared for the Area 3 Radioactive Waste Management Site (RWMS) U-3ax/bl Disposal Unit Corrective Action Unit (CAU) 110 in accordance with the reissued (November 2000) Resource Conservation and Recovery Act (RCRA) Part B operational permit NEV HW009 (Nevada Division of Environmental Protection [NDEP], 2000) and the Federal Facility and Consent Order (FFACO) (NDEP et al., 1996). CAU 110 consists of one Corrective Action Site 03-23-04, described as the U-3ax/bl Subsidence Crater. Certifications of closure are located in Appendix A.

The U-3ax/bl is a historic disposal unit within the Area 3 RWMS located on the Nevada Test Site (NTS) (Figure 1). The unit, which was formed by excavating the area between two subsidence craters (U-3ax and U-3bl), was operationally closed in 1987. The U-3ax/bl disposal unit was closed under the RCRA, as a hazardous waste landfill (Figure 2).

Existing records indicate that, from July 1968 to December 1987, U-3ax/bl received 2.3×10^5 cubic meters (m^3) (8.12×10^6 cubic feet [ft^3]) of waste. NTS atmospheric nuclear device testing generated approximately 95 percent of the total waste volume disposed of in U-3ax/bl; 80 percent of the total volume was generated from the Waste Consolidation Project (Elletson and Johnejack, 1995).

Area 3 is located in Yucca Flat, within the northeast quadrant of the NTS. The Yucca Flat watershed is a structurally closed basin encompassing an area of approximately 780 square kilometers (300 square miles). The structural geomorphology of Yucca Flat is typical of the Basin and Range Physiographic Province. Yucca Flat lies in one of the most arid regions of the country. Water balance calculations for Area 3 indicate that it is normally in a state of moisture deficit (U.S. Department of Energy, Nevada Operations Office [DOE/NV], 1999).

1.1 PURPOSE

The Area 3 RWMS U-3ax/bl Disposal Unit was identified as a historic RCRA site in the RCRA Part B Permit issued by NDEP Permit Number NEV HW009 (NDEP, 1995). This permit specifies that the unit be closed under Title 40 Code of Federal Regulations 265 (U. S. Environmental Protection Agency [EPA], 1996b) closure requirements for interim status facilities. Additionally, closure requirements, include U. S. Department of Energy (DOE) Order 5820.2A (DOE, 1988) and DOE Order 435.1. A Closure Plan (CP) (DOE/NV, 2000) was

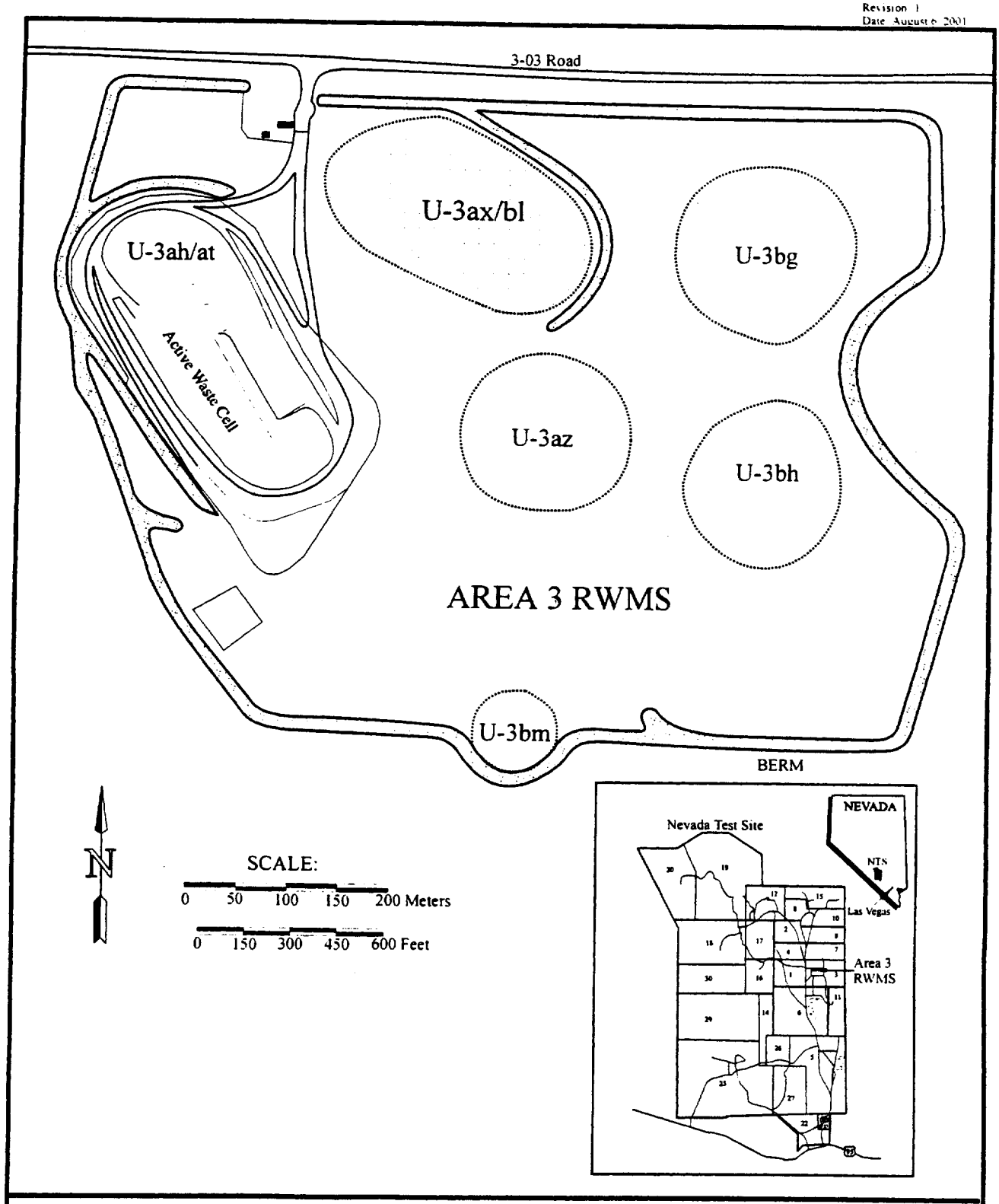


FIGURE 1
CAU 110 SITE LOCATION MAP

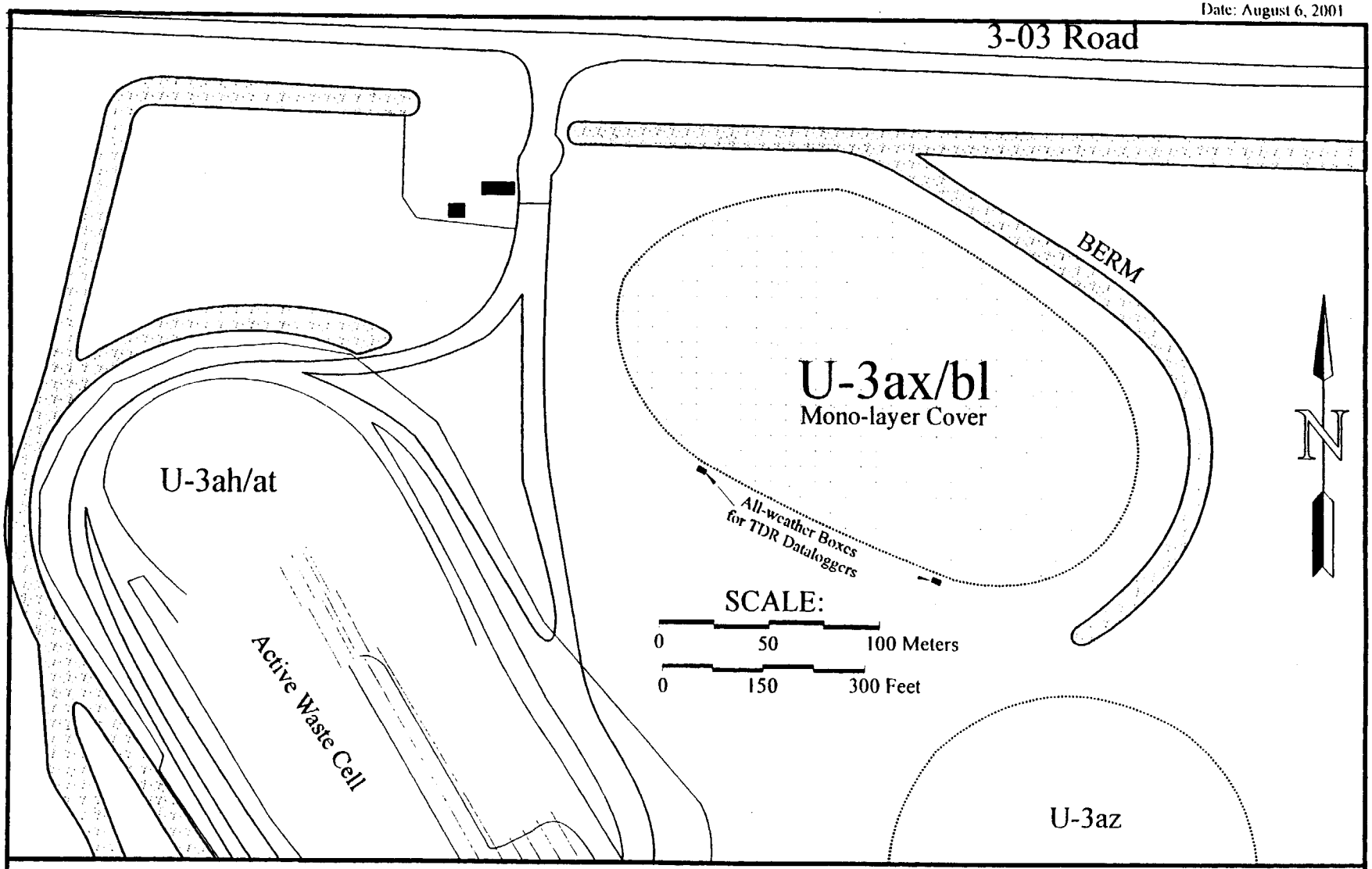


FIGURE - 2
CAU 110 SITE VICINITY MAP

developed for the U-3ax/bl Disposal Unit to address all of the above requirements. The purpose of this CR is to document that the closure of the Area 3 RWMS U-3ax/bl Disposal Unit complied with all of the CP closure requirements.

1.2 SCOPE

The recommended closure strategy for the Area 3 RWMS U-3ax/bl Disposal Unit was closure in place with a RCRA equivalent cover. The approved closure strategy consisted of the following activities:

- Preplanning and site preparation.
- Closure of 11 polyvinyl chloride (PVC) monitoring wells located around the perimeter of U-3ax/bl. The CP identified only nine monitoring wells, two additional wells were located and closed during the closure field activities. Closure was accomplished by removing the PVC piping to a depth of 0.3 meters (m) (1.0 foot [ft]) below existing grade. The remainder of the pipe was filled with grout, and a 0.3-m (1-ft) concrete cap was installed over the monitoring well.
- Installation of four time-domain reflectometry (TDR) monitoring instrumentation nests in the cover to monitor cover performance.
- Construction of a monolayer cover by adding an additional 0.3 m (1 ft) of fill on top of the operational cover.
- Seeding the monolayer cover with native shallow rooting vegetation.
- Installation of a irrigation system over the entire cover to augment natural rainfall and promote vegetation growth.
- Installation of a fence and signs around the cover to prevent animals from eating the native vegetation and keep unauthorized personnel from performing intrusive activities on the monolayer vegetative cover.
- Post-closure cover monitoring has been started. Cover performance monitoring will be performed for a two-year period prior to negotiating post-closure criteria with the NDEP.

However, the Permit will be modified by NDEP to reflect post-closure inspections and subsidence survey requirements.

1.3 CR CONTENTS

This CR is divided into the following sections:

Section 1.0 - Introduction
Section 2.0 - Closure Activities
Section 3.0 - Waste Disposition
Section 4.0 - Closure Verification
Section 5.0 - Conclusions and Recommendations
Section 6.0 - References

The appendices of this document have been modified from the approved March 2001 FFACO outline. The following FFACO outline appendices have either not been included or revised as indicated below:

- Data Quality Objectives (DQOs) as developed in the Corrective Action Decision Document - DQOs were not developed for the closure of the Area 3 U-3ax/bl Disposal Unit. The monolayer cover was constructed to the criteria specified in the Construction Quality Assurance Plan.

- Confirmation Sampling Test Results - The U-3ax/bl Disposal Unit was closed by installation of a monolayer vegetative cover. Verification samples were not required.

- Waste Disposition Documentation - Hazardous or radiological waste was not generated during the closure activities. All waste was surveyed and disposed in the Area 3 Radiological Waste Management Area dumpster. The waste in the dumpster is disposed within the Area 23 landfill on a weekly basis.

- Modifications to the Post-Closure Plan - Modifications have not been proposed to the post-closure monitoring plan.

The following documents were used to develop this closure report:

- Characterization Report for Corrective Action Unit 110: Area 3 U-3ax/bl Disposal Unit, Nevada Test Site, Nevada, Rev. 0, DOE/NV–580; November 1999 (DOE/NV, 1999).

- Closure Plan for Corrective Action Unit 110: Area 3 RWMS U-3ax/bl Disposal Unit, Nevada Test Site, Nevada; Rev. 0, DOE/NV–647, August 2000 (DOE/NV, 2000).

No DQOs were developed for the construction of the Area 3 U-3ax/bl Disposal Unit cover. The landfill cover construction activities were controlled by the construction drawings in the Construction Quality Assurance Plan located in Appendix A-1 of the CP (DOE/NV, 2000).

2.0 CLOSURE ACTIVITIES

This section of the CR details the specific activities involved in the closure of CAU 110.

2.1 DESCRIPTION OF CORRECTIVE ACTION ACTIVITIES

Closure of CAU 110 was completed using the approved Closure Plan for Corrective Action Unit 110: Area 3 RWMS U-3ax/bl Disposal Unit, Nevada Test Site, Nevada, Revision 0, dated August 2000 (DOE/NV, 2000). The CP was based on the recommendations in the Characterization Report for Corrective Action Unit 110: U-3ax/bl Disposal Unit, Nevada Test Site, Nevada (DOE/NV, 1999). The characterization report was developed from a number of characterization studies performed for the DOE/NV Waste Management Division. Before the closure activities began, the following prefield activities were completed:

- Preparation of National Environmental Policy Act documentation.
- Preparation of the Site-Specific Health and Safety Plan.
- Preparation of the Field Management Plan.

The following is the scope of the closure actions implemented for CAU 110. Hold and check points identified in the Closure Plan Construction Quality Assurance Plan (DOE/NV, 2000) were approved in the field and a copy of the completed form is provided in Appendix B.

2.1.1 Installation of Time-Domain Reflectometry Instrumentation Nests

The following activities were required to install the post-closure monitoring cover performance instrumentation. TDR instruments are used to calculate the moisture content of the soil at a specific location. By installing TDR probes at a number of depths, a moisture profile can be developed. This vertical moisture profile can be used to verify that cover design is effectively removing moisture from the vegetative cover. The TDR installation field activities were conducted between October 29, 2000 through November 7, 2000:

- Based on the operational cover geotechnical analysis (DOE/NV, 2000), a backfill compaction standard of 80 percent was established. The compaction standard was developed for a number of different compaction techniques (Appendix C). A test pit located

just outside of the cover was used to determine the number of passes, using different equipment, required to achieve the required 80 percent compaction. Performance standards were established for the following compaction techniques: foot tamping, backhoe wheel rolling, and mechanical thumping.

- Four 0.6-m (2-ft) deep trenches were excavated across the cover (Figure 3) to bury the TDR cables. The trenches were angled so that two sets of "V" trenches were formed. The center of the "V" was located just outside of the monolayer cover. The cabling from the two TDR nests were wired into a data logger located on a instrument panel found at the point of each "V". To protect the cabling from moisture, the cabling was run through a sealed 7.62 centimeter (cm) (3 inch [in]) diameter flexible PVC conduit.

- The four trenches were backfilled and wheel-rolled according to the performance standard developed to achieve the specified 80 percent compaction.

- Four TDR nests were excavated (Figure 3). Each nest was excavated to a depth of 1.8-m (6-ft) below ground surface. The excavation followed the benching requirements specified in the Design Change Notice (DCN) number: DCN 01/10-449. A total of eight TDR instruments was installed in each nest. Each TDR instrument was staggered within the excavation to prevent any preferential pathways for moisture to enter the monitoring system. The bottom TDR instrument was installed by hand excavating 0.3-m (1-ft) into the operational cover. The soil on top of all TDR instruments was compacted by using the foot-tamping performance standard. Areas of the excavation not directly over a TDR instrument were compacted using the mechanical thumper compaction standard. The top TDR instrument was placed on the ground surface. An additional 0.3-m (1-ft) of soil was placed on top of the TDR instrument and compacted to 80 percent using the foot-tamping performance standard. A diagram of a TDR monitoring nest is provided as Figure 4.

- The two data loggers are connected to a wireless signaling system which connect to a land based telephone line located in the Area 3 RWMS office building. This system allow off-site downloading of TDR data, which reduces monitoring costs.

- TDR soil moisture calibration curves (Appendix I) were developed for the U-3ax/bl by using cover soil compacted to 80 percent. The soil surrounding the TDR probe is moistened to a known moisture content. The reading is recorded and the experiment is repeated using different soil moisture percentages until a calibration curve is developed. Direct TDR

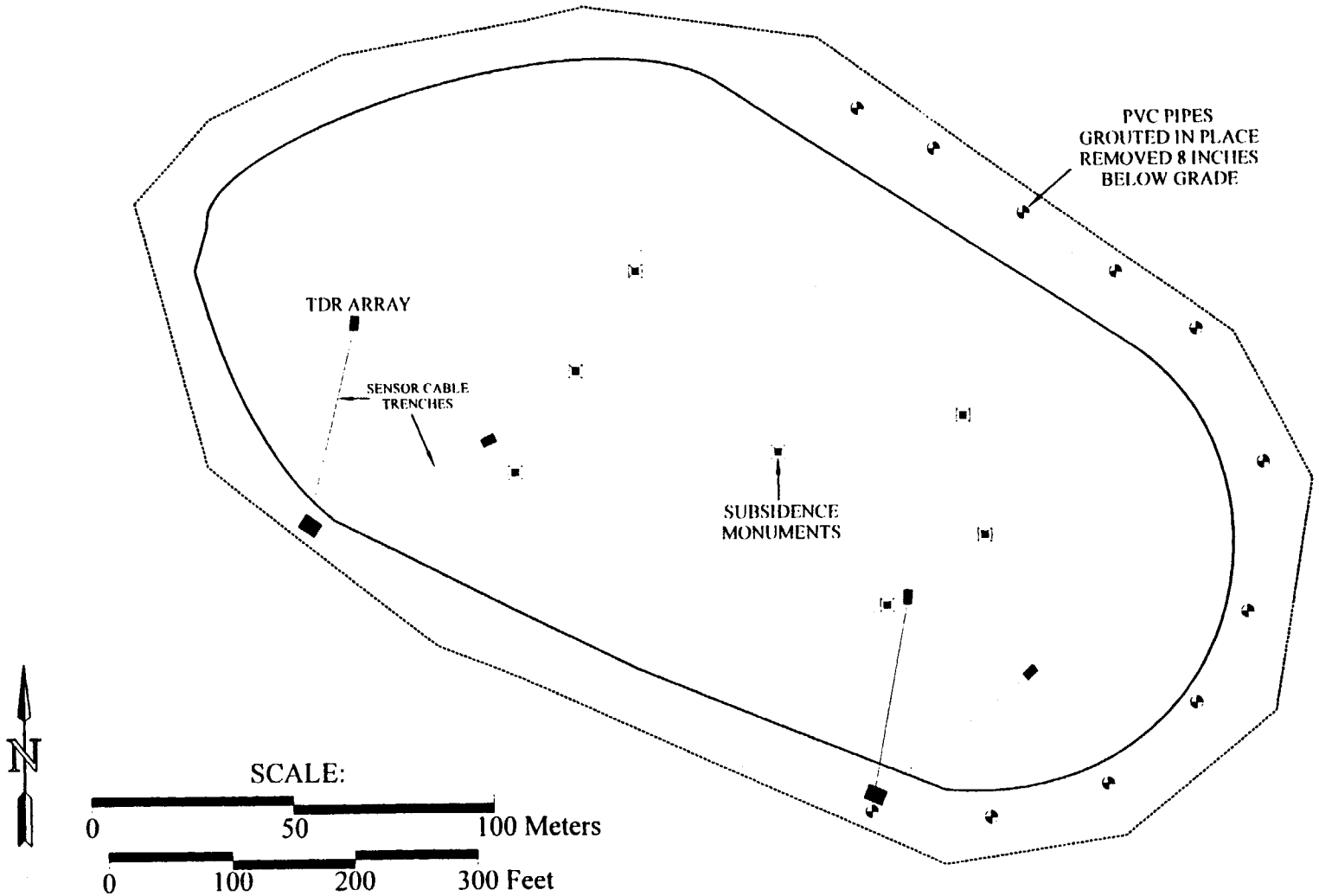


FIGURE 3
PLAN VIEW OF TDR NESTS AND TRENCHES

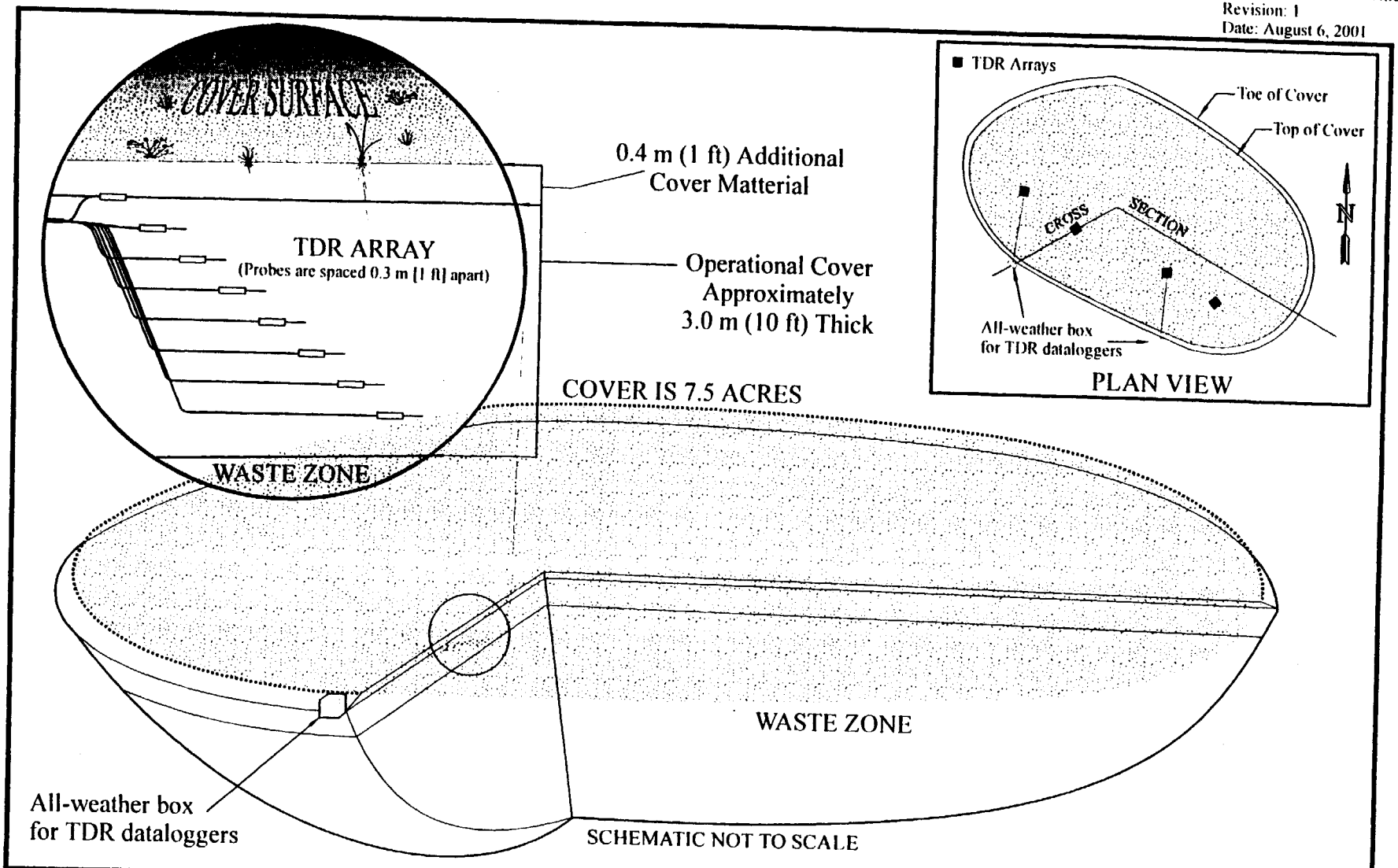


FIGURE 4
TDR INSTALLATION DIAGRAM

measurements from the TDR nests are then compared to the calibration curve and a soil moisture percentage is estimated. Additional information on the post-closure monitoring program is provided in Section 5.1 of this CR.

