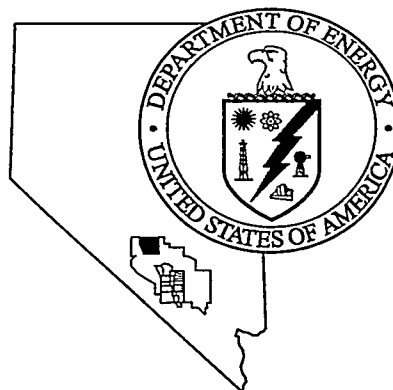


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Corrective Action Plan for  
Corrective Action Unit 423:  
Area 3 Building 03-60  
Underground Discharge Point,  
Tonopah Test Range, Nevada

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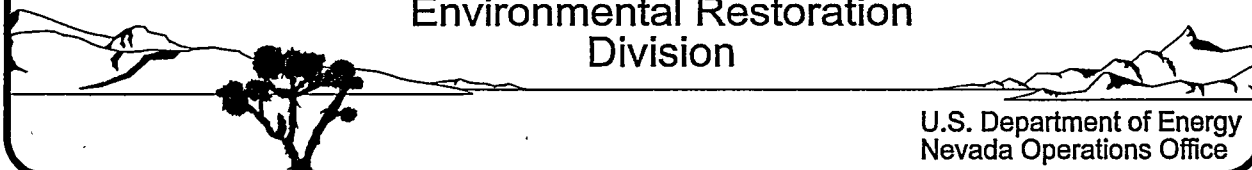
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**Corrective Action Plan  
For Corrective Action Unit 423:  
Area 3 Building 03-60 Underground Discharge Point,  
Tonopah Test Range, Nevada**

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

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**Prepared by  
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**October 1998**

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**Corrective Action Plan  
For Corrective Action Unit 423:  
Area 3 Building 03-60 Underground Discharge Point,  
Tonopah Test Range, Nevada**

Approved by: Janet Appenzeller-Wing  
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Date: 10/14/98

Approved by: Runore C. Wycoff  
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Nevada Environmental Restoration Project

Date: 10/15/98

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## **ACRONYMS AND ABBREVIATIONS**

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CADD	Corrective Action Decision Document
CAIP	Corrective Action Investigation Plan
CAP	Corrective Action Plan
CAU	Corrective Action Unit
cm	centimeter
CR	Closure Report
DOE	Department of Energy
DOE/NV	U.S. Department of Energy, Nevada Operations Office
ft	feet
gal	gallon
in	inch
L	liter
m	meter
mg/kg	milligram per kilogram
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NTS	Nevada Test Site
NV	Nevada
PAL	Preliminary Action Level
RCRA	Resources Conservation and Recovery Act

## **ACRONYMS AND ABBREVIATIONS (continued)**

---

TTR	Tonopah Test Range
USAF	U.S. Air Force
UDP	Underground Discharge Point
VOC	Volatile Organic Compounds

## **ABSTRACT**

---

This Corrective Action Plan provides the closure methods for Corrective Action Unit (CAU) 423: Area 3 Building 03-60 Underground Discharge Point (UDP), Tonopah Test Range, Nevada. CAU 423 consists of the UDP and an associated discharge pipeline extending from Building 03-60.

Corrective action investigations were completed in January 1998, and are documented in the Corrective Action Decision Document (U.S. Department of Energy, 1998). Results indicate an asymmetrical hydrocarbon plume, measuring 11 meters (m) (35 feet [ft]) in length, 6 m (20 ft) in width, and 4 to 20 m (14 to 65 ft) in depth, has formed beneath the UDP and migrated westward. Petroleum hydrocarbon levels were identified above the 100 milligrams per kilogram (mg/kg) action level specified in Nevada Administrative Code (NAC) 445A (NAC, 1996). The highest petroleum hydrocarbon concentration detected was 2,400 mg/kg (at 6 m [20 ft] below surface grade) as diesel.

Corrective actions will consist of administrative controls and in place closure of the UDP and its associated discharge pipeline.

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## 1.0 INTRODUCTION

---

This Corrective Action Plan (CAP) provides the selected corrective action alternative and proposes the corrective action methodology for Corrective Action Unit (CAU) 423: Area 3 Building 03-60 Underground Discharge Point (UDP), at the Tonopah Test Range (TTR), Nevada (NV). The TTR is located approximately 225 kilometers (140 miles) northwest of Las Vegas, NV (Figure 1).

