Nevada
Environmental
Restoration
Project

DOE/NV--1268

National Nuclear Security Administration

Closure Report for Corrective Action Unit 151: Septic Systems and Discharge Area, Nevada Test Site, Nevada

Controlled Copy No.:_____

Revision: 0

April 2008

Environmental Restoration
Project

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

DISCLAIMER

DOE/NV--1268

CLOSURE REPORT FOR CORRECTIVE ACTION UNIT 151: SEPTIC SYSTEMS AND DISCHARGE AREA, NEVADA TEST SITE, NEVADA

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

Controlled Copy No.____
Revision: 0
April 2008

THIS PAGE INTENTIONALLY LEFT BLANK

CLOSURE REPORT FOR CORRECTIVE ACTION UNIT 151: SEPTIC SYSTEMS AND DISCHARGE AREA, NEVADA TEST SITE, NEVADA

Approved By: Original signed by: K Cabble Date: 4-8-08
Kevin J. Cabble
Federal Sub-Project Director
Industrial Sites Sub-Project

Approved By: Original signed by: J Jones Date: 4/8/08
John B. Jones
Acting Federal Project Director
Environmental Restoration Project

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

LIST OF FIGURES

LIST OF TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

BMP	best management practice
CAP	Corrective Action Plan
CAS	Corrective Action Site
CAU	Corrective Action Unit
COC	contaminant of concern
CR	Closure Report
Cs	cesium
CSM	conceptual site model
EPA	U.S. Environmental Protection Agency
FAL	final action level
FFACO	*Federal Facility Agreement and Consent Order*
gal	gallon(s)
MCA	Mutual Consent Agreement
mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
MW	mixed waste
ND	not detected
NDEP	Nevada Division of Environmental Protection
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
PAL	preliminary action level
PCBs	polychlorinated biphenyls
pCi/g	picocuries(s) per gram
PRG	preliminary remediation goal
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RMA	Radioactive Materials Area

ACRONYMS AND ABBREVIATIONS (continued)

SVOC	semi-volatile organic compound
TCLP	Toxicity Characterization Leaching Procedure
TPH	total petroleum hydrocarbons
UR	use restriction
WMA	waste management area
yd^3	cubic yard(s)

EXECUTIVE SUMMARY

Corrective Action Unit (CAU) 151 is identified in the *Federal Facility Agreement and Consent Order* (FFACO) as Septic Systems and Discharge Area. CAU 151 consists of the following eight Corrective Action Sites (CASs), located in Areas 2, 12, and 18 of the Nevada Test Site, approximately 65 miles northwest of Las Vegas, Nevada.

- CAS 02-05-01, UE-2ce Pond
- CAS 12-03-01, Sewage Lagoons (6)
- CAS 12-04-01, Septic Tanks
- CAS 12-04-02, Septic Tanks
- CAS 12-04-03, Septic Tank
- CAS 12-47-01, Wastewater Pond
- CAS 18-03-01, Sewage Lagoon
- CAS 18-99-09, Sewer Line (Exposed)

CAU 151 closure activities were conducted according to the FFACO (FFACO, 1996; as amended February 2008) and the Corrective Action Plan for CAU 151 (U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office, 2007) from October 2007 to January 2008. The corrective action alternatives included no further action, clean closure, and closure in place with administrative controls. CAU 151 closure activities are summarized in Table 1.

Closure activities generated liquid remediation waste, sanitary waste, hydrocarbon waste, and mixed waste. Waste generated was appropriately managed and disposed. Waste that is currently staged onsite is being appropriately managed and will be disposed under approved waste profiles in permitted landfills. Waste minimization activities included waste characterization sampling and segregation of waste streams. Some waste exceeded land disposal restriction limits and required offsite treatment prior to disposal. Other waste meeting land disposal restrictions was disposed of in appropriate onsite or offsite landfills. Waste disposition documentation is included as Appendix C.

TABLE 1. SUMMARY OF CORRECTIVE ACTION UNIT 151 CLOSURE ACTIVITIES

CAS	CAS Name	Closure Method	COC	Closure Activities
02-05-01	UE-2ce Pond	No Further Action	None	• None
12-03-01 (Lagoon A)	Sewage Lagoons (6)	Closure in Place (Lagoon A)	Arsenic	• For Lagoon A, posted UR warning signs and implemented administrative controls
12-03-01 (Lagoons B through G)	Sewage Lagoons (6)	No Further Action (Lagoons B through G)	None	• For Lagoons B and E, implemented administrative URs as a BMP • For Lagoons C, D, F, and G, no work was performed
12-04-01 (System #1)	Septic Tanks	Clean Closure (System #1)	1,4-Dichlorobenzene, Trichloroethene, Cesium-137, and Aroclor-1254	• Pumped liquid remediation waste from the tanks to the Area 12 Sewage Lagoons for disposal, removed remaining liquid remediation waste from the tanks for disposal at the Area 23 Lagoons, removed sludge from the tanks for either onsite disposal as sanitary waste or offsite treatment and disposal as MW, rinsed and removed the tanks for disposal as sanitary waste, collected verification samples, and backfilled the excavation
12-04-01 (System #4)	Septic Tanks	No Further Action (System #4)	None	• As a BMP, pumped liquid remediation waste from the tanks to the Area 12 Sewage Lagoons for disposal, removed and solidified sludge from the tanks for disposal as hydrocarbon waste, removed the tanks for disposal as sanitary waste, and backfilled the excavation
12-04-02	Septic Tanks	No Further Action	None	• As a BMP, pumped liquid remediation waste from the tanks to the Area 12 Sewage Lagoons for disposal and grouted the tanks in place
12-04-03	Septic Tank	No Further Action	None	• As a BMP, pumped liquid remediation waste from the tanks to the Area 12 Sewage Lagoons for disposal, grouted the two inner tanks in place, removed and solidified sludge from the two outer tanks for disposal as hydrocarbon waste, removed the two outer tanks for disposal as sanitary waste, and backfilled the excavation
12-47-01	Wastewater Pond	No Further Action	None	• As a BMP, implemented administrative UR
18-03-01	Sewage Lagoon	No Further Action	None	• As a BMP, removed approximately 100 feet of asbestos cement pipe and wooden walkway for disposal as sanitary waste
18-99-09	Sewer Line (Exposed)	No Further Action	None	• None

BMP: best management practice
CAS: Corrective Action Site
COC: contaminant of concern
MW: mixed waste
UR: use restriction

1.0 INTRODUCTION

This Closure Report (CR) documents closure activities for Corrective Action Unit (CAU) 151, Septic Systems and Discharge Area, according to the *Federal Facility Agreement and Consent Order* (FFACO) (FFACO, 1996; as amended February 2008) and the Corrective Action Plan (CAP) (U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office [NNSA/NSO], 2007). CAU 151 consists of the following eight Corrective Action Sites (CASs), located in Areas 2, 12, and 18 of the Nevada Test Site (NTS) (Figure 1).

- CAS 02-05-01, UE-2ce Pond
- CAS 12-03-01, Sewage Lagoons (6)
- CAS 12-04-01, Septic Tanks
- CAS 12-04-02, Septic Tanks
- CAS 12-04-03, Septic Tank
- CAS 12-47-01, Wastewater Pond
- CAS 18-03-01, Sewage Lagoon
- CAS 18-99-09, Sewer Line (Exposed)

1.1 PURPOSE

CAU 151, Septic Systems and Discharge Area, consists of eight CASs located in Areas 2, 12, and 18 of the NTS. The closure alternatives included no further action, clean closure, and closure in place with administrative controls. The purpose of this CR is to provide a summary of the completed closure activities, documentation of waste disposal, and analytical data to confirm that the remediation goals were met.

1.2 SCOPE

The closure strategy for CAU 151 was as follows:

- CAS 02-05-01, UE-2ce Pond, required no further action, and no work was performed.
- At CAS 12-03-01, Sewage Lagoons (6), Lagoon A was closed in placed with administrative controls. Use restriction (UR) warning signs were posted.
- At CAS 12-03-01, Sewage Lagoons (6), no further action was required for Lagoons B, C, D, E, F, and G. At Lagoons C, D, F, and G, no work was performed. As a best management practice (BMP) at Lagoons B and E, administrative URs were implemented.
- At CAS 12-04-01, Septic Tanks, System #1 was clean closed. Liquid remediation waste was pumped from the two septic tanks in this system to the Area 12 Sewage Lagoons for disposal. Remaining liquid remediation waste was removed from the tanks for disposal at the Area 23 Lagoons. Sludge was removed from the tanks for either onsite disposal as sanitary waste or offsite treatment and disposal as mixed waste (MW). The tanks removed for disposal as sanitary waste, and all remaining inlet and outlet lines were sealed with grout.

