Nevada
Environmental
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Project

DOE/NV--1313

National Nuclear Security Administration

Corrective Action Plan for Corrective Action Unit 563: Septic Systems, Nevada Test Site, Nevada

Controlled Copy No.:_____

Revision: 0

March 2009

Environmental Restoration
Project

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

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CORRECTIVE ACTION PLAN FOR CORRECTIVE ACTION UNIT 563: SEPTIC SYSTEMS, NEVADA TEST SITE, NEVADA

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

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CORRECTIVE ACTION PLAN
FOR CORRECTIVE ACTION UNIT 563:
SEPTIC SYSTEMS,
NEVADA TEST SITE, NEVADA

Approved By: Original signed by: K Cabble Date: 3-11-09

Kevin J. Cabble
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ACRONYMS AND ABBREVIATIONS

ACP	asbestos cement pipe
BMP	best management practice
CADD	Corrective Action Decision Document
CAIP	Corrective Action Investigation Plan
CAP	Corrective Action Plan
CAS	Corrective Action Site
CAU	Corrective Action Unit
COC	contaminant of concern
CR	Closure Report
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DQI	data quality indicator
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ft	foot (feet)
gal	gallon(s)
HW	hazardous waste
in.	inch(es)
LLW	low-level waste
mk/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
MW	mixed waste
NDEP	Nevada Division of Environmental Protection
NEPA	*National Environmental Policy Act*
NNSA/NSO	U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office
NNSA/NV	U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office
NTS	Nevada Test Site
PPE	personal protective equipment
QA/QC	quality assurance/quality control

ACRONYMS AND ABBREVIATIONS (continued)

REOP	Real Estate/Operations Permit
RPD	relative percentage difference
RWP	Radiological Work Permit
TCLP	Toxicity Characterization Leaching Procedure
VCP	vitrified clay pipe
yd^3	cubic yard(s)
%R	percent recovery

EXECUTIVE SUMMARY

This Corrective Action Plan (CAP) has been prepared for Corrective Action Unit (CAU) 563, Septic Systems, in accordance with the *Federal Facility Agreement and Consent Order* (1996; as amended February 2008). CAU 563 consists of four Corrective Action Sites (CASs) located in Areas 3 and 12 of the Nevada Test Site. CAU 563 consists of the following CASs:

- CAS 03-04-02, Area 3 Subdock Septic Tank
- CAS 03-59-05, Area 3 Subdock Cesspool
- CAS 12-59-01, Drilling/Welding Shop Septic Tanks
- CAS 12-60-01, Drilling/Welding Shop Outfalls

Site characterization activities were performed in 2007, and the results are presented in Appendix A of the CAU 563 Corrective Action Decision Document (U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office, 2008). The scope of work required to implement the recommended closure alternatives is summarized below.

- **CAS 03-04-02, Area 3 Subdock Septic Tank,** contains no contaminants of concern (COCs) above action levels. No further action is required for this site; however, as a best management practice (BMP), all aboveground features (e.g., riser pipes and bumper posts) will be removed, the septic tank will be removed, and all open pipe ends will be sealed with grout.
- **CAS 03-59-05, Area 3 Subdock Cesspool,** contains no COCs above action levels. No further action is required for this site; however, as a BMP, all aboveground features (e.g., riser pipes and bumper posts) will be removed, the cesspool will be abandoned by filling it with sand or native soil, and all open pipe ends will be sealed with grout.
- **CAS 12-59-01, Drilling/Welding Shop Septic Tanks,** will be clean closed by excavating approximately 4 cubic yards (yd^3) of arsenic- and chromium-impacted soil. In addition, as a BMP, the liquid in the South Tank will be removed, the North Tank will be removed or filled with grout and left in place, the South Tank will be filled with grout and left in place, all open pipe ends will be sealed with grout or similar material, approximately 10 yd^3 of chlordane-impacted soil will be excavated, and debris within the CAS boundary will be removed.
- **CAS 12-60-01, Drilling/Welding Shop Outfalls,** contains no COCs above action levels. No further action is required for this site; however, as a BMP, three drain pipe openings will be sealed with grout.

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1.0 INTRODUCTION

This Corrective Action Plan (CAP) has been prepared in accordance with the *Federal Facility Agreement and Consent Order* (1996; as amended February 2008). Corrective Action Unit (CAU) 563, Septic Systems, is located in Areas 3 and 12 of the Nevada Test Site (NTS) and consists of the following four Corrective Action Sites (CASs) (Figure 1):

- CAS 03-04-02, Area 3 Subdock Septic Tank
- CAS 03-59-05, Area 3 Subdock Cesspool
- CAS 12-59-01, Drilling/Welding Shop Septic Tanks
- CAS 12-60-01, Drilling/Welding Shop Outfalls

The site history and characterization results are provided in the Corrective Action Investigation Plan (CAIP) (U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office [NNSA/NSO], 2007) and Corrective Action Decision Document (CADD) (NNSA/NSO, 2008).

1.1 PURPOSE

This CAP presents the scope of work required to implement the recommended corrective actions, as specified in Section 4.0 of the CADD (NNSA/NSO, 2008).

1.2 SCOPE

The approved closure activities for CAU 563 include removal of arsenic- and chromium-impacted soil. As a best management practice (BMP), aboveground features, septic tank liquids, septic tanks, chlordane-impacted soil, and debris will be removed; a cesspool and septic tanks will be abandoned; and remaining open pipe ends will be sealed. Table 1 presents CAS-specific closure activities and contaminants of concern (COCs). Specific details are presented in Section 2.0.

1.3 CORRECTIVE ACTION PLAN CONTENTS

This CAP consists of the following sections and appendices:

- Section 1.0: Introduction
- Section 2.0: Detailed Statement of Work
- Section 3.0: Schedule
- Section 4.0: Post-Closure Plan
- Section 5.0: References
- Appendix A.1: Engineering Specifications and Drawings
- Appendix A.2: Sampling and Analysis Plan
- Appendix A.3: Project Organization
- Library Distribution List