CAU 423 contains Corrective Action Site No. 03-02-002-0308, which is comprised of the UDP and an associated discharge pipeline extending from Building 03-60. The UDP is approximately 73 meters (m) (240 feet [ft]) northwest of the northwest corner of Building 03-60 and is adjacent to a barbed-wire fence near the southwest corner of the Area 3 Boxcar Storage Yard (Figure 2). The UDP consists of a 1.1 m (3.5 ft) diameter corrugated metal culvert pipe, which is set vertically in the ground at a depth of 0.61 m (2 ft) below ground surface. The base of the UDP is located approximately 6.1 m (20 ft) below ground surface. An asymmetrical hydrocarbon plume, measuring 11 m (35 ft) in length, 6 m (20 ft) in width, and 4 to 20 m (14 to 65 ft) in depth, has formed beneath the UDP and migrated westward (Figure 3).

Building 03-60, the Auto Maintenance Shop, serves as a light duty fleet shop. Originally, waste oil was drained to Septic Tank 33-12 and the associated leachfield (addressed within CAU No. 427). When the septic tank was abandoned, waste oil products were discharged to a sump. From approximately 1965 to 1990, a gravity-fed discharge pipeline from the sump carried the waste oil to the UDP. Records do not indicate the amount of waste oil, or other shop products, discharged to the UDP prior to 1990. A 1994 inspection of Building 03-60 concluded that the sump had been sealed by a concrete slab. On January 8, 1998, the 2.5 centimeter (cm) (1 inch [in]) discharge pipeline connected to the UDP was cut, wrapped with Teflon tape, and capped with a steel lid.

In September 1996, approximately 1,514 liters [L] (400 gallons [gal]) of waste oil, which contained volatile organic compounds (VOCs), aromatics, and chlorinated aromatics, were pumped and transported to a Resource Conservation and Recovery Act (RCRA) treatment, storage, and disposal facility. The remaining 950 L (250 gal) of waste oil was removed in October 1997. Current waste oil generated at the Light Duty Fleet Shop is placed into containers and delivered to the U.S. Air Force (USAF) for disposal.

Total petroleum hydrocarbons in the UDP plume were detected at a maximum concentration of 2,400 milligrams per kilogram (mg/kg) (at 6 m [20 ft] below surface grade) as diesel. The action level specified in Nevada Administrative Code (NAC) 445A (NAC, 1996) is 100 mg/kg. Other constituents of concern were not detected. All VOCs and semi-volatile organic compounds were under Preliminary Action Levels (PALs), as outlined in the Corrective Action Investigation Plan (CAIP) (Department of Energy [DOE], 1997). Polychlorinated biphenyls