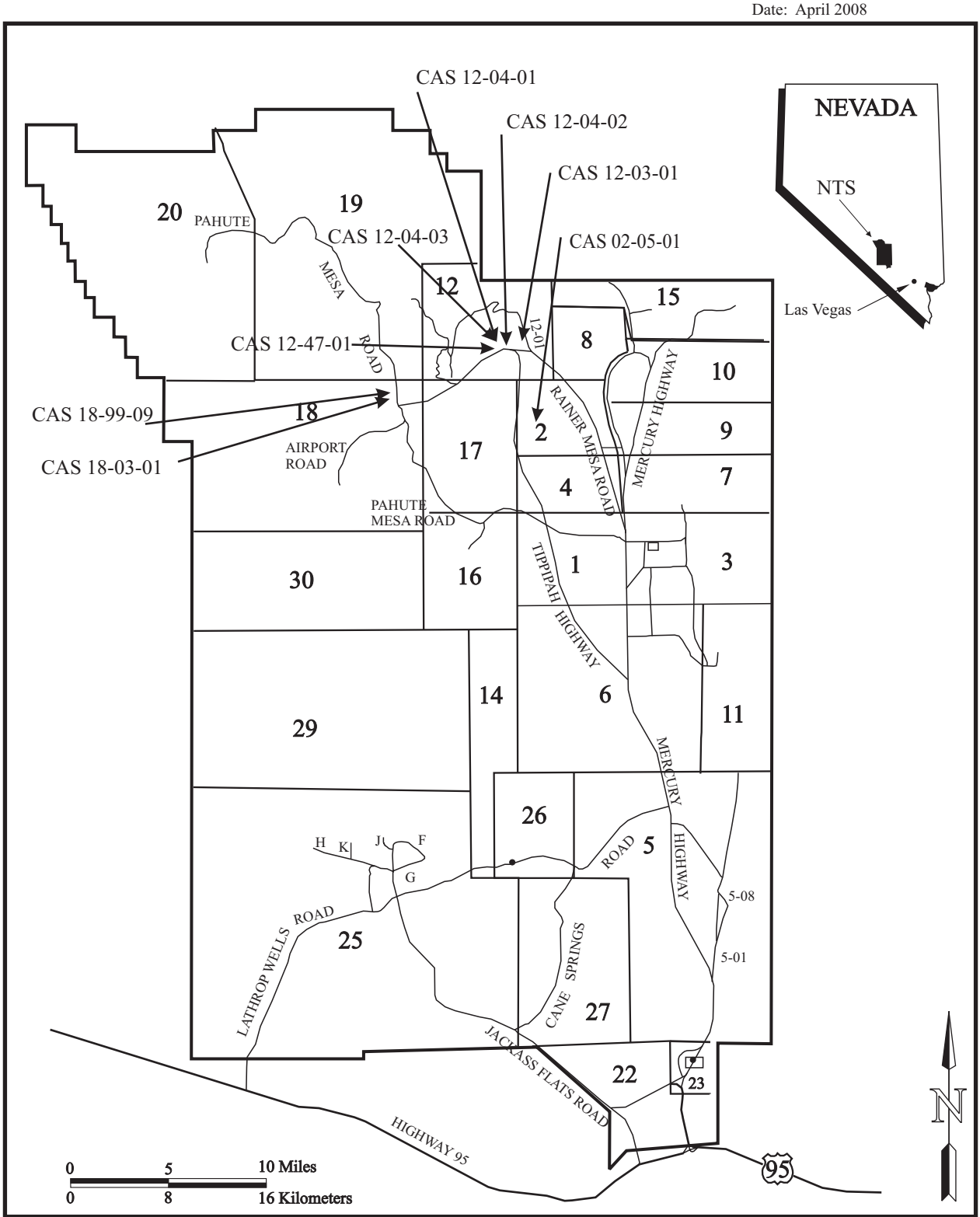


FIGURE 1
CORRECTIVE ACTION UNIT 151 SITE LOCATION MAP

- At CAS 12-04-01, Septic Tanks, no further action was required for System #4; however, as a BMP, liquid remediation waste was pumped from the four septic tanks in this system to the Area 12 Sewage Lagoons for disposal, the sludge was removed for disposal as hydrocarbon waste, and the tanks were removed for disposal as sanitary waste. All remaining inlet and outlet lines and the distribution box associated with this system were sealed with grout.
- CAS 12-04-02, Septic Tanks, required no further action; however, as a BMP, liquid remediation waste was pumped from the six septic tanks in this system to the Area 12 Sewage Lagoons for disposal, and the tanks were grouted in place.
- CAS 12-04-03, Septic Tank, required no further action; however, as a BMP, liquid remediation waste was pumped from the four septic tanks in this system to the Area 12 Sewage Lagoons for disposal, the two inner tanks were grouted in place, sludge was removed from the two outer tanks for disposal as hydrocarbon waste, and the two outer tanks were removed for disposal as sanitary waste. All remaining inlet and outlet lines associated with the two outer tanks were sealed with grout. In addition, ten drains and cleanouts located on the foundations of buildings that were once connected to this system were sealed with grout.
- CAS 12-47-01, Wastewater Pond, required no further action; however, as a BMP, an administrative UR was implemented.
- CAS 18-03-01, Sewage Lagoon, required no further action; however, as a BMP, approximately 100 feet of asbestos cement pipe and a wooden walkway were removed for disposal as sanitary waste.
- CAS 18-99-09, Sewer Line (Exposed), required no further action, and no work was performed.

1.3 CLOSURE REPORT CONTENTS

This CR includes the following sections:

- Section 1.0 - Introduction
- Section 2.0 - Closure Activities
- Section 3.0 - Waste Disposition
- Section 4.0 - Closure Verification Results
- Section 5.0 - Conclusions and Recommendations
- Section 6.0 - References
- Appendix A - Data Quality Objectives
- Appendix B - Sample Analytical Results
- Appendix C - Waste Disposition Documentation
- Appendix D - Use Restriction Documentation

- Appendix E - Site Closure Photographs
- Library Distribution List

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

- CAP for CAU 151 (NNSA/NSO, 2007)
- Corrective Action Decision Document for CAU 151 (NNSA/NSO, 2006)
- *Industrial Sites Quality Assurance Project Plan* (QAPP) (U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office [NNSA/NV], 2002)

Data quality objectives developed for site characterization of CAU 151 were presented in Appendix A of the Corrective Action Investigation Plan for CAU 151 (NNSA/NSO, 2004) and are included as Appendix A of this report. A conceptual site model (CSM) was developed for CAU 151 based on process knowledge, historical information, and personnel interviews. No variations to the CSM were identified; the CSM was confirmed by soil sample results and verified during closure activities. Site closure was verified through inspections, sampling, observations, and documentation of waste disposal.

2.0 CLOSURE ACTIVITIES

This section details the specific activities completed during the closure of CAU 151, deviations from the CAP, the schedule of completed activities, and the final site plan. Photographs in Appendix E document the states of the sites before corrective actions were implemented, field work in progress, and site conditions after completion of work.

2.1 DESCRIPTION OF CORRECTIVE ACTION ACTIVITIES

Closure activities for CAU 151 were completed according to the CAP (NNSA/NSO, 2007). The following sections detail the closure activities as completed.

2.1.1 Preplanning and Site Preparation

Prior to closure activities, the following documents were prepared:

- *National Environmental Policy Act* Checklist
- Site-Specific Health and Safety Plan
- Field Management Plan
- NNSA/NSO Real Estate/Operations Permit
- Work control packages

2.1.2 Closure Activities

The following sections detail the closure activities completed at each CAS.

2.1.2.1 Corrective Action Site 02-05-01, UE-2ce Pond

This site, located in Area 2, consists of an excavated pond, surrounding bermed area, and surface trench running between the pond and the UE-2ce water well. No contaminants of concern (COCs) are present; therefore, the site was closed by taking no further action.

2.1.2.2 Corrective Action Site 12-03-01, Sewage Lagoons (6)

This site, located in the northeast portion of the Area 12 camp, consists of Lagoons A through G (Figure 2). Lagoon A was closed in place with administrative controls, and Lagoons B, C, D, E, F, and G required no further action.

At Lagoon A, arsenic is present at concentrations greater than the FAL. Lagoon A was closed in place with administrative controls. A UR was implemented to prohibit unauthorized intrusive activity. UR warning signs were posted. The CAU Use Restriction Information form and a figure showing the locations of the surveyed points delineating the use-restricted area are included in Appendix D. Annual site inspections will be required at Lagoon A to ensure that the signs are intact and legible and that the UR is maintained. Details on the post-closure requirements are included in Section 5.2.