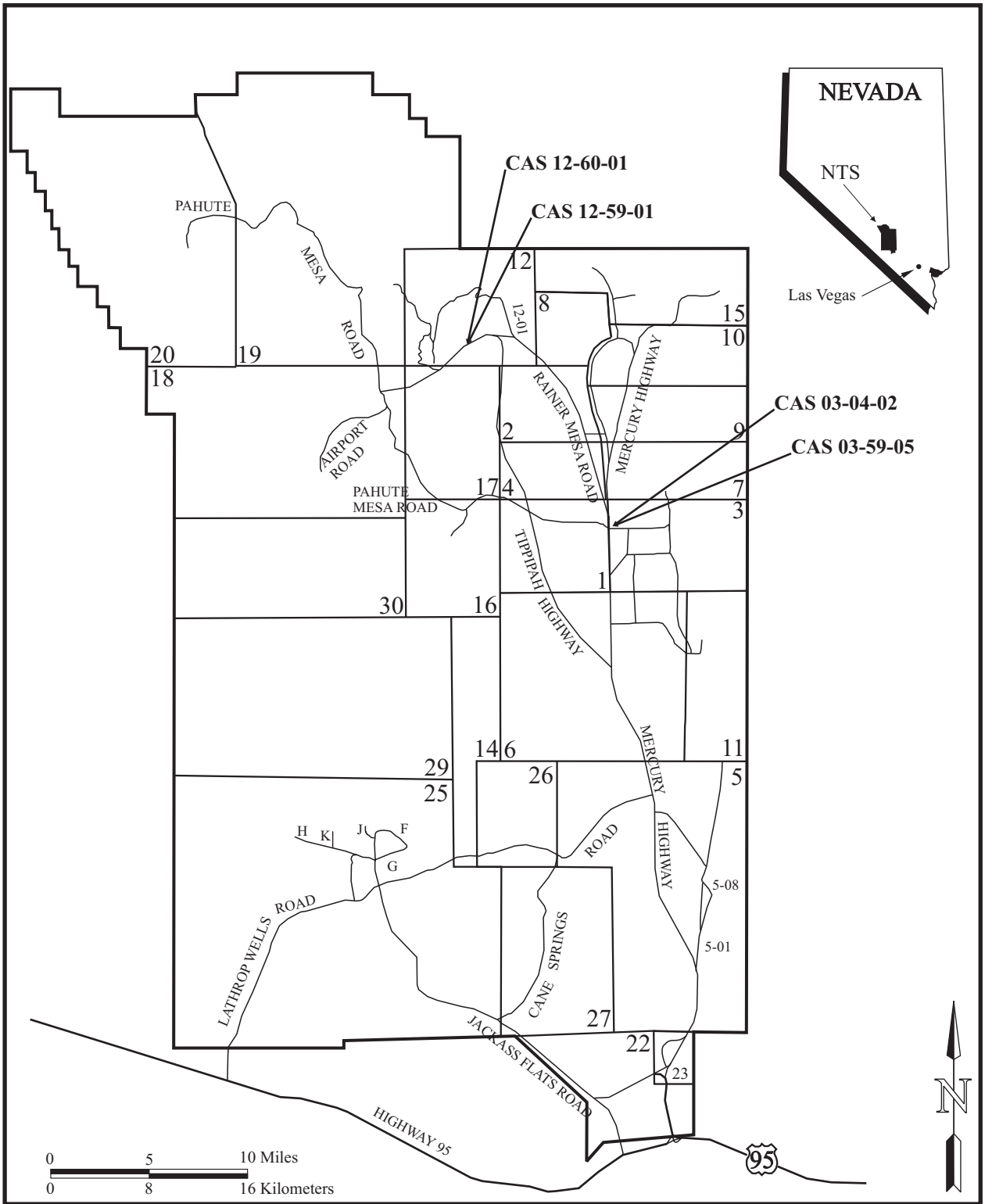

FIGURE 1. CORRECTIVE ACTION UNIT 563 SITE LOCATION MAP

TABLE 1. CORRECTIVE ACTION UNIT 563 CLOSURE ACTIVITIES

CAS	Name	Closure Method	COCs	Scope of Work
03-04-02	Area 3 Subdock Septic Tank	No Further Action	None	• As a BMP, remove aboveground features (e.g., riser pipes and bumper posts) • As a BMP, remove the septic tank • As a BMP, seal open pipe ends with grout
03-59-05	Area 3 Subdock Cesspool	No Further Action	None	• As a BMP, remove aboveground features (e.g., riser pipes and bumper posts) • As a BMP, abandon the cesspool • As a BMP, seal open pipe ends with grout
12-59-01	Drilling/Welding Shop Septic Tanks	Clean Closure	Chromium Arsenic	• Remove approximately 4 yd^3 of arsenic- and chromium-impacted soil • As a BMP, remove approximately 3,700 gal of liquid • As a BMP, remove or fill with grout and leave in place the North Tank • As a BMP, fill with grout and leave in place the South Tank • As a BMP, seal open pipe ends with grout or similar material • As a BMP, remove approximately 10 yd^3 of chlordane-impacted soil • As a BMP, remove debris from within the CAS boundary
12-60-01	Drilling/Welding Shop Outfalls	No Further Action	None	• As a BMP, seal three drain pipe openings with grout

BMP: best management practice
CAS: Corrective Action Site
COC: contaminant of concern
gal: gallon(s)
yd^3: cubic yard(s)

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2.0 DETAILED STATEMENT OF WORK

The approved corrective actions for CAU 563, as evaluated in Section 3.0 of the CADD and identified in Section 4.0 of the CADD (NNSA/NSO, 2008), include:

- CAS 03-04-02, Area 3 Subdock Septic Tank: No Further Action
- CAS 03-59-05, Area 3 Subdock Cesspool: No Further Action
- CAS 12-59-01, Drilling/Welding Shop Septic Tanks: Clean Closure
- CAS 12-60-01, Drilling/Welding Shop Outfalls: No Further Action

2.1 CORRECTIVE ACTIONS

The corrective action alternatives for CAU 563 are identified in Section 4.0 of the CADD (NNSA/NSO, 2008) and were approved by the Nevada Division of Environmental Protection (NDEP). The objective of the corrective actions is to prevent or mitigate adverse environmental impacts and migration of contamination. The corrective actions and BMPs for CAU 563 are identified below.

2.1.1 Alternative 1, No Further Action

2.1.1.1 Corrective Action Site 03-04-02, Area 3 Subdock Septic Tank

This site is located in Area 3 of the NTS, in the southern portion of the Area 3 Subdock. The site consists of an empty 2,000-gallon (gal) steel septic tank fitted with a 2-inch (in.) diameter vent line and an 8-in. diameter suction line. The vent line rises 3 feet (ft) above grade and is located 2 ft north of the suction line. The suction line is capped by a 12-in. diameter metal cover. The tank location is identified on the surface by the vent line and suction line cover surrounded by six concrete bumper posts. The site layout is depicted in Figure 2.

No COCs are present at concentrations above action levels at this site, and no further action is required. However, as a BMP, all aboveground features (e.g., riser pipes and bumper posts) will be removed for disposal as sanitary waste, the septic tank will be removed for disposal as sanitary waste, and all open pipe ends will be sealed with grout. The excavation will be backfilled with clean soil and contoured to the approximate surrounding topographic grade.