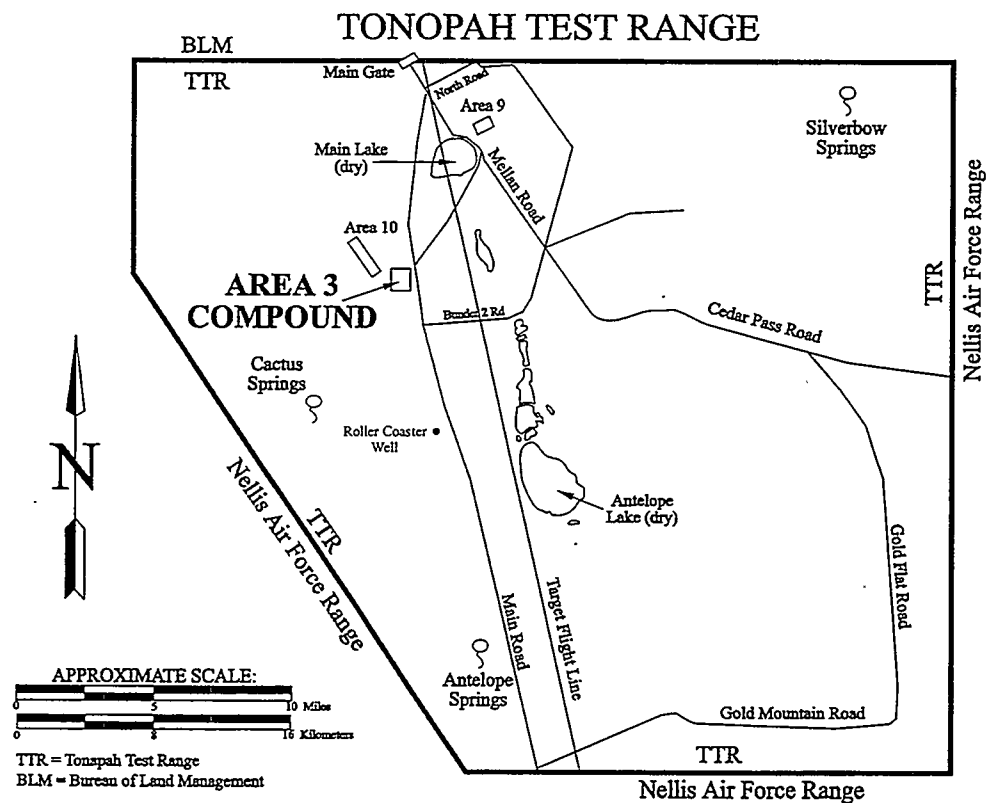
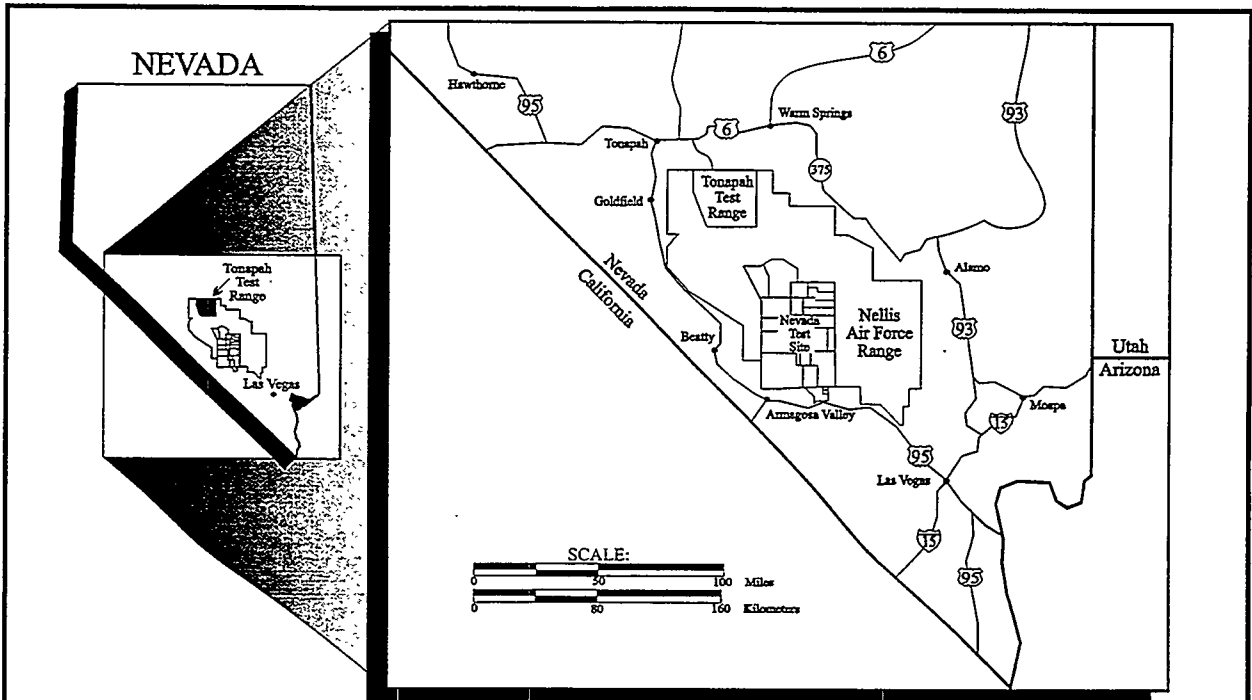