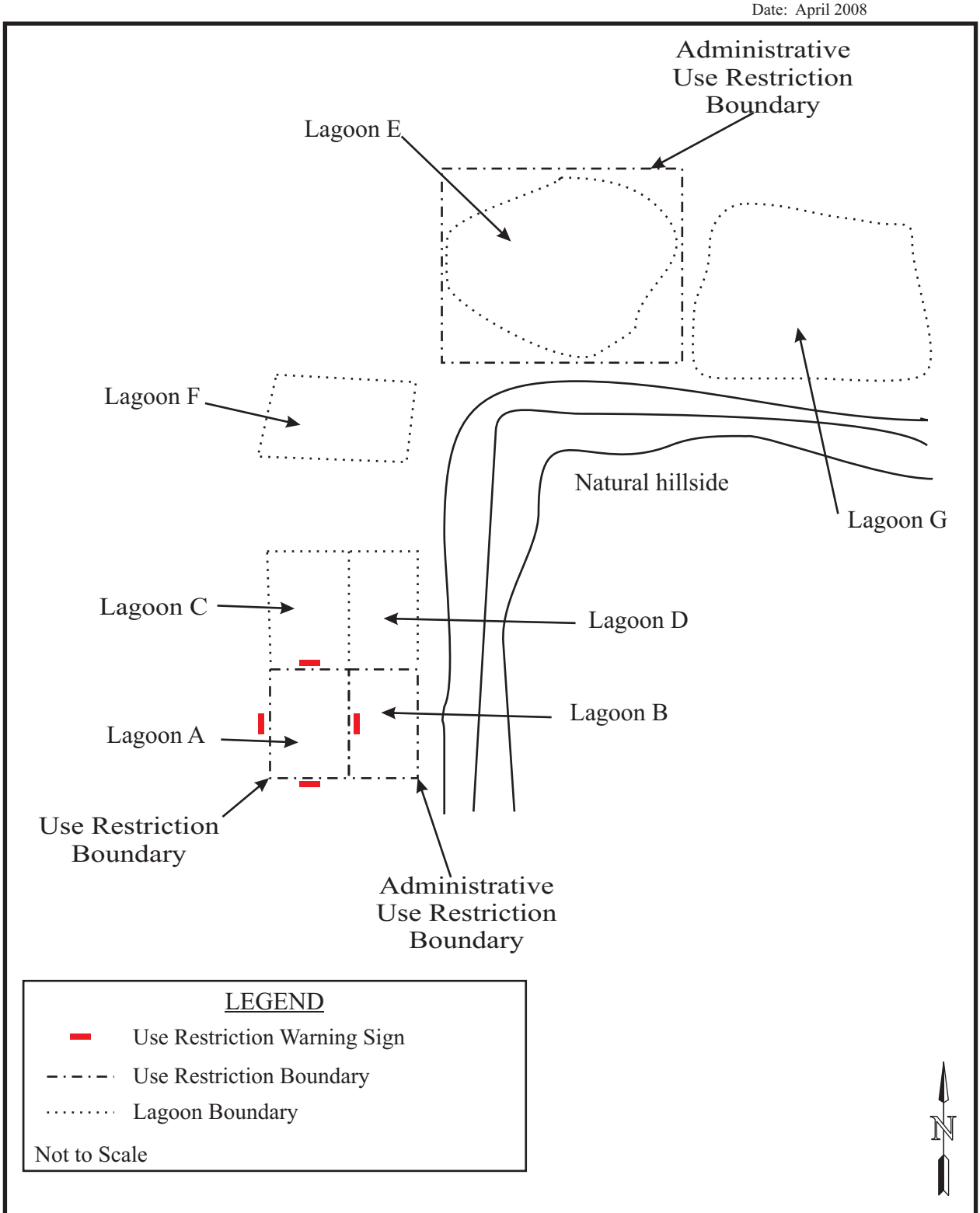


FIGURE 2
CORRECTIVE ACTION SITE 12-03-01, SEWAGE LAGOONS (6)

No COCs are present at concentrations above final action levels (FALs) at Lagoons B and E. However, arsenic is present at Lagoon B and semi-volatile organic compounds (SVOCs) are present at Lagoon E above the preliminary action levels (PALs), which were defined as the U.S. Environmental Protection Agency (EPA) Region 9 preliminary remediation goals (PRGs) for industrial soil (EPA, 2004). However, arsenic and SVOCs did not exceed the FALs that were calculated based on an Occasional Use Area scenario. The Occasional Use Area scenario assumes that individuals will not visit the area for more than 50 workdays in their lifetime. No further action was required for Lagoons B and E; however, as a BMP, administrative URs were implemented for these lagoons to maintain the current and future land use at the Occasional Use Area scenario. No postings or post-closure monitoring are required. The CAU Use Restriction Information form and a figure showing the locations of the surveyed points delineating the use-restricted areas are included in Appendix D.

No COCs are present at Lagoons C, D, F, and G. No further action was required for Lagoons C, D, F, and G, and no work was performed.

2.1.2.3 Corrective Action Site 12-04-01, Septic Tanks

This site, located in the southeast portion of the Area 12 camp, consisted of two septic tanks referred to as System #1 and four septic tanks referred to as System #4. System #1 was clean closed, and System #4 required no further action.

Trichloroethene, 1,4-Dichlorobenzene, Aroclor-1254, and cesium (Cs)-137 were present at concentrations greater than FALs in the sludge in the tanks associated with System #1. No COCs were present in the liquid in the tanks. System #1 was clean closed. Approximately 5,800 gallons (gal) of liquid remediation waste were pumped from the tanks to the Area 12 Sewage Lagoons for disposal. Approximately 760 gal of remaining liquid that was in contact with potentially impacted sludge and 2,240 gal of sludge were then removed from the tanks and packaged in drums. Waste characterization samples were collected from the drummed waste to determine the appropriate disposal pathway. The liquid was determined to be sanitary waste. It is currently being stored and managed onsite and will be transported to the Area 23 Lagoons for disposal, where it will be emptied from the drums into the lagoons. Approximately 1,200 gal of sludge were determined to be sanitary waste. This sludge is currently being stored and managed onsite and will be solidified with clean soil and transported to the Area 9 U10c Landfill for disposal. The remaining 1,040 gal of sludge were determined to be MW. In addition, plastic and a pump used during MW remediation activities, and personal protective equipment generated during waste characterization sampling activities, are stored in drums and are considered MW. The MW was transported to the Mutual Consent Agreement (MCA) Storage Pad, where it is currently being stored and managed, and will be transported offsite for treatment and disposal as MW. The tanks were then rinsed, and the rinsate collected was solidified and disposed with the sludge from the tanks. The two tanks were then removed and disposed at the Area 9 U10c Sanitary Landfill, and all remaining inlet and outlet lines were sealed with grout.

Five verification samples, one from each side wall and one from the floor of the excavation, and one blind duplicate sample were collected and analyzed for volatile organic compounds, Cs-137, and polychlorinated biphenyls (PCBs). Verification sample results indicated that the remaining soil did not contain contamination at concentrations above the action levels; therefore, the

excavation was backfilled with clean soil. A summary of the sample data is included in Section 4.0, and the laboratory data reports are included in Appendix B.

No COCs were present in the tanks associated with System #4. No further action was required for System #4; however, as a BMP, the four septic tanks in System #4 and their contents were removed for disposal. Approximately 23,600 gal of liquid remediation waste were pumped from the tanks to the Area 12 Sewage Lagoons for disposal. The sludge was then solidified with clean soil, removed from the tanks, and disposed at the Area 9 U10c Sanitary Landfill and at the Area 6 Hydrocarbon Landfill. Some sludge was disposed at the Area 9 U10c Sanitary Landfill because the landfill accepts a limited amount of hydrocarbon-impacted waste. The four tanks were then removed and disposed at the Area 9 U10c Sanitary Landfill. All remaining inlet and outlet lines were sealed with grout, and the excavation was backfilled with clean soil. In addition, the distribution box associated with this system and its outlet lines, including the overflow line, were sealed with grout.

2.1.2.4 Corrective Action Site 12-04-02, Septic Tanks

This site, located in the eastern portion of the Area 12 camp, consisted of six septic tanks referred to as System #5. No COCs were present in the septic tanks at this site. No further action was required; however, as a BMP, approximately 17,900 gal of liquid remediation waste were pumped from the tanks to the Area 12 Sewage Lagoons for disposal, and the tanks were grouted in place. It was not practical to remove the sludge or the tanks due to their close proximity to active utilities.

2.1.2.5 Corrective Action Site 12-04-03, Septic Tank

This site, located in the southeast portion of the Area 12 camp, consisted of four septic tanks referred to as System #3. No COCs were present in the septic tanks at this site. No further action was required; however, as a BMP, approximately 24,200 gal of liquid remediation waste were pumped from the tanks to the Area 12 Sewage Lagoons for disposal. The two inner tanks were grouted in place because it was not practical to remove the sludge or the tanks due to their close proximity to active utilities. The sludge in the two outer tanks was then solidified with clean soil, removed from the tanks, and disposed at the Area 9 U10c Sanitary Landfill and at the Area 6 Hydrocarbon Landfill. Some sludge was disposed at the Area 9 U10c Sanitary Landfill because the landfill accepts a limited amount of hydrocarbon-impacted waste. The two outer tanks were then removed and disposed at the Area 9 U10c Sanitary Landfill. All remaining inlet and outlet lines associated with the two outer tanks were sealed with grout, and the excavation was backfilled with clean soil. In addition, ten drains and cleanouts located on the foundations of buildings that were once connected to this system were sealed with grout.

2.1.2.6 Corrective Action Site 12-47-01, Wastewater Pond

This site, located in the south-central portion of the Area 12 camp, consisted of two sumps and the associated piping. No COCs are present at this site. However, PCBs, total petroleum hydrocarbons (TPH), and SVOCs are present in the soil above the PALs, which were defined as the EPA Region 9 PRGs for industrial soil (EPA, 2004). PCBs did not exceed the FALs that were calculated based on an Occasional Use Area scenario. The Occasional Use Area scenario assumes that individuals will not visit the area for more than 50 workdays in their lifetime.

FALs were established for the hazardous constituents for TPH, and the concentrations of the hazardous constituents of TPH did not exceed FALs. SVOCs were attributed to asphalt and are therefore not considered COCs. No further action was required for this site; however, as a BMP, an administrative UR was implemented to maintain the current and future land use at the Occasional Use Area scenario. No postings or post-closure monitoring are required. The CAU Use Restriction Information form and a figure showing the locations of the surveyed points delineating the use-restricted areas are included in Appendix D.

2.1.2.7 Corrective Action Site 18-03-01, Sewage Lagoon

This site, located in Area 18 at the Area 17 camp, consisted of two sewage lagoons and the associated collection piping. No COCs are present at this site. No further action was required; however, as a BMP, approximately 100 feet of asbestos cement pipe and a wooden walkway were removed and disposed at the Area 9 U10c Sanitary Landfill.

2.1.2.8 Corrective Action Site 18-99-09, Sewer Line (Exposed)

This site, located in Area 18 at the Area 17 camp, consists of a 6-inch-diameter vitrified clay pipe. No COCs are present; therefore, the site was closed by taking no further action.

2.2 DEVIATIONS FROM THE CORRECTIVE ACTION PLAN AS APPROVED

No deviations from the CAP (NNSA/NSO, 2007) were necessary.

2.3 CORRECTIVE ACTION SCHEDULE AS COMPLETED

Closure activities began in October 2007 and were completed in January 2008. Details of the schedule are provided in Table 2.