2.1.1.2 Corrective Action Site 03-59-05, Area 3 Subdock Cesspool

This site is located in Area 3 of the NTS, in the southern portion of the Area 3 Subdock. The site consists of 100 ft of vitrified clay pipe and a buried cesspool that is 13 ft deep by 3 ft in diameter, constructed of steel, and open-bottomed. The cesspool is fitted with a single vented lid. The cesspool location is identified on the surface by four concrete bumper posts. The site layout is depicted in Figure 3.

No COCs are present at concentrations above action levels at this site, and no further action is required. However, as a BMP, all aboveground features (e.g., riser pipes and bumper posts) will be removed for disposal as sanitary waste, the cesspool will be abandoned by filling it with sand or native soil, and all open pipe ends will be sealed with grout.

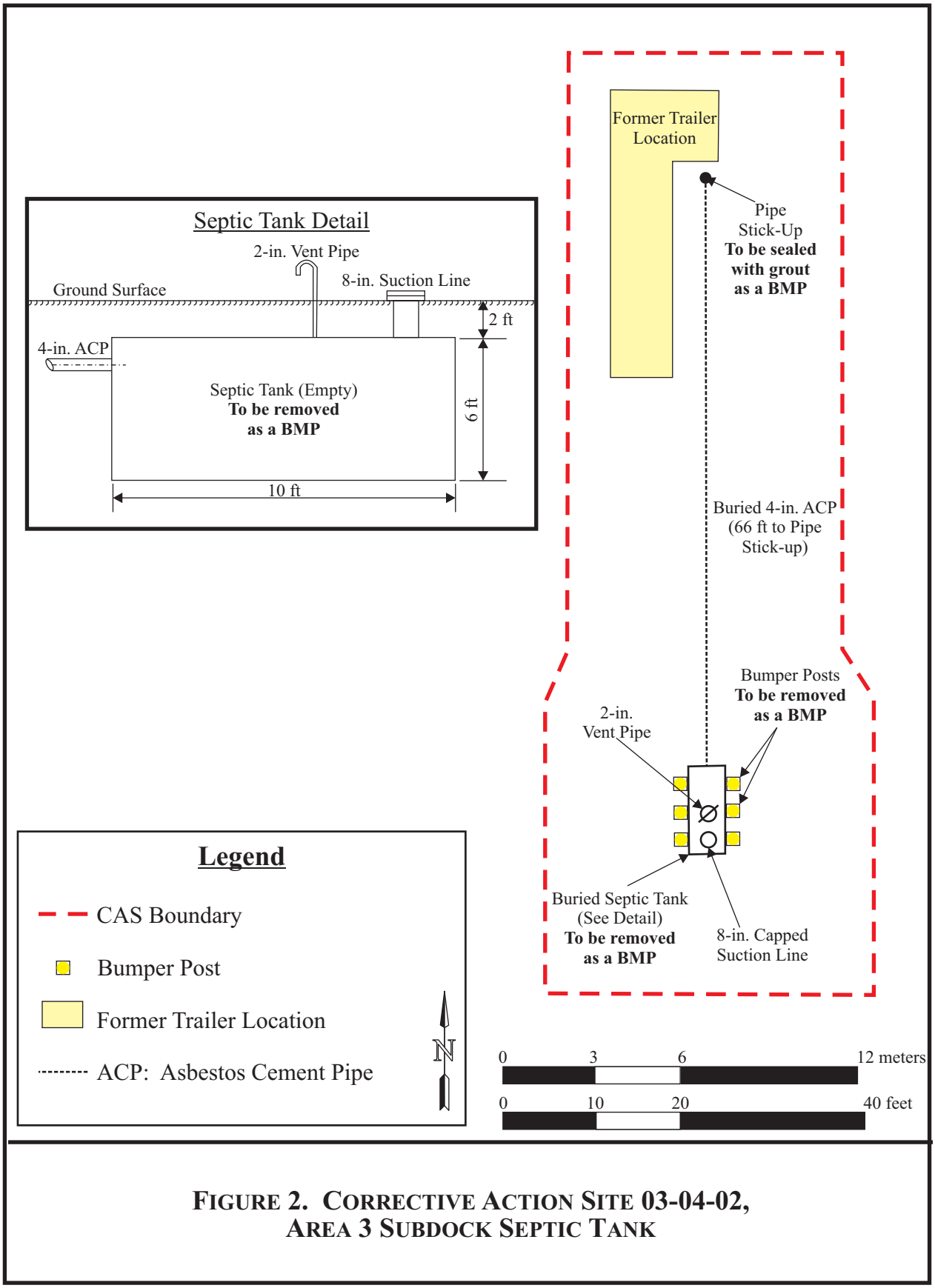

FIGURE 2. CORRECTIVE ACTION SITE 03-04-02, AREA 3 SUBDOCK SEPTIC TANK

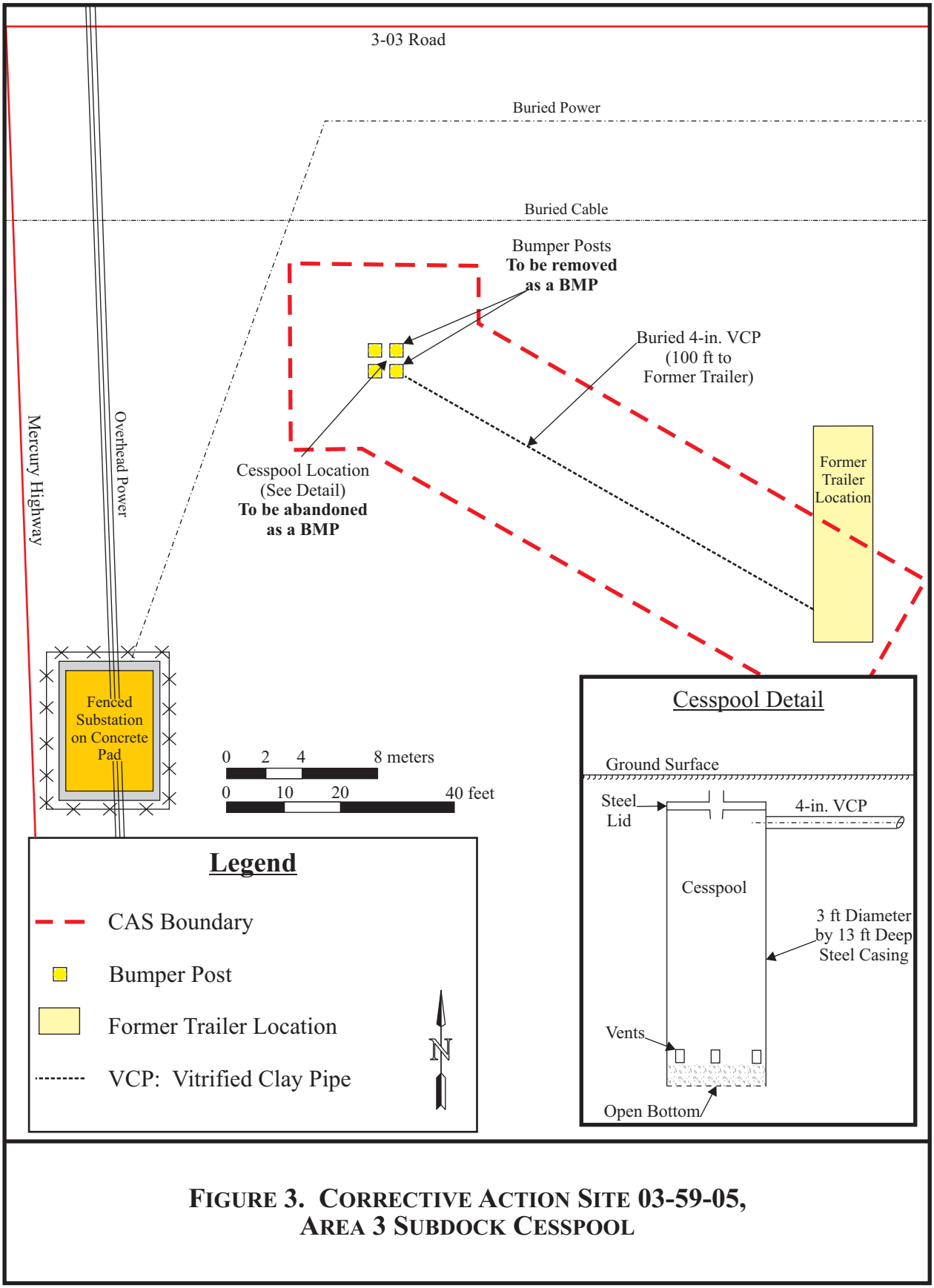

FIGURE 3. CORRECTIVE ACTION SITE 03-59-05, AREA 3 SUBDOCK CESSPOOL

2.1.1.3 Corrective Action Site 12-60-01, Drilling/Welding Shop Outfalls

This site is located in Area 12 of the NTS, at the former Area 12 Drilling/Welding Shop. The site consists of three inactive, abandoned drain lines and respective outfalls originating from the Drilling/Welding Shop, which primarily supported the maintenance of equipment used during E-Tunnel drilling and testing activities. The drain lines and outfall pipes include 6-in. and 12-in. diameter steel piping. The site layout is depicted in Figure 4.

No COCs are present at concentrations above action levels at this site, and no further action is required. However, as a BMP, the three drain pipe openings will be sealed with grout.

2.1.2 Alternative 2, Clean Closure

2.1.2.1 Corrective Action Site 12-59-01, Drilling/Welding Shop Septic Tanks

This site is located in Area 12 of the NTS, the former Area 12 Drilling/Welding Shop. The site consists of two separate septic systems (one North Tank and one South Tank), associated subsurface piping, and two stained soil locations ("First Stained Area" and "Second Stained Area"). The North Tank, a 12,000-gallon tank constructed of steel, is empty. The South Tank, with a 5,300-gallon capacity and also constructed of steel, contains approximately 3,700 gal of liquid. The site layout is depicted in Figure 5.