FIGURE 1  
SITE LOCATION MAP OF AREA 3  
TONOPAH TEST RANGE

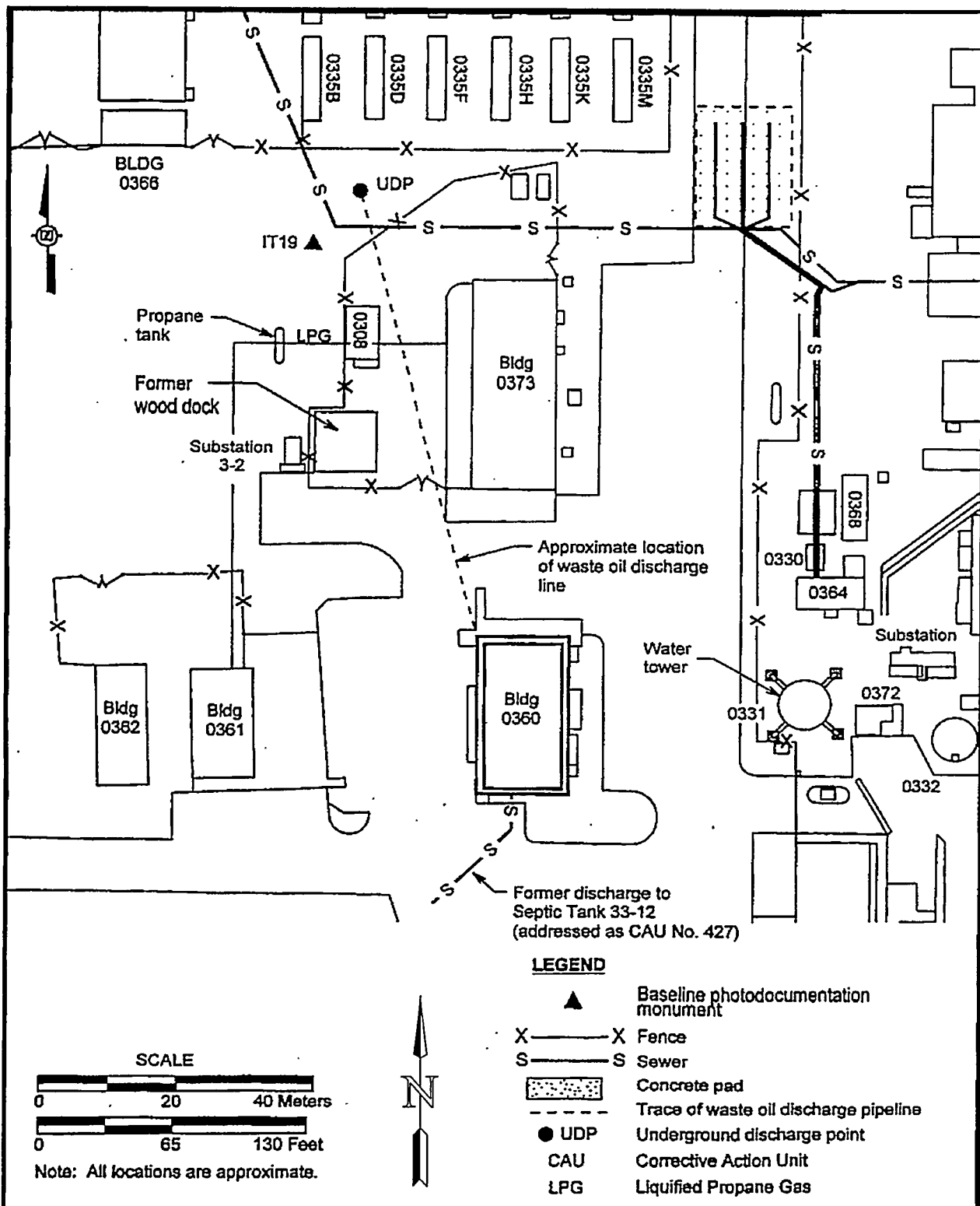


FIGURE 2  
 SITE LOCATION MAP OF AREA 3 BUILDING 0360  
 UNDERGROUND DISCHARGE POINT  
 (CAIP, DOE 1997)





were not detected above PALs. With the exception of arsenic, all RCRA metal samples were below PALs. The soil background level for arsenic is 13.8 mg/kg near the UDP area. As specified in the Corrective Action Decision Document (CADD) (DOE, 1998), the industrial Preliminary Remediation Goal for arsenic is 2.4 mg/kg. Since arsenic was not found above background levels in the UDP plume, it is not considered a constituent of concern. Additionally, radiological field screenings did not detect radiation levels greater than two times background levels.

As outlined in the CADD (DOE, 1998), site conditions will not adversely impact the groundwater beneath CAU 423 or any nearby drinking water wells because of the soil's biological degradation characteristics and the approximate 110 to 120 m (361 to 394 ft) groundwater depth.

## **1.1 PURPOSE**

The purpose of this CAP is to provide the methods for implementing the corrective action alternative as provided in the CADD (DOE, 1998). Detailed information of the site history and results of the characterization activities are found in the CAIP (DOE, 1997) and the CADD (DOE, 1998).

## **1.2 SCOPE**

The scope of this plan provides methods for the administrative closure of CAU 423. Based on the findings of the previous investigation, the selected corrective action alternative is:

- Closure in place of the UDP.
- Closure in place of the Building 03-60 discharge pipeline.
- Implementation of administrative controls.

## **1.3 CORRECTIVE ACTION PLAN CONTENTS**

This CAP is divided into the following sections:

- Section 1.0 - Introduction
- Section 2.0 - Detailed Statement of Work

- Section 3.0 - Schedule
- Section 4.0 - Post-Closure Monitoring Plan
- Section 5.0 - References
- Appendix A - Engineering Drawings
- Appendix B - Project Organization

This plan was developed using information and guidance provided from the following documents:

- Corrective Action Decision Document for Corrective Action Unit 423: Building 03-60 Underground Discharge Point, Tonopah Test Range, Nevada, Rev. 0, DOE, June 1998.
- Corrective Action Investigation Plan for Corrective Action Unit No. 423: Building 03-60 Underground Discharge Point, Tonopah Test Range, Nevada, Rev. 0, DOE, October 1997.
- Nevada Environmental Restoration Project, Health and Safety Plan, Revision 3, DOE, 1998.
- Nevada Environmental Restoration Project, Project Management Plan, Revision 0, DOE, 1994.
- Nevada Environmental Restoration Project, Industrial Sites, Quality Assurance Project Plan, Nevada Test Site, Revision 1, DOE, 1996.