TABLE 2. CORRECTIVE ACTION UNIT 151 CLOSURE ACTIVITIES SCHEDULE

CORRECTIVE ACTION SITE OR ACTIVITY	START DATE	END DATE
Waste Characterization Sampling	October 15, 2007	October 22, 2007
12-03-01, Sewage Lagoons (6)	January 8, 2008	January 8, 2008
12-04-01, Septic Tanks	November 8, 2007	January 8, 2008
12-04-02, Septic Tanks	November 13, 2007	November 26, 2007
12-04-03, Septic Tank	November 5, 2007	December 6, 2007
18-03-01, Sewage Lagoon	December 10, 2007	December 13, 2007

2.4 SITE PLAN/SURVEY PLAT

As-built drawings were not required for CAU 151 closure activities. URs were implemented for the following CASs:

- At CAS 12-03-01, Sewage Lagoons (6), Lagoons B and E were use-restricted to maintain the areas at Occasional Use Area designations and thereby prevent overexposure of personnel to contaminants that exceed permissible action levels. Administrative URs were implemented.

No signs were posted. Lagoon A was use-restricted for arsenic contamination. UR signs were posted on all four sides of the use-restricted area.

- CAS 12-47-01, Wastewater Pond, was use-restricted to maintain the site at an Occasional Use Area designation and thereby prevent overexposure of personnel to contaminants that exceed permissible action levels. An administrative UR was implemented. No signs were posted.

Figures showing the locations of the surveyed points delineating the use-restricted areas are included in Appendix D. Information regarding the URs is provided in Section 4.2, and post-closure requirements are identified in Section 5.2.

3.0 WASTE DISPOSITION

This section describes the waste streams generated during closure activities and their final disposition. Waste streams included liquid remediation waste, sanitary waste, hydrocarbon waste, and MW. Waste disposition is summarized in Table 3 and discussed in detail in the following sections. Waste disposition documentation is included as Appendix C.

3.1 WASTE MINIMIZATION

Industry standard waste minimization practices were applied throughout the course of closure activities. These practices included laboratory analysis of waste characterization samples to correctly characterize and segregate waste streams.

3.2 WASTE MANAGEMENT

All waste was managed according to applicable federal and state regulations, U.S. Department of Energy orders, and company procedures. Waste management areas (WMAs) were established throughout the project, as needed. All WMAs were identified with appropriate signs and boundaries to restrict unauthorized access. The WMAs were inspected on a weekly or monthly basis, as required, to ensure that all containers were intact, not leaking, and not exceeding storage duration times. Applicable WMAs were posted as Radioactive Materials Areas (RMAs) whenever radiological waste was stored in the area. Upon removal of radiologically contaminated waste, the RMA was surveyed and de-posted.

Waste containers were purchased either new or reconditioned. Prior to use, all containers were inspected to verify that they were in good condition (e.g., no leaks, rust, or dents), lined or made of material that would not react with the waste, and in compliance with U.S. Department of Transportation requirements. The containers remained closed while stored unless waste was being added. Containers were also handled in such a manner that the integrity of the container was not compromised. Appropriate labels were affixed, and relevant information was marked on the containers with an indelible marker. All information was legible and clearly visible.

3.3 WASTE CHARACTERIZATION

Accurate and defensible analytical data were collected to correctly characterize septic tank contents. The septic tank contents had not been analyzed for pesticides during the corrective action investigation at any of the CASs; therefore, samples were collected to verify that pesticides were not present above regulatory limits for disposal purposes. One liquid sample was collected from each septic tank, which was a composite sample from both chambers. The liquid samples were analyzed for total pesticides. One sludge sample was also collected from each septic tank, which was a composite sample of sludge from both chambers. The sludge samples were analyzed for Toxicity Characterization Leaching Procedure pesticides. The results showed that the septic tanks did not contain pesticides at levels above regulatory limits. The laboratory data reports for waste characterization samples are included in Appendix B.

TABLE 3. CORRECTIVE ACTION UNIT 151 WASTE DISPOSITION SUMMARY

WASTE STREAM	CORRECTIVE ACTION SITE	DESCRIPTION OF WASTE	WASTE CONTAINER	VOLUME	DISPOSITION
Liquid Remediation Waste	12-04-01, Septic Tanks	Septic Tank Contents	No waste container necessary	760 gal	Currently staged onsite; will be disposed at the Area 23 Lagoons
		Septic Tank Contents	No waste container necessary	29,400 gal	Disposed at the Area 12 Sewage Lagoons
	12-04-02, Septic Tanks	Septic Tank Contents	No waste container necessary	17,900 gal	
	12-04-03, Septic Tank	Septic Tank Contents	No waste container necessary	24,200 gal	
Sanitary Waste	12-04-01, Septic Tanks	Solidified Sludge	Drums	1,200 gal	Currently staged onsite; will be disposed at the Area 9 U10c Sanitary Landfill
		Septic Tanks	No waste container necessary	60 yd^3	Disposed at the Area 9 U10c Sanitary Landfill
	12-04-03, Septic Tank	Septic Tanks	No waste container necessary	20 yd^3	
	18-03-01, Sewage Lagoon	Asbestos Cement Pipe and Wooden Walkway	No waste container necessary	20 yd^3	
Hydrocarbon Waste	12-04-01, Septic Tanks	Solidified Sludge	No waste container necessary	120 yd^3	Disposed at the Area 9 U10c Sanitary Landfill and the Area 6 Hydrocarbon Landfill
	12-04-03, Septic Tank	Solidified Sludge	No waste container necessary	90 yd^3	
MW	12-04-01, Septic Tanks	Sludge	Drums	1,040 gal	Currently staged at the MCA Storage Pad; will be transported offsite for treatment and disposal
		Personal Protective Equipment, Plastic, and Pump	Drums	360 gal	

gal: gallon(s)
MCA: Mutual Consent Agreement
MW: mixed waste
yd^3: cubic yard(s)

At CAS 12-04-01, System #1, approximately 760 gal of liquid that was in contact with potentially impacted sludge and 2,240 gal of sludge were removed from tanks and packaged in drums. Waste characterization samples were collected from the drummed waste to determine the appropriate disposal pathway. A sample was collected from each drum of sludge, and one composite sample was collected from the drums of liquid. Each sample was analyzed for Toxicity Characterization Leaching Procedure (TCLP) Trichloroethene, TCLP 1,4-Dichlorobenzene, plutonium-239/240, and Cs-137. The liquid and approximately 1,200 gal of sludge were determined to be sanitary waste. The remaining 1,040 gal of sludge were determined to be MW. The laboratory data reports for waste characterization samples are included in Appendix B.

Waste characterization samples were collected with disposable sampling equipment and placed in appropriately labeled sample containers secured with custody seals. All samples were labeled with a unique sample number, placed on ice, and transported under a chain of custody. Standard quality assurance (QA)/quality control (QC) samples were collected. One blind duplicate was collected for each septic system. Samples were analyzed by certified offsite contract laboratories. Analytical results were validated at the laboratory using stringent QA/QC procedures, including matrix spike/matrix spike duplicates, spiked surrogate recovery analysis, verification of analytical results, and data quality indicator requirements. Detailed information regarding the QA/QC program requirements can be found in the Industrial Sites QAPP (NNSA/NV, 2002).

3.4 WASTE STREAMS AND DISPOSAL

Waste streams generated during closure activities at CAU 151 included sanitary waste, hydrocarbon waste, and MW. Waste disposition documentation is included as Appendix C.

3.4.1 Liquid Remediation Waste

A total of approximately 71,500 gal of liquid remediation waste was pumped from the septic tanks to the Area 12 Sewage Lagoons for disposal. This was accomplished via existing pipelines in Area 12. In addition, a total of approximately 760 gal of liquid remediation waste from CAS 12-04-01, System #1, is currently being stored onsite in drums that will be transported to and emptied into the Area 23 Lagoons for disposal.

3.4.2 Sanitary Waste

Sanitary waste included septic tanks, asbestos cement pipe, sludge, and other construction debris. A total of approximately 100 yd^3 of sanitary waste was transported in end-dump trucks to the Area 9 U10c Sanitary Landfill for disposal. In addition, a total of approximately 1,200 gal of sludge from septic tanks at CAS 12-04-01, System #1, was determined to be sanitary waste. The sludge is currently being stored onsite and will be solidified with clean soil and transported to the Area 9 U10c Sanitary Landfill for disposal.

3.4.3 Hydrocarbon Waste

Hydrocarbon waste included solidified sludge from septic tanks at all CASs except the sludge from the septic tanks in CAS 12-04-01, System #1. A total of approximately 210 yd^3 of hydrocarbon-impacted sludge that was removed from the tanks and solidified with clean soil was transported in end-dump trucks to either the Area 9 U10c Sanitary Landfill or the Area 6 Hydrocarbon Landfill for disposal. The Area 9 U10c Sanitary Landfill accepts a limited amount of hydrocarbon-impacted waste.

3.4.4 Mixed Waste

A total of approximately 1,400 gal of MW was generated during closure activities. MW included sludge from the septic tanks in CAS 12-04-01, System #1, plastic and a pump used during MW remediation activities, and personal protective equipment generated during waste characterization sampling activities. MW was packaged in drums and transported to the MCA Storage Pad, where it is currently being stored and managed. The waste will be transported to a permitted offsite facility for treatment and disposal.

4.0 CLOSURE VERIFICATION RESULTS

Site closure was verified by visual observations and site closure photographs to document that closure activities had been completed and by collecting and analyzing soil verification samples. Soil verification samples were collected from the excavation after the septic tanks had been removed at CAS 12-04-01, System #1, to verify that the soil beneath the septic tanks did not contain contamination above action levels. The results showed that no COCs above the action levels are present at the site. Sample results are summarized in Table 4, and the laboratory data reports are included in Appendix B.

4.1 DATA QUALITY ASSESSMENT

Accurate and defensible analytical data were collected to verify that the CAU 151 closure objectives were met. The following sections describe the QA/QC procedures, data validation process, and a reconciliation of the CSM with actual findings during CAU 151 closure activities. More detail on the QA/QC procedures for CAU 151 can be found in the CAP for CAU 151 (NNSA/NSO, 2007).