2.1.2 Installation of Monolayer Cover

This section outlines the activities required to construct the monolayer cover. An 2.5-m to 3-m (8-ft to 10-ft) operational cover was constructed over the U-3ax/bl waste unit in 1987. Subsidence and hydrologic modeling (DOE/NV, 2000) determined that only an additional 0.3 m (1 ft) of soil was required to meet the monolayer cover performance criteria. The monolayer cover installation field activities were conducted between October 30, 2000 through December 7, 2000. Specific construction details are provided below.

- Native soil was obtained from the Area 3 borrow pit located approximately 5 kilometers (3 miles) southwest of the Area 3 RWMS. Geotechnical tests of the borrow pit soil confirmed that it was similar to the material used in constructing the operational cover in 1987.

- Bull dozers and front-end loaders were used to stockpile borrow material. On average four belly dump trucks were used to transport the borrow material to the U-3ax/bl cover. Each belly dump truck transported approximately 14.2 m^3 (18 cubic yards [yd^3]) of borrow material.

- Due to surface contamination radiological posting requirements and to minimize/eliminate the requirement to decontaminate equipment, belly dump trucks were restricted to areas of the cover that had imported borrow material spread on the surface. A front-end loader, dozer, and grader were used to push the borrow material onto the U-3ax/bl cover. This operation was conducted in a manner that prevented any equipment coming in contact with the original operational cover surface. Approximately 11, 571 m^3 (15,125 yd^3) of borrow material was transported to and placed on to the operational cover.

- Survey grade stakes were installed to direct cover grading operations across the 3 hectares (ha) (7.5 acre [ac]) monolayer cover. After the final grade was established across the monolayer cover, a final elevation survey was conducted to "as-built" the monolayer cover.

- Seven subsidence monuments were installed across the monolayer cover. The locations of the subsidence monuments are provided in Figure 3. Each monument was surveyed and location and elevation information engraved on a brass plate attached to the center of each monument.

2.1.3 Planting Native Vegetation

To enhance the moisture removal capabilities of the monolayer cover, a mixture of shallow rooting native plants were identified for the U-3ax/bl monolayer cover. The native plants will intercept committed precipitation before it can reach the waste unit. The planting field activities were conducted between November 28, 2000 through December 6, 2000. Specific construction details are provided below.

- The monolayer cover surface was disked to a depth of 0.3 m (1 ft) to provide an ideal soil condition for the establishment of the selected native species seeds.

- Seeding was accomplished at a broadcast-seeding rate of 22.79 kilograms (kg) per ha (20.33 pounds [lb] per ac) of pure live seed. Seeds were planted using a tractor-drawn seed drill. A drag chain was used to cover the planted seeds. A list of the species and relative abundance is provided in Appendix D.

- Straw mulch was applied over the seeded cover to protect the seeds from erosion and to increase soil moisture content in the upper 15-cm (6-in) of the cover. The straw was applied at a rate of 4,484 kg/ha (4,000 lb/ac) using a straw blower. The mulch is held in place by crimping the ends of the straw into the cover using a tractor-drawn disk crimper.

- In order to establish the seeds that were installed in the monolayer cover, the natural precipitation required augmentation. The Area 3 RWMS receives on average 17 cm per year (yr) (6.69 in/yr); optimal revegetation requires 25 cm/yr (9.84 in/yr) of rainfall. A sprinkling irrigation system was installed across the monolayer cover. The irrigation system is fed from a Baker tank that is filled by water trucks on an "as needed" basis. The goal of the irrigation program is to augment natural precipitation and keep the upper 15 cm (6 in) of the monolayer cover moist. Irrigation activities are scheduled on an "as needed" basis from January 2001 through June 2001.

- After the vegetation has become established, the irrigation system will be removed from the site. Irrigation activities are scheduled to be completed by June 30, 2001.

2.1.4 Closure of PVC Monitoring Wells

Nine PVC monitoring wells were identified in the CP, however eleven PVC monitoring wells were installed along the slope of the U-3bl portion of the U-3ax/bl waste disposal unit. It is thought that these PVC monitoring wells were installed to provide waste cell water content information through neutron logging. During the U-3ax/bl landfill operations and installation of the operational cover, the majority of these PVC wells were crushed within 6 m (20 ft) of the ground surface. Since these PVC monitoring wells could not be used for any post-closure monitoring purposes, they were closed following Nevada Administrative Code (NAC) 534.421, Plugging: Wells for Purposes Other Than Water Wells. The well closure activities were conducted between November 28, 2000 through December 6, 2000. Closure activities consisted of the following:

- A 0.3-m (1-ft) long by 0.3-m (1-ft) wide by 20-cm (8-in) deep hole was hand dug around each PVC monitoring well.
- A hand saw was used to cut the exposed PVC piping flush with the bottom of the excavated surface.
- A neat cement grout was used to fill the PVC monitoring well from the base or crushed end to the ground surface. The neat cement grout was allowed to set and additional material was placed into the monitoring well if any settling occurred.
- A 0.3-m (1-ft) long by 0.3-m (1-ft) wide by 20-cm (8-in) high cement grout plug was poured to cover the top of the closed monitoring well. This plug blocks any potential preferential pathway for runoff to migrate into the U-3ax/bl waste unit.

2.1.5 Installation of Monolayer Cover Fence

To prevent indiscriminate access of personnel or animals to the monolayer vegetative cover, a fence was installed around the cover. A single entry gate was installed near the northwest corner of the cover (Figure 3). Site access information and identification signs are installed on the fencing to meet hazard notification requirements. The fence construction activities were conducted between December 7, 2000 through January 25, 2001. Detailed fencing construction details are provided below.

- Fence posts were driven into the ground in 1.5-m (5-ft) intervals around the cover. Each fence post was driven approximately 0.56-m (22-in) into the ground with approximately 1.2-m (4-ft) of fence post exposed.

- Four smooth strand wire lengths were attached between the fence posts around the monolayer vegetative cover. The lengths of smooth wire were installed as close to equal distant apart as possible.

- A grader was used to excavate an approximately 0.3-m (1-ft) v-shaped trench of soil from the base of the fence. This excavation was required for the installation of chicken wire mesh around the exterior of the monolayer vegetative cover. The chicken wire mesh is required to keep animals from borrowing under the fence and destroying the vegetation.

- After the chicken wire mesh has been installed, the grader was used to replace the 0.3-m (1-ft) of soil that was removed.

- Warning signs were installed on the fence every 61-m (200-ft) along the exterior of the U-3ax/bl monolayer vegetative cover.

2.2 DEVIATIONS FROM CP AS APPROVED

Two DCNs and an E-mail were requested and approved during construction of the monolayer vegetative cover. Each change was associated with the Construction Quality Assurance Plan (QAP) located in Appendix A-1 of the Closure Plan (DOE/NV, 2000). Each change is discussed separately below and are found in Appendix E. In addition to the engineering DCNs and e-mail, two additional PVC monitoring wells were discovered and closed per Section 2.1.4.

2.2.1 DCN No. 01/10-448

This DCN was required to support the excavation of the TDR installation nests. The Construction QAP drawing JS-003-00004-C3 required that the construction crew use portable shoring to support the side walls of the excavation. The drawings did not allow the use of benching techniques to stabilize the sides of the excavation. No shoring was available so the Construction QAP drawing was modified to allow for benching on both sides of the excavation.

2.2.2 DCN No. 01/10-449

This DCN clarified how the compaction performance standard would be established. The size of the test pit was reduced from 1-m (3-ft) by 4.9-m (16-ft) to 1-m (3-ft) by 1.8-m (6-ft). Reducing the size of the test pit did not affect the compaction performance standard accuracy or methodology. Reducing the size of the test pit provided the same results while reducing the time and resources required to obtain the compaction performance standard data.

2.2.3 November 11, 2000 E-mail

The Bechtel Nevada design engineer assigned to the U-3ax/bl Disposal Unit closure project, authorized a deviation from the Construction QAP in an November 11, 2000 E-mail. The E-mail was to be followed with a DCN formalizing this change. This DCN was not issued during the construction phase of the project. In lieu of a DCN, the "as constructed" survey data were evaluated against the authorization requirements of the E-mail and these changes were incorporated into the final "as built" engineering drawings. The e-mail authorized reducing the size of the final fence perimeter. The final fence location was reduced to the perimeter of the old radiological delineation fence line. The Construction QAP drawing JS-003-00004-C2 fence perimeter was larger than is required to address radiological or safety concerns. By reducing the perimeter of the fence line to the original radiological control perimeter, the amount of acreage requiring post-closure inspection/maintenance was significantly reduced.

In addition to reducing the fence perimeter, the location of the access gate was relocated from the south side of the cover to the west side. The gate location was moved to provide easier access into the U-3ax/bl monolayer vegetative cover from the Area 3 RWMS office area.

2.2.4 PVC Monitoring Well Closure

Two additional PVC monitoring wells were discovered hidden in low areas filled with tumble weeds. These monitoring wells were similar in construction to the nine previously identified PVC monitoring wells. These newly identified wells were closed in the same manner and time frame as the nine PVC monitoring wells identified in the CP.

2.3 CAU 110 CLOSURE ACTIVITIES SCHEDULE

The completed closure field activities schedule can be found in Figure 5. Activities such as post-

closure monitoring and irrigation of the vegetative cover are ongoing and are not included in the schedule.

2.4 CAU 110 FINAL SURVEY "AS BUILT" DIAGRAMS

The final engineering "as built" drawings for the CAU 110 Area 3 U-3ax/bl Disposal Unit are provided in Appendix F of this report. The information included in Appendix C (compaction performance standard geotechnical data) and Appendix E (engineering DCNs) along with final survey data were used to complete the final engineering "as built" drawings provided in Appendix F.

ACTIVITY DESCRIPTION	Activity Duration (days)
CAU 110 Area 3 U-3axbl Closure	
Mobilization- 10/23/2000	1
TDR Installation- 10/29/2000 to 11/07/2000	9
Cover Construciton - 10/30/2000 to 12/07/2000	23
PVC Monitoring Well Closure- 11/8/2000 to 11/22/2000	7
Subsidence Monument Installation - 11/27/2000 to 11/30/2000	4
Planting - 11/28/2000 to 12/06/2000	7
Irrigation System Installation - 12/11/2000 to 12/14/2000	5
Fencing Installation - 12/07/2000 to 01/25/2001	9

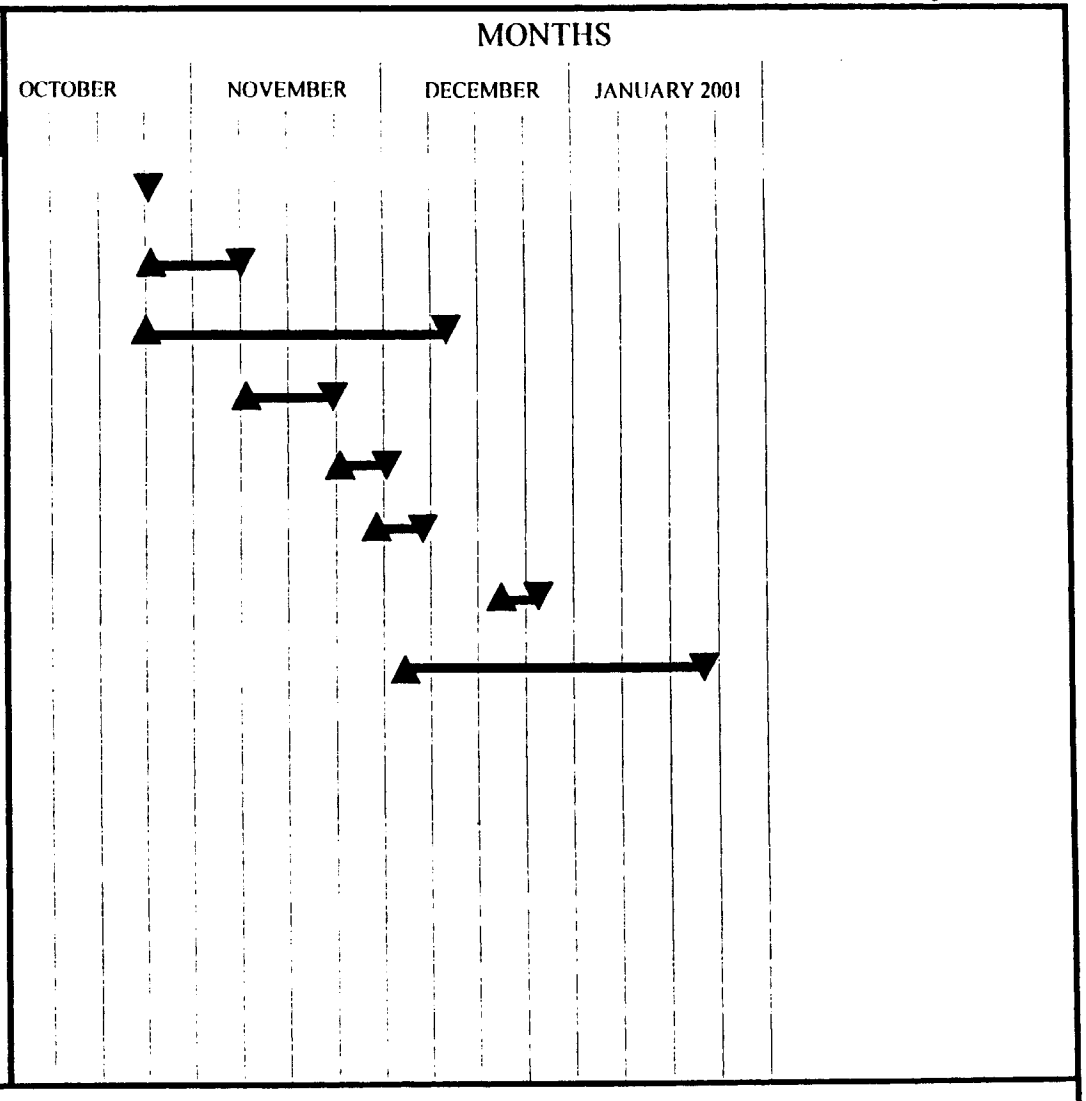


FIGURE - 5
CLOSURE FIELD SCHEDULE

THIS PAGE INTENTIONALLY LEFT BLANK

3.0 WASTE DISPOSITION

Waste generated from CAU 110 closure activities consisted of non-radiologically impacted personal protective equipment and sanitary trash. All waste was surveyed to verify that it met release criteria. Once verified, the waste was bagged and disposed of in the Area 3 RWMS dumpster. The waste in the dumpster is disposed within the Area 23 landfill on a weekly basis.

THIS PAGE INTENTIONALLY LEFT BLANK

4.0 CLOSURE VERIFICATION

The U-3ax/bl Disposal Unit was closed by constructing an engineered cover. Closure verification consisted of the completion of the CAU 110 Remediation, U-3ax/bl Disposal Unit Closure Approval Matrix and Checklist located in Appendix B. Guidance for the cover construction and verification was provided in the approved Construction QAP (Appendices A-1, DOE/NV, 2000).

4.1 DATA QUALITY ASSESSMENT

The closure of the Area 3 U-3ax/bl Disposal Unit did not require the development of DQOs. Following EPA guidance for landfill closures, a Construction QAP was developed (EPA, 1991). The Construction QAP included a CAU 110 U-3ax/bl Disposal Unit Closure Approval Matrix and Checklist (Appendix B) which verified that all of the quality assurance check and hold points were verified in the field prior to progressing to the next closure task.

4.2 LAND-USE RESTRICTIONS

The Area 3 U-3ax/bl Disposal Unit has been closed in accordance with the approved closure plan (DOE/NV, 2000). This landfill has been fenced and posted with signs reading "Subsurface Radiologic Contamination". The future use of any land related to the U-3ax/bl Disposal Unit is restricted from any activity that may alter or modify the containment control as approved by the state of Nevada and identified in this document or any other CAU 110 documentation unless appropriate concurrence from the NDEP is obtained in advance.

The specific location and monitoring requirements for the Area 3 U-3ax/bl site was recorded on the CAU Use Restriction Information Form. The information on the completed form is added into the DOE/NV Facility Information Management System and the Central Data Repository. The original CAU Land Use Restriction Form was filed within the U-3ax/bl Disposal Unit project file. A copy of the CAU Use Restriction Information is included in Appendix G of this report. The post-closure monitoring requirements for CAU 110 are outlined in Section 5.1.

THIS PAGE INTENTIONALLY LEFT BLANK

5.0 CONCLUSIONS AND RECOMMENDATIONS

Closure of the Area 3 U-3ax/bl Disposal Unit was accomplished by completing the following tasks:

- Closure of eleven PVC monitoring wells located around the perimeter of U-3ax/bl. The CP identified only nine monitoring wells, two additional wells were located and closed during the closure field activities. Closure was accomplished by removing the PVC piping to a depth of 0.3-m (1-ft) below existing grade. The remainder of the pipe was filled with grout and a 0.3-m (1-ft) concrete cap installed over the monitoring well.

- Installation of four TDR cover monitoring instrumentation nests to monitor cover performance.

- Construction of a monolayer cover by adding an additional 0.3-m (1-ft) of fill on top of the operational cover.

- Seeding the monolayer cover with native shallow rooting vegetation.

- Installation of a irrigation system over the entire cover to augment natural rainfall and promote vegetation growth.

- Installation of a fence and signs around the cover to prevent animals from eating the native vegetation and keep unauthorized personnel from performing intrusive activities on the monolayer vegetative cover.

5.1 POST-CLOSURE MONITORING REQUIREMENTS

The components of the Area 3 U-3ax/bl Disposal Unit post-closure monitoring plan are provided below.

5.1.1 Inspections

Inspections will be done on a quarterly basis. Inspections will consist of visual observations to check that the cover is intact. Each site inspection will be documented on a site inspection form.

The post-closure inspection will consist of the following elements:

- A detailed inspection of the cover fencing. The perimeter of the fencing will be walked by the inspector and the condition of the fencing and chicken wire, warning signs, and entrance gate and lock will be documented every six months.

- The condition of the seven survey subsidence markers will be inspected every six months. In addition, on an biannual basis, all seven survey markers will be resurveyed to determine if the cover has subsided.

- During each inspection, any changes in the condition of the cover or fenced area will be documented. Specific changes noted on the current condition of the cover include, but are not limited to, trash/debris within the fenced compound, animal burrows/nesting activity, or erosion of the cover.

- Cracks or settling imperfections (<15 cm [6 in] deep) on the cover will be documented and will be scheduled for repair on an annual basis. Larger disruptions of the cover (animal burrows or erosion) will be immediately evaluated and repaired within 90 days.

- All repair work should preserve the original cover "as built" design. If the cover repair requires modification of the cover design, DOE/NV will present a formal design modification request to the NDEP prior to making the design modification.

5.1.2 Cover Monitoring

The U-3ax/bl Disposal Unit cover is designed to limit infiltration into the disposal unit. Waste cover performance will be monitored using TDR soil water content sensors buried at various depths within the waste cover to provide water content profile data. Soil water content profile data will demonstrate whether the cover is performing as expected.

TDR probes have been buried in the cover at depths of 0.3 to 2.4 m (1 to 8 ft), one probe every 0.3 m (1 ft). TDR probes are installed at a distance of 36.5 m (120 ft) from the edge of the cover. A profile of eight probes (a stack) was repeated at four locations across the cover (Figure 4). Moisture content data from the TDR moisture probes will be stored on a datalogger. The datalogger can be programmed to collect data at any frequency of interest; however, the recommended data collection frequency is once per day. The recommended frequency of remote data download and data analysis is once per week.

5.1.3 Compliance Criteria

The U-3ax/bl Disposal Unit cover boundary is defined by the fence installed around the cover. The fence encloses the approximately 3-ha (7.5-ac) site. The point of compliance is the depth of the deepest TDR soil moisture probe. Compliance will be set based on soil moisture content; however, the specific criteria will not be established until the cover has had sufficient time to reach equilibrium. The cover will be irrigated, as needed, to supplement rainfall for the first year in order to aid in establishing vegetation. Once the moisture content within the cover reaches equilibrium, soil moisture trigger values will be agreed upon with the NDEP.

The following have been established for the post-closure monitoring program:

1) Notify the NDEP of noncompliance within 14 days of determining that the cover is not operating according to the established compliance criteria.

2) Non-critical (cracks or settling imperfections equal to or less than 15 cm [6 in] deep on the cover) maintenance activities will be compiled during the fiscal year and addressed in the following fiscal year. The NDEP will be provided with the list of non-critical cover maintenance requirements each August.

3) Cracks or settling imperfections greater than 15 cm (6 in) deep which extend 1.0 m (3 ft) or more on the cover (through animal burrows, erosion, or subsidence) will be evaluated and repaired within 60 days of detection.

4) On an twice a year basis, all seven survey markers located on the cover will be resurveyed to determine if the cover has subsided.

After NDEP notification of noncompliance, a work plan will be submitted to the NDEP within 90 days outlining the proposed remediation/investigation plan. All corrective actions will be documented in an annual post-closure monitoring report and a copy submitted to the NDEP.

5.1.4 Maintenance and Repair

The post-closure inspection will be done, at a minimum, once every three months. All inspection and maintenance activities conducted during the year will be documented and submitted to the NDEP. The annual letter report will be provided on or before August 31th of each year of the post- closure inspection period. The post-closure inspection period duration is proposed to be

five years. After five years of post-closure monitoring, the permittee may submit a request to NDEP to reevaluate the monitoring program and/or schedule. The annual letter report will include the following information:

- Brief narrative and pictures from post-closure inspection activities.
- U-3ax/bl Disposal Unit cover inspection logs.
- Moisture content profiles through the previous year.
- Maintenance and repair documentation (if any).
- Specific recommendations for non-standard maintenance or changes in post-closure monitoring.

All closure and post-closure monitoring documentation will be retained in project files and is available upon request.

5.2 RECOMMENDATIONS

Based upon the completion of site activities, it is requested that a notice of completion be provided by the NDEP for CAU 110. Upon closure approval, CAU 110 will be promoted from Appendix III to Appendix IV of the FFACO, "Closed Corrective Action Units."