## **2.0 DETAILED STATEMENT OF WORK**

---

### **2.1 APPROVED ALTERNATIVE IMPLEMENTATION**

The selected alternative requires closure in place of the UDP and its associated discharge pipeline with the use of administrative controls. The TTR is a restricted-access facility, therefore administrative controls will prevent inadvertent contact with subsurface media and restrict use involving intrusive activities.

Anticipated corrective action field activities consist of the following:

- Removal and disposal of the borehole casing protruding above the UDP.
- Grouting of the borehole casing remaining in the UDP.
- Construction of a UDP cement cover.
- Verification of the discharge pipeline's condition and, if necessary, sealing it with grout.
- Administrative controls - Imposing restrictions to prevent intrusive activities and inadvertent contact with subsurface media.

Coordination of the closure will include the USAF. Future use of areas related to this CAU will be restricted from activities that may alter or modify the containment control as identified in the Closure Report (CR) unless appropriate concurrence is obtained in advance.

Implementation of this plan ensures protection of human health and the environment, and meets compliance with media clean-up standards (NAC 445A.2272 [NAC, 1996]). Under this alternative, short-term risks to workers are minimal. Long-term risks are minimized by controlling access to the site and by reduction in petroleum hydrocarbon levels through natural biological activity. Due to the direction of groundwater flow and its approximate 110 to 120 m (361 to 394 ft) depth, groundwater beneath CAU 423 and nearby drinking water wells will not be adversely impacted. Only minimal waste will be generated during corrective action field activities. Corrective action field activities use existing resources and technologies and will generate minimal disturbances to the surrounding areas, (i.e., underground and aboveground utilities). The proposed corrective action alternative also provides a cost-effective method for meeting closure requirements.

### **2.1.1 Closure in Place of the Underground Discharge Point**

Access to the UDP is limited by the Building 0373 pad, a fence surrounding the Sandia Warehouse area, and boxcars used for storage. Numerous aboveground and underground utilities are present (i.e., propane tanks, gas lines, water lines, a telephone line, and an abandoned sewer line [Figure A.1]). The site topography slopes gently to the northwest with surface drainage flowing in the same direction. The location of the UDP is currently marked by a 25 cm (10 in) diameter borehole surface casing with a locking lid that extends approximately 46 cm (18 in) above ground surface.

The UDP consists of a 1.1 m (3.5 ft) diameter corrugated metal culvert pipe, which is set vertically in the ground at a depth of 0.61 m (2 ft) below ground surface. The base of the UDP is located approximately 6.1 m (20 ft) below ground surface. During investigation activities, approximately 340 kilograms (750 pounds) of medium bentonite chips were mixed with sand at the base of the UDP. The remainder of the steel culvert was packed with sand (Figure 4).

In order to remove the borehole casing, soils covering the UDP will be excavated to approximately 0.91 m (3 ft) in depth and 1.2 m (4 ft) in diameter. Only clean soil is expected. Should excavated soil exhibit visual characteristics of petroleum hydrocarbon impacted media, the approximate 1.0 cubic meters (1.4 cubic yards) of excavated soil will be tested to verify that total petroleum hydrocarbon concentrations are below the 100 mg/kg action level. If the excavated soil is found to contain petroleum hydrocarbon concentrations above the action level, it will be disposed of in the Area 10 TTR landfill or a Nevada Test Site (NTS) landfill. The excavation above the UDP will be backfilled and/or area graded with clean soil.

The borehole casing, protruding from the UDP, will be cut and removed. The uncontaminated upper casing, approximately 25 cm (10 in) in diameter by 107 cm (42 in) in length, will be "green tagged" and shipped to NTS salvage for use as scrap metal. The borehole casing remaining in the UDP will be grouted. Concrete/grout will be used to seal the UDP and construct a cap/marker.