4.1.1 Quality Assurance/Quality Control Procedures

Verification samples were collected with disposable sampling equipment and placed in appropriately labeled sample containers secured with custody seals. All samples were labeled with a unique sample number, placed on ice, and transported under a chain of custody. Standard QA/QC samples were collected (i.e., one blind duplicate per twenty samples). Samples were analyzed by certified offsite contract laboratories. Analytical results were validated at the laboratory using stringent QA/QC procedures, including matrix spike/matrix spike duplicates, spiked surrogate recovery analysis, verification of analytical results, and data quality indicator requirements. Detailed information regarding the QA/QC program requirements can be found in the Industrial Sites QAPP (NNSA/NV, 2002).

4.1.2 Data Validation

Data validation was performed according to the Industrial Sites QAPP (NNSA/NV, 2002), which is based on the EPA functional guidelines for data quality (EPA, 1994; 1999). Data were reviewed to ensure that samples were appropriately processed and analyzed and that the results are valid. All sample data were validated at the Tier I and Tier II levels.

No anomalies were discovered in the data that would discredit any of the verification sample results. Data met the required data quality indicators (i.e., precision, accuracy, sensitivity, completeness, comparability, and representativeness) with one exception. Accuracy, which is assessed by examining the percent recovery of laboratory control and spiked samples, was outside the range specified by the Industrial Sites QAPP (NNSA/NV, 2002) for one sample. Matrix spike/matrix spike duplicate recoveries were low for 1,4-Dichlorobenzene. A percent recovery within the range of 70 to 130 percent indicates satisfactory analytical accuracy; however, the matrix spike and matrix spike duplicate percent recoveries were 61 percent and 57

TABLE 4. CORRECTIVE ACTION SITE 12-04-01, SEPTIC TANKS, VERIFICATION SAMPLE RESULTS

DATE COLLECTED	SAMPLE DELIVERY GROUP	SAMPLE NUMBER	1,4-DICHLOROBENZENE (mg/L)	ACTION LEVEL = 7.5 mg/L	TRICHLOROETHENE (mg/L)	ACTION LEVEL = 0.5 mg/L	AROCLOR-1254 (mg/kg)	ACTION LEVEL = 27.7 mg/kg	CESIUM-137 (pCi/g)	ACTION LEVEL = 12.2 pCi/g
12/19/2007	V3032 (chemical) and V3033 (radiological)	120401-V1	ND		ND		ND		0.0628	
		120401-V2	ND		ND		ND		0.0944	
		120401-V3	ND		ND		ND		ND	
		120401-V4	ND		ND		ND		ND	
		120401-V5	ND		ND		ND		ND	
		120401-V6	ND		ND		ND		ND	

mg/kg: milligram(s) per kilogram
mg/L: milligram(s) per liter
ND: not detected above minimum laboratory detection limits
pCi/g: picocuries(s) per gram

percent, respectively. All of the sample results for 1,4-Dichlorobenzene were orders of magnitude less than the action level; therefore, the data were usable for making a decision.

While only summary laboratory QC data for verification samples are included in Appendix B, the complete data sets, including validation reports for waste characterization and verification samples, is maintained in the project files and available upon request.

4.1.3 Conceptual Site Models

A CSM was developed and presented in the approved Corrective Action Investigation Plan for CAU 151 (NNSA/NSO, 2004). The CSM was confirmed by soil sample results and verified during closure activities.

4.2 USE RESTRICTIONS

URs have been implemented for the following CASs:

- CAS 12-03-01, Sewage Lagoons (6)
- CAS 12-47-01, Wastewater Pond

4.2.1 Corrective Action Site 12-03-01, Sewage Lagoons (6)

At this site, Lagoons B and E were use-restricted to maintain the areas at Occasional Use Area designations and thereby prevent overexposure of personnel to contaminants that exceed permissible action levels. Administrative URs were implemented. No signs were posted, and no post-closure inspections are required.

Lagoon A was use-restricted for arsenic contamination. UR signs were posted to warn against intrusive activity according to the FFACO UR posting guidance (FFACO, 2003). Annual site inspections will be required to ensure that the signs are intact and legible and that the UR is maintained. Details on the post-closure requirements are included in Section 5.2.

The CAU Use Restriction Information forms and figures showing the locations of the surveyed points delineating the use-restricted areas for Lagoons A, B, and E are included in Appendix D.

4.2.2 Corrective Action Site 12-47-01, Wastewater Pond

This site was use-restricted to maintain the site at an Occasional Use Area designation and thereby prevent overexposure of personnel to contaminants that exceed permissible action levels. An administrative UR was implemented. No signs were posted, and no post-closure inspections are required. The CAU Use Restriction Information form and a figure showing the locations of the surveyed points delineating the use-restricted area are included in Appendix D.

THIS PAGE INTENTIONALLY LEFT BLANK

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The following site closure activities were performed at CAU 151 and are documented in this CR:

- CAS 02-05-01, UE-2ce Pond, required no further action, and no work was performed.
- At CAS 12-03-01, Sewage Lagoons (6), Lagoon A was closed in placed with administrative controls. UR warning signs were posted.
- At CAS 12-03-01, Sewage Lagoons (6), no further action was required for Lagoons B, C, D, E, F, and G. At Lagoons C, D, F, and G, no work was performed. As a BMP at Lagoons B and E, administrative URs were implemented.
- At CAS 12-04-01, Septic Tanks, System #1 was clean closed. Liquid remediation waste was pumped from the two septic tanks in this system to the Area 12 Sewage Lagoons for disposal. Remaining liquid remediation waste was removed from the tanks for disposal at the Area 23 Lagoons. Sludge was removed from the tanks for either onsite disposal as sanitary waste or offsite treatment and disposal as MW. The tanks removed for disposal as sanitary waste, and all remaining inlet and outlet lines were sealed with grout.
- At CAS 12-04-01, Septic Tanks, no further action was required for System #4; however, as a BMP, liquid remediation waste was pumped from the four septic tanks in this system to the Area 12 Sewage Lagoons for disposal, the sludge was removed for disposal as hydrocarbon waste, and the tanks were removed for disposal as sanitary waste. All remaining inlet and outlet lines and the distribution box associated with this system were sealed with grout.
- CAS 12-04-02, Septic Tanks, required no further action; however, as a BMP, liquid remediation waste was pumped from the six septic tanks in this system to the Area 12 Sewage Lagoons for disposal, and the tanks were grouted in place.
- CAS 12-04-03, Septic Tank, required no further action; however, as a BMP, liquid remediation waste was pumped from the four septic tanks in this system to the Area 12 Sewage Lagoons for disposal, the two inner tanks were grouted in place, sludge was removed from the two outer tanks for disposal as hydrocarbon waste, and the two outer tanks were removed for disposal as sanitary waste. All remaining inlet and outlet lines associated with the two outer tanks were sealed with grout. In addition, ten drains and cleanouts located on the foundations of buildings that were once connected to this system were sealed with grout.
- CAS 12-47-01, Wastewater Pond, required no further action; however, as a BMP, an administrative UR was implemented.
- CAS 18-03-01, Sewage Lagoon, required no further action; however, as a BMP, approximately 100 feet of asbestos cement pipe and a wooden walkway were removed for disposal as sanitary waste.
- CAS 18-99-09, Sewer Line (Exposed), required no further action, and no work was performed.

5.2 POST-CLOSURE REQUIREMENTS

5.2.1 Inspections

The only CAS with post-closure requirements is CAS 12-03-01, Sewage Lagoons (6). Lagoon A contains arsenic contamination at concentrations greater than the FAL of 45.1 mg/kg. The maximum concentration of arsenic in the soil was 58 mg/kg. Inspections will be performed annually to verify that UR warning signs are in place and legible and that the UR is maintained. The interior of the use-restricted area will be inspected to confirm there have been no disturbances to the area. Maintenance or repair needs that are identified, such as sign or post repair, will be completed within 90 calendar days of discovery and documented in writing at the time the work is done. Inspection results will be documented in the combined NTS post-closure annual letter report. The report will include a discussion of observations and will describe any maintenance activities performed since the last inspection. A copy of the inspection checklist will be provided, and the field notes will be maintained in the project files. A copy of the letter report will be submitted to the Nevada Division of Environmental Protection (NDEP).

5.3 RECOMMENDATIONS

Since closure activities for CAU 151 have been completed following the NDEP-approved CAP (NNSA/NSO, 2007) as documented in this report, NNSA/NSO requests the following:

- A Notice of Completion be provided by NDEP to NNSA/NSO for the closure of CAU 151.
- The transfer of CAU 151 from Appendix III to Appendix IV, Closed Corrective Action Units, of the FFACO (FFACO, 1996; as amended February 2008).

6.0 REFERENCES

EPA, see U.S. Environmental Protection Agency.

Federal Facility Agreement and Consent Order, 1996 (as amended February 2008). Agreed to by the State of Nevada; U.S. Department of Energy, Environmental Management; U.S. Department of Defense; and U.S. Department of Energy, Legacy Management.

Federal Facility Agreement and Consent Order, 2003. Use Restriction Posting Guidance.

FFACO, see *Federal Facility Agreement and Consent Order*.

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.

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

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office, 2004. *Corrective Action Investigation Plan for Corrective Action Unit 151: Septic Systems and Discharge Area, Nevada Test Site, Nevada*. DOE/NV--981. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office, 2006. *Corrective Action Decision Document for Corrective Action Unit 151: Septic Systems and Discharge Area, Nevada Test Site, Nevada.* DOE/NV--1123. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office, 2007. *Corrective Action Plan for Corrective Action Unit 151: Septic Systems and Discharge Area, Nevada Test Site, Nevada.* DOE/NV--1184. Las Vegas, NV.