6.0 REFERENCES

Bechtel Nevada, 2000. Site Specific Health and Safety Plan for Closure Activities at Corrective Action Unit 110: Area 3 RWMS U-3ax/bl Disposal Unit, October 2000, Las Vegas, NV.

DOE, see U.S. Department of Energy.

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

Elletson, L. W., and K. R. Johnejack, 1995. Waste Inventory Report for the U-3ax/bl Disposal Unit at the Nevada Test Site. Reynolds Electrical & Engineering Co., Inc. DOE/NV/11432-193.

EPA, see U.S. Environmental Protection Agency.

NAC, see Nevada Administrative Code.

NDEP, see Nevada Division of Environmental Protection.

Nevada Administrative Code, 534.421, Plugging: Wells for Purposes Other Than Water Wells.

Nevada Division of Environmental Protection, November 2000. Permit For a Hazardous Waste Facility, Permit Number NEV HW009; Section VII.B.7.

Nevada Division of Environmental Protection, U.S. Department of Energy, and U.S. Department of Defense, April 1996. Federal Facilities Agreement and Consent Order (FFACO) of 1996.

U.S. Department of Energy, 1988. "Radioactive Waste Management," DOE Order 5820.2A, U.S. Department of Energy, Washington, D.C.

U.S. Department of Energy, Nevada Operations Office, 1999. Characterization Report for Corrective Action Unit 110: Area 3 U-3ax/bl Disposal Unit, Nevada Test Site, Nevada, DOE/NV--580, November 1999, Las Vegas, NV.

6.0 REFERENCES (Continued)

U.S. Department of Energy, Nevada Operations Office, 2000. Closure Plan for Corrective Action Unit 110: Area 3 RWMS U-3ax/bl Disposal Unit, Nevada Test Site, Nevada, DOE/NV–647, August 2000, Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office, 2000. Field Management Plan for Corrective Action Unit 110: Area 3 U-3ax/bl Disposal Unit, Nevada Test Site, Nevada, October 2000, Las Vegas, NV.

U.S. Environmental Protection Agency, 1991. Design and Construction of RCRA/CERCLA Final Covers, EPA/625/4-91/025, Washington, D.C.

U.S. Environmental Protection Agency, 1996a. 40 Code of Federal Regulations 265.310, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities Closure and Post Closure Care, Washington, D.C.

U.S. Environmental Protection Agency, 1996b. 40 Code of Federal Regulations 265.90, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities Ground Water Monitoring, Washington, D.C.

APPENDIX A
CERTIFICATION OF CLOSURE

THIS PAGE INTENTIONALLY LEFT BLANK

CERTIFICATION OF CLOSURE BY THE
NATIONAL NUCLEAR SECURITY ADMINISTRATION
NEVADA OPERATIONS OFFICE

I certify under penalty of law that the Area 3 U-3ax/bl Disposal Unit, Corrective Action Unit 110, located in Area 3 at the Nevada Test Site has been closed in accordance with the approved Closure Plan for CAU No. 110: Area 3 RWMS U-3ax/bl Disposal Unit, Nevada Test Site dated August 2000 and the Permit for a Hazardous Waste Management Facility Number NEV HW009, United States Department of Energy, Nevada Operations Office, Nevada Test Site, dated November 2000. All measures required in the Closure Plan and applicable Resource Conservation and Recover Act 42 U.S.C. 6901-6991i and Title 40 CFR 260-268 have been fully implemented and that, to the best of my knowledge, no violations exist.

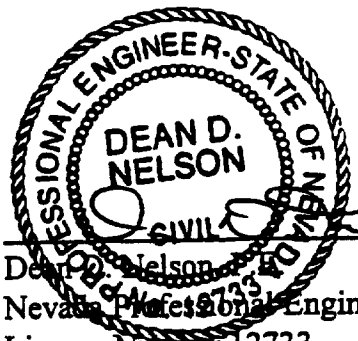
Kathleen A. Carlson, Manager
NNSA Nevada Operations Office

6/7/01
Date

National Nuclear Security Administration
Nevada Operations Office
P.O. Box 98518
Las Vegas, NV 89193-8518

CERTIFICATION OF CLOSURE BY THE INDEPENDENT PROFESSIONAL ENGINEER

I, Dean D. Nelson, a registered Professional Engineer, hearby state that I have reviewed the Closure Plan for the Closure of the Area 3 U-3ax/bl Disposal Unit, Corrective Action Unit 110, located in Area 3 at the Nevada Test site and am familiar with the rules and regulations of Title 40 §CFR 265.90 and §265.310 pertaining to the closure of this Corrective Action Unit has been performed with the exception of that stated in Section 2.2, in accordance with the approved Closure Plan for CAU No. 110 Area 3 U-3ax/bl Disposal Unit, Nevada Test Site dated August 2000 and the Permit for a Hazardous Waste Management Facility Number NEV HW009, United States Department of Energy, Nevada Operations Office, Nevada Test Site, dated November 2000.



Dean D. Nelson, P.E.
Nevada Professional Engineer (Civil)
License Number 12733

June 11, 2001
Date

PEER Consultants, P.C.
2439 Losee Road, Suite 1C
North Las Vegas, Nevada 89109

APPENDIX B
APPROVAL MATRIX AND CHECKLIST

THIS PAGE INTENTIONALLY LEFT BLANK

CAU 110 U-3AX/BL DISPOSAL UNIT CLOSURE APPROVAL MATRIX AND CHECKLIST

MATRIX: Use for further definition of quality responsibilities and for identification of relevant procedures.

NOTE: *BN organizations, in accordance with the Quality Management Process Description document PD-0001.002, will provide the necessary controls during construction to verify that all design-specified hold points outlined in this plan are complied with prior to proceeding with subsequent process steps. Independent hold-point monitoring/data review will be conducted by the Independent Professional Engineer/CQA Officer representative.*

ITEM - CAU 110 U-3AX/BL DISPOSAL UNIT CLOSURE	I ENG/TM GM/TL	II CONST/ OTHERS	III SUB-CONTR	IV MTL/ SRVY	V CQA HP*	VI CHECKLIST INITIAL/DATE
1.0 GENERAL INSPECTIONS/OBSERVATIONS						
General Project Support/Readiness Review	ENG	CONST		SRVY	CP	KBC 10/15/00
Lift/ Layer Thickness	TL	CONTR		TL	CP	KBC completed 11/16/00
As-built Topographic Survey	ENG			SRVY	HP	Released by J. Sorola on 12/12/00 KBC
2.0 TIME-DOMAIN REFLECTOMETRY (TDR) INSTALLATION						
Qualification of Field Soil Performance Specifications Refer to CQA Plan - Table 3.1 Inspection Schedule	ENG	CONTR		TL	HP	Verbal by J. Sorola on 11/02/00 KBC
Excavation - See Drawing C-1	ENG	CONTR		SRVY/TL	HP	Verbal Approval by J. Sorola 11/02/00 KBC

CONSTR = BN Construction Superintendent; CQA = Construction Quality Assurance; ENG = BN Engineering; TM = BN ER Task Manger; HP = Hold Point; PE/CQA = Independent Professional Engineer/Construction Quality Assurance Officer (PEER Consultants); MTL = BN Materials Test Laboratory; SRVY = BN Survey; SUB-CONTR = BN Subcontractor; TL = BN ER Technical Lead; GM = BN Er Group Manger; CP = Check Point; * See Table 3.1 of the Construction Quality Assurance Plan

ITEM - CAU 110 U-3AX/BL DISPOSAL UNIT CLOSURE	I ENG/TM GM/TL	II CONST/ OTHERS	III SUB-CONTR	IV MTL/ SRVY	V CQA HP*	VI CHECKLIST INITIAL/DATE
TDR Installation (Equipment & Wiring) by Others Per Manufacturer Instructions	TL	OTHERS			CP	TDR Probes placed/completed by 11/16/00 KBC
Back filling/Compaction per Performance Specification	ENG	CONTR		SRVY/TL	HP	Verbal approval by J. Sorola 11/02/00 KBC
As-built trench & TDR installation (location/depth)	ENG			SRVY/TL	HP	Verbal approval by J. Sorola 11/07/00 KBC
3.0 NATIVE FILL LAYER PLACEMENT COVER						
Borrow mat'l meets requirements of specification 02223	TL	CONTR			CP	KBC 10/31/00 Soil from Area 3 borrow pit.
Placement & grade check	TL	CONTR			CP	KBC 11/16/00
As-built Topographic Survey	ENG			SRVY/TL	HP	Approved by J. Sorola 12/13/00
4.0 MONUMENTS, FENCING, & SIGN PLACEMENT						
Monuments and brass survey ~~plates~~ pins	ENG	CONTR		SRVY/TL	CP	Monuments placed 11/15/00 Pins stamped 12/13/00 KBC
Fence Installation	TL	CONTR		SRVY/TL	CP	completed on 1/24/01 KBC
Sign Installation	TL	CONTR		SRVY/TL	CP	completed on 1/24/01 KBC
As built fence corners, monuments, & signs by Survey	ENG			SRVY/TL	HP	Fencing 12/10/00 Monuments 12/13/00 KBC

CONSTR = BN Construction Superintendent; CQA = Construction Quality Assurance; ENG = BN Engineering; TM = BN ER Task Manger; HP = Hold Point; PE/CQA = Independent Professional Engineer/Construction Quality Assurance Officer (PEER Consultants); MTL = BN Materials Test Laboratory; SRVY = BN Survey; SUB-CONTR = BN Subcontractor; TL = BN ER Technical Lead; GM = BN Er Group Manger; CP = Check Point; * See Table 3.1 of the Construction Quality Assurance Plan

ITEM - CAU 110 U-3AX/BL DISPOSAL UNIT CLOSURE	I ENG/TM GM/TL	II CONST/ OTHERS	III SUB-CONTR	IV MTL/ SRVY	V CQA HP*	VI CHECKLIST INITIAL/DATE
5.0 VEGETATIVE COVER PREPARATION, PLANTING, & IRRIGATION SYSTEM						
Prepare Cover surface for seeding	TL	CONTR			HP	completed 12/28/00 KBC
Cover seeding	TL	CONTR			CP	completed 12/7/00 KBC
Irrigation System installed	TL	CONTR			CP	completed KBC 1/11/01
6.0 PVC MONITORING WELL CLOSURE						
Prepare PVC Monitoring Wells for Closure	TL	CONTR			CP	completed 11/8/00 KBC
Grout PVC wells and build concrete pad	TL	CONTR			CP	completed 11/22/00 KBC
7.0 U-3ax/bl DISPOSAL UNIT COVER CONSTRUCTION COMPLETION						
Site walk down inspection tour	ENG/TM/GP	CONTR			HP	complete 1/25/01
Site tour/documentation and PE review/acceptance	ENG/TM/GM/ PE	CONTR			HP	for DN 4/06/01

CONSTR = BN Construction Superintendent; CQA = Construction Quality Assurance; ENG = BN Engineering; TM = BN ER Task Manger; HP = Hold Point; PE/CQA = Independent Professional Engineer/Construction Quality Assurance Officer (PEER Consultants); MTL = BN Materials Test Laboratory; SRVY = BN Survey; SUB-CONTR = BN Subcontractor; TL = BN ER Technical Lead; GM = BN Er Group Manger; CP = Check Point; * See Table 3.1 of the Construction Quality Assurance Plan

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C
TESTING/INSPECTION REPORTS

THIS PAGE INTENTIONALLY LEFT BLANK

NOV 0 1 2000

NUCLEAR DENSITY ASTM D2922-96 CAMPBELL MC-2/MC-3 TROXLER	BECHTEL NEVADA MATERIALS TESTING LABORATORY P.O. BOX 98521, M/S NTS188 LAS VEGAS, NV 89193-8521	CHARGE #: C7K99D1 DATE TYPED 11/01/200 PAGE 1 OF 1

Requested by K. CAMPBELL User/Agency BECHTEL Material PROCTOR, LAB # 0262, TP21 (11/09/

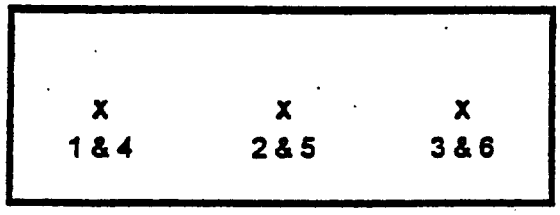
Project U3 AX/BL Location of Tests TEST PIT

Tested by J. Denny Date Tested 10/31/2000 Checked by Dale K.

LABORATORY NO	139	140	141	142	143	144
DEPTH OF PROBE	10"	10"	10"	12"	12"	12"
DEPTH OF TESTS (LIFT #)	1	1	1	2	2	2
TEST #	1	2	3	4	5	6
DRY DENSITY-PCF	90.1	93.9	91.1	94.5	93.4	91.9
MOISTURE %	8.4	7.6	8.5	7.6	7.0	7.5
PERCENT COMPACTION	79.1	82.4	80.0	83.0	82.0	80.7
MAX DENSITY PCF	113.9	113.9	113.9	113.9	113.9	113.9
OPTIMUM MOISTURE %	12.9	12.9	12.9	12.9	12.9	12.9
REQUIRED COMPACTION %	80.0	80.0	80.0	80.0	80.0	80.0
IN / OUT of SPECIFICATION	OUT	IN	IN	IN	IN	IN

GAUGE NO 23205 DATE OF STANDARDIZATION 10/31/2000 VALUE OF M 631
STANDARDIZATION D 2814

PLOT PLAN



REMARKS: TEST PIT WAS APPROXIMATELY 6'X3' BY 3' DEEP. 1st LIFT PLACED WAS ABOUT 10" AND THE 2ND ABOUT 12" THICK. RETEST OF TEST #1 WAS NOT NEEDED BY K. CAMPBELL.

CC:

J. SOROLA	BECHTEL
G. HUDAK	PEER
J. SMITH	BECHTEL
D. MADSEN	BECHTEL
K. CAMPBELL	BECHTEL
MTL BECHTEL FILES	

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX D
VEGETATION SPECIES LIST

THIS PAGE INTENTIONALLY LEFT BLANK

Number of acres:	7.31

Genus	Species	Common Name	Total PLS lbs	PLS lbs/acre	Total bulk lbs of seed	Bulk lbs/acre
Artemisia	*spinescens*	**Budsage**	0.80	0.11	6.27	0.86
Atriplex	*canescens*	**Four-wing Saltbush**	Deleted from mix per UNLV recommendation			
Atriplex	*confertifolia*	**Shadscale**	32.00	4.38	101.42	13.87
Ceratoides	*lanata*	**Winterfat**	36.00	4.92	65.06	8.90
Ericameria	*nauseosa*	**Rubber Rabbitbrush**	11.20	1.53	100.83	13.79
Elymus	*elymoides*	**Squirreltail**	7.44	1.02	9.73	1.33
Ephedra	*nevadensis*	**Nevada Ephedra**	21.60	2.95	39.93	5.46
Eriognum	*fasciculatum*	**Buckwheat**	2.40	0.33	30.15	4.12
Grayia	*spinosa*	**Spiny Hopsage**	4.00	0.55	7.75	1.06
Hymenoclea	*salsola*	**Cheesebush**	16.00	2.19	26.03	3.56
Lycium	*andersonii*	**Desert Thorn**	1.60	0.22	2.61	0.36
Oryzopsis	*hymenoides*	**Indian Ricegrass**	24.80	3.39	26.16	3.58
Spharaelea	*ambigua*	**Globe Mallow**	4.80	0.66	6.18	0.85
TOTALS			162.64	22.25	422.12	57.75

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX E
DEVIATIONS FROM CONSTRUCTION QAP

THIS PAGE INTENTIONALLY LEFT BLANK

Bechtel Nevada

Engineering Department
DESIGN CHANGE NOTICE

Sheet 1 of 2
DCN No. 01/10-448

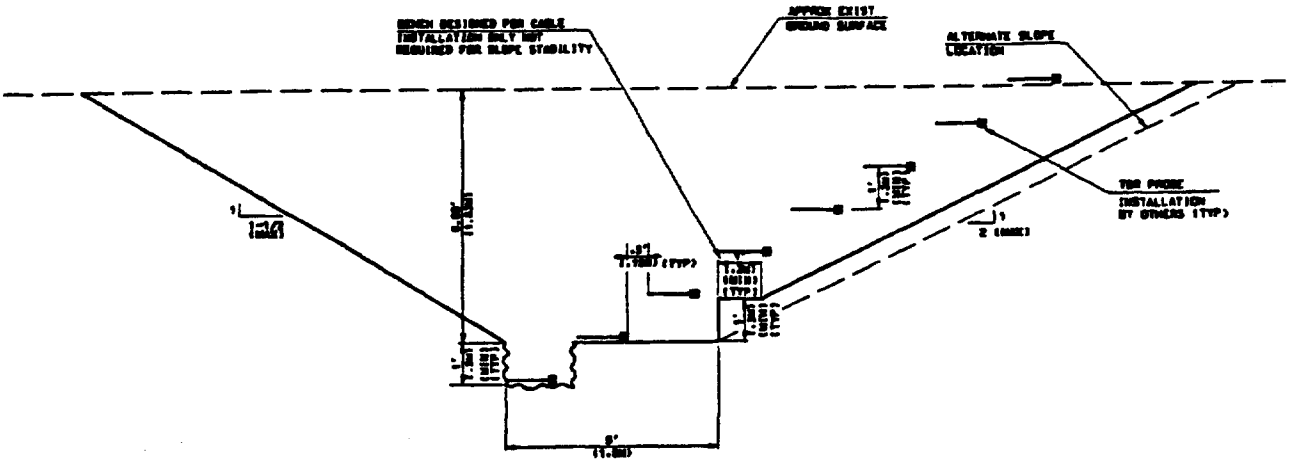
[X] Design Drawing [ ] Design Specification Date Initiated: 10/31/00

Document No.: JS-003-00004-C3 Revision No.: 0

Title: SECTIONS

Description of Change:
MODIFIED SECTION C

Engineering Tracking No. 00004.A03



SECTION C

Prepared By:	Date:	Checked By:	Date:
Julie A. Sevola	10/31/00		10/31/00

APPROVALS

Project Engineer:	Date:	Other BN Organizations: (PA, ESS&H, etc.)	Date:
	10/31/00		
	Date:		Date:
	Date:		Date:
	Date:		Date:

Bechtel Nevada

Engineering Department
DESIGN CHANGE NOTICE

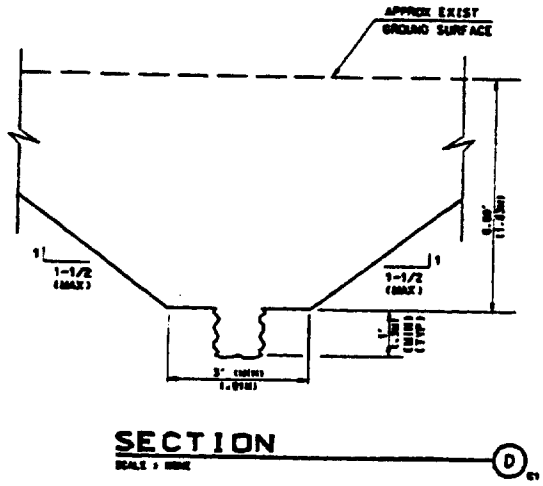
Sheet 2 of 2
DCN No. 01/10-448

Document No.: JS-003-00004-C3 Revision No.: 0

Title: SECTIONS

Description of Change:
MODIFIED SECTION D

Engineering Tracking No. 00004.A03



SECTION (D)

e:/std/cell/(gen2032)(gen100)/dcn2

Bechtel Nevada

Engineering Department DESIGN CHANGE NOTICE

Sheet 1 of 1

DCN No.: DCN01/10-449

☐ Design Drawing ☒ Design Specification Date Initiated: 10/31/2000

Document No.: SP-00004A03-C0007 **Revision No.:** 0

Title: Construction Specifications for U3ax/bl RCRA Equivalent Closure

Description of Change:

SECTION 02222, PART 3, PARAGRAPH 3.03.D.2.c:

REPLACE Minimum area to be tested shall be 3 feet (914 mm) by 16 feet (4.88 m). **WITH** Minimum area to be tested shall be 3 feet (914 mm) by 6 feet (1.83 m).

Prepared by:	Date:	Checked by:	Date:
Julie A. Sowle	10/31/00	Dale A. Ortiz	10/31/00

APPROVALS

Project Engineer: Kenneth Bowman	Date: 10/31/00	Other BN Organizations: (PA, ESS&H, etc.)	
	Date:		Date:
	Date:		Date:
	Date:		Date:

From: Julie Sorola
To: ENVIRON.MERC-DORMB.CampbeK
Date: 11/9/00 9:15am
Subject: Re: Ax/bl fence engineering tech change request and TDR data -Reply

Kevin,

The proposed fence reconfiguration is acceptable. A DCN will be issued that will delete the requirement to reinstall the existing rad fence after construction of the cover and move the new fence to the approximate location of the existing rad fence. Per our conversation, the new fence will be signed as a radiation contamination area in addition to the required RCRA postings.

Please supply information on the new postings for inclusion in the asbuilt package i.e., spacing, size, color, wording, etc. I know these postings are standard for the NTS, but we do not have that information in engineering.

CC: HUDAKGG, ENVIRON.MERC-DORMB.MADSENDD, ENVIRON.MERC...

APPENDIX F
"AS-BUILT" DRAWINGS FOR AREA 3 U-3AX/BL COVER

THIS PAGE INTENTIONALLY LEFT BLANK

UNITED STATES DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE

LAS VEGAS, NEVADA

RADIOACTIVE WASTE MANAGEMENT SITE

CAU 110 U3ax/bl RCRA EQUIVALENT CLOSURE

AREA 3

INDEX

DRAWING NUMBER		DRAWING TITLE	STANDARD NUMBER	DESCRIPTION
TITLE				
JS-003-00004-T1	REV 1	TITLE SHEET	STD T1 SHT 1 STD T2 SHT 1	STANDARDS INDEX GENERAL NOTES, DRAFTING SYMBOLS & ANSI STANDARDS
CIVIL				
JS-003-00004-C1	REV 1	SITE PLAN	STD C100 SHT 1	NOTES, LEGEND & SYMBOLS
JS-003-00004-C2	REV 1	GRADING PLAN	STD C101 SHT 1	ABBREVIATIONS
JS-003-00004-C3	REV 1	SECTIONS		
JS-003-00004-C4	REV 1	DETAILS		

SCOPE OF WORK

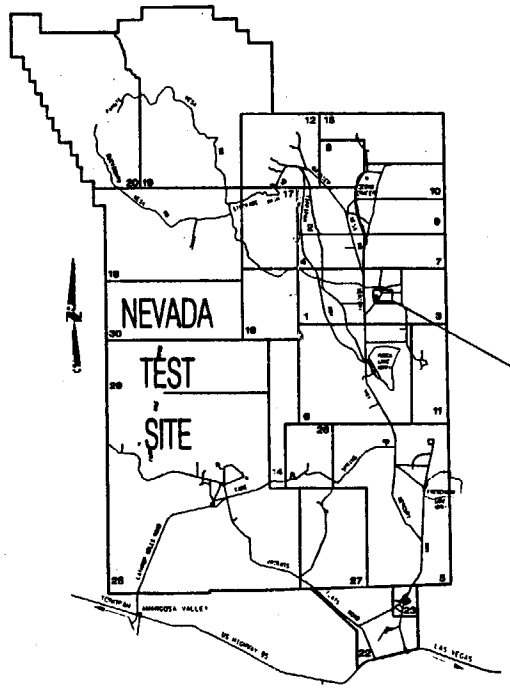
CONSTRUCT 7.8 ACRE COVER THAT CLOSED THE INACTIVE U3ax/bl DISPOSAL UNIT IN ACCORDANCE WITH THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA). THE COVER WAS CONSTRUCTED USING NATIVE MATERIALS.