### **2.1.2 Closure in Place of the Building 03-60 Discharge Pipeline**

The 2.5 cm (1 in) diameter discharge pipeline connecting Building 03-60 and the UDP is located approximately 0.91 m (3 ft) east of the UDP and 0.61 m (2 ft) below ground surface. A 1994 inspection of Building 03-60 concluded that the sump feeding into the discharge pipeline had been sealed by a concrete slab. On January 1, 1998, the portion of the discharge pipeline connected to the UDP was cut, wrapped with Teflon tape, and capped with a steel lid. The discharge pipeline is currently filled with sludge. A pipeline kink, located approximately 3.7 m (12 ft) from the UDP, prevented complete flushing of the sludge from the discharge

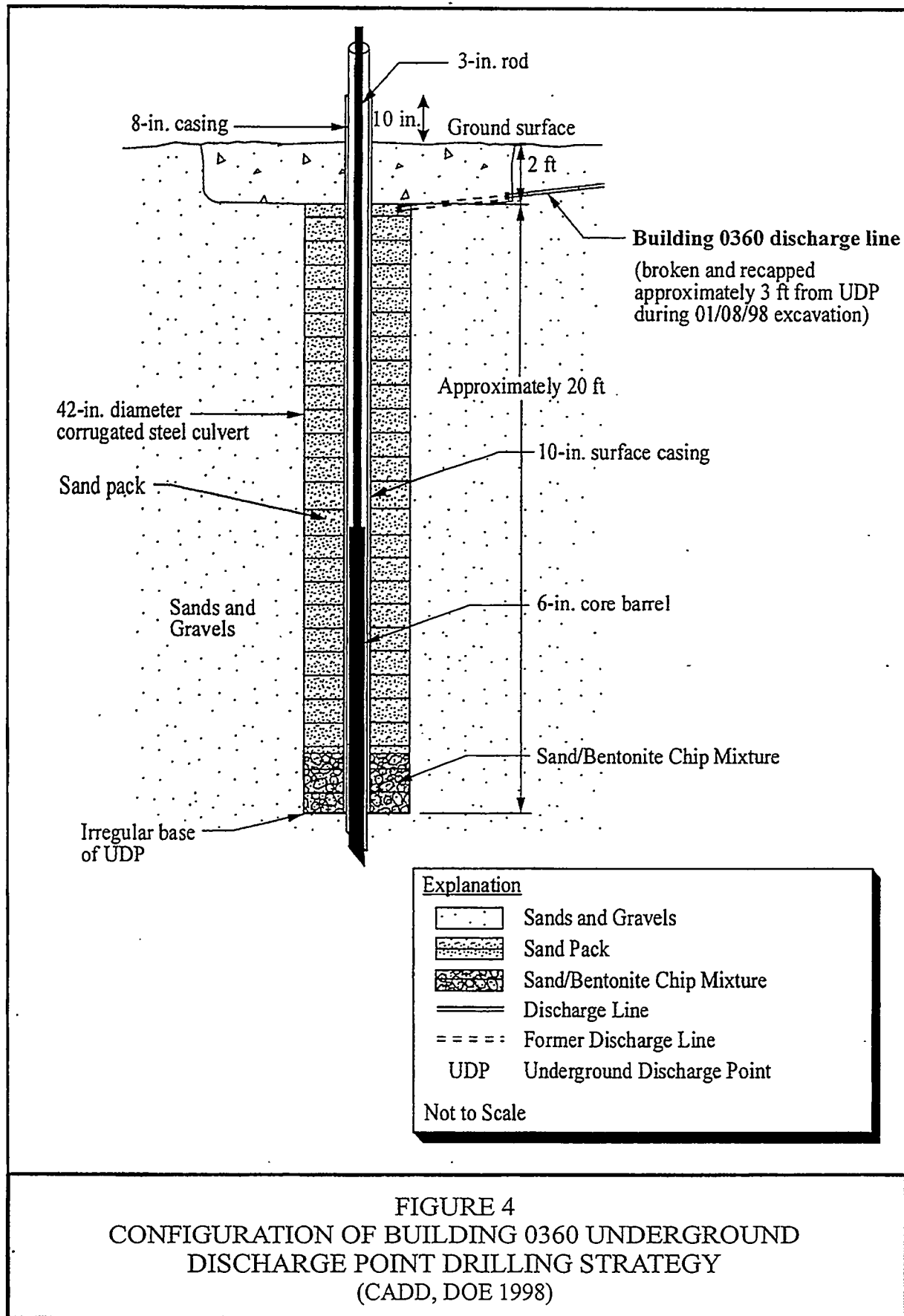


FIGURE 4  
 CONFIGURATION OF BUILDING 0360 UNDERGROUND  
 DISCHARGE POINT DRILLING STRATEGY  
 (CADD, DOE 1998)

pipeline. During sludge sampling activities, the discharge pipeline was cut at approximately 36.6 m (120 ft) from Building 03-60. The line break was then sealed with a rubber sleeve secured by steel bands. Hazardous wastes were not detected above PALs in the sludge.