U.S. Environmental Protection Agency, 1994. *Guidance for the Data Quality Objectives Process*. EPA QA/G-4. Washington D.C.

U.S. Environmental Protection Agency, 1999. *Contract Laboratory Program National Functional Guidelines for Organic Data Review.* EPA540/R-99/008. Washington D.C.

U.S. Environmental Protection Agency, 2004. *Region 9 Preliminary Remediation Goals*. As accesed at http://www.epa.gov/region09/waste/sfund/prg/files/04prgtable.pdf.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A*

DATA QUALITY OBJECTIVES

As presented and published in Appendix A of the approved *Corrective Action Investigation Plan for Corrective Action Unit 151: Septic Systems and Discharge Area, Nevada Test Site, Nevada*, 2004, DOE/NV--981. Las Vegas, NV.

THIS PAGE INTENTIONALLY LEFT BLANK

A.1 Seven-Step DQO Process for CAU 151 Investigation

The DQO process described in this appendix is a seven-step strategic planning approach based on the scientific method. It is used to plan data collection activities at CAU 151, Septic Systems and Discharge Area. The DQOs are designed to ensure that the data collected will provide sufficient and reliable information to identify, evaluate, and technically defend the recommended corrective actions (i.e., no further action, closure in place, or clean closure). Existing information about the nature and extent of contamination at each CAS in CAU 151 is insufficient to evaluate and select preferred corrective actions; therefore, a CAI will be conducted.

The CAU 151 investigation will be based on the DQOs presented in this appendix as developed by representatives of the NDEP and the NNSA/NSO. This document identifies and references the associated EPA Quality System Documents entitled *Data Quality Objectives for Hazardous Waste Site Investigation* (EPA, 2000a) and *Guidance on Choosing a Sampling Design for Environmental Collection Data* (EPA, 2000b) upon that the DQO process presented herein is based.

A.1.1 CAS-Specific Information

Corrective Action Unit 151, Septic Systems and Discharge Area, consists of the following nine CASs:

- 02-05-01, UE-2ce Pond
- 12-03-01, Sewage Lagoons (6)
- 12-04-01, Septic Tanks
- 12-04-02, Septic Tanks
- 12-04-03, Septic Tank
- 12-47-01, Wastewater Pond
- 18-03-01, Sewage Lagoon
- 18-99-09, Sewer Line (Exposed)
- 20-19-02, Photochemical Drain

The nine CASs are located in Areas 2, 12, 18, and 20 of the NTS as shown in Figure A.1-1. The following sections present CAS-specific information on the physical setting, operational history, sources of potential contamination, previous investigation results, and COPCs. Of the nine CAU 151 CASs listed above, three (CASs 12-04-01, 12-04-02, and 12-04-03) have been combined for

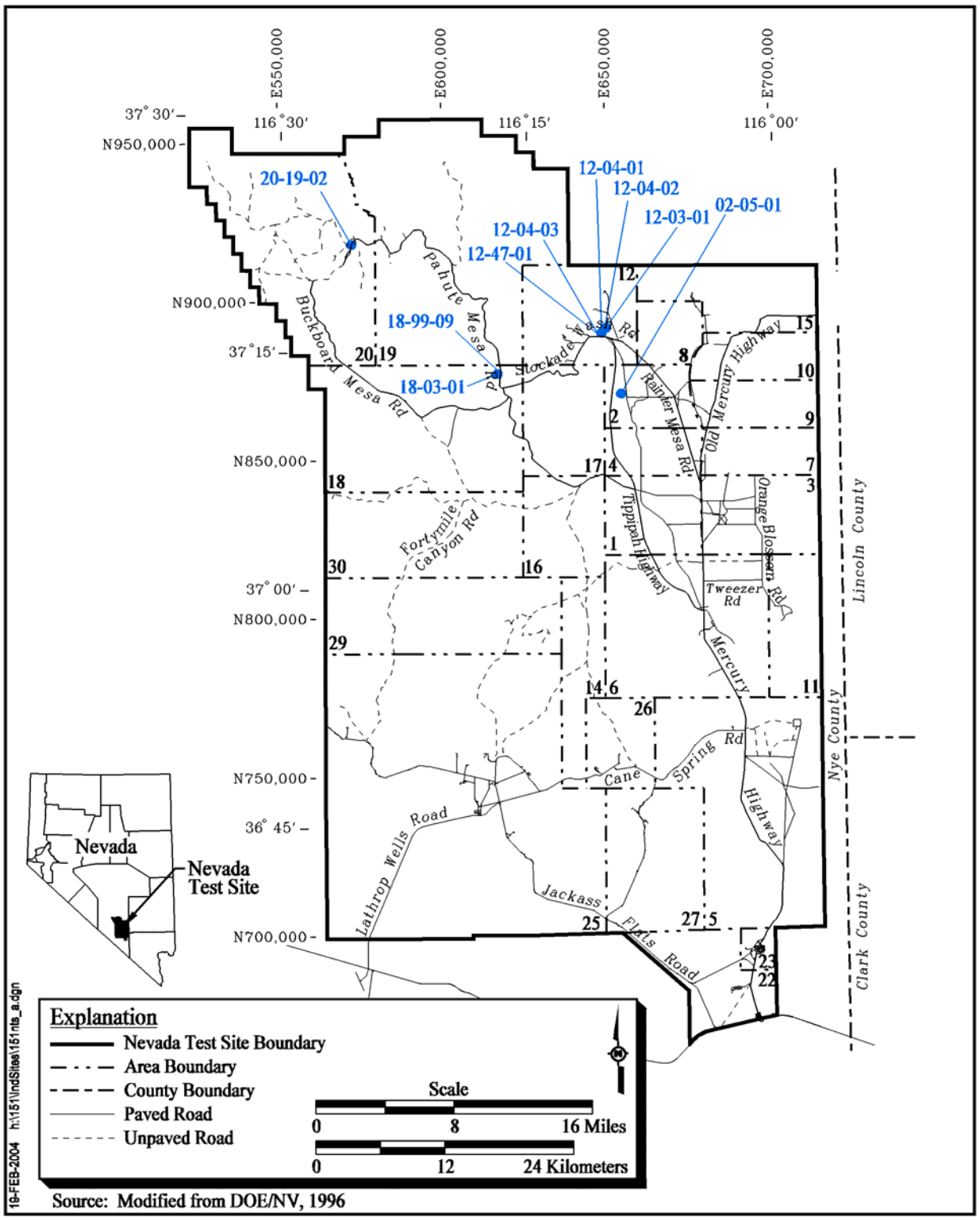


Figure A.1-1
CAU 151, CAS Location Map

discussion purposes because each represents a component of the same septic system. Septic tank contents and residual media will be characterized for waste disposal purposes.

Previous investigation data for the CAU 151 CASs are limited. Additionally, many of the COPCs are based on knowledge of activities conducted rather than specific knowledge of a release. As a result, many of the Decision I COPCs for the CAI are considered the class of contaminants for a given analytical suite. Polychlorinated biphenyls, beryllium, and the radionuclides uranium-234, uranium-235, and uranium-238, americium-241, cesium-137, strontium-90, plutonium-238, and plutonium-239/-240 are included as COPCs for all CASs because of common NTS concerns. Other COPCs are included if specifically mentioned in the operational history documentation or previous sampling events. Table A.1-1 lists the COPCs per CAS.

Table A.1-1
Decision I Contaminants of Potential Concern Per CAS[a]

COPC	CAS					
	02-05-01	12-03-01	12-04-01, 12-04-02, 12-04-03	12-47-01	18-03-01, 18-99-09	20-19-02
Organics						
VOCs[a]	X	X	X	X	X	X
SVOCs[a]	X	X	X	X	X	X
TPH	--	X	X	--	--	--
PCBs[a]	X	X	X	X	X	X
Metals						
RCRA Metals[a]	X	X	X	X	X	X
Beryllium	X	X	X	X	X	X
Other Parameters						
Pesticides	--	--	--	X	X	--
Radionuclides						
Gamma Emitting Radionuclides	X	X	X	X	X	X
Tritium	X	--	--	--	--	--
Strontium-90	X	--	--	--	--	--
Isotopic Plutonium	X	X	X	X	X	X
Isotopic Uranium	X	X	X	X	X	X

[a]For those COPCs identified that include multiple parameters, the parameters with PALs will be evaluated using EPA *Region IX Risk-Based Preliminary Remediation Goals* for chemical contaminants in industrial soils (EPA, 2002b)

X = COPCs

A.1.1.1 Corrective Action Site 02-05-01, UE-2ce Pond

Physical Setting and Operational History - Corrective Action Site 02-05-01 consists of an excavated pond, surrounding bermed area, and a surface trench running between the pond and the UE-2ce Well. The pond measures approximately 68 by 50 ft and is dry. A 6-ft high berm surrounds the pond, except on the east side of the pond, where the berm is 10 ft high. There is a gravel mound within the pond that is approximately 3 ft tall, 4 ft wide, and 60 ft long. In addition to the mound, there is miscellaneous debris including cables, scrap metal, and wood scattered in the bottom and around the pond. The 4 in. deep and 12 in. wide surface trench leading from the pond to the well is approximately 60 ft long and contains small pieces of wood debris and vegetation. Boundaries of this CAS are well defined by the surficial features. Figure A.1-2 shows the location of the CAS and the adjacent features.