PROJECT NOTES

ALL CONSTRUCTION FEATURES, MATERIALS, TESTS AND DETAILS CONFORM TO THE PROJECT SPECIFICATIONS AND THE APPROVED CONSTRUCTION QUALITY ASSURANCE PLAN (CQAP). FOR DETAILS OF STANDARDS REFERENCED ON THIS PROJECT, SEE THE DESIGN DRAWING STANDARDS.

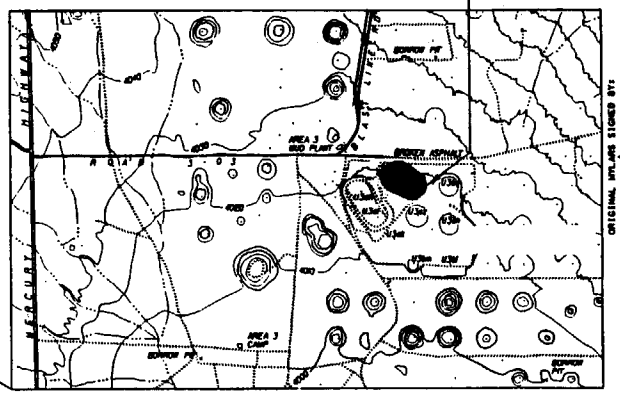
METRIC NOTE

ALL DESIGN DIMENSIONS ARE SHOWN ENGLISH AND METRIC. NOMINAL CUSTOMARY ENGLISH CALLOUTS ARE MAINTAINED. METRIC CALLOUTS ARE USED WHERE NO ENGLISH CALLOUT EXISTS OR WHERE VENDOR SUPPLIED ITEMS ARE METRIC BY DESIGN.



LOCATION MAP
NOT TO SCALE

U3ax/bl COVER



U3ax/bl VICINITY MAP
NOT TO SCALE

ORIGINAL MYLARS SIGNED BY:

AS-BUILT

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

ORIGINAL AS-BUILT SIGNED BY:

REVISED DRAWING PER VERBAL DIRECTION RECEIVED FROM TASK MANAGER ON 9/16/01.	1	9/20/01
AS-BUILT. DATED 03/29/01. ADDED DRAWING TO DRAWING LIST. REVISED SCOPE & NOTES.	0	8/8/01
ISSUED FOR CONSTRUCTION 8/8/00	0	8/8/00

DESIGNED	E. C. LANER	8/7/00
DRAWN	STEVE MACHT	8/8/00
CHECKED	SABLINE CURTIS	8/8/00
QA		
DOE REF NO.	N/A	
PROJECT NO.	00004-405	
CONTRACT NO.	DE-AC08-96NV11718	

U.S. DEPARTMENT OF ENERGY

NEVADA TEST SITE — AREA 03

RADIOACTIVE WASTE MANAGEMENT SITE

CAU 110 U3ax/bl RCRA EQUIVALENT CLOSURE

TITLE SHEET

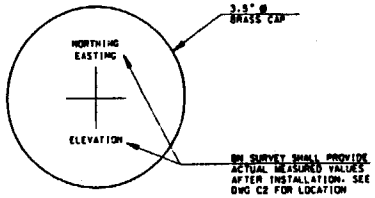
Bechtel Nevada

JS-003-00004-T1

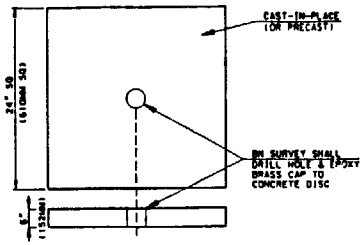
DUAL ENGLISH/METRIC DRAWING

ALL METRIC DIMENSIONS AND NOTATIONS ARE SHOWN BELOW THE DIMENSION LINE OR IN PARENTHESIS.

WHOLE NUMBERS INDICATE MILLIMETERS
DECIMAL NUMBERS SHOWN TO TWO (2) PLACES INDICATE METERS
DECIMAL NUMBERS SHOWN TO THREE (3) PLACES INDICATE KILOMETERS



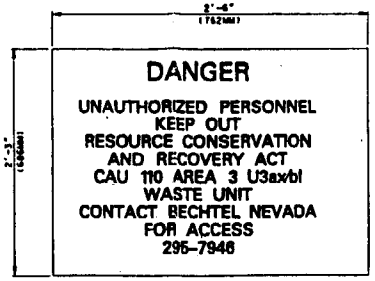
BRASS CAP DETAIL (1) C2
NOT TO SCALE



CONCRETE MONUMENT DETAIL (2) C2
NOT TO SCALE

DETAIL NOTES

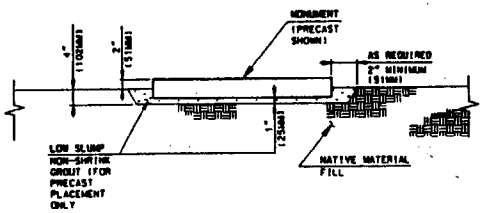
1. DETAIL 2 - SHOWS CONTROLLED DIMENSIONS FOR MONUMENT.
2. DETAIL 4 - FORM CAST-IN-PLACE CONCRETE MONUMENT TO THE DIMENSIONS SHOWN.



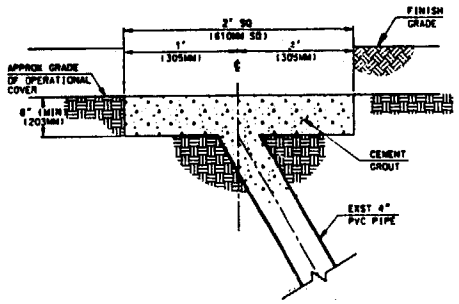
SIGN DETAIL (3) C2
NOT TO SCALE

SIGN NOTES

1. SIGNS ARE WHITE WITH BLACK LETTERING.
2. MINIMUM LETTER/WORD HEIGHT IS:
   DANGER = 3" (76MM)
   ALL OTHERS = 1½" (38MM)
3. SIGN STOCK THICKNESS IS 16 GAGE/0.063".



INSTALLATION DETAIL (4) C2
NOT TO SCALE



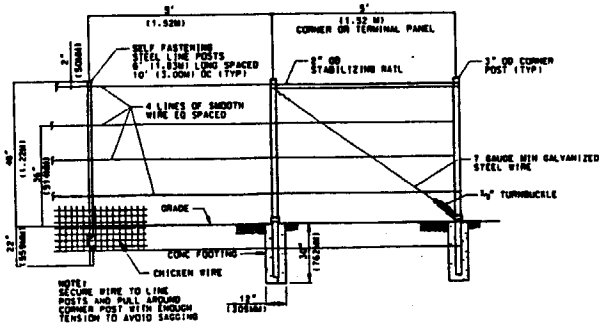
PIPE GROUTING DETAIL (7) C1
NOT TO SCALE

FENCE NOTES

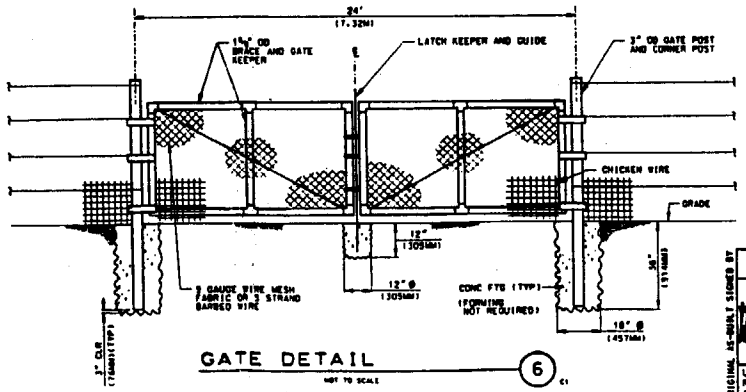
1. FENCING MEETS THE REQUIREMENTS OF SPECIFICATION SECTION 02831.
2. ALL FENCING COMPONENT DIMENSIONS SHOWN ARE NOMINAL. SEE NOTE 1.
3. CONCRETE FOOTING DIMENSIONS ARE APPROXIMATE.

REFERENCES

TITLE SHEET	JS-003-00004-T1
GRADING PLAN	JS-003-00004-C2
CONSTRUCTION SPECIFICATION FOR CAU110 U3ax/bl RCRA EQUIVALENT CLOSURE, SECTION 02831	SP00004A03-C0007.0



4 WIRE FENCE (5) C1
NOT TO SCALE



GATE DETAIL (6) C1
NOT TO SCALE

AS-BUILT

ORIGINAL AS-BUILT SIGNED BY: Bechtel Nevada

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

ORIGINAL MYLARS SIGNED BY

REVISED	BY	CHKD	APP'D	DATE
0	K. C. LANDER	AL	STEVE MACHT	8/7/00
1	K. C. LANDER	AL	STEVE MACHT	8/8/00

SUBMITTED BECHTEL BY: K. C. LANDER 8/7/00
APP'D BY DOE/NV PROJECT MANAGER: STEVE MACHT 8/8/00
SUBMITTED BY: SABRINE CURTIS 8/8/00
TRACT NUMBER: N/A
PROJECT NUMBER: 00004-403
ACTIVITY NUMBER: CT6061.08
SHT NO OF NO: N/A

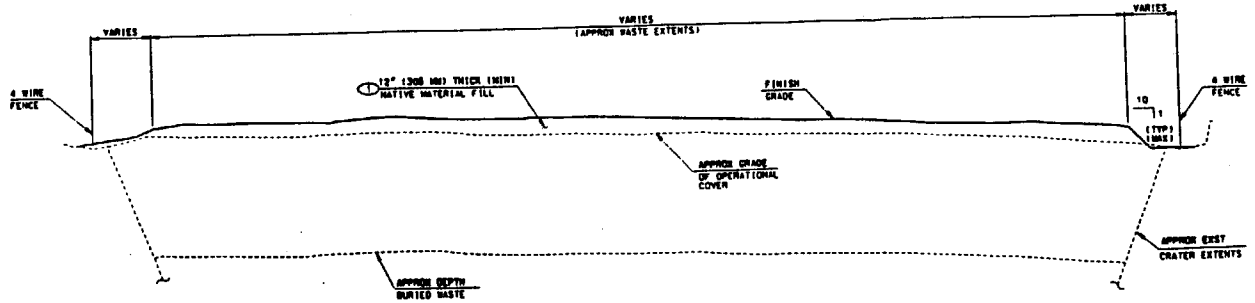
REVISED: DATED 03/29/01. REVISED AND REISSUED.
ISSUED FOR CONSTRUCTION 8/8/00

U.S. DEPARTMENT OF ENERGY
Bechtel Nevada
NEVADA TEST SITE — AREA 03
RADIOACTIVE WASTE MANAGEMENT SITE
CAU 110 U3ax/bl RCRA EQUIVALENT CLOSURE
DETAILS
JS-003-00004-C4

DUAL ENGLISH/METRIC DRAWING

ALL METRIC DIMENSIONS AND NOTATIONS ARE SHOWN BELOW THE DIMENSION LINE OR IN PARENTHESIS.

SINGLE NUMBERS INDICATE MILLIMETERS
DECIMAL NUMBERS SHOWN TO TWO (2) PLACES INDICATE METERS
DECIMAL NUMBERS SHOWN TO THREE (3) PLACES INDICATE KILOMETERS



SECTION (A) C2
SCALE : HORIZONTAL 1" = 30' VERTICAL 1" = 9'

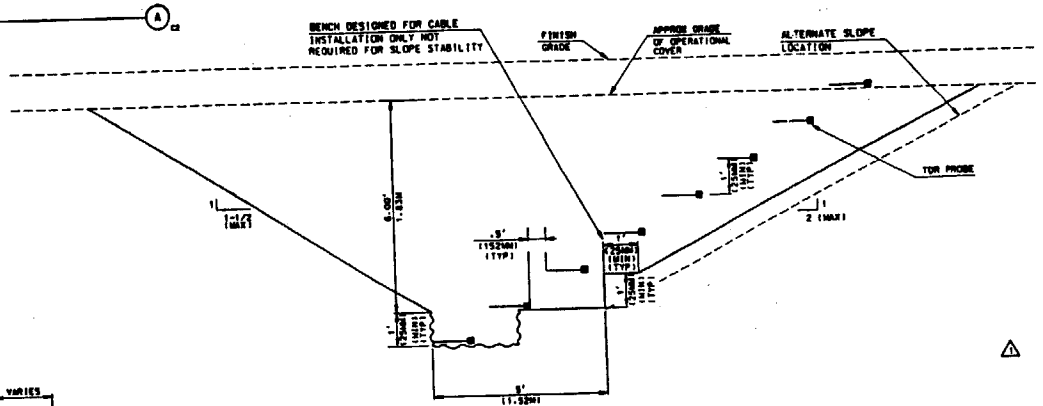
KEY NOTES

1. NATIVE MATERIAL FILL WAS PLACED IN MINIMUM 6" TO MAXIMUM 12" COMPACTED LIFTS.

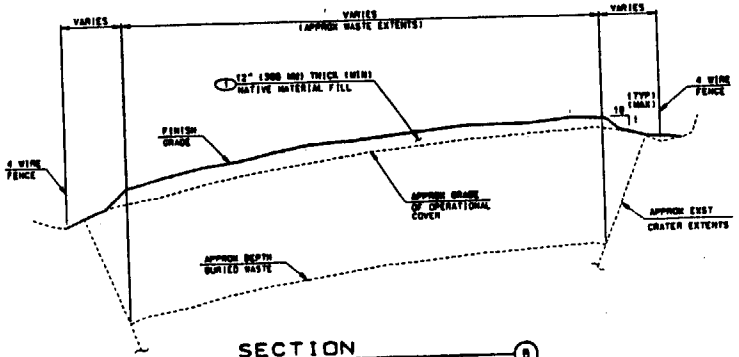
AS-BUILT

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

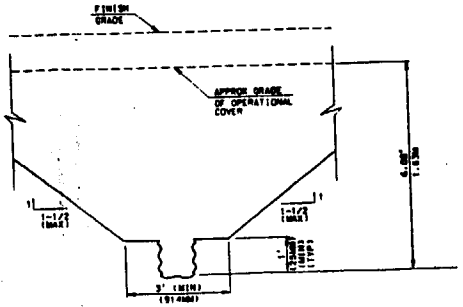
ORIGINAL AS-BUILT SIGNED BY



SECTION (C) C1
SCALE : HORIZONTAL 1" = 30'



SECTION (B) C2
SCALE : HORIZONTAL 1" = 30' VERTICAL 1" = 9'



SECTION (D) C1
SCALE : HORIZONTAL 1" = 30'

REFERENCES

TITLE SHEET JS-003-00004-T1

GRAPHIC SCALE
0 5 10 15 FEET
1" = 5'

GRAPHIC SCALE
0 50 100 150 FEET
1" = 50'

ORIGINAL AS-BUILT SIGNED BY

DESIGNED	MCJ	8/7/00	
DRAWN	E. C. LUKES	8/7/00	
CHECKED	JAS	8/7/00	
APPROVED	STEVE MACHT	8/8/00	
DEPT'S PROJECT ENGINEER	N/A	PROJECT MGR TR	N/A
DEPT'S PROJECT MANAGER	N/A	PROJECT MGR TR	N/A
CADD/DRAFTING SUPERVISOR	CARLENE CURTIS	PROJECT MGR TR	N/A
PROJECT NUMBER	00004-403	CTR/DOE/NSO	N/A

0	AS-BUILT: DATED 03/29/01, INCORPORATED DCR'S 00/08-418 & 01/10-448. REVISED AND REDRAWN.	
	ISSUED FOR CONSTRUCTION 8/8/00	

U.S. DEPARTMENT OF ENERGY

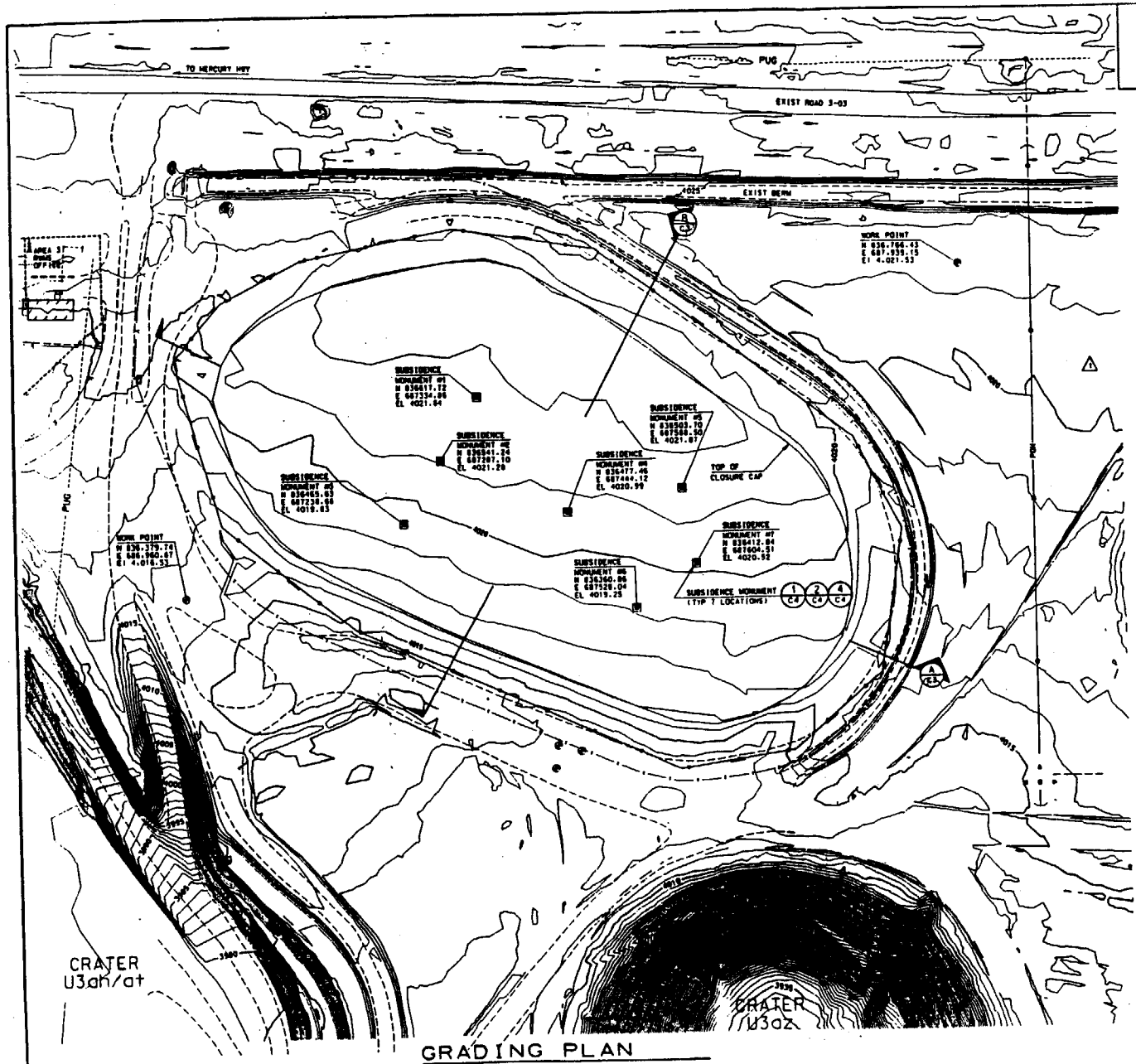
NEVADA TEST SITE — AREA 03
RADIOACTIVE WASTE MANAGEMENT SITE
CAU 110 U3cx/bl RCRA EQUIVALENT CLOSURE

SECTIONS

Bechtel Nevada

JS-003-00004-C3

03 JS 01 02:09:54 P:\Dgn\00004a03\asbuilt\c3.dgn



DUAL ENGLISH/METRIC DRAWING

ALL METRIC DIMENSIONS AND NOTATIONS ARE SHOWN BELOW THE DIMENSION LINE OR IN PARENTHESIS.

WHOLE NUMBERS INDICATE MILLIMETERS
DECIMAL NUMBERS SHOWN TO TWO (2) PLACES INDICATE METERS
DECIMAL NUMBERS SHOWN TO THREE (3) PLACES INDICATE KILOMETERS

GENERAL NOTES

1. NATIVE MATERIAL SOILS WERE OBTAINED FROM THE AREA 3 BORROW PIT LOCATED 1.5 MILES (2.41 KM) SOUTH OF THE RWMS.
2. ALL SIDE SLOPES OF THE CLOSURE CAP ARE A MAXIMUM OF 10%(1V:10H).

REFERENCES

TITLE SHEET	JS-003-00004-T1
SECTIONS	JS-003-00004-C3
DETAILS	JS-003-00004-C4

ORIGINAL AS-BUILT STORED BY

AS-BUILT

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

GRAPHIC SCALE
0 30 60 120 180 FEET
1" = 60'

CONTOUR INTERVAL = 1 FT

ORIGINAL APPLIANS STORED BY

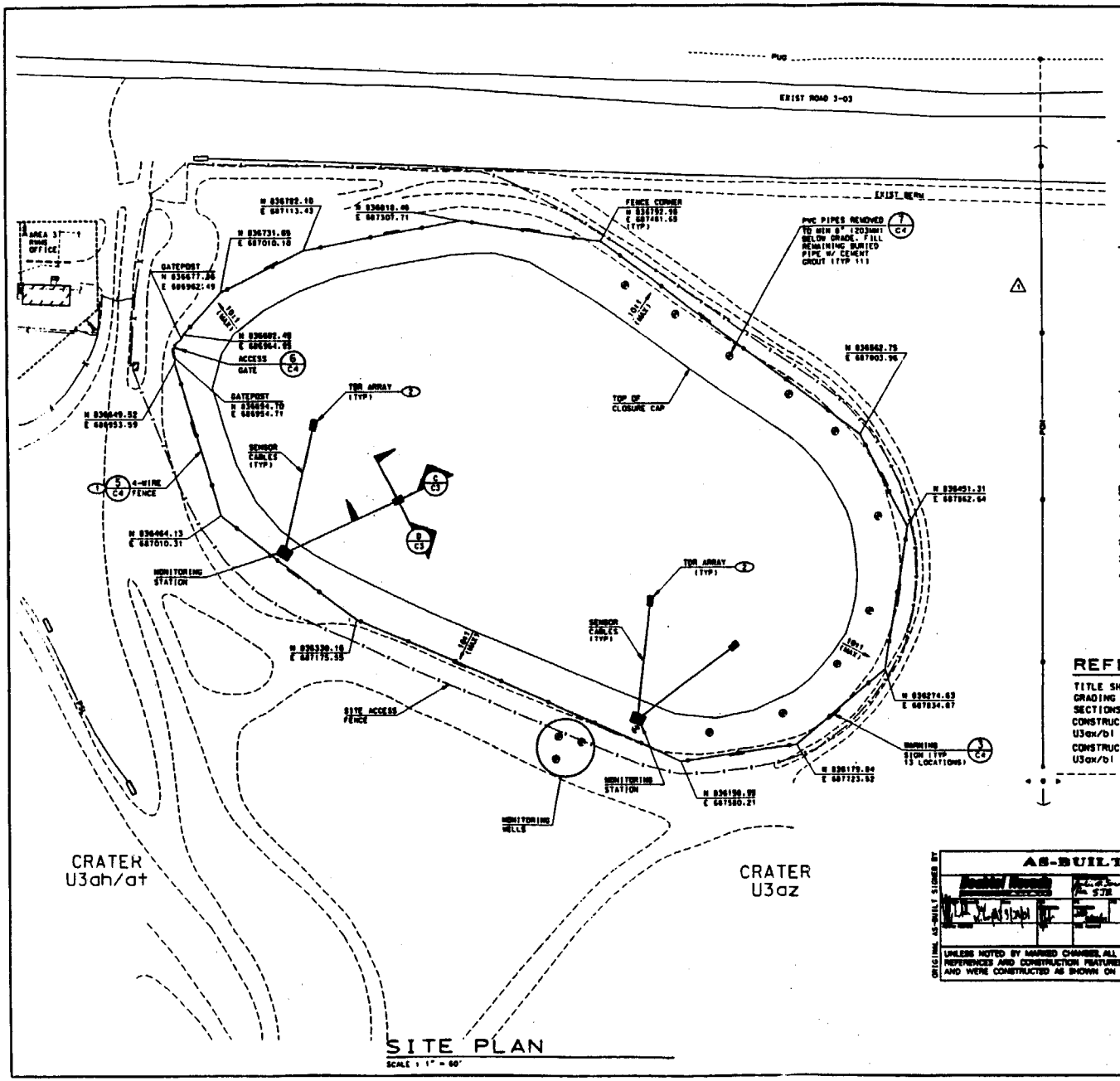
REVISIONS	DRAWN	CHECKED	DATE
0 ISSUED FOR CONSTRUCTION 8/8/00	M.D.J.	K. C. LANER	8/7/00
1 AS-BUILT, DATED 03/29/01, REVISED AND RECORDED	J.A.S.	STEVE MACHT	8/8/00
	N/A		

U.S. DEPARTMENT OF ENERGY

NEVADA TEST SITE
RADIOACTIVE WASTE MANAGEMENT SITE
CAU 110 U3ax/bl RCRA EQUIVALENT CLOSURE
AREA 03
GRADING PLAN

Bechtel Nevada

DRAWING NUMBER JS-003-00004-C2
SHEET 2 OF 4



DUAL ENGLISH/METRIC DRAWING

ALL METRIC DIMENSIONS AND NOTATIONS ARE SHOWN BELOW THE DIMENSION LINE OR IN PARENTHESIS.