Arsenic and chromium were detected at concentrations above action levels at the First Stained Area (sample location C04). Step-out samples defined the extent of contamination as 12 ft in diameter and to a depth of less than 1 ft. The volume of soil recommended for removal is estimated at 4 yd^3. The soil will be excavated for appropriate disposal.

A preliminary evaluation of the arsenic- and chromium-impacted soil indicated it will most likely be disposed as sanitary waste. The Toxicity Characterization Leaching Procedure (TCLP) analytical result for chromium at sample location C04 was 0.0058 milligrams per liter (mg/L), which is below the toxicity characteristic limit of 5.0 mg/L for chromium. The TCLP analytical result for arsenic was below the laboratory's minimum detectable concentration. Therefore, the soil will most likely be sanitary waste.

A minimum of two verification samples, one from a randomly selected side wall and one from the floor of the excavation, will be collected and analyzed for arsenic and chromium. The number of verification samples may vary depending on the size of the final excavation. If verification sample results indicate that an action level is exceeded, additional soil will be removed, and additional verification samples will be collected. Upon verifying that the impacted soil has been removed, the excavation will be backfilled with clean soil and contoured to the approximate surrounding topographic grade.

Chlordane was detected at elevated concentrations at several locations downgradient of the Drilling/Welding Shop concrete pad where routine application of pesticides may have occurred. Sporadic and discontinuous distribution of residual chlordane is likely a result of degradation, grading of surfaces, and migration. Therefore, chlordane is not considered to be associated with a release from this CAS and is not considered to be a COC at this CAS. An action level was not identified for chlordane.