The UE-2ce Well was drilled in 1977 to collect post-test radiological data of the geologic conditions from the Nash test conducted in 1967 (DOE/NV, 1986). According to the *Environmental Survey Preliminary Report, Nevada Test Site, Mercury, Nevada* (DOE, 1988a), the satellite well was drilled to a depth of 502 m, which is 138 m deeper than the Nash explosion level. The well was created to produce water from the carbonate rock. The water was sampled and the results indicated that the Nash test forced the contaminants into the newly formed fractures. Sampling was performed on the well to study radionuclide migration from the unsaturated zone to the saturated zone. During construction of the well, the adjacent pond was constructed to receive tritium contaminated water from the adjacent well. The UE-2ce well and the adjacent pond are connected by a 60-ft trench. As the well was sampled and tests were conducted in the well, the excess water was pumped into the UE-2ce pond. Pumping was discontinued in 1986 when the pump was no longer functional and was not repaired or replaced. Today, hand bailers are used to collect water for the samples from the well.

Sources of Potential Contamination - The sources of potential contamination at CAS 02-05-01 are based on documentation of the Nash test. The primary source of contamination to the pond is the result of discharged effluent from the adjacent UE-2ce well. Radionuclides identified during the sampling of the well included tritium, krypton-85, isotopic plutonium, and isotopic uranium (DRI, 1988).

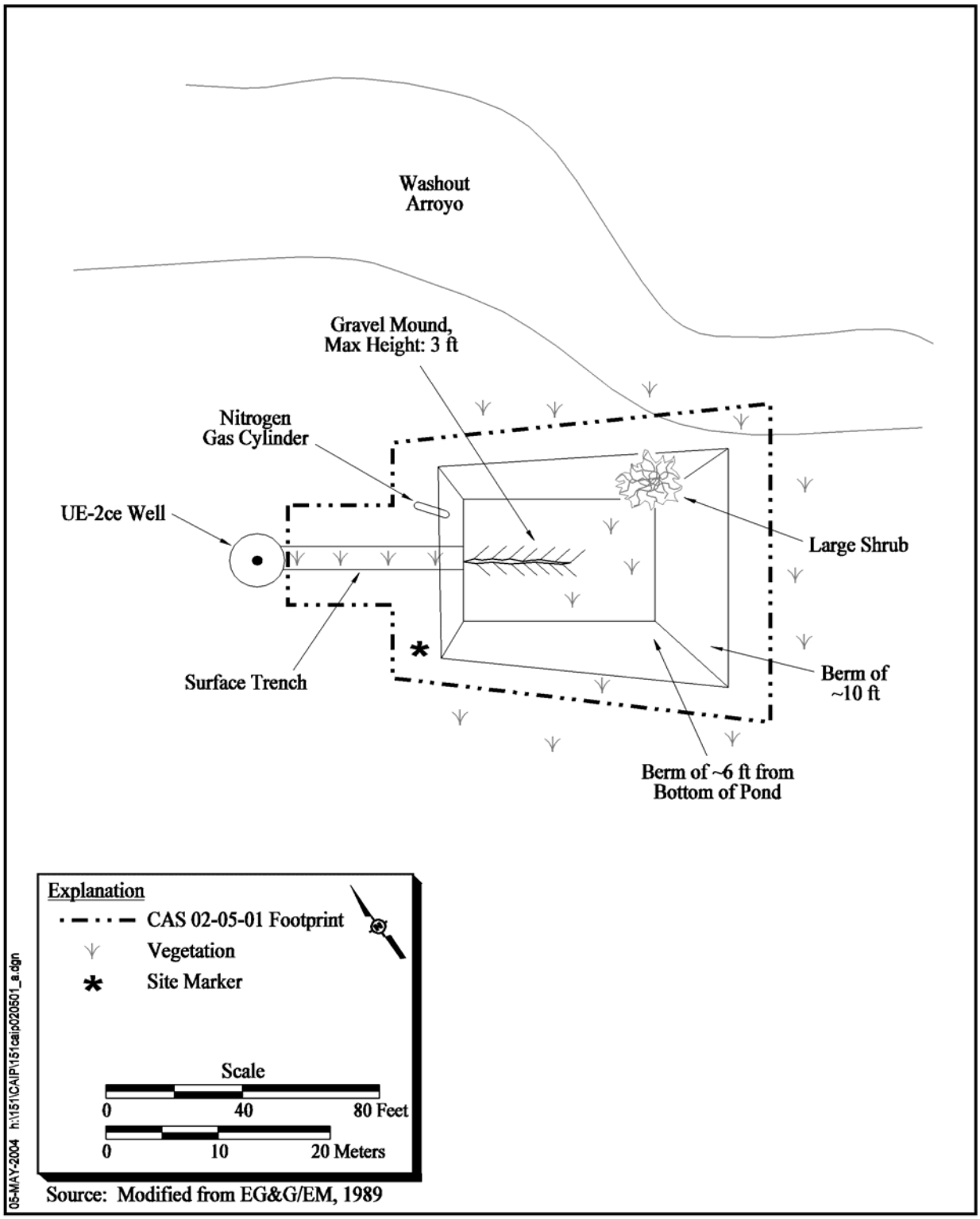


Figure A.1-2
CAU 151, CAS 02-05-01 Site Map

Previous Investigation Results - The following are previous investigation results from water and soil sampling conducted on the well and the pond at CAS 02-05-01:

- Soil sampling was conducted at the UE-2ce pond on August 27, 1997. The intent of the sampling was to collect soil from the most contaminated location within the UE-2ce pond. Samples were submitted for laboratory analysis for total VOCs, SVOCs, PCBs, total RCRA-8 metals, and radionuclides. Reported concentrations of arsenic and lead did not exceed industrial PRGs (Bordelois, 1998). Other chemical contaminants detected were acetone; ethylenebenzene; methylene chloride; tetrachloroethene; toluene; trichloroethlene; xylenes; bis (2-ethylhexyl) phthalate; 4,4,-DDT; arsenic; chromium; barium; and lead. Other radiological contaminants include gross alpha, lead-212, lead-214, and potassium-40 (Bordelois, 1998). Lead-212, lead-214, and potassium-40 are naturally occurring radionuclides.

- A radiological survey was conducted in 1998 at the west side of the pond. The results show a reading of 423 dpm alpha and 1,008 dpm beta. The document states that the waste of concern is located at the surface and that the level of contamination was above background. The site has never undergone any remedial actions, but there are no radiological signs posted. The radiological readings were slightly above background (IT, 1998).

- The UE-2ce well was sampled using a wireline bailer as a part of the Hot Well Program in August 2001. The sampling depth was 472.5 m. The results indicated that tritium activity was 1.4×10^5 nCi/L. There were low uranium concentrations (0.39 μg/L) and plutonium results were below the detection limit of 0.6 picograms/L (LLNL, 2003).

Contaminants of Potential Concern - Based on UE-2ce well and the operations conducted therein, the COPCs for CAS 02-05-01 are:

- Tritium, isotopic uranium, and isotopic plutonium associated with the discharge of well water from UE-2ce.

- Analytical results suggest the following COPCs may also be present acetone; ethylenebenzene; methylene chloride; tetrachloroethene; toluene; trichloroethlene; xylenes; bis (2-ethylhexyl) phthalate; 4,4,-DDT; arsenic; chromium; barium; lead; and tritium.

- Because the historical documentation is not definitive, total VOCs, total SVOCs, and TPH have been added to the analytical suite.

- NTS-specific analytes shall be added to the suite if not already identified from historical or process knowledge. These analytes include gamma-emitting radionuclides, PCBs, and RCRA metals and beryllium.

A.1.1.2 Area 12 Camp Septic Systems Background

Five of the CASs in CAU 151 are located in Area 12 Camp. The Area 12 Camp was built in 1957 for mining activities and became a support area for tunnels projects (specifically B and E Tunnels) in the Rainier Mesa area in the early 1960s. The camp was active through the early 1990s when operations were discontinued in 1992 (Rarrick, 2003). Most of the camp has been abandoned and demolished; however, a few operational buildings still remain occupied in the area. Four of the five CASs in CAU 151 are interconnected; CASs 12-03-01, Sewage Lagoons (6) is the endpoint for the septic systems, CASs 12-04-01, Septic Tanks; 12-04-02, Septic Tanks; and 12-04-03, Septic Tanks. The fifth, CAS 12-47-01, Wastewater Pond, includes of two sumps that the discharges from three buildings fed into. As the activities at the camp grew, the demand for updated systems was identified and the CASs that comprise the systems included in CAU 151 became obsolete. As new systems were built in the late 1980s, the old systems were bypassed to maintain the integrity of the piping of the system in order to replace the older components with updated systems to support the activities. A 1989 aerial photo showed that use of the old systems had ceased and operations at the new sewage lagoons were active. There is no evidence that any of the old piping systems were physically removed in rerouting the Area 12 Camp effluents to the newer lagoons. As a result, the CASs of CAU 151 in Area 12 Camp are identified as components of the old, replaced system.

In the early 1960s, CASs 12-04-01, 12-04-02, and 12-04-03 serviced the majority of the Area 12 Camp and discharged effluent into the six sewage lagoons (CAS 12-03-01). Documentation suggests that the facilities that discharged into these systems included the cafeteria, recreation hall, change house, and housing trailers (Haworth, 1989). From the description of the buildings that are associated with the system, it is speculated that only sanitary effluent was discharged into the tanks; however, due to the uncertainties of the activities at the NTS during the system's operational time frame, the investigation will account for other constituents that may be present.

For CAS 12-47-01, the women's restroom trailer, Building 12-8 Area 12 Construction Shop, Building 12-16 Motor Pool Equipment Maintenance Shop, and Building 12-910 Crafts Building all fed into the sump system. However, there is no evidence that these buildings were connected to the septic systems and lagoons in CAU 151 (Holmes & Narver, 1987; REECo, 1971).

A.1.1.3 Corrective Action Site 12-03-01, Sewage Lagoons (6)

Physical Setting and Operational History - Corrective Action Site 12-03-01 consists of seven lagoons that were constructed in the late 1960s and early 1980s (Figure A.1-3). For this CAS, the features have been identified as Lagoons A through G to the features within this system. Table A.1-2 provides a summary of the lagoons and their current conditions. These lagoons are associated with the septic systems from the Area 12 Camp (CASs 12-04-01, 12-04-02, and 12-04-03).