WHOLE NUMBERS INDICATE MILLIMETERS
DECIMAL NUMBERS SHOWN TO TWO (2) PLACES INDICATE METERS
DECIMAL NUMBERS SHOWN TO THREE (3) PLACES INDICATE KILOMETERS

ASSUMPTIONS

1. NATIVE MATERIAL LAYER SOILS WAS OBTAINED FROM THE AREA 3 BORROW PIT LOCATED 1.5 MILES (2.41 KM) SOUTH OF THE RWMS.
2. NON-POTABLE CONSTRUCTION WATER (SEE DRG T1) WAS OBTAINED FROM THE AREA 6 CAMP SUMP/ TRUCK FILL STAND AND TRANSPORTED TO THE RWMS.

GENERAL NOTES

1. BASIS FOR HORIZONTAL CONTROL IS THE NORTH AMERICAN DATUM 1927, STATE PLANE, NEVADA CENTRAL ZONE, FEET.
2. BASIS FOR VERTICAL CONTROL IS THE NORTH AMERICAN VERTICAL DATUM OF 1929, FEET.
3. NATIVE MATERIAL FILL MEETS THE REQUIREMENTS OF SPECIFICATION SECTION 02223.

KEY NOTE

1. INSTALLED NEW 4-WIRE FENCE IN PLACE OF EXISTING RADIOLOGICAL WARNING FENCE AROUND ENTIRE UNIT.
2. INSTALLATION PERFORMED BY OTHERS.

PIPE GROUTING NOTES

1. AN 12" X 12" X 8" (305mm X 305mm X 203mm) AREA WAS EXCAVATED FROM AROUND EACH PVC PIPE.
2. EACH PVC PIPE WAS CUT A MIN 8" (203mm) BELOW GRADE.
3. EACH PVC PIPE WAS FILLED WITH CEMENT GROUT.
4. THE GROUT WAS PLACED INTO THE PVC UNTIL IT OVERFLOWED INTO THE FOOTER & FILLED TO GRADE. NO SPECIAL FINISH WAS REQUIRED: LEVEL & CURE.

REFERENCES

TITLE SHEET	JS-003-00004-T1
GRADING PLAN	JS-003-00004-C2
SECTIONS	JS-003-00004-C3
CONSTRUCTION SPECIFICATION FOR CAU110 U3ax/bl RCRA EQUIVALENT CLOSURE, SECTION 02222	SP00004A03-C0007.0
CONSTRUCTION SPECIFICATION FOR CAU110 U3ax/bl RCRA EQUIVALENT CLOSURE, SECTION 02223	SP00004A03-C0007.0

AS-BUILT

ORIGINAL AS-BUILT SIGNED BY

UNLESS NOTED BY MARKED CHANGES, ALL DIMENSIONS, NOTES, REFERENCES AND CONSTRUCTION FEATURES ARE CORRECTED, AND WERE CONSTRUCTED AS SHOWN ON THIS DRAWING.

GRAPHIC SCALE
0 30 60 120 180 FEET
1" = 60'

ORIGINAL AS-BUILT SIGNED BY

REVISED	DRAWN	CHECKED	DESIGNED	DATE	PROJECT MGR	APPROVED
8/17/00	JS	JS	JS	8/17/00	S. C. LANIER	8/17/00
8/24/00	JS	JS	JS	8/24/00	STEVE HACHT	8/24/00
					DEP'T MGR PROJECT MANAGER	

0	8/17/00	AS-BUILT, DATED 03/29/01, REVISED AND RESIGNED			
1	8/24/00	ISSUED FOR CONSTRUCTION 8/24/00			

54-81196 CURTIS			
00004-001	N/A	CONTRACT NO.	N/A

NEVADA TEST SITE — AREA 03
RADIOACTIVE WASTE MANAGEMENT SITE
CAU 110 U3ax/bl RCRA EQUIVALENT CLOSURE
SITE PLAN

U.S. DEPARTMENT OF ENERGY

Bechtel Nevada

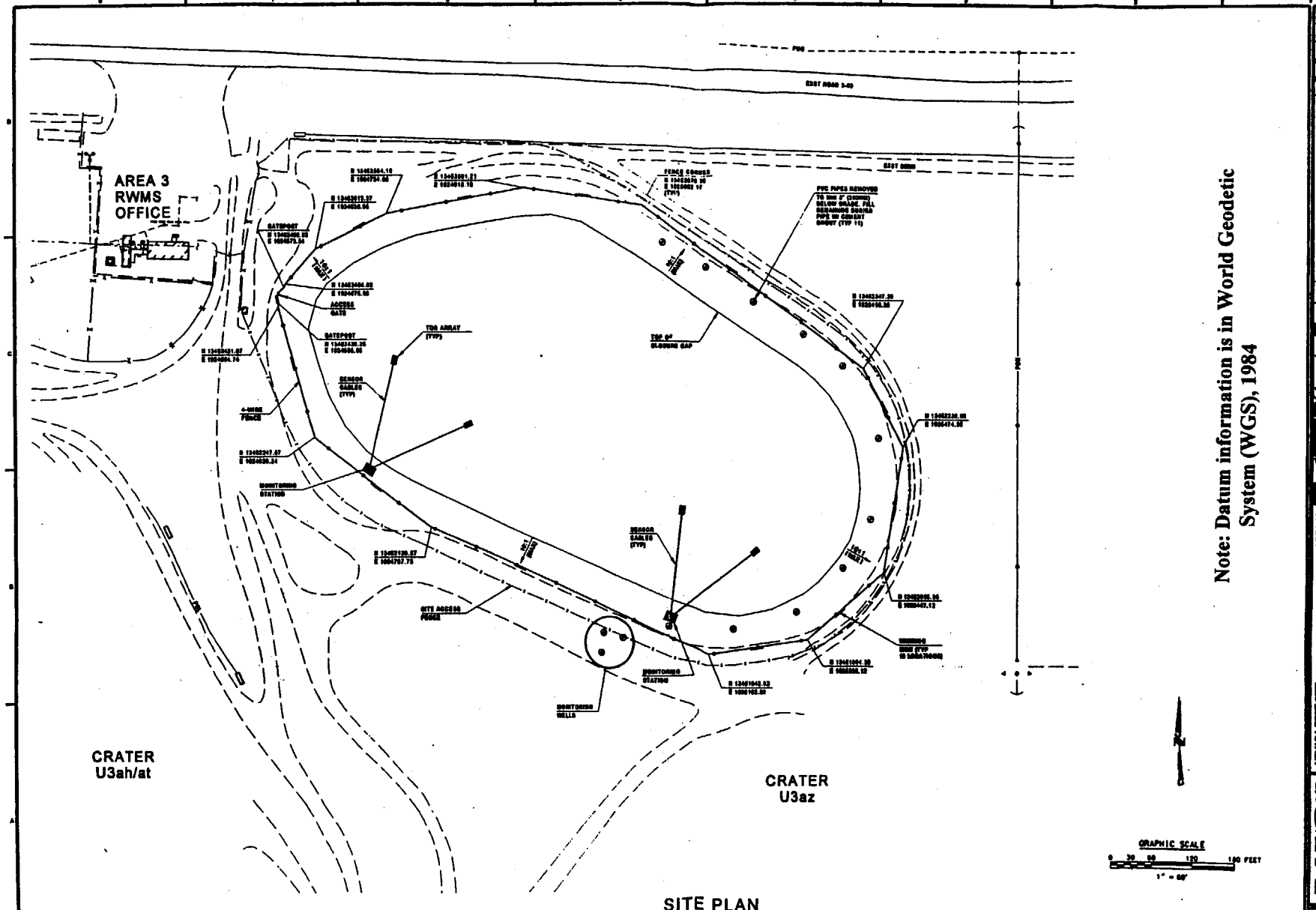
JS-003-00004-C1

SHEET 2 REV 1

APPENDIX G
LAND-USE RESTRICTIONS

THIS PAGE INTENTIONALLY LEFT BLANK

FOR INFORMATION ONLY - NOT FOR CONSTRUCTION



APPENDIX G
LAND-USE RESTRICTIONS

THIS PAGE INTENTIONALLY LEFT BLANK

CAU Use Restriction Information

CAU Number/Description: **CAU 110: Area 3 WMD U-3ax/bl Crater**

Applicable CAS Numbers/Descriptions: **CAS 03-23-04: U-3ax/bl Subsidence Crater**

Contact (Organization/project): **DOE/NV Industrial Sites Project Manager**

Surveyed Area (UTM coordinates; Zone 11, NAD 27): The site is defined by the following NAD 27 coordinates: **Gatepost: 13,452,458.93 N; 1,924,573.54 E Southern end of cover: 13,452,059.38 N; 1,925,447.12 E- Northeast side:13,452,601.21 N; 1,924,918.18 E - 13,452,578.35 N; 1,925,092.17 E - 13,452,347.30 N; 1,925,415.20 E - 13,452,236.09 N; 1,925,474.25 and Southwest side: 13,452,247.57 N; 1,924,620.24 E - 13,451,942.82 N; 1,925,192.82 E - 13,451,964.20 N; 1,925,336.12**

Survey Date: **January 24, 2001** Survey Method (GPS, etc.): **Transit Survey**

Site Monitoring Requirements: **Visual inspections, subsidence monitoring, & TDR analysis**

Required Frequency (quarterly, annually?): **Varies, check Closure Plan for activity specific frequency**

If Monitoring Has Started, Indicate Last Completion Date: **N/A**

Use Restrictions

The future use of any land related to this Corrective Action Unit (CAU), as described by the above surveyed location, is restricted from any DOE or Air Force activity that may alter or modify the containment control as approved by the state and identified in the CAU Closure Report or other CAU documentation unless appropriate concurrence is obtained in advance.

Comments: See the Closure Report for additional information on the condition of the site and any monitoring and/or inspection requirements.

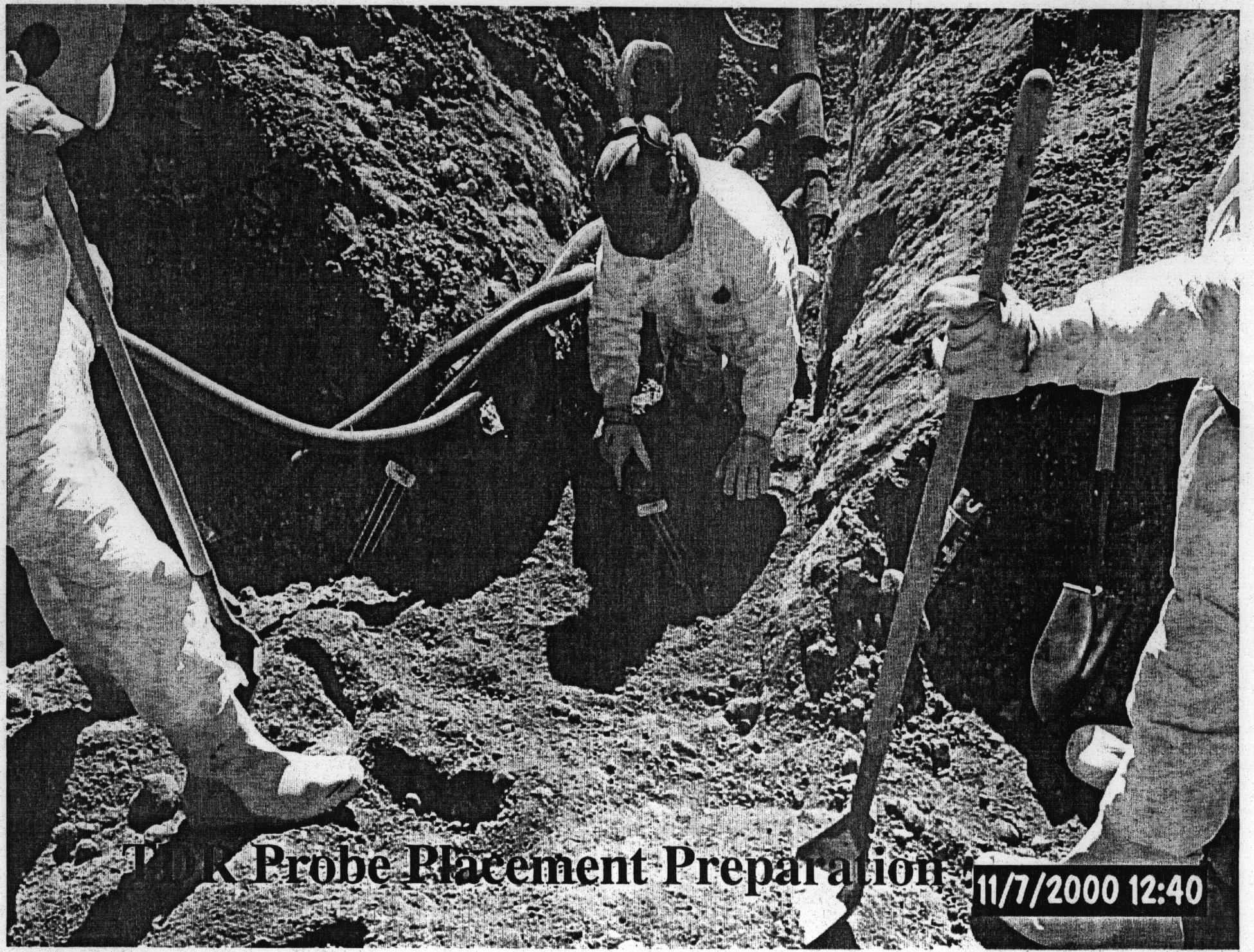
Submitted By: Janet Appenzeller-Wing **Date:** 6/6/01

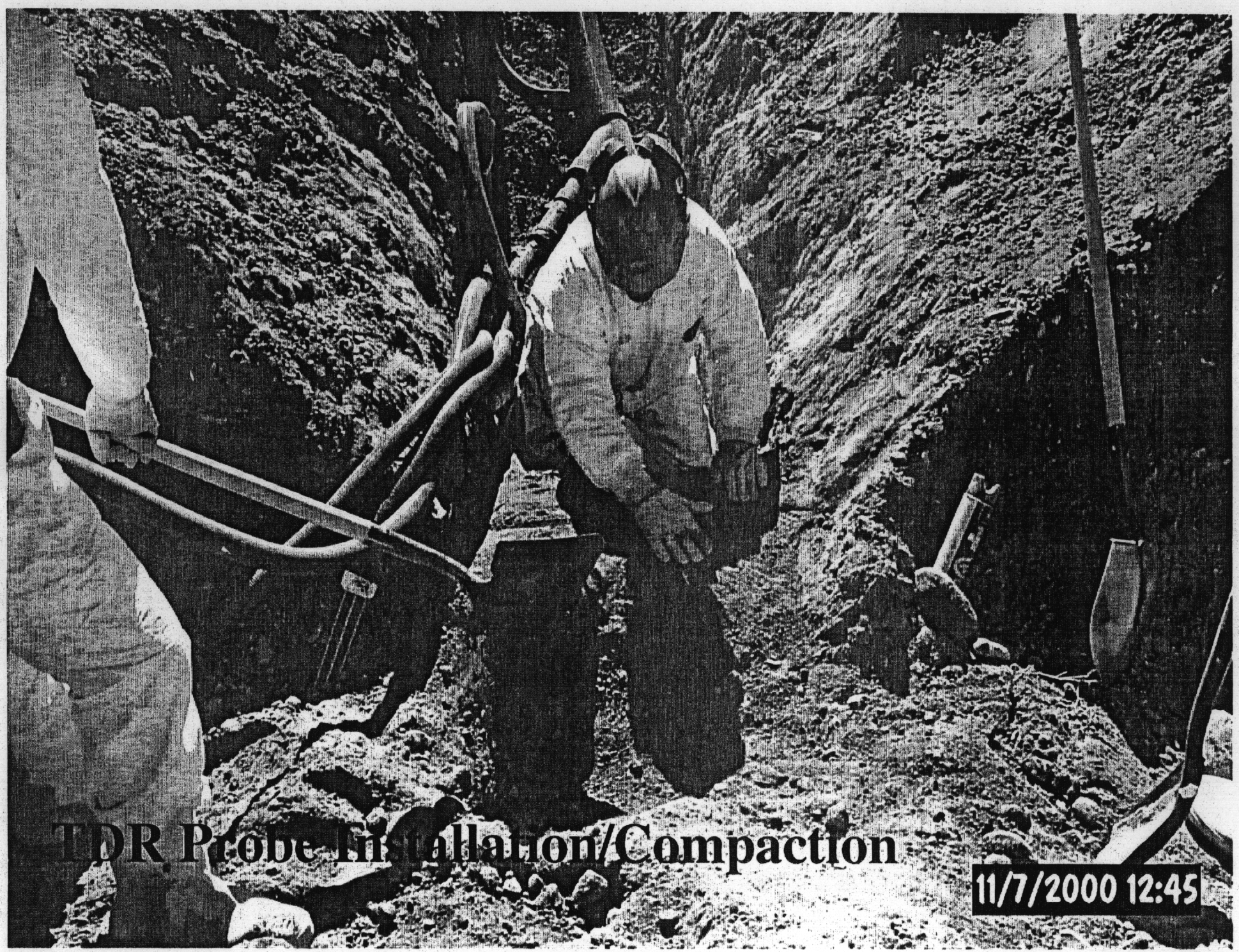
cc with copy of survey map:
CAU Files (2 copies)

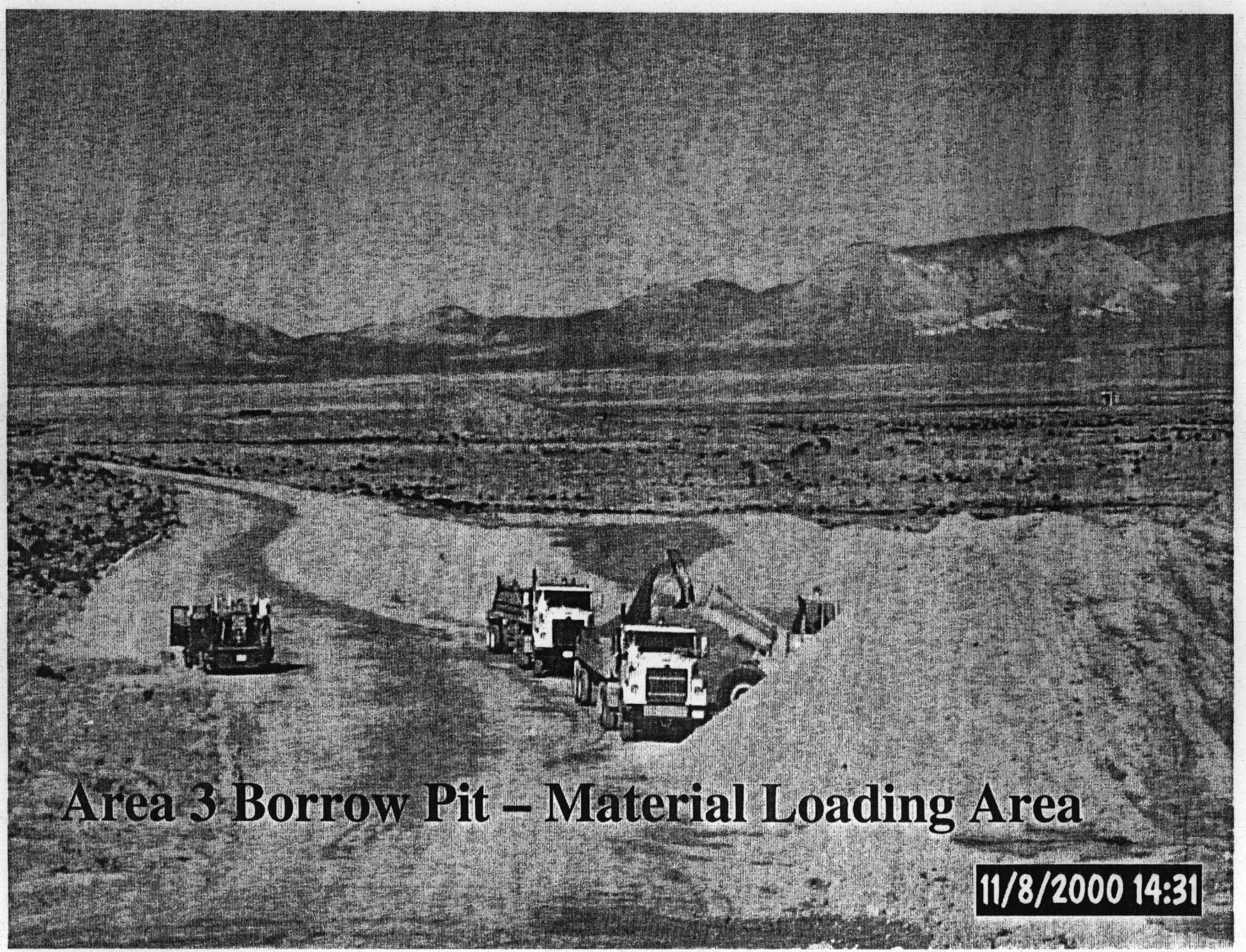
THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX H
PHOTOGRAPHS AND FIELD NOTES