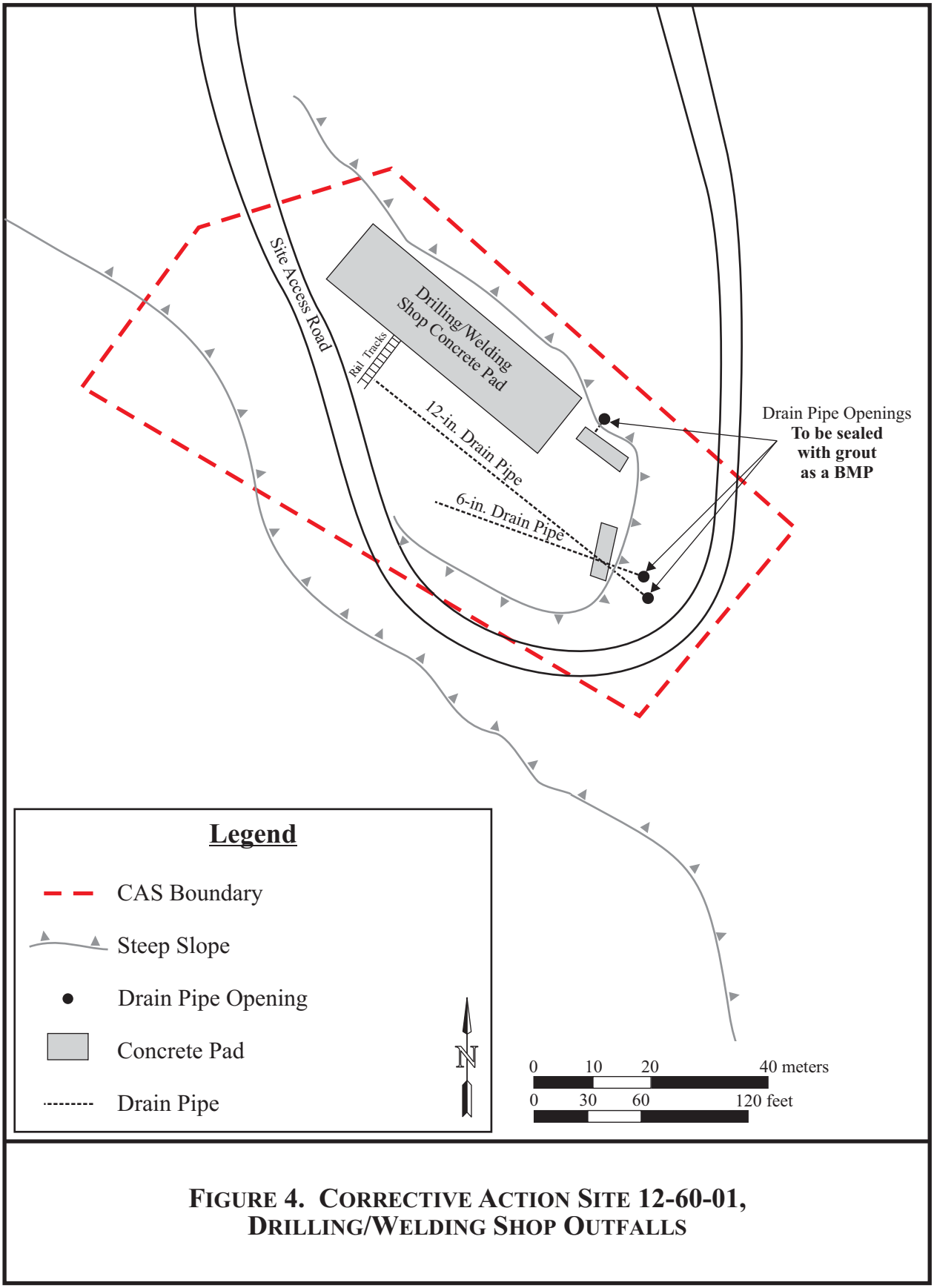

FIGURE 4. CORRECTIVE ACTION SITE 12-60-01, DRILLING/WELDING SHOP OUTFALLS

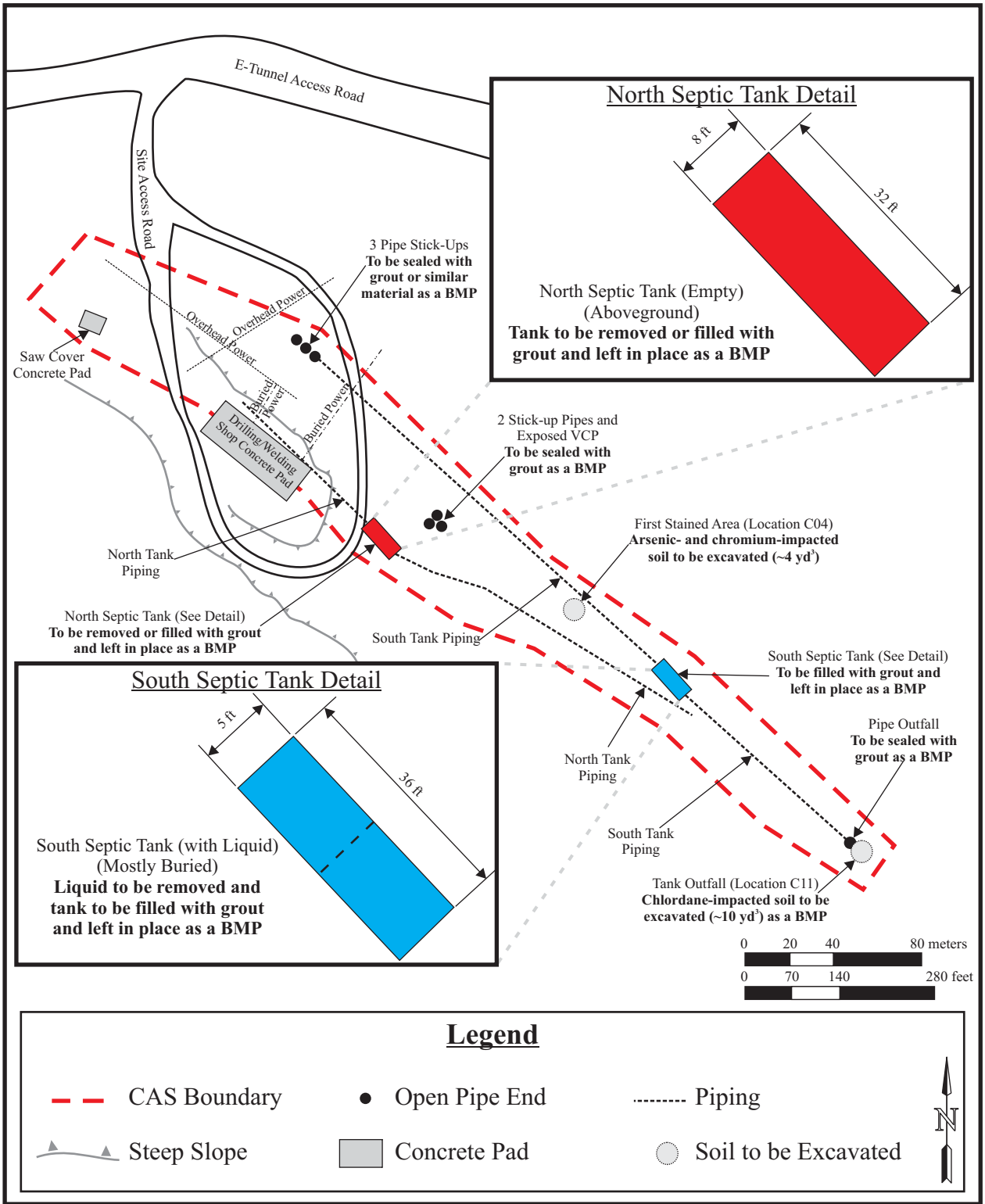

FIGURE 5. CORRECTIVE ACTION SITE 12-59-01, DRILLING/WELDING SHOP SEPTIC TANKS

Although chlordane is not considered to be a COC at this CAS, it was determined that soil with higher concentrations of chlordane at the Tank Outfall (sample location C11) would be removed as a BMP. The volume of soil that will be removed is approximately 10 yd^3 (20 ft by 14 ft by 1 ft below ground surface). The soil will be excavated for appropriate disposal.