Due to the presence of nearby utilities, the discharge pipeline will not be removed. Corrective action field activities will include establishing administrative controls and excavating portions of the discharge line to verify that the sludge is contained and that the discharge line is sealed. If necessary, the ends and any breaks in the discharge line will be recapped and sealed with a slightly expanding grout. Housekeeping debris will be disposed of in an appropriate TTR or NTS landfill.

### **2.1.3 Administrative Controls**

The TTR is a restricted-access facility. Administrative controls will prevent inadvertent contact with subsurface waste and restrict use involving intrusive activities. This will be done through coordination with TTR administrative, maintenance, and operational organizations.

## **2.2 CONSTRUCTION QUALITY ASSURANCE**

Construction activities consist primarily of soil excavation and sign postings; therefore, construction quality assurance is not required.

## **2.3 WASTE MANAGEMENT**

Only nonhazardous wastes are expected at this site. Waste generated will consist of housekeeping debris and the 1.07 m (3.5 ft) by 0.025 m (10 in) diameter borehole casing. Housekeeping debris and any impacted excavated soil will be disposed of in a TTR or NTS permitted landfill according to DOE orders, U.S. Department of Transportation requirements, and state and federal agreements and permits between the U.S. Department of Energy, Nevada Operations Office (DOE/NV) and the Nevada Division of Environmental Protection (NDEP).

### **2.3.1 Waste Minimization**

For the duration of the project, site workers will follow the principles of the Bechtel Nevada Waste Minimization and Pollution Prevention Program. As part of this approach, the removed portion of the borehole casing will be sent to salvage and sold as scrap metal.

## **2.4 CLEAN-UP VERIFICATION**

Corrective action field activities are not anticipated to include the removal of petroleum hydrocarbons or soil containing hydrocarbons. Corrective action field activities are not anticipated to involve contact with impacted subsurface media; therefore, clean-up verification is not necessary and will not be performed.

## **2.5 PERMITS**

Required permits for this project include an Excavation and Trenching Permit and a Hot Work Permit Request.

### **2.5.1 Excavating and Trenching Permit**

An approved Excavating and Trenching Permit will be obtained prior to any excavation. The permit contains a justification for the trenching operation and a checklist of pertinent organizations who must inspect the site so that the trenching will not impact utilities. A copy of this permit will be kept at the project site by the site supervisor.

### **2.5.2 Hot Work Permit Request**

A Hot Work Permit will be obtained prior to cutting of the UDP surface borehole casing. The permit describes the location and type of work to be done, as well as requires the job supervisor, foreman, or appointee, to inspect the work area and confirm that the appropriate precautions have been taken (i.e., that sparks are controlled, equipment is checked, etc.). A copy of this permit will be kept at the project site by the site supervisor.

## **2.6 CLOSURE CERTIFICATION**

Closure will be verified through appropriate observations and documentation of corrective action activities. A CR detailing the corrective action field activities will be prepared and submitted by DOE/NV by certified mail or other means of verifiable delivery to the NDEP. The CR will be delivered by the date specified in Section 3.0.



### 3.0 SCHEDULE

---

The NDEP requires completion of the final Closure Report by August 2, 1999. The following activity schedule is planned for CAU 423: Area 3 Building 03-60 Underground Discharge Point, Tonopah Test Range, Nevada.

- Begin coordination of corrective action field activities within 60 days of NDEP approval of the CAP.
- Complete field activities by March 1, 1999.
- Prepare the CR for submittal to NDEP within approximately 120 days after completion of the field activities.

Flexibility has been placed in the project schedule to account for minor difficulties (weather, equipment breakdowns, etc.). DOE will keep the NDEP apprised of any condition that may impact the project schedule.

## **4.0 POST-CLOSURE MONITORING PLAN**

---

Unless CAU 423: Area 3 Building 03-60 Underground Discharge Point, Tonopah Test Range, Nevada is released for unrestricted use, inspections and post-closure monitoring are not required. Inspections are not required after severe weather events, such as heavy rainfall, flash flooding, and high winds, because of the UDP cement cover and depth of the petroleum hydrocarbon impacted soil plume.

## 5.0 REFERENCES

---

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

DOE, 1998, Corrective Action Decision Document for Corrective Action Unit 423: Building 03-60 Underground Discharge Point, Tonopah Test Range, Nevada, Rev. 0, June 1998. DOE/NV-508, UC-700.

DOE, 1998, Corrective Action Investigation Plan for Corrective Action Unit No. 423: Building 03-60 Underground Discharge Point, Tonopah Test Range, Nevada, Rev. 0, October, 1997. DOE/NV-487.

FFACO, see Federal Facility Agreement and Consent Order.

FFACO, 1996, Agreed to by the Nevada Division of Environmental Protection, the U.S. Department of Energy, and the U.S. Department of Defense.