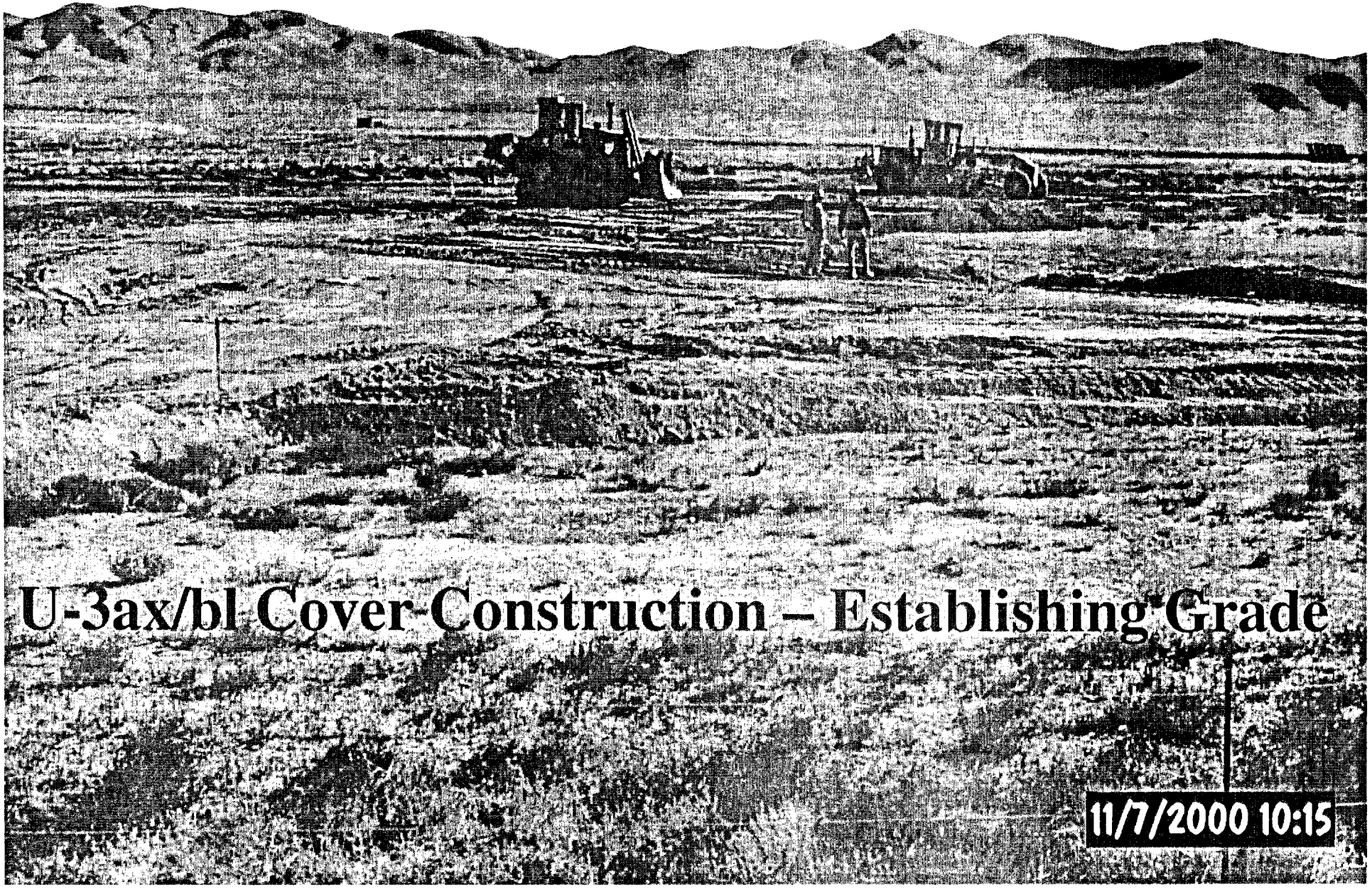
THIS PAGE INTENTIONALLY LEFT BLANK

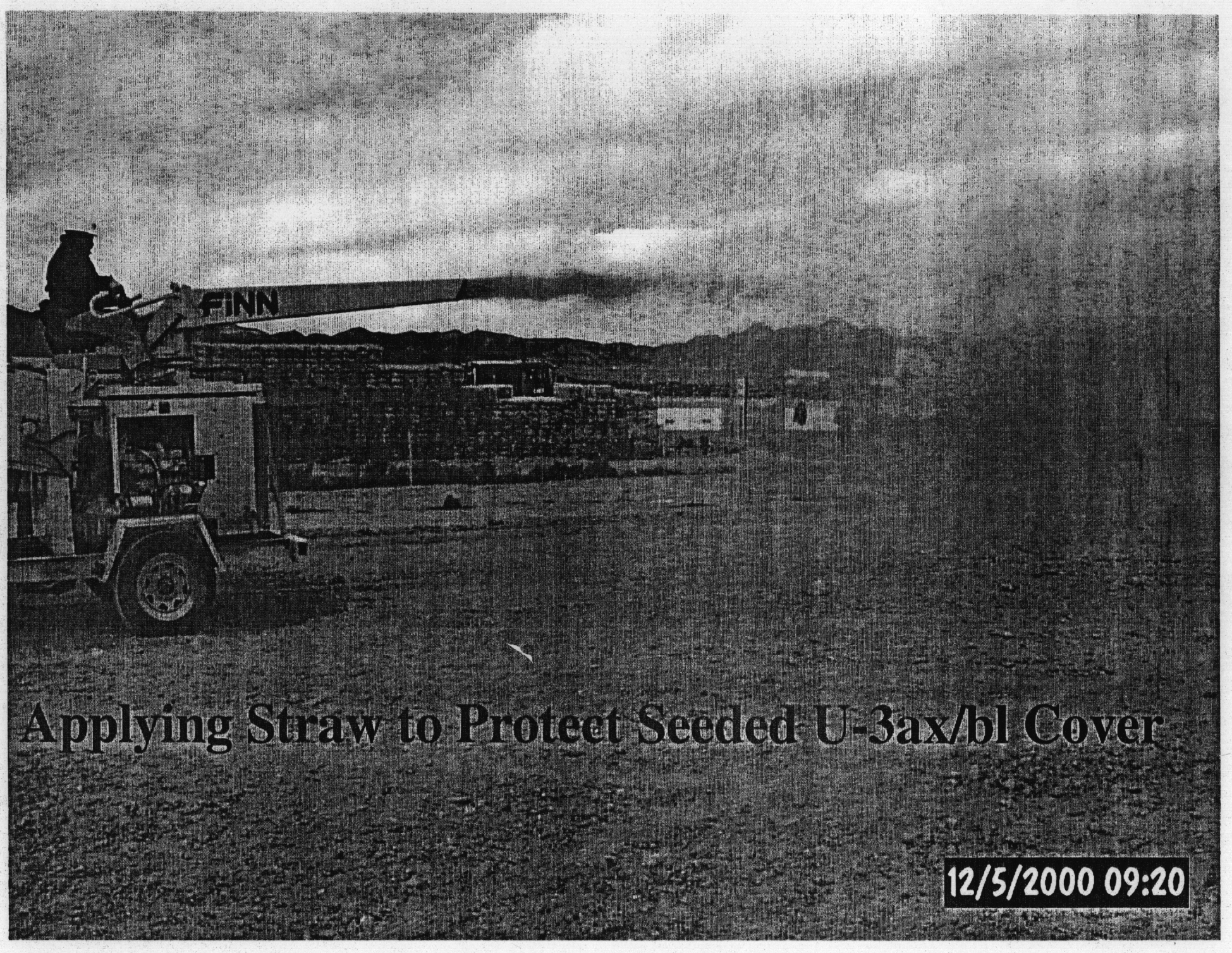

TDR Probe Placement Preparation
11/7/2000 12:40


TDR Probe Installation/Compaction
11/7/2000 12:45


Area 3 Borrow Pit – Material Loading Area
11/8/2000 14:31


U-3ax/bl Cover Construction – Laying Material
11/7/2000 10:18


U-3ax/bl Cover Construction – Establishing Grade
11/7/2000 10:15



Applying Straw to Protect Seeded U-3ax/bl Cover

60 **TITLE** CAU110 Ax/6l Closure **PROJECT NO.**

BOOK NO.

Work continued from Page N/A Monday 10/23/00

Weather: Cold 50's overcast intermittent rains.

Safety: Tailgate briefing given on site.

Topics: Scope of work: Fencing work, Mobilization of equipment to site
Slip/trip/fall, Working around heavy equip.
PPE, Bio hazard

Personnel: Site Supervisor Chuck Warnock
Tech Lead Kevin Campbell
H.P. Craig Lyons
Laborers Joe Jablonski, Victor Ramirez
ER tech Mike Floyd
Rad Tech Mike VanDillen, Tim Baker
Electricians Jim Rainey, Gary Gardner, Rubin Cuaron
Operators Paul Robinson, Danny Ellis
Safety Gene Cook

Equipment: BN/ER Metro Van, backhoe, D9 for borrow pit in route

Wiremen arrived on site for tailgate Rubin Cuaron no medical clearance, no training, Samples

1000 Laborers working on fence access and security.

- One laborer V. Ramirez arrived on site without and training or health records on file. Good training & medical on Ramirez. All current laborers have fencing & gate ups

Moved metro van into position just inside support zone

1420 Conduit delivered. Operator to off load conduit in route. Conduit will be placed near southern gate inside support zone.

430 - No excavation will be done today due to rain. Operators depart site. All personnel except site sup, 2 laborers gone for day.

Work continued to Page N/A

SIGNATURE [signature] DATE 10/23/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Weather: Overcast, slight showers, cool 60's.

Safety: Tailgate given prior to start of work Topics included:
Scope of work, slip/trip/fall, cold stress, emergency contacts/procedures, working around heavy equipment

- Caltrans posting signs - "Blasting Construction", ~~#3~~ "4-3Rx/16" around location Support Zone
- Electricians, ASTD folks (Dan Levitt, Loyd Dasdel), BNER (Mike Flory, Dudley Emer) laying out conduit and stringing TDR probe cabeling.

Medco van setup, hot line established.

Paul Robinson preparing to mark off extent of cover inside EZ. Drawing #C3 shows cover edge is 50ft inside existing fence line. After lunch cover edges will be staked and excavation of conduit trench and TDR probe pits will begin.

1300 Joe, Paul R., Danny S. dressed out and in EZ trenching conduit trench, and masking/staking cover edge. Conduit trench is ~~2 ft~~ 18 inches deep
2 in. of bedding sand, 4 in conduit, covered with native fill.

Blade and West Accumulation Trailer were delivered ~ 0900 am.

Completed excavating western most conduit trench and ~ 1/3 of second westerne trench
Assembled 2 conduits with cabel

Fault line

SIGNATURE [signature] DATE 10/24/00

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

62 **TITLE** ~~U-3ax~~ CAU 110 & U-3ax/bl Closure **PROJECT NO.**

Work continued from Page N/A Wednesday **BOOK NO.**

Weather: Overcast Sunshine coming through

Safety: Weather inclement weather. hazards, Level D PPE in support zone, level c in EZ, slip/trip/fall hazards, working around heavy equipment, noise hazard

Activities

- P. Robinson continuing to stake cover boundaries
- Continuing to excavate TDR trenches
- Delivered from equipment - tractor, disking equipment, ~~et~~ seed shell delivered staged up from Qcik Shell heavy portion
- Electricians attended Tailgate briefing then back to Area 6 for work in shop
- Laborers policing area.

Visitors ~~Personnel~~

Herb Bensinger

Bob Rommel

John Davey

- 10 yard of sand delivered to site.

1500 Water truck delivered to site. Slight leak went to see mechanic working on farm equipment.

- Perimeter of cover staked out. Grade stakes being placed on cover
- 3 TDR conduit trenches complete. 4th trench 50ft left to dig.
- All 4 TDR probe and conduit systems have been weatherized using electrical tape & weatherizing rubber tape.

1600 workers screened out of CA.

Bobby Dolans 9L dozer & tow water pull conditioning clean fill material at borrow pit. Watering ASTD area.

3 operators 1 Site Sup 2 Teamsters

2 laborers 1 tech Lead 1 IH

3 RCTs 1 SHESO 2 BNER tech

Last Line

Work continued to Page _____

SIGNATURE Kevin Campbell DATE 10/25/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Weather: Cool 60's, overcast with partial sun, rain showers predicted

Safety: Tailgate briefing topics included
Scope of work, weather - if rain work stops, hazards working around heavy equip.
slip/trip/fall hazards, dust control on CA using water truck & hose.

Visitors:
Rich Smith - RSL cameraman
John Kit - performing construction audit
- Continuing to place grade stake on cover
- Continue to dig TDR conduit trenches. Will place bedding sand ≈ 2in in trenches
- Water truck on site for dust control. Water truck leaking slowly.
- Continuing to work/condition soil in borrow pit.
- Off loaded a few bails of straw and 1" conduit/tubing for ASTD work.
Panel truck staged ~~down the access road towards Mercury Hwy with fuel equipment~~. next to ASTD area.

2 - teamsters (sand, fuel)
Dennis Finney
Bob Dommel

Ordered another 10 yds^3 of sand for trenches.
1330 Sand delivered and dumped and dozer
1400 Fuel truck arrived to fuel backhoe, and water pull'd to borrow pit
Water truck went to borrow pit to dump load for soil conditioning

1430 Still placing sand in TDR conduit trenches.
1440 Delivered 980 Front End Loader.
500 Depart Site for Area 23

Last line

SIGNATURE Kim Campbell DATE 10/26/00
DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

64 **TITLE** U-34c/BL Closure Activities **PROJECT NO.**

Work continued from Page N/A Monday 10/30/00 **BOOK NO.**

Weather: Rain intermittent showers, cool 60's

Safety: Tailgate briefing given on site.
Scope of work, cold stress,

Visitors: Jerel Nelson Dennis Finney
~~Dooley~~ Fred Penrod (DOE)

Borrow Pit: 100ft x 400ft 4 pieces of equipment 1 D9, 1 Loader, 1 water pull. 1 D8
Preparing soil for cover.

1300 Brought a load (1 fed) of soil up from borrow pit for developing compaction performance specification

Preparing area in ASTD for excavation.

Discussions to clarify CQA reqm. on TDR trench design and probe placement specifications

1330 Fred Penrod of DOE arrived on site. He was briefed on the SSHASP, tech change to the SSHASP and Tailgate briefing.

1340 J. Large arrived on site with water tanker for dust supression during excavation.

1410 Begin excavation of ASTD trench for bypassers using 980 Loader.
3 people in EZ - 1 operator, 1 grade checker, 1 laborer

Equipment:
1 D9, 1 Blade, 1 water tanker truck, 1 metro van, 1 waste accumulation trailer
1 D8, 1 980 Loader, 1 water pull

Personnel
3 RCT 1 Tech Cord 2 laborer
1 Site Sup 1 I.H 1 teamster
1 SW850 3 operators

Work continued to Page N/A

SIGNATURE K. B. Campbell DATE 10/30/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Work continued from Page N/A Tuesday 10/31/00

Weather: Clear, high clouds, cold!

Safety: Scope of work, cold stress, slip trip fall

Stn # C9YTDC@N ASTD.

- Phone conversation w/ Julie Sorola regarding DCN to Drawing C3 and Page 02222-3 section 3.03 D.2.c. dimension of test pad/pit to 3 × 6 × 3' deep. Julie will fax copy of DCN later this morning. Also all side slopes of TDR pits will be sloped 2:1 with a bench at 5 ft deep.

Discussions w/ P Robinson want modification to TDR pit design
Front & Back of Pit 2:1 slope to depth of 4 ft. Side vertical to 4 ft.
Bench at 4 ft deep. Bench is ft wide.
3 ft deeper in trench.

2 Electricians & 1 laborer D. Levitt placing TDR cables in conduits in trenches on cover
2 operators on cover

~~2 laborers~~, 2 operators, teamster supporting ASTD excavation,

0830 Excavation of ASTD trench

~~0830~~ Excavated a 3ft. × 6ft × 3 ft deep pit on cover just north of cover south gate. =80ft
Pit to be used to determine performance specification for
1 foot lifts will be placed in 6 inch layers then compacted. Once 1 ft compacted will take 3 compaction readings

~~1100 First 6" = 5 passes/stomps by front. } 1 ft compacted 79.1, 82.5, 80.0~~

~~Second 6" = 5 passes/stomps~~

① 1 11inch lift 6 passes compacted to = 10inches
Compaction results 79.1, 82.5, 80.0%

② 2-7 inch lifts placed each stomped 4 passes compacted to 6 inches.
compaction results 80.0 83 82.1 ⇒ This is our compaction performance spec
Soil very dry may add a small amount of water

SIGNATURE [signature] DATE 10/31/00

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

ASTD Personnel	CAU 110 Personnel
2 operators	
2 laborer	2 electrician until 1200
1 ~~excavator~~	2 BNER tech
1 RCT	1 Dan Levitt
1 ~~FORK~~	1 Operator
	1 Laborer
	1 NSE
	2 RCT
	After noon All on CAU 110

Copy of email from D Madsen to Sotolla received regarding DCN for compaction test pad and design of TDR pits.

CD0444-21

Issue: According to Excavation & Penetration we must perform an atmosphere reading prior to allowing workers in an excavation deeper than 5 ft. Don't have monitoring equip on hand J. Vinciello went to CP-50 for multigas meter and train

Visitors: Tommy Gomez — Placing TDR probes is on hold.
Dennis Finney
Jeff Smith
Kathy Thurin

12:30 Because of dust being produced in ASTD excavation and SE direction of winds ~~[illegible]~~ decided to halt ASTD work to concentrate on TDR work. Will backfill conduit trenches and once we have a atmosphere ~~reading~~ measurement will place TDR probes

SIGNATURE [signature] DATE 10/31/0

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

- Spoke with Vic Dunn & John Davey about issue of making an atmospheric measurement according to CD0444.21 & CD0444.64; for an excavation deeper than 5 ft. Both agreeded that Jeff Vincolli is qualified to make these measurements. For each TDR probe pit an O_2, LEL, toxicity measurement will be made prior to allowing workers into pits. Once measurements are documented on IH survey forms workers will be allowed in pit.

- Backfilling with soil and sand TDR conduit trenches.

1400 Jeff Vincolli returned from CP with multigas meter (PHDS) ~~and performed IH measurements of~~

1430 Second water tanker, front end loader (982) delivered

- Trenches will be inspected by certified Competent Person daily. A signed Trench Daily Inspection Report will be in project files. The Competent person on site who will do all trench inspections is Paul Robinson.
- In addition, whenever excavations are open and deeper than 5 ft. an industrial hygiene surveillance will be made of the trench atmosphere O_2, LEL, toxicity will be determined. Jeff Vincolli or Gina will make all atmospheric measurements. When J. Vincolli is not on site and atmospheric measurements must be made Gina Cobb will make readings.

Last Line

SIGNATURE [signature] DATE 10/31/00

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

68 **TITLE** U-3ax/bl Closure Activities **PROJECT NO.**

Work continued from Page 67A Wednesday 11/1/00 **BOOK NO.**

weather: Clear, cool low 60's colder. Predicted winds for afternoon.

Safety: Scope of work - Place TDR probes, Rad Survey, backfill conduit runs, Begin leveling/placing clean fill on ax/bl cover.

Visitors: Pat Thomas, Wayne Hedges - Fuelers
Bob Rommel, Steve Nacht, Paul Brown
Dave Madsen, Wayne Johnson, Jered Nelson, Dennis Gustafson
Jack McLain

0745 Tailgate given. Work will be on Ax/bl today no ASTD work.

Crew: 1 supervisor 3 RCTs ENER Tech 2
1 SHSO 3 laborers RSTO Tech 2
1 HP 4 Operators
1 Tech Lead 4 Teamsters

0830 Crew dressing out to place TDR probes.

0900 ~~Foot~~ First loads of dirt from borrow pit delivered to cover. Clean fill being placed at fence line and being pushed onto cover using D8 dozer

0930 Fuelers arrive to refuel equipment.

Gray Layne and RCT performing Rad survey of ax/bl cover.

1100 Advancing clean fill onto Ax/bl cover

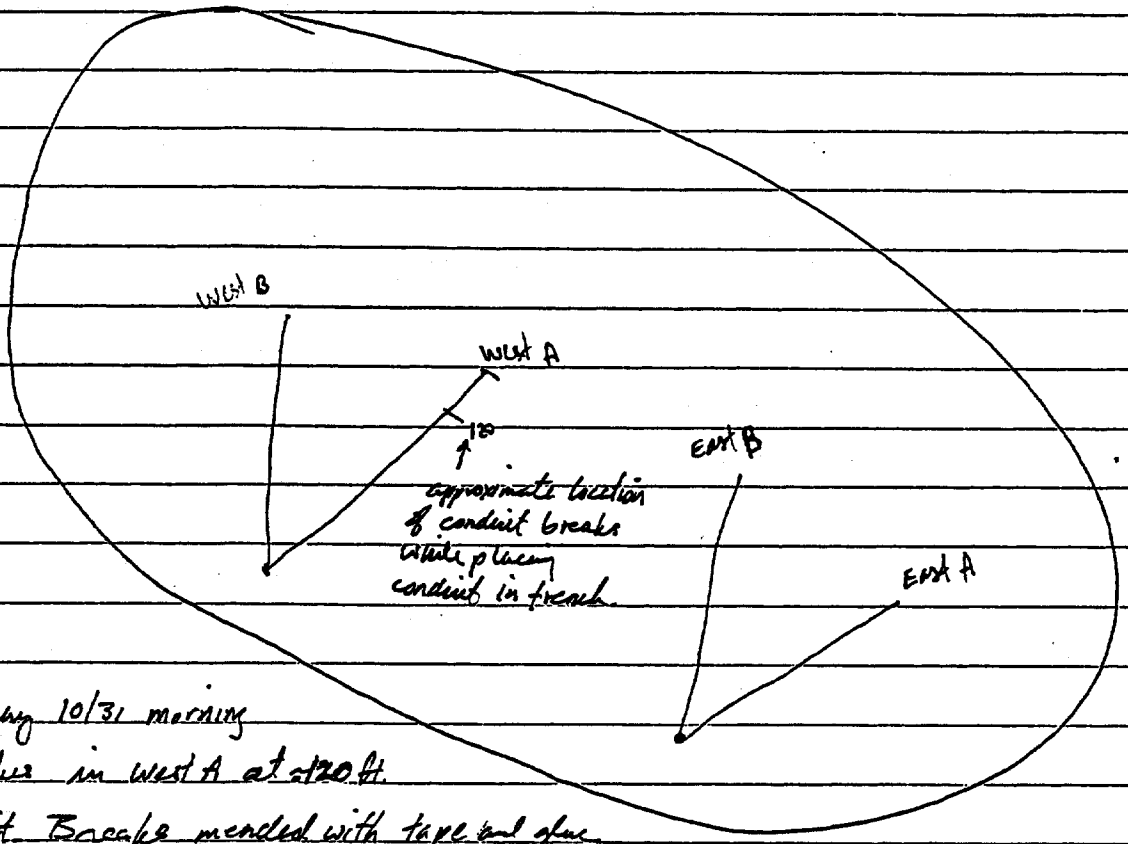
1230 2 Electricians arrived on site to place 90° bends on the ends of the TDR cable conduits. Also will place metal tape above conduit for future underground location

1300 ENER management visitors depart site.

1300 Second Tailgate Briefing give to emphasize that workers were not to move onto or off of the clean fill being advanced into the EZ (CA) and vice versa.

SIGNATURE [signature] DATE 11/1/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE



Tuesday 10/31 morning

3 breaks in West A at ≈120 ft.

conduit. Breaks mended with tape and glue.

Conduit is bedded in ≈ 2 inches of clean sand, covered completely with clean sand, and then covered with excavated soil. Detection tape is placed in trench at approximately 1 ft bgs prior to cover.