A preliminary evaluation of the chlordane-impacted soil indicated it may require treatment and disposal as mixed waste (MW). The TCLP analytical result for chlordane at sample locations C11 and C11D (step-out location) were above the hazardous waste (HW) toxicity characteristic limit of 0.03 mg/L for chlordane. Treatment and disposal as HW may not be possible, however, because plutonium-239 is also present. Plutonium-239 was detected at sample location C11 at 2.61 picocuries per gram, which although below the action level for removal, is above the acceptance limit of the HW treatment and disposal facility; therefore, the soil may require treatment and disposal as MW. Waste will be characterized at the time of generation and efforts will be made to reduce the amount of MW generated, if any.

No verification samples will be collected at this location because chlordane is not a COC and is being removed as a BMP. The excavation will be backfilled with clean soil and contoured to the approximate surrounding topographic grade.

The liquid contents of the South Tank do not contain COCs above action levels, and the liquid appears to be rainwater. As a BMP, the liquid will be removed from the tank for disposal as sanitary waste. In addition, as a BMP, the North Tank will be removed for disposal as sanitary waste or filled with grout and left in place, the South Tank will be filled with grout and left in place, all open pipe ends will be sealed with grout or similar material, and debris within the CAS boundary that can be removed manually will be removed for disposal as sanitary waste.

2.2 CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL

Construction activities will include removal of arsenic- and chromium-impacted soil, aboveground features, septic tank liquids, chlordane-impacted soil, and debris; abandonment of a cesspool and septic tanks; and sealing of remaining open pipe ends. No engineered structures will be constructed as part of site closure. Therefore, a construction quality assurance/quality control (QA/QC) plan is not required.

2.2.1 Construction Field Sample Collection Activities

Construction field samples are not necessary for the closure of CAU 563. Samples may be collected for the purpose of waste stream characterization and to verify that the approved cleanup criteria have been met. Sample collection activities are addressed in Section 2.4.

2.2.2 Construction Laboratory/Analytical Data Quality Indicators

CAU 563 closure activities are limited to removal of soil, liquid, and debris. Therefore, a construction QA/QC plan is not required, and construction data quality indicators (DQIs) are not applicable. To ensure that backfill material remains consistent, all fill will be taken from an approved borrow source.

2.3 WASTE MANAGEMENT

All waste streams will be managed and disposed according to applicable federal and state regulations, U.S. Department of Energy (DOE) orders, U.S. Department of Transportation (DOT) regulations, and company waste management procedures. CAU 563 closure activities are expected to generate sanitary waste and MW. Although not expected, if HW and/or low-level waste (LLW) is generated, it will be properly managed and disposed. Confirmation of waste disposal will be included in the CAU 563 Closure Report (CR).

2.3.1 Waste Minimization

All work activities that generate waste will strive to minimize the volume of waste generated. Special care will be taken to properly characterize and segregate waste streams to avoid the generation of additional waste.

2.3.2 Waste Types

2.3.2.1 Sanitary Waste

Sanitary waste removed from sites will be radiologically screened for free release (U.S. Department of Energy, Nevada Operations Office, 2004) and disposed as sanitary waste in an onsite permitted landfill.

2.3.2.2 Mixed Waste

MW is waste containing both radioactive waste and HW constituents. Closure activities will most likely generate MW, which will be managed and disposed according to all applicable federal and state regulations, DOE orders, DOT regulations, and company waste management procedures. All MW will be packaged under the guidance of a Waste Certification Official and Waste Generator Services personnel. When staged on site, the MW will be stored in a radioactive materials area and a 90-day HW accumulation area until a waste disposal profile is prepared and approved. Samples will be collected to enable completion of a treatability study, if necessary. The MW will then be disposed of appropriately.

2.3.2.3 Hazardous Waste

Closure activities are not expected to generate HW; however, if generated, HW will be managed and disposed according to all applicable federal and state regulations, DOE orders, DOT regulations, and company waste management procedures. Upon generation, HW will be containerized and stored in a satellite accumulation area or a 90-day HW accumulation area, depending on the amount of waste generated. After an approved waste profile is generated, the waste will be disposed at a permitted offsite treatment, storage, and disposal facility.

2.3.2.4 Low-Level Waste

Closure activities are not expected to generate LLW; however, if generated, LLW will be managed and disposed according to all applicable federal and state regulations, DOE orders, DOT regulations, and company waste management procedures. All LLW will be packaged under the guidance of a Waste Certification Official and Waste Generator Services personnel. LLW will be stored in a radioactive materials area until a waste disposal profile is prepared and approved, and transport to an appropriate disposal facility can be arranged.

2.3.2.5 Decontamination Waste

Equipment will be surveyed prior to release from an exclusion zone. Any equipment that becomes contaminated during closure activities will be decontaminated on site. Dry decontamination will be the preferred method. For larger pieces of equipment that cannot be effectively decontaminated using dry decontamination techniques, wet decontamination techniques will be used. All decontamination rinsate will be managed appropriately according to applicable regulations and, once characterized, properly disposed.

2.3.2.6 Personal Protective Equipment

All personal protective equipment (PPE) that becomes contaminated during closure activities will be disposed with the appropriate waste stream.

2.4 CONFIRMATION OF CORRECTIVE ACTIONS

Accurate and defensible analytical data will be collected to characterize waste and verify that the closure objectives are met. In addition, visual inspection and photographic documentation will verify final site conditions.

2.4.1 No Further Action Sites

No further action is required at the following sites; however, BMPs will be performed, and the final site conditions will be verified by visual inspection and photographic documentation included in the CR:

- CAS 03-04-02, Area 3 Subdock Septic Tank
- CAS 03-59-05, Area 3 Subdock Cesspool
- CAS 12-60-01, Drilling/Welding Shop Outfalls

2.4.2 Clean Closure Sites

The following site will be clean closed:

- CAS 12-59-01, Drilling/Welding Shop Septic Tanks

CAS 12-59-01 will be considered clean closed after laboratory results verify that verification samples are below action levels. A minimum of two verification samples will be collected from the excavation at the First Stained Area and analyzed for arsenic and chromium using U.S. Environmental Protection Agency (EPA) method SW-846 6010 (EPA, 1996). The number

of verification samples may vary depending on the size of the final excavation. If verification sample results indicate that an action level is exceeded, additional soil will be removed, and additional verification samples will be collected. The action level for arsenic is 23 milligrams per kilogram (mg/kg), and the action level for chromium is 450 mg/kg. Upon verifying that the impacted soil has been removed, the excavation will be backfilled with clean soil and contoured to the approximate surrounding topographic grade. BMPs at CAS 12-59-01 will be verified by visual inspection and photographic documentation. Confirmation of corrective actions will be included in the CR.