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Nevada Administrative Code 1996. NAC 445A, "Water Pollution Control." Carson City, NV.

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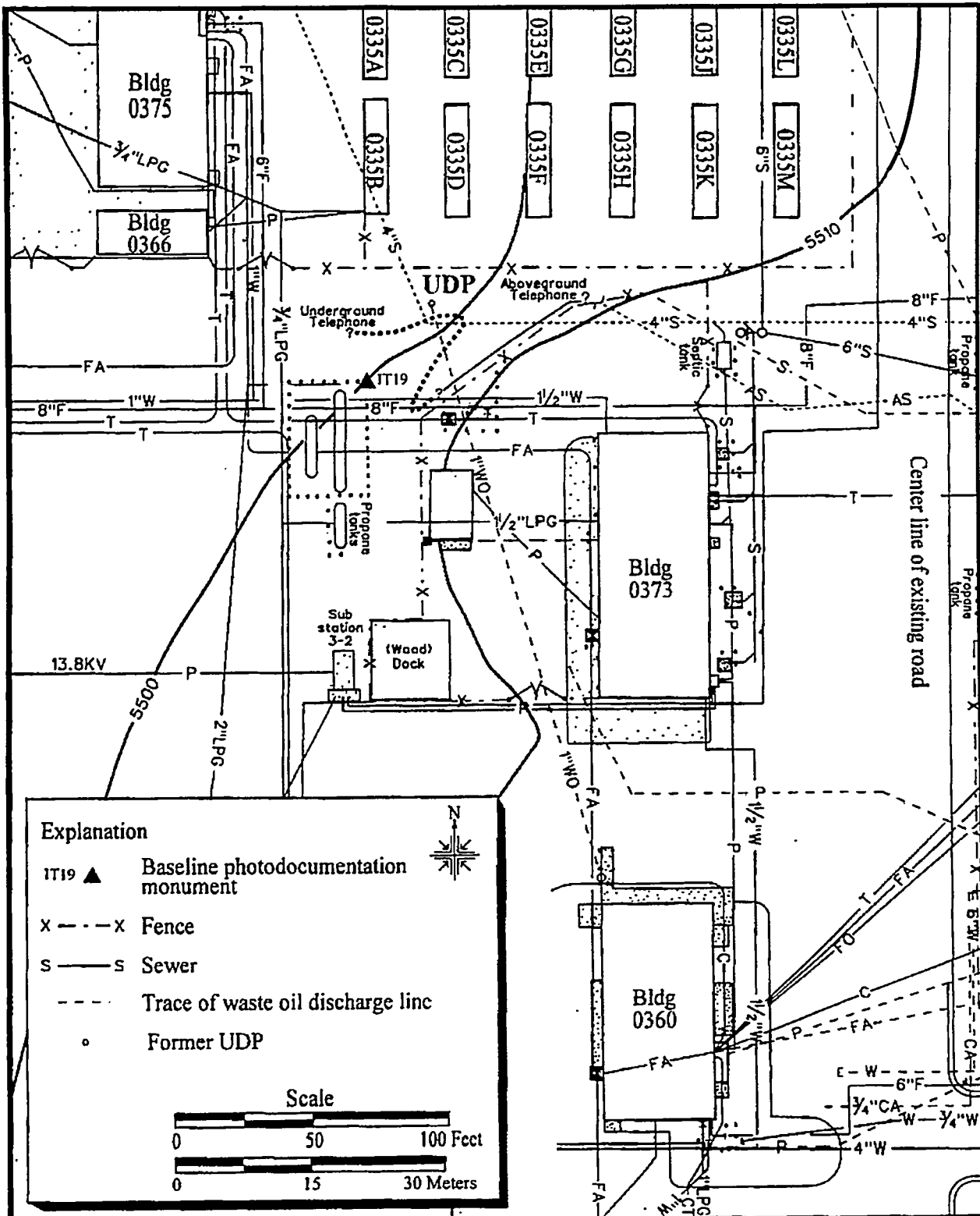
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U.S. Department of Energy, Nevada Operations Office. 1996c. Industrial Waste Quality Assurance Project Plan, DOE/NV-425. Las Vegas, NV.

## **Appendix A**

### **Engineering Specifications and Drawings**



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## **Appendix B**

### **Project Organization**

The following are the DOE/NV project contacts:

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The identification of the project Health and Safety Officer and the Quality Assurance Officer can be found in the appropriate DOE plan. However, personnel are subject to change and it is suggested that the Project Manager be contacted for further information. The Task Manager will be identified in the Federal Facility Agreement and Consent Order Biweekly Activity Report prior to the start of field activities.



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