1330 Ordered 10 yd^3 of clean sand to complete burial of East B and East A conduits. Sand delivered and placed off edge of clean cover fill @ ≈ 1400

1440 Excavating the West B TDR probe pit.

Continue to expand cover with clean fill

1450 Rich Smith arrived on site to take videos

1519 Bob Rommel arrived to ask several questions regarding CQAP specs regarding survey support. Survey was scheduled for Monday 11/5/00 to as-built TDR trenches.

Will request a ROTC for Section 01050 Part 2 2.01 B 2.

SIGNATURE			DATE
			11/01/00
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

1548 Dug up a crank of 3 ft' 1½ inch diameter steel. Excavated from ~5½ feet deep. Notified Craigs Pit is ready for installation. Uncovered pipe while sloping the rear edge of pit. Pipe will be surveyed in a.m.

- Covered about 100 ft × 110 ft of Ax/bl with clean fill.

West A TDR probe pit - Depth before 1 ft cover placed on existing Ax/bl surface

Depth feet bgs	Probe #
7 ft	116
6 ft	115
5 ft	114
4 ft	113
3 ft	112
2 ft	111
1 ft	110
surface	109

TDR probes installed by L. Deskell, M. Floyd, J Dixon, D Emer

Last time

SIGNATURE [signature] DATE

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Work continued from Page N/A Thursday 11/2/00

Weather: Clear, cool 50's-60's, winds 10 mph out of the NW.

Safety: Tailgate given at job site. Topics

Scope of work - bury 2nd set of TDR probes, backfill East A and East B trenches, expand cover

Cold/weather

slip/trip/fall

Visitors! Fred Penrod DOE,

0880 Began hauling soil from borrow pit to cover

- SH&SO performed atmospheric monitoring in TDR probe trench West B.

- P. Robinson did trench inspection of West B TDR probe pit

- RCT dressed out and did a rad survey of the piece of scrap rebar 3/4" dug up yesterday while sloping the rear side of the West B probe pit.

- Backfilling East A and East B trenches with clean sand.

1340 - Rich Smith on sit taking video shots

Once rad survey clears TDR West B probe pit, M. Floyd, J Dixon will place the first 2 deepest probes by hand in West B.

0830 Long conversations with Greg Hudak and Dave Madsen provided some clarification on the CQAP and my responses/edits. Several errors/inconsistencies in procedures/specifications were pointed out. Hudak will talk to Julie Sorola regarding HP Hold Point release of TDR probe as-built. Hudak requested a sketch of TDR probe nest installation.

1100 Electricians placed detection tape above conduits. Conduit trenches East A, East B being backfilled.

1300 Mechanics arrive to work on replacing large loader ripping teeth

1530 Final TDR probe buried in West B probe pit.

Continuing to expand

Work continued to Page 72

SIGNATURE			DATE
[signature]			11/02/00
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

72 **TITLE** CAU110 Closure Activities **PROJECT NO.**

Work continued from Page 71 Thursday 11/2/00 **BOOK NO.**

1 site sup	5 operators (1 left	6 teamsters
1 SH&SO	3 laborers	
1 HP	3 RCTs	
1 Tech lead	4 BNER tech	
2 Electricians (until noon)	1 ASTD tech	
	1 video (half day)	

in Lorrow pit

Fuel line of D8 dozer broke around 10 am. Mechanic repaired line by noon. About 1 cup of fuel was spilled. Non-reportable spill.

Rad survey of piece of rebar showed nothing above background.

Work continued to Page N/A

SIGNATURE [signature] DATE 11/2/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Weather: Clear, cool light winds from the north. Winds are supposed to increase later this morning/afternoon

Safety: Tailgate briefing given prior to start of work.

Scope of work - survey trench & grade stakes, excavate TDR probe pit(s), place TDR probes, continue cushion on cover.

- Surveyors (2 of them) showed up and were briefed. Both are on biosurvey and so work doesn't need to stop while one of them are in the EZ.

0930 Mechanic (K. Parker) completed fitting 988 loader with new cutting teeth. 2 Teamsters arrive to fuel equipment. (Pat Thomas, Wayne Hedges) Refueled Blade, D8 dozer. D. Robinson excavating TDR pits on A/C.

0946 Watering ASTO soil pile to control dust. Winds increasing and kicking up dust.

0947 Catherine Cotenada from analytical services called and confirmed that she has biosurvey samples for John Meher and a Plutonium sample for Michael Morgan. Mike turned in gamma & Americium sample today; they are in my possession and will be submitted to the lab today.

10:30 Completed excavating East B TDR pit. Working on East A pit.

11:00 Survey completed shooting grade stakes. Beginning survey of TDR trenches.

3 belly dumps hauling bringing soil from borrow pit.

12:00 Both East A and East B TDR probes excavated.

SIGNATURE [signature] DATE 11/6/00

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

74 **TITLE** CAU 110 Closure Activities **PROJECT NO.**

BOOK NO.

Work continued from Page 73 Monday 11/6/00

12:30 SH&SO in CA(EZ) performing atmospheric monitoring of TDR probe pits Atmospheric monitoring showed normal ambient conditions

1240 Competent person (P. Robinson) performed trench inspections on both East A and East B TDR probe pits.

1300 Excavation of East A pit uncovered a small piece of flat stock metal Metal smear securely embedded in wall of pit. RCT being sent in to survey 3" x 8" piece exposed.

1330 TDR pit at East B is to far out on cover. ~~Excavat~~ Rear of excavation will be backfilled and trench end expanded/enlarged to accomodate probes.

1520 East A at ≃ 5 ft bgs a piece of 4"x3" stainless steel uncovered → clean survey

1545 East B ½ - ¾ cable ≃ 3 ft bgs & piece of barbed wire ≃ 2 ft → clean surv

East B one breech → glued and taped.

East A two breech → glued and taped.

Visitors: Jerel Nelson
Dillard Vincent
Tom Lenord

Just Jim

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Made in USA

Work continued to Page _____

SIGNATURE [signature] DATE 11/6/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Weather: Clear cold 50's very windy

Safety: Tailgate topics: Scope of work - continue cover construction, install TDR probes
Cold: Stay warm, take breaks when needed
Slip trip, fall hazard.

Visitors: Jeff Smith
Gary Hudak
~~Jeb~~ Jarel Nelson
Sabine Curtis } DOE 09:30
Janet Appenzeller-Ming }
Ted ~~Zaferatos~~ Zaferatos - NDEP (10 a.m - 11 a.m)
Rick Smith - RSL/video

0800 Moving loads of soil from cover
Working on TDR probe placement in East B pit.
1040 Completed installing TDR probes in East B.
SHESO went in to do atmospheric monitoring of East A TDR probe pit.

Conversation with J. Smith & G. Hudak regarding CQAP checklist. Will make notes on when CP/HP are released and how the release was made/documented.

Have 3 belly dumps running 2 @ 20-22 yd^3/load + 1 @ 17 yd^3
Large belly dumps carrying @ 20-22 yd^3/load.

11:10 DOE representatives depart site.
11:30 Jeff Smith departs site.
1400 Completed installing TDR Probes in East A TDR probe pit!!
1430 71 belly dump loads of soil placed on cover. ## @ @ 22 yd^3/load.

Joint Tune

SIGNATURE		DATE
[signature]		11/7/00
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS / DATE

76 **TITLE** CAU 110 Closure Activities **PROJECT NO.**

BOOK NO.

Work continued from Page N/A Wednesday 11/8/00

Weather: Clear, cool 60's, calm no winds at 0900.

Safety: Scope of work - excavate by hand 2x2x1 ft area around the 11 abandoned pvc monitoring wells, continue cover construction.

- Slip trip fall hazards
- Hazards for of working around heavy equipment
- Be aware of the distinction between the CA(EZ) and clean cover → do not move from one to the other while on cover area.
- Cold stress hazards
- High wind hazards

0830 Continuing to construct soil cover.

0830 Hand excavating an area 2x2x1 ft around the abandoned PVC monitoring wells. Preparing for grouting abandoned wells.

1500 Air brakes on blade locked up. Mechanic called. Will replace air line on 11/9 a.m.

110 belly loads placed on cover @ ≈ 22 yd³ each.
Approximately 45% of cover complete

PVC pipes cut off at ≈ 1" below ground surface. We are ready to grout abandoned wells

Requested tech changes to location of finished fence line & grout specifications. Provided TOP probe positioning data to Sonia, Hadush Tesfai Tsui

Work continued to Page N/A

SIGNATURE			DATE
			11/8/00
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

Work continued from Page N/A Thursday 11/9/00

Weather: Overcast, cold 50s, calm. Afternoon: light snow showers.

Safety: Continue cover construction

Hazards working around heavy equipment, wear orange vests

visitors: 2-fuelers

5 - 2 laborer (Joe Jablonski, Morris Grice) and 3 operators (P. Robinson, R. Cruise, Gary Northby) attending defensive driving course until 1200.

830 Mechanic on site working on air line on blade.

0 Moving dirt from borrow pit to cover. Paver placing dirt.

920 Telephone call from J. Sorola approved proposed change to fence line now used. She will issue a DCN. We have approval to construct the new used fence within ± 5 ft. of the existing fence.

5

1300 2 laborers & 3 operators returned from training.

1310 Concrete vault and associated concrete parts for ASTD arrived on site. 4 pipe fitters assist to off load vault.

0 1330 C Lyons & 3rd RCT arrive on site

14:43 HTHSG (CJ-1 grout mix design Harry Tuthill S.5176 6yd³ pre-mixed

500- Snow falling hard now. still no accumulation

5

SIGNATURE			DATE
			11/9/00
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

78 **TITLE** CAU 110 Closure Activities

PROJECT NO.

BOOK NO.

Work continued from Page N/A Tuesday 11/14/00

Weather: Clear, ~~cold~~ cool 50's, calm

Safety: Use extra caution when working around the heavy equipment.
Sun glare in the afternoon blinding operators. So teamsters need to exercise caution when working on cover in afternoon

Visitors: G. Hudak, R. Smith, Stu Rawlinson

Continuing to construct As/Bl cover

Continuing to excavate ASTD

- Tremi Grout abandoned wells
- Monuments ordered/cast

ASTD Crew

2 operators
2 laborers
1 teamster
2 PCTs ≈ 7 hr each

- Called Charels Christoffer regarding collecting EPerm samples from existing fence line. Left message. Charels returned call, will collect EPERMX on Monday.
- G. Hudak agreed w/ C. Womack to use a cement slurry to close PVC wells, cement cap. Because of the shallow groundwater of PVC wells
- Scheduled survey crew for Monday 11/20. They will tape cover, locate PVC wells, work on ASTD trench.

- 3 belly dumps (one end dump) hauling material for cover

1536 Spoke w/ George Trenchi regarding pipes/well discovered at north west area of AS. He said to speak w/ Herman Terry @ 5-6593

1600 Scheduled J. Denny MTL for ASTD compaction testing on Thursday 11/16

Work continued to Page N/A

SIGNATURE		DATE
K Campbell		11/14/00
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS / DATE

Wednesday 11/15/00

Weather: Clear, cool 50s, calm

Safety: Tailgate given prior to beginning work.
New company policy on on-the-job injury covered/discussed during briefing PY-0444.01
Hearing protection will be required when working around water truck.

Visitors: Dave Krantzwitch - Iron worker GF
Jesus Monje - Iron worker
Bob Romel
} Determined the # of turn points needed for new fence line. on site until 8:30

- Continuing to place cover material on A-1/b1
- Continuing to excavate ASTD trench - flattening up side slopes
A steal roller will be delivered to the site later today for compacting the bottom of the ASTD trench.
- NTL (John Denny) scheduled for ~10 a.m. 11/16 to perform compaction testing on ASTD trench and area directly over bowser TDR probes @ 1 ft. bgs.

1110 Steel wheel roller delivered for compacting base of ASTD trench

ASTD Personnel
2 operators
1 laborer
2 RCTs @ 7 hr each
1 tech person
1 teamster

Received fax copy of grant and cap requirements for abandoned PVC monitoring wells from G. Hudak. Received verbal approval from J. Sorola via G. Hudak for approach. Copy submitted to Bloomer of BN Engineering

SIGNATURE Kim Campbell DATE 11/15/00

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

80 **TITLE** CAU110 Closure Activities **PROJECT NO.**

Work continued from Page N/A Thursday 11/16/00 **BOOK NO.**

-Weather: Clear, cool & light breezes from the NW

Safety: Tailgate given prior to start of work: Scope of work, equipment hazards, cold work constitute

Visitors: Duane Puckett, John Davey

- Continue to construct cable cover; cover nearly complete
- Compacting ASTD trench using steel wheel roller.
- Will construct a test pad to develope compaction performance specs for 80% by foot, 90% and 95% using gas powered thumper.

0940 Fuel truck on site 2 teamsters

Mechanic on site working on belly dump that broke down yesterday.

- Load of sand for ASTD dumped @ 10:00. Part dumped inside ASTD CA, part outside. John Denny on site from MTL to do ASTD compaction testing.

* Having trouble meeting compaction spec for ASTD pit bottom of 95%. Two approaches (1) ask engineers to relax compaction spec to 90% (2) collect a sample from pit for a proctor. G. Lyons will let us collect a small sample for γ-scan analysis. IT has a γ-scan instrument at E-Med. Have paged Rich Deshler (4-5687, 5-1090) regarding ~~how analysis~~ analyzing sample.

1330 J. Scrolla called J. Dixon and approved a 90% compaction spec for the bottom of the ASTD pit. We have collected a soil sample from the ASTD for γ-analysis by IT. IT has agreed to run 20 minute γ-scan and provide us the results. If cleared by HP C. Lyons will submit soil samples from ASTD pit for proctor determination ~~analysis~~.

1345 Corrugated Metal Pipe, 3 6 of them, 10 ft diameter delivered to site and off loaded.

SIGNATURE [signature] DATE 11/16/00

DISCLOSED TO AND UNDERSTOOD BY DATE

Work continued from Page 80 Thursday 11/16/00

According to one hand here at Area 3 RWMS the two pipes discovered at the NW edge of the cell ~~[illegible]~~ connect to an underground tank. This tank ~~was~~ was possibly used to dispose of waste liquids Was given a name to check with - Norm Landry

1410 Gary Nordby (OE) was dispatched with ASTD soil samples for Area 25 2x500 ml E-Mad and γ-analysis. Sample bottles/area screened by RCT's and taken for analysis

* RCTs going to work Friday performing surface scan of ASTD downgrading

1441 J. Sorolla called and approved change of 95% to 90% for compaction for ASTD trench bottom.

1510 2 more CMP sections and scaffolding arrive on site and are off loaded.

1610 Bob Cat arrived on site. 3 yd.

1615 Craig Lyons called and after reviewing γ-spec sample results cleared proctor samples for delivery to MTL. Samples transported to the MTL by me with green tag and copy of RCT rad swipe results

Just June

SIGNATURE [signature] DATE 11/16/00

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Weather: High overcast, cool 60's, calm.
Safety: Work on pouring the bottoms of ASTD lysimeters, Working around heavy equipment.

08:30 SH & SO performed atmospheric survey of lysimeter atmosp. No abnormal atmospheric readings. Survey documented on "Confined Space Entry Air Monitoring Survey" form. Multimeter (PHD5) due for monthly calibration

08:55 P. Robinson performed daily trench inspection form of ASTD lysimeter facility. Nothing abnormal.

08:00 Blowers (2) were delivered to site to provide ventilation in cans.

09:00 Waiting on BN Engineering release of Hold Point of Asfbl cover survey data to rip cover to prepare for planting.

09:00 Foran workers placing drain pipe/slotted pipe sections in lysimeters

09:00 Waiting on concrete for lysimeter and Asfbl fence post pours.

09:50 Cement arrives on site.

10:10 Placing cement in first lysimeter via buckets

10:30 Gary Hudak called to give a heads up that there may be a high spot on the Asfbl cover. Also to point out that cover side slopes are shown at 10:1 on drawing.

Continuing to pour concrete in lysimeters

11/14 G. Hudak called back said J. Sorella has no problem w/ cover elevations. Verbal release of Engineering Hold Point will be given first after lunch.

SIGNATURE [signature] DATE 11/27/00
DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Work continued from Page 82 Monday 11/27/00

Visitors: Frank Eck,

Issues: C. Nance spoke w/ SHE&SO about symptoms of: CO, CO_2 poisoning. Had some symptoms last week after working on a piece of equipment. Asking about symptoms of exposure.

SHE&SO is checking on symptoms, monitoring, reporting issues etc. Passed on issue to P. Brown @ 11:30

1230 spoke with J. Sorola. She conditionally released the Engineering Hold Point on As/Bl survey topo data. We need to repair the cover side slopes to 10H:1V from present steeper slope. We can place subsidence monuments and begin ripping for blasting.

BV.

Corrected cover toe slope to @ 10:1.

Ripping cover to 6 inches using blade.

Completed pouring concrete and finishing 6 lysimeters.

Last Time

SIGNATURE Kevin Campbell DATE 11/27/00

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

84 **TITLE** CAU 110 Closures Activities **PROJECT NO.**

Work continued from Page N/A Tuesday 11/28/00 **BOOK NO.**

Weather: Clear, 60's calm

Safety: Tailgate given prior to work

Visitors: Bob Romel, 2 Fuelers.

Atmospheric measurements made on lysimeters prior to allowing personnel to enter. No abnormal atmospheric reading were detected. Will take meter to Bob Baudreaux for monthly calibration at end of shift.

Off loading Tee posts for Ax/BC fence

Continuing to pour concrete in lysimeters.

Laying out Tee posts for Ax/BC fence

1200 Completed ripping the Ax/BC cover with blade

1230 Completed placing cement in last lysimeter

P. Brown ordered roll-off for site clean up

Work continued to Page N/A

SIGNATURE Ken Campbell DATE 11/28/00

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Monday 12/4/00

Weather: Clear, sunny, 70's

Safety: Tailgate given prior to beginning work.

Visitors: Sabrina Curtis - DOE
Ted Zaferatos - NDEP

- Late/slow start due to all hands meeting. 2.5 hour delay.
- Delay caused by not having respirator clearance permit. Superintendent did not realize it was in project files did not call Tech Ltd.

Working on K-1/B2 fencing, only one nonworker on site
Completed decking K-1/B2 cover

P Robinson acting as crane operator ~~backup~~ D. Sisco on personal leave.
P. Robinson at DTF for some training.

- Sprayed down road soil pile
- Cleaning by vacuum lysimeters
- Applying two part epoxy to base of lysimeters. 2 gallons of epoxy per lysimeter

Placing seed on K-1/B2 cover raking seed in.

Completed epoxying 4 lysimeters. Will complete epoxying remaining 4 tomorrow

Last Time

SIGNATURE Ken Campbell DATE 12/4/00

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

86 **TITLE** CTU 110 Closure Activities **PROJECT NO.**

BOOK NO.

Work continued from Page N/A Tuesday 12/5/00

Weather: High clouds, 60's

Safety: Tailgate session prior to beginning work

Visitors: Bob Rommel, Dave Kr, Dwaine Fechet, Roberto Lopez

Preparing to place straw on cover

Crane temporarily down. Mechanic sent for.

Working on preparing TDR and Heat probes for placement in lysimeters.

1300 Blowing straw on cover using tractor & straw blower. (½ laborers, 1 Teamster, 1 OE) 1 BN biologist

1/300 Crimping straw on cover using tractor & crimper (1 OE)

1300 Continuing to wire lysimeters w/ TDR/Heat probes. Cables from probes are being attached to a piece of PVC piping which is in turn secured to the side of the lysimeter.

1400 Completed attaching top rails & diagonal bracing to A2/B2 corner posts.

1547 G. Hurlock called to convey that survey data shows some spots of cover are short greater than 50 ft inside of original Fence Line. Asked to speak with Paul Robinson

1610 According to BN Engineering Survey data indicated that a spot on SE has too steep a slope. And a spot in NE corner is ~16 ft short of the designed 50 ft' inside original fence line. Eng asked that P. Robinson remeasure area and make repairs/corrections.

Last Line

Work continued to Page N/A

SIGNATURE [signature] DATE 12/05/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Wednesday 12/6/00

Weather: Clear, 60s calm.

Safety: Tailgate given prior to starting work.

Visitors: ~~2 fuelers~~ 2 fuelers (teamsters), teamster dropping off equipment.
Dave Kranicevich, Dennis Finney, Ed Holtman (BN), Rick Betteridge (DOE), Ralph Smeenk (BOE), Duane Pucket to be

5 P Robinson reviewed information faxed by J. Sorola regarding corrections made to Ax/B1 cover. Requested 1 belly dump, 1 loader, 1 blade for repair work. According to BN engineering the cover is just a few feet short on eastern end. Need to extend cover a few feet to the east, adjust the slopes to 10:1 or shallower.

10 Continuing to run TDR/Heat probe cables from lysimeters.
Waiting on epoxy to finish sealing last 2 lysimeters

:30 SH&SO made atmospheric measurments of inside of lysimeters No abnormal readings. ~~As~~ Monitoring documented of IH survey forms. Forms on file at job site.

5

10:30 Blade Loader and belly dump on site for cover work.
11:00 First load of fill from A3 borrow pit brought to cover.

- BN technicians testing TDR & Heat probes.
0 - Electricians continuing to install/secure Probes & cabling.
- Backfilling around ASTD Vault with clean fill/sand Backfill being compa. using ~~wheel~~ hand operated vibrating roller and "thumper" tamping units. Mechanic working on 2 thumper units.
- Continue to blow and crimp straw on cover.

5 1200 Completed covering A2/B1 cover with straw
Repositioned the crane so that it can be used to lift bucket loads of dirt into the ASTD trench.
Dan Levit on site to test TDR/Temp probes in lysimeters. Also checked cover TDR pin
Just \ two

SIGNATURE			DATE
S. Campbell			12/06/00
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

88 **TITLE** CAU 110 Closure Activities **PROJECT NO.**

Work continued from Page N/A Thursday 12/07/2000 **BOOK NO.**

Weather: High clouds, 60's, calm

Safety: Tailgate safety meeting prior to beginning work.
Will be reinstating RWP and PPE Level C PPE requirements when backfilling ASTD trench with suspect soil. RWP will be enforced until suspect soil is placed, covered with a layer of clean soil, and a rad survey of area (Stomp & Stomp) shows area is not contaminated.

Visitors: Craig Layton

P. Robinson will continue to place new borrow soil along eastern & southern edges of Ax/Bz cover.

Spoke with Norm Landry regarding what soil was used in the construction of the Ax/Bz cover. It is mainly soil from Ahat and excavated from between Ax & Bz. Tom Gomez was also involved with Ax/Bz cover construction.

Dug several spade holes along eastern edge of cover near the 50 ft line. All show that there is 1 ft or more of cover material over the original operational cover at the 50 ft line inside original area rad fence.

- Marked Top of Slope and Toe of Slope for new reworked/reparied cover (East & southern sides) slope. Cut slope to 10:1 or shallower. Survey arranged for Monday morning to as-built slopes once again.

- Ironworkers cut up one removed plate returned some incorrect wire back to warehouse.

- No earthwork on ASTD done today

Last Line

Work continued to Page N/A

SIGNATURE Kevin Cayless DATE 12/07/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Monday 12/11/2000

Weather: Cold 50's clear calm.

Safety: Tailgate given prior to beginning work Cold stress, heavy equipment

Visitors: Angela Kay BN IH for OJT, Craig Lyons, Daphne Puckett

- Survey on site to resurvey Ax/BL top of slope and toe of slope; monument locations and as-built fence.