2.4.3 Sample Collection Methods

Verification samples will be collected using standard sampling procedures. Sample collection date, time, and other pertinent information will be logged on a "Service Request and Chain of Custody Record," and recorded in a bound project field notebook. Samples will be collected by hand, using disposable pre-cleaned or decontaminated sampling equipment. All samples will be collected in clean containers, labeled with a unique sample identification number using the CAS number followed by the sample number (e.g., 125901-V1), sealed with a tamper-proof seal, bagged, placed on ice in a cooler, and transported to an offsite analytical laboratory following strict chain of custody. Samples will be analyzed by EPA-approved analytical methods at EPA-approved laboratories (EPA, 1996). Sample analysis will include laboratory analysis of QA/QC samples and will follow stringent QA/QC procedures (EPA, 1996). Sample analysis for radioisotopes will be performed in accordance with the Environmental Measurements Laboratory Procedures Manual (DOE, 1997).

One set of QA/QC samples will be collected for every 20 environmental samples or with every batch of samples submitted for laboratory analysis, whichever is greater. QA/QC samples will include blind duplicates, matrix spike/matrix spike duplicates, and equipment rinsate samples. All blind duplicates will be labeled with a unique sample number. All samples will be collected according to the *Industrial Sites Quality Assurance Project Plan* (U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office [NNSA/NV], 2002).

2.4.4 Laboratory/Analytical Data Quality Indicators

Data quality objectives (DQOs) are qualitative and quantitative statements that specify the quality of the data required to support closure of a site.

CAS 12-59-01, Drilling/Welding Shop Septic Tanks, will require the collection and analysis of verification samples. If it is required, waste characterization samples will be collected for disposal purposes. All laboratory data generated during closure activities will be reviewed by project personnel to ensure the data are usable and complete according to the CAU 563 DQOs. In addition, as specified in the *Industrial Sites Quality Assurance Project Plan* (NNSA/NV, 2002), 100 percent of the data packages will be evaluated at the Tier I and Tier II levels. Any data determined not to be valid will be identified in the CR.

DQIs are qualitative and quantitative statements that specify the data requirements of a project. The DQIs include precision, accuracy, representativeness, comparability, completeness, and sensitivity. These DQIs are discussed below.

2.4.4.1 Precision

Precision is a measure of agreement among a replicate set of measurements of the same property under similar conditions. This agreement is expressed as the relative percentage difference (RPD) between duplicate measurements. Precision applies to parameters sampled and analyzed in duplicate. One duplicate sample will be collected per set of verification samples. All duplicate samples will be collected from the same medium and analyzed for the same set of analytes. The precision of the analytical results will be assessed by calculating the RPD for a verification sample and its duplicate sample results. (An RPD of less than or equal to 30 percent indicates acceptable precision [NNSA/NV, 2002]).

2.4.4.2 Accuracy

Accuracy is a measure of the closeness of an individual measurement or the average of a number of measurements to the true value. Accuracy includes a combination of random error (precision) and systematic error (bias) components that result from sampling and analytical operations. This closeness is expressed as percent recovery (%R). Accuracy will be assessed by examining the %R of laboratory control and spiked samples. (A %R within the range of 70 to 130 percent indicates satisfactory analytical accuracy [NNSA/NV, 2002]).

2.4.4.3 Representativeness

Representativeness is a qualitative evaluation of measurement system performance. It is the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness will be attained by ensuring that the sample locations, analytical parameters, analytical methods, sampling protocols, and sample handling all meet the project-specific objectives.

2.4.4.4 Comparability

Comparability is a qualitative measure that expresses the confidence that one data set can be compared to another. It will be achieved by using standardized field sampling procedures. The same analytical laboratory will perform the analyses for all samples. Sample results will be reported in standard units to allow for comparison of the data.

2.4.4.5 Completeness

Completeness is a quantitative measure of data quality expressed as the percentage of valid data obtained that satisfies the project-specific requirements. Since a limited number of samples will be collected for both waste characterization and verification of closure, 100 percent of the data collected needs to be of acceptable quality to maintain acceptable QA/QC standards.

2.4.4.6 Sensitivity

Sensitivity is the capability of a method or instrument to discriminate between measurement responses representing different levels of a variable of interest. This indicator is determined from the value of the standard deviation at the concentration level of interest. It represents the minimum difference of concentration that can be distinguished between two samples with a high

degree of confidence. Sensitivity must be sufficient to detect contaminants at or below decision levels. Sensitivity will be achieved by analyzing all samples using appropriate EPA-approved analytical laboratories, methods, and instruments.

2.5 PERMITS

Prior to beginning closure activities, planning documents and permits will be prepared. These documents will include a *National Environmental Policy Act* (NEPA) Checklist, a Real Estate/Operations Permit (REOP), Radiological Work Permits (RWPs), excavation permits, and blind penetration permits.

2.5.1 *National Environmental Policy Act* Checklist

A NEPA Checklist will be completed prior to all closure activities at the site. Closure activities will follow all applicable federal, state, and local laws, regulations, and permits regarding protection of the environment.

2.5.2 Real Estate/Operations Permit

A REOP will be obtained prior to beginning closure activities. The permit will establish NNSA/NSO as the prime authority possessing control of the site.

2.5.3 Radiological Work Permit

RWPs will be required for work at any radiologically impacted site when radiological conditions require, as determined by a Health Physicist. RWPs will inform workers of the specific PPE required and identify site-specific controls. Workers will be required to sign the RWPs and acknowledge their understanding of the requirements before entry into any radiologically controlled area. RWPs will be maintained by the Radiological Control Technician at the entrance to the radiologically controlled area. All site workers will be required to be Radiation Worker II-trained to perform work within a radiologically controlled area.

2.5.4 Utility Clearances, Excavation Permits, and Blind Penetration Permits

An excavation permit and a blind penetration permit will be obtained prior to beginning excavation activities. These permits require that a utility clearance be performed. A copy of the permit will be filed on site throughout the duration of the project.

3.0 SCHEDULE

All preparation and field activities are scheduled for completion in fiscal year 2010. Sufficient flexibility will be incorporated into the field schedule to allow for minor difficulties (e.g., weather, equipment failure). NNSA/NSO shall notify NDEP of any condition or event that may impact the project schedule.

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4.0 POST-CLOSURE PLAN

None of the CASs in CAU 563 will be closed in place with administrative controls. Use restrictions will not be implemented, and post-closure inspections will not be required.