- Operators & laborers dressing out to enter ASD area/pit to begin backfilling pit.

- Crane down mechanic called. Crane's reels will not release.

11:30 Mechanic on site to repair crane.

Crane repaired. Backfilling ASD pit.

- Surveyors placing brass pins in subsidence monuments on Ax/BL. They completed as-building survey of the new fence, the cover edge where engineering indicated thin areas and/or areas where cover is short, not extensive enough. Set 3 of the 7 brass pins in subsidence monuments. Batteries on drill went dead. Data delivered to Scotty Ellison at approx noon.

- Completed placing first 1 ft lift in ASD trench. Compaction of lift done using thumpers & hand operated roller. Performance Compaction ~~not~~ specification (80 met or exceeded.

- Dust controlled by watering.

Jack Jones

SIGNATURE [signature] DATE 12/11/00

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

90 **TITLE** CAU 110 Closure Activities **PROJECT NO.**

Work continued from Page N/A Tuesday 12/12/00 **BOOK NO.**

Weather: Overcast, cold 50's, calm, scattered showers, hail, gusty winds afternoon

Safety: Tailgate given prior to beginning work

Visitors: Von Moll RSL photographer, Galen Messer

Slow start to ASTD dirt work due to light precipitation

10:00 Laborers in ASTD pit compacting lift.

Mechanic on site working on crane

10:30 Crane still having problems. Mechanic called back to site. Using crane without swing brake

Placing lift in ASTD & compacting using thumpers & roller

- Decided to turn crane back in on Thurs instead of Fri 12/13. Making good progress backfilling ASTD with backhoe and bobcat.

- Waiting on Ax/Bz side slope Hold Point release from engineering.

- If HP is released will blow and crimp straw on 12/13 on cover edges.

RCTs surveying the crane hook for release.

Swipes of crane hook show no rad. Crane released for demobilization

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60655 Made in USA

Work continued to Page N/A

SIGNATURE [signature] DATE 12/12/2000

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Work continued from Page N/A Wednesday 12/13/00

weather: Cold 50's, high clouds, calm.
Safety: Tailgate given prior to beginning work
Visitors: Rich Smith, Bob Rommel
Surveyors on site drilling subsidence monuments and affixing brass survey pins.
Will survey and stamp pins by end of the day.

Crew for straw blowing on hand - 1 operator, 2 laborers.
Crew to move crane on site - 1 operator & 1 oiler.

1000 Nearly finished with placing straw on cover edges. Engineering released the HP on the cover edges on 12/12 @ 17:30 via an email message. Straw will be crimped into place.

- Continuing to backfill ASTD trench. Jay Dixon arrived on site with the remaining of the heat probes for the lysimeters.

RCTs preparing to take dirty laundry to Area 6 laundry

Crane moved demobilized from site.

Last Line

Work continued to Page _____

SIGNATURE [signature] DATE 12/13/2000

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

92 **TITLE** CAU 110 Closure Activities **PROJECT NO.**

BOOK NO.

Work continued from Page N/A Thursday 12/14/00

Weather: Clear, cold 50's, light winds

Safety: Tailgate given prior to beginning work.

Visitors: Frank Eyl teamster GF, 2 Fuelers, 2 oilers

Continuing to back fill ASTD trench from soil pile

Waiting on lowboy to load farm equipment to transport Farm Equip.

0700 Send teamster & operator to get lowboy for farm equip.

1000 Survey finished with as-built of Ax/Bl monuments

1430 Second load of farm equipment to Mercury.

1500 844 Loader delivered to Site Now we are moving some dirt.

1520 Tanker truck emptied and returned to filling station

1530 Lowboy off to Fleet. Should be off rent as of 12/14 COB

1550 Completed placing all suspected contaminated soil in ASTD ~~trench~~ pit.

Covering ASTD bottom with "clean" soil from excavation pile.

1600 R. Cruse had to attend a security briefing

~~1600~~ 1540 Spoke with Craig Lyons (IH) regarding Rad survey Stump & Tramp of ASTD scheduled for Friday 12/15. It is a go

SIGNATURE Kevin Campbell DATE 12/14/00

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX I
U-3ax/bl TDR CALIBRATION

THIS PAGE INTENTIONALLY LEFT BLANK

U-3ax/bl TDR CALIBRATION

Conducted March 2001

Dan Levitt, Environmental Technical Services, Bechtel Nevada

April 4, 2001

Introduction

Calibration of time-domain reflectometry (TDR) sensors is required because soil type affects TDR response, and because TDR trace length (and subsequent volumetric water content) measurements increase as cable lengths and numbers of multiplexers increase. A "dry-down" calibration was conducted on a TDR probe in a laboratory in March 2001.

Results indicate that a linear equation fit the calibration data with a correlation coefficient (R^2) of 0.9963, which is an excellent fit. The calibration data fell just far enough away from standard calibration equations such as Topp's equation (Topp et al., 1980), that it is recommended that the site-specific and cable length-specific U-3ax/bl linear regression equation be used. A 2nd order polynomial equation was also fit to these data (R^2 = 0.9966), but the gain in accuracy is so slight, that a linear regression equation should be used for simplicity.

Calibration Procedure

[Note: A BN Draft Procedure is currently being prepared, but has not been formalized yet.]
A bucket of soil was collected from the U-3ax/bl cover in November 2000. Soil from that bucket was placed in a flat pan with dimensions of 52 x 26 x 7 cm, with one Campbell Scientific Inc. (CSI) TDR probe model CS610 buried horizontally in the middle of the pan. The probe had 2 cm of soil above and below the probe rods. The TDR probe had 165 feet of RG8 cable, and was wired through a level-two SMDX50 multiplexer, with 10 feet of RG58 cable connecting to the level-one multiplexer, with 1.5 feet of RG58 cable connecting to a TDR100 TDR controller. This configuration is identical to the two U-3ax/bl TDR system configurations.

The soil pan was placed on an electronic balance for NIST-traceable mass balance measurements. The electronic balance was configured such that its digital output could be logged by an analog datalogger as TDR measurements were made, providing a dataset of TDR measurements of trace length divided by probe length (L/L), with simultaneous measurements of mass.

After initial setup, the soil pan was saturated, and left to dry for two weeks. After drying to a final volumetric water content (VWC) of 5.5%, the soil from the soil pan was weighed, oven-dried for 24 hours, and weighed again to determine final VWC. This "anchor point" was used to convert mass balance measurements into VWC readings, and compared to L/L measurements made by TDR.

Results and Discussion

Results from this dry-down calibration are shown in Figure 1. Due to the long cable lengths and soil type at U-3ax/bl, the TDR trace end-points were extremely flat under saturated, and near-saturated conditions, rendering the TDR data unreliable under such conditions. Therefore, the TDR data was only fit through a VWC of 30 %. Fortunately, only the top few centimeters of soil at U-3ax/bl is expected to get this wet (following significant rains), so the use of a TDR calibration in the range of 5 to 30 % volumetric water content should be sufficient. The noisy data at the wet end of this calibration are shown in Figure 1. Figure 2 is the same as Figure 1, but with Area 5, and CNTA TDR calibration data included for comparison.

A linear equation, and a 2nd order polynomial equation were fit to the U-3ax/bl data using linear regression data analysis tools in MicroSoft Excel. The correlation coefficient (R^2) for these fits were 0.9963 for the linear equation, and 0.9966 for the 2nd order equation. There is essentially no difference between these equations, so it is recommended that the linear equation be used for simplicity.

If the calibration data were closer to one of the standard calibration equations, such as Topp, Topp's equation could be used for simplicity. However, the U-3ax/bl TDR system configuration uses the longest cable lengths known to be used by staff at CSI (Jim Bilskie, CSI, Personal Communication). If the Topp equation is used, VWC will be over-predicted by about 5 % VWC (at a VWC of 25 %).

This method does not account for hysteresis. However, field soil is usually in a drying state, with wetting only occurring following precipitation events, and the error associated with hysteresis is generally a few percent VWC. In addition, this method of calibration is recommended by Campbell Scientific Inc., and by researchers at several Universities who use and calibrate TDR regularly (Jim Bilskie, CSI, Personal Communication).

U-3ax/bl TDR Calibration Equation

Results of linear regression analysis yielded the following table of coefficients:

Intercept	-17.13722
X Variable 1	10.373701

Such that VWC (%) = -17.137 + 10.3737 * (L/L)

Where (L/L) is trace length / probe length and output by the datalogger.

References

Topp, G.C., J.L. Davis and A.P. Annan, 1980. Electromagnetic determination of soil water content: Measurements in coaxial transmission lines. Water Resources Research 16(3):574-582.

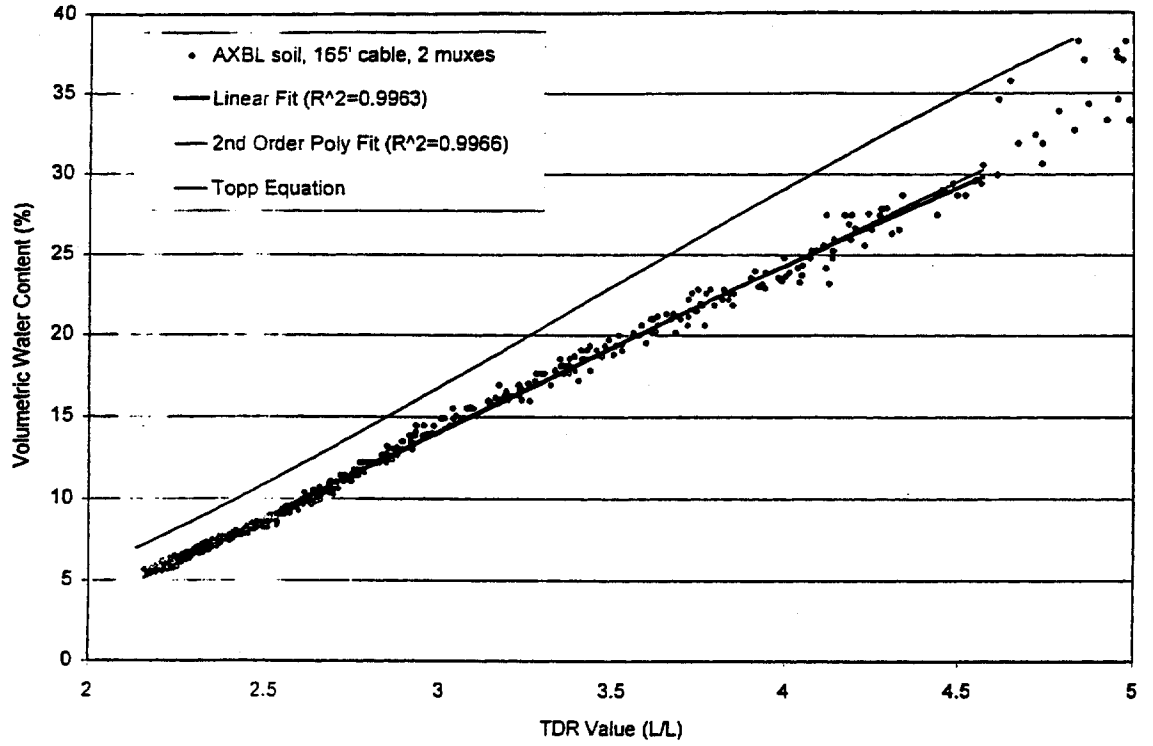


Figure 1. U-3ax/bl TDR calibration fits with the Topp Equation.

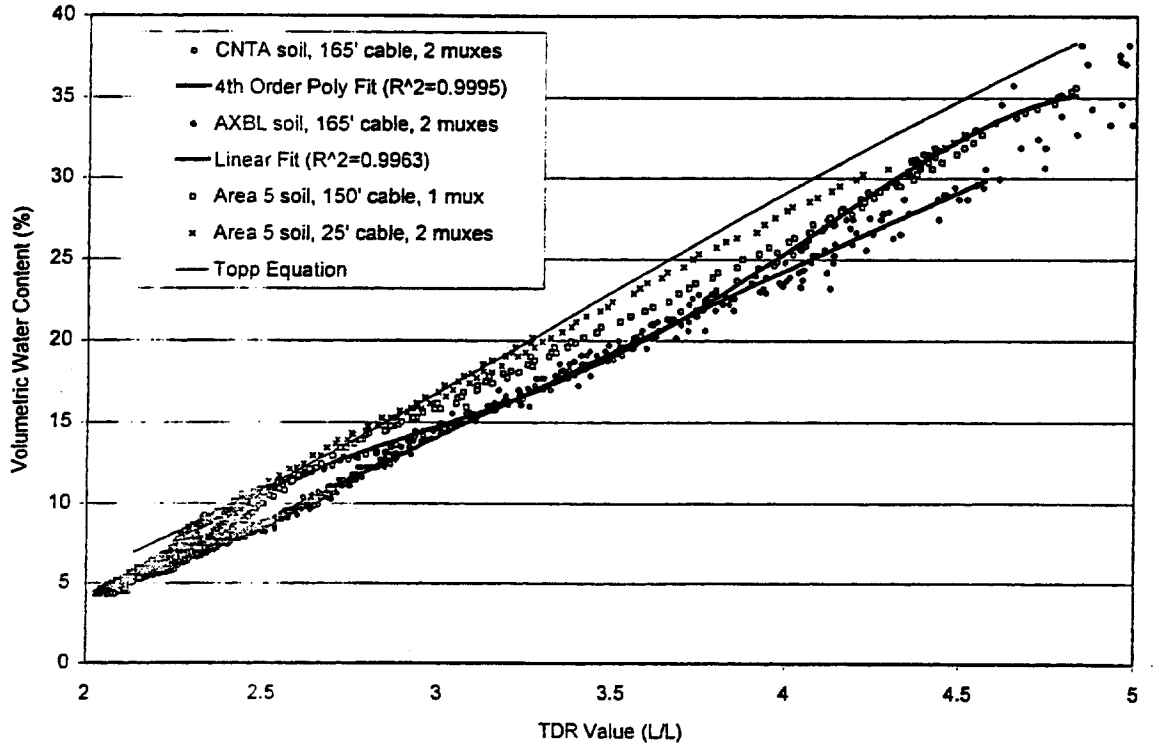


Figure 2. U-3ax/bl TDR calibration with other calibration data and equations.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX J
NDEP COMMENT RESOLUTION

THIS PAGE INTENTIONALLY LEFT BLANK

DOCUMENT REVIEW SHEET

Document Title/Number: Draft Closure Report for Corrective Action Unit 110: Area 3 RWMS U-3ax/bl Disposal Unit, Nevada Test Site, Nevada.
Document Date: April 2001
Revision Number: 0
Originator/Organization: Jeff Smith, Bechtel Nevada Environmental Restoration
Date Comments Due: May 30, 2001
Reviewer/Organization: Paul Liebendorfer, NDEP

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
1. Page ix and Page 1, General Comment	M	The CAS Number should be referenced along with the CAU Number.	The text has been modified as requested.	Yes
2. Various pages in ES, Introduction, References, & Appendix A	M	All references to RCRA Part B permit NEV HW009 should include the statement, "As updated by the RCRA Part B permit (NEV HW009), reissued November, 2000".	The text has been modified as requested.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
3. Page 4, Section 1.2, Last bullet	M	It should be noted that NDEP will add post-closure monitoring criteria to the Permit, however the specific performance criteria will be established as stated in the CR.	The text has been modified in this bullet to indicate the post-closure inspection and subsidence monitoring requirements will be added to the Permit.	Yes
4. Page 5, Section 1.3	M	Section 5 of the CR contains Conclusions and Recommendations, not References. Section 6 (References) should be added to this listing.	The text has been modified as requested.	Yes
5. Page 7, Section 2.1.1, First Paragraph	M	"...a vertical moisture can be developed..." should be changed to read "...a moisture profile can be developed...".	The text has been modified as requested.	Yes
6. Page 8, Section 2.1.1, Last bullet	M	The TDR moisture calibration curves, referred to in this paragraph, should be included in an appendix to the CR.	The TDR calibration curves are provided in Appendix I of the CR.	Yes
7. Page12, Section 2.1.3, 2nd bullet	M	"...22.79 kilograms (kg) per ha (pounds [lb] per ac) of pure live seed...". The numerical value of the pounds per ac should be inserted immediately ahead of the pounds per ac reference.	The text has been modified as requested.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
8. Page 14, Section 2.2	M	Discussion of DCN 01/10-448, shown in Appendix E, should be included in this section.	DCN 00/08-418 was inadvertently included in Appendix E. The discussion in Section 2.2.1 refers to DCN 01/10-448. The text has been modified to indicate the correct DCN number.	Yes
9. Page 15, Section 2.2	M	A DCN for the November 11, 2000 E-mail should be filed on this item for consistency of project procedures.	According to BN Engineering procedures a DCN can not be issued after an activity has been completed. The procedure is to not the change in the final "as built" drawings.	No
10. Page 21, Section 4.0	M	The referenced checklist is not contained in Appendix A. The certifications of Closure are in Appendix A and the Checklist is in Appendix B.	The text has been modified to indicate that the checklist is located in Appendix B.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
11.Pgs 24 & 25 Section 5.1.1 & Section 5.1.3	M	These two items state the survey markers will be surveyed on an annual basis. The DOE/NV Closure Plan states the survey markers will be surveyed on an annual basis (Closure Plan for Corrective Action Unit 110: Area 3 RWMS, U-3ax/bl Disposal Unit, Nevada Test Site, Nevada, Section 4.1 Inspections, Pg. 23, second bullet item). The survey should be conducted on a bi-annual basis (every six months).	The text has been modified to reflect that subsidence monitoring will be conducted twice a year.	Yes
12.Appendix G	M	The Northeast coordinates shown in Appendix G are 836,782.110 ft N; 687,113.43 ft E. The as-built drawings shown in Appendix F, shows the coordinates as 836,782.10 ft N; 687,113.43 ft E. Please correct as appropriate.	A new drawing for the Land Use Restriction survey area was developed for the document.	Yes
13.Appendix H	M	The photographs should be labeled for reference purposes.	The photographs have been labeled as requested.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Document Title/Number: Closure Report for Corrective Action Unit 110: Area 3 RWMS U-3ax/bl Disposal Unit, Nevada Test Site, Nevada.
Document Date: June 2001
Revision Number: 0
Originator/Organization: Jeff Smith, Bechtel Nevada Environmental Restoration
Date Comments Due: July 16, 2001
Reviewer/Organization: Paul Liebendorfer, NDEP

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
1) Page 7, Section 2.1.1, 1st paragraph, 3rd sentence	M	Change sentence from ...*a moisture can be developed*... to ... *a moisture profile can be developed.*	The text has been modified as requested.	Yes
2) Page 24, Section 5.1.1, 2nd bullet	M	The survey markers are to be surveyed biannually, every six months, to determine if the cover has subsided.	The text has been modified as requested.	Yes
3) Page 15, Section 2.2.3	M	The section number should be 2.2.2.	The text has been modified as requested.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
4) Page 27, Section 6.0	M	The correct reference section is VII.B.7 for CAU 110 in the Nevada Division of Environmental Protection, November 2000 Permit for a Hazardous Waste Facility, Permit Number NEV HW009.	The text has been modified as requested.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
5) Appendix G	M	The CAU Use Restriction Information Form and drawing SK-003-00004-C1 should indicate the datum used for the survey. The datum used for this appendix and Drawing JS-003-00004-C1, in Appendix F, appear different. An explanation would be helpful.	All Engineering drawings created at the Nevada Test Site have been standardized on the North American Horizontal Datum established in 1927 and North American Vertical Datum established in 1929. These datums are what are used by USGS topographic maps. Unfortunately, the CAU Use Restriction Information Form has been standardized using the World Geodetic System (WGS) developed in1984. The WGS longitude and latitude system is used by the Global Positioning System (GPS), since this is easy to use WGS 1984 has become the NNSA/NV ERD Common Document Repository (CDR) standard. The Use Restriction Information Drawing SK-003-00004-C1 has been modified to include the WGS 1984 information.	Yes

a. Comment Types: M=Mandatory S=Suggested

THIS PAGE INTENTIONALLY LEFT BLANK

DISTRIBUTION LIST

THIS PAGE INTENTIONALLY LEFT BLANK

DISTRIBUTION LIST

*Provide copy of initial distribution of Revision 0; remainder of list gets Revision 0 if approved without changes. The entire list receives Revision 1, if issued.

Nevada Department of Environmental Protection

Paul Liebendorfer — 2 (Controlled)*
Bureau of Federal Facilities
Division of Environmental Protection
333 W. Nye Lane, Room 13B
Carson City, NV 89706-0866

Michael D. McKinnon — 1 (Controlled)*
Bureau of Federal Facilities
Division of Environmental Protection
555 E. Washington, Suite 4300
Las Vegas, NV 89101-1049

U.S. Department of Energy

Janet Appenzeller-Wing — 1 (Uncontrolled)*
Environmental Restoration Division
U.S. Department of Energy,
National Nuclear Security Administration,
Nevada Operations Office
P.O. Box 98518 M/S 505
Las Vegas, NV 89193-8518

Sabine Curtis — 1 (Uncontrolled)*
Environmental Restoration Division
U.S. Department of Energy,
National Nuclear Security Administration,
Nevada Operations Office
P.O. Box 98518 M/S 505
Las Vegas, NV 89193-8518

DISTRIBUTION LIST (Continued)

U.S. Department of Energy (continued)

Sabrina Lawrence — 1 (Controlled)*
Environmental Restoration Division
U.S. Department of Energy,
National Nuclear Security Administration,
Nevada Operations Office
P.O. Box 98518 M/S 505
Las Vegas, NV 89193-8518

Public Reading Facility — 1 (Controlled)
U.S. Department of Energy,
National Nuclear Security Administration,
Nevada Operations Office
P.O. Box 98521 M/S NLV040
Las Vegas, NV 89193-8521

Technical Information Resource Center — 1 (Uncontrolled)
U.S. Department of Energy,
National Nuclear Security Administration,
Nevada Operations Office
P.O. Box 98521 M/S 505
Las Vegas, NV 89193-8521

U.S. Department of Energy — 1 (Uncontrolled)
Office of Scientific and Technical Information
175 Oak Ridge Turnpike
P.O. Box 62
Oak Ridge, TN 37831-0062

DISTRIBUTION LIST (Continued)

Bechtel Nevada

Correspondence Control — 1 (Uncontrolled)*
Bechtel Nevada
P.O. Box 98521 M/S NLV008
Las Vegas, NV 89193-8521

Environmental Management Library — 1 (Uncontrolled)*
Bechtel Nevada
P.O. Box 98521 M/S NLV080
Las Vegas, NV 89193-8521

Tom Fitzmaurice — 1 (Uncontrolled)*
Bechtel Nevada
P.O. Box 98521 M/S NTS306
Las Vegas, NV 89193-8521

Brad Jackson — 1 (Uncontrolled)*
Bechtel Nevada
P.O. Box 98521 M/S NTS306
Las Vegas, NV 89193-8521

Wayne Johnson — 1 (Uncontrolled)*
Bechtel Nevada
P.O. Box 98521 M/S NTS306
Las Vegas, NV 89193-8521

Steve Nacht — 1 (Uncontrolled)*
Bechtel Nevada
P.O. Box 98521 M/S NTS306
Las Vegas, NV 89193-8521

DISTRIBUTION LIST (Continued)

Bechtel Nevada (continued)

Jeffery Smith — 1 (Uncontrolled)*
Bechtel Nevada
P.O. Box 98521 M/S NTS306
Las Vegas, NV 89193-8521

PEER Consultants

Gary Hudak — 2 (Uncontrolled)
PEER Consultants
P.O. Box 98521 M/S NLV082
Las Vegas, NV 89193-8521