4.1 INSPECTIONS

Post-closure inspections will not be required for CAU 563.

4.2 MONITORING

Post-closure monitoring will not be required for CAU 563.

4.3 MAINTENANCE AND REPAIR

Post-closure maintenance and repair will not be required for CAU 563.

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5.0 REFERENCES

DOE, see U.S. Department of Energy.

EPA, see U.S. Environmental Protection Agency.

Federal Facility Agreement and Consent Order. 1996 (as amended August 2006). Agreed to by the State of Nevada; the U.S. Department of Energy, Environmental Management; the U.S. Department of Defense; and the U.S. Department of Energy, Legacy Management.

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

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

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U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office. 2002. *Industrial Sites Quality Assurance Project Plan, Nevada Test Site, Nevada*, Revision 3, DOE/NV--372. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2007. *Corrective Action Investigation Plan for Corrective Action Unit 563: Septic Systems, Nevada Test Site, Nevada*, DOE/NV--1181. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2008. *Corrective Action Decision Document for Corrective Action Unit 563: Septic Systems, Nevada Test Site, Nevada*, DOE/NV--1259. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 2004. *NV/YMP Radiological Control Manual,* DOE/NV/11718--079-REV 5. Las Vegas, NV.

U.S. Environmental Protection Agency. 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods*, SW-846, Third Edition. Washington, D.C.

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APPENDIX A.1

ENGINEERING SPECIFICATION AND DRAWINGS

NOTE: Engineering specifications and drawings are not required for closure of Corrective Action Unit 563. This Appendix is included as required by the approved *Federal Facility Agreement and Consent Order* outline for a Corrective Action Plan.

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APPENDIX A.2

SAMPLING AND ANALYSIS PLAN

NOTE: Sufficient details on the type, number, and location of verification samples to be collected to verify site closure activities have been provided in Sections 2.1.2 and 2.4 of this document. This Appendix is included as required by the approved *Federal Facility Agreement and Consent Order* outline for a Corrective Action Plan.

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APPENDIX A.3

PROJECT ORGANIZATION

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PROJECT ORGANIZATION

For this project, the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office (NNSA/NSO) points of contact are as follows:

NNSA/NSO Federal Industrial Sites Sub-Project Director: Kevin J. Cabble
Telephone Number: (702) 295-5000

NNSA/NSO Task Manager: Tiffany Lantow
Telephone Number: (702) 295-7645

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

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APPENDIX A.4

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION COMMENT RESPONSE FORM

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Document Title: DRAFT CORRECTIVE ACTION PLAN FOR CORRECTIVE ACTION UNIT 563: SEPTIC SYSTEMS, NEVADA TEST SITE, NEVADA **Revision Number:** 0 **Responsible NNSA/NSO ERP Federal Sub-Project Director:** Kevin Cabble	**Document Date:** January 2009 **Author/Organization:** NSTec **Reviewer/Organization/Phone:** Jeff MacDougall/NDEP/486-2850 ext 233 **Review Criteria:** Full

Comment No. / Location	Comment	Comment Response
1. Section 2.1.2.1	Section 2.1.2.1 mentions two septic tanks, a North and South tank. There is no discussion of what closure activities will be performed for the North septic tank.	The last sentence in the last paragraph of Section 2.1.2.1 has been revised as follows: **"…the North Tank will be removed for disposal as sanitary waste or filled with grout and left in place, the South Tank will be filled with grout and left in place,…"**
2. Section 2.1.2.1, second paragraph	Section 2.1.2.1, second paragraph mentions MW being generated during site closure indicating the presence of radiological contamination. The discussion mentions collecting and analyzing a minimum of two verification samples for arsenic and chromium. Why are the verification samples not being analyzed for radiological COCs? Please add a brief explanation to the text.	The aresenic- and chromium-impacted soil will most likely be disposed as sanitary waste, and the text in Section 2.1.2.1 has been revised as follows: **"A preliminary evaluation of the arsenic- and chromium-impacted soil indicated it will most likely be disposed as sanitary waste. The Toxicity Characterization Leaching Procedure (TCLP) analytical result for chromium at sample location C04 was 0.0058 milligrams per liter (mg/L), which is below the toxicity characteristic limit of 5.0 mg/L for chromium. The TCLP analytical result for arsenic was below the laboratory's minimum detectable concentration. Therefore, the soil will most likely be sanitary waste."** Arsenic and chromium were the only constituents present above Preliminary Action Levels (PALs), so the verification samples at this location will only be analyzed for arsenic and chromium to verify that these contaminants have been removed from this location.
3. Section 2.1.2.1, third paragraph	Section 2.1.2.1, third paragraph mentions generating MW during closure. Why are there no verification samples being collected and analyzed for chemical or radiological COCs? Please add a brief explanation to the text.	As identified in the Corrective Action Decision Document, chlordane is not a contaminant of concern (COC), and the chlordane-impacted soil is only being removed as a best management practice. Because chlordane is not a COC, verification samples are not required at this location. Due to the presence of plutonium-239 at this location, although below the PAL, the soil may be mixed waste. However, after the soil is excavated, additional waste characterization samples will be collected. The text in Section 2.1.2.1 has been revised as follows: **"A preliminary evaluation of the chlordane-impacted soil indicated it may require treatment and disposal as mixed waste (MW). The TCLP analytical result for chlordane at sample locations C11 and C11D (step-out location) were above the hazardous waste (HW) toxicity characteristic limit of 0.03 mg/L for chlordane. Treatment and disposal as HW may not be possible, however, because plutonium-239 is also present. Plutonium-239 was detected at sample location C11 at 2.61 picocuries per gram, which although below the action level for removal, is above the acceptance limit of the HW treatment and disposal facility; therefore, the soil may require treatment and disposal as MW. Waste will be characterized at the time of generation and efforts will be made to reduce the amount of MW generated, if any.** **No verification samples will be collected at this location because chlordane is not a COC and is being removed as a BMP. The excavation will be backfilled with clean soil and contoured to the approximate surrounding topographic grade."**

Comment No. / Location	Comment	Comment Response
4. Table 1, Section 2.1.2.1, and Figure 5	Table 1, Section 2.1.2.1, and Figure 5 mention that the two septic tanks will either be removed or abandoned by filling the tanks with sand or native fill. After visiting the site the preferable closure alternative is removal of the North septic tank and abandonment by filling with grout of the South septic tank. Please clarify the text.	The last sentence in the last paragraph of Section 2.1.2.1 has been revised as follows: **"…the North Tank will be removed for disposal as sanitary waste or filled with grout and left in place, the South Tank will be filled with grout and left in place,…"** Table 1 and Figure 5 have also been revised.

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