The known piping and any closed/abandoned piping directly associated with the layout are included in the scope of the CAS. There is piping leading into the lagoons from the Area 12 Camp septic systems that previously fed into the lagoons, but has been diverted to the new lagoons located east of 12-01 Road. This piping remains active and is not associated or included in the scope of this CAS. However, piping from the old lagoons to the point of diversion to the new system (indicated by a manhole) is included in the scope of this CAS. Documentation indicates that the primary lagoons are connected to the two adjacent lagoons via an underground system, and that the two closed distribution boxes, manholes, and cleanouts are included in the scope of this CAS. None of the piping is visible from the ground surface with the exception of the piping between Lagoons E and G (REECo, 1967a, b, and c).

Sources of Potential Contamination - The sources of potential contamination at CAS 12-03-01 include:

- The sewage lagoons were associated with the Area 12 Camp. Septic systems used at this location discharged into these lagoons.
- The piping systems associated with the lagoons may be asbestos-containing material (ACM) (REECo, 1967b).
- The tunnels associated with the nuclear tests in the Rainier Mesa area had holding ponds with tritiated water. According to interviews, it is possible that these ponds were discharged into the lagoons at CAS 12-03-01 (Rarrick, 2003).

Previous Investigation Results - There have been several sampling events associated with CAU 12-03-01. A description of identified results are as follows:

- Water samples were collected from the Area 12 sewage lagoons between 1982 and 1985. Data was collected for pH, total suspended solids, fecal coliform, BOD, COD, and DO.

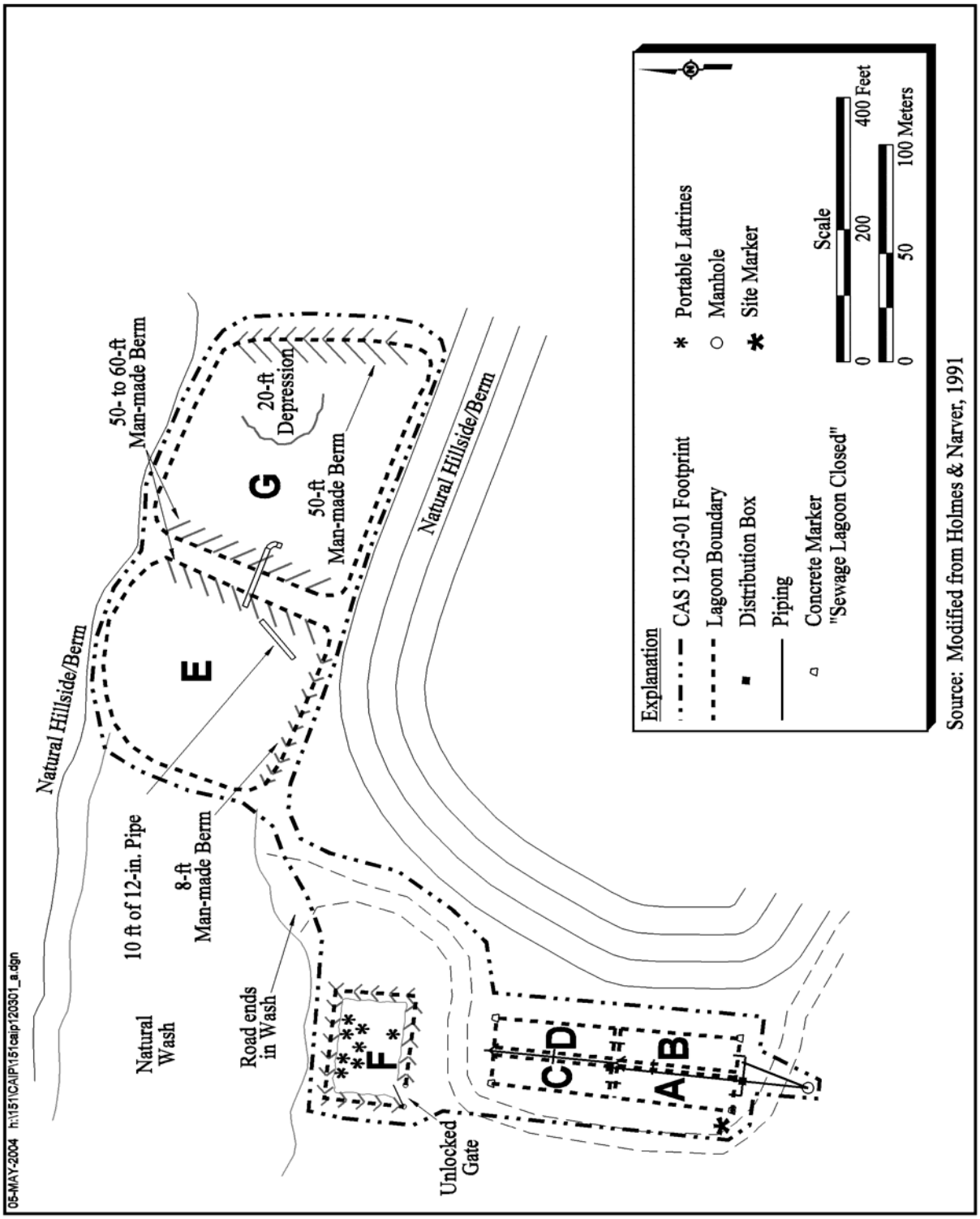


Figure A.1-3
CAU 151, CAS 12-03-01 Site Map

Table A.1-2
Physical Setting for CAS 12-03-01

Lagoon	Purpose	Construction	Dimensions	Current Physical Setting
A	Southwest Primary Lagoon	1966 to 1967	344 x 158 ft	These four lagoons are adjoined and filled with soil. There are four concrete monuments that denote the corners and are posted as closed. A distribution box is in the center of the four lagoons.
B	Southeast Primary Lagoon			
C	Northwest Secondary Lagoon			
D	Northeast Secondary Lagoon			
E	West Evaporation Lagoon (Old Evaporation Pond)	1985 to 1989	400 x 300 x 35 ft	This lagoon has bermed walls and contains greyish-white mud, vegetation, and soil throughout the bottom.
F	Stabilization Pond		151 x 116 x 20 ft	This lagoon is backfilled and graded. The surface is covered with gravel.
G	East Evaporation Lagoon	Approximately 1972	400 x 400 x 50 ft	The lagoon contains vegetation on the west side and there is dried, red-colored mud throughout the bottom. There is piping debris throughout the bottom that does not appear to be connected to any systems.

EG&G, 1989; Holmes & Narver, 1972; REECo, 1967a; Shaw, 2003b

Based on the collected data, the lagoons would have not met the standard set by 40 CFR 141.23 under the SDWA (DOE, 1988a).

- Soil/sediment samples were collected from the lagoons in 1989 for analysis to determine if hazardous materials were present. Lead was detected in Lagoons B, C, and E. (Haworth, 1989).

- In 1990, soil samples were collected from Lagoons A, B, and G; however, only Lagoons A and B had reported results. For both lagoons, toluene (7.9 µg/L), barium (1.0 mg/L), benzyl alcohol (21 µg/L), acetophenone (5.2 µg/L), phenol (2.5 µg/L), and bis (2-ethylhexyl) phthalate (3.2 µg/L) were detected in the samples. This event did not distinguish between lagoons A and B, but presented both locations as one lagoon (Mattes, 1990).

- In 1992, soil samples were collected from Lagoon E, and the results were determined to be below the EPA PRGs; however, there were detects for barium, chromium, PCBs, methylene chloride, acetone, tetrachloroethene, and toluene. It was indicated that PCBs may be related to pesticides because of the detections. Acetone and methylene chloride were also detected in

the laboratory QC blank, so the results may be erroneous due to laboratory artifact (Trump, 1992).

Contaminants of Potential Concern - The COPCs for CAS 12-03-01 were established as a part of the known investigations and historical knowledge of this site. The analytes are as follows:

- Analytical results suggest that lead, barium, chromium, PCBs, acetone, benzol alcohol, acetophenone, phenol, bis (2-ethylhexyl) phthalate, methylene chloride, tetrachloroethene, and toluene are COPCs specific to this CAS.

- CASs 12-04-01, 12-04-02, and 12-04-03 discharged into the lagoons. For characterization purposes, all of the COPCs listed in Table A.1-3 are included in this CAS if they have not already been identified in previous analytical results from CAS 12-03-01.

- Due to uncertainties of activities associated with the tritiated water holding ponds located at the B and E Tunnels, tritium has been added as a COPC for CAS 12-03-01.

- Because the historical documentation is not definitive, total VOCs and total SVOCs have been added to the analytical suite.

- NTS-specific analytes shall be added to suite if not already identified from historical or process knowledge. These analytes include gamma-emitting radionuclides, and RCRA metals with beryllium.

- Based on the historical and process knowledge of this CAS, pH has been added to the list of analytes used to determine soil characteristics. Historical documentation suggests that acids and bases may have been discharged into the lagoons.

- Asbestos is associated with the adjoined piping and considered for health and safety purposes.

- Sewage sludge, if encountered, will also be analyzed for fecal coliform bacteria for health and safety purposes.

A.1.1.4 Corrective Action Sites 12-04-01, 12-04-02, and 12-04-03, Septic Tanks

Physical Setting and Operational History - Corrective Action Sites 12-04-01, 12-04-02, and 12-04-03 are located in the Area 12 Camp at the NTS (Figure A.1-4). The CAS consists of four separate septic systems named Systems #1, #3, #4, and #5. These systems are associated with and discharged into CAS 12-03-01, Sewage Lagoons (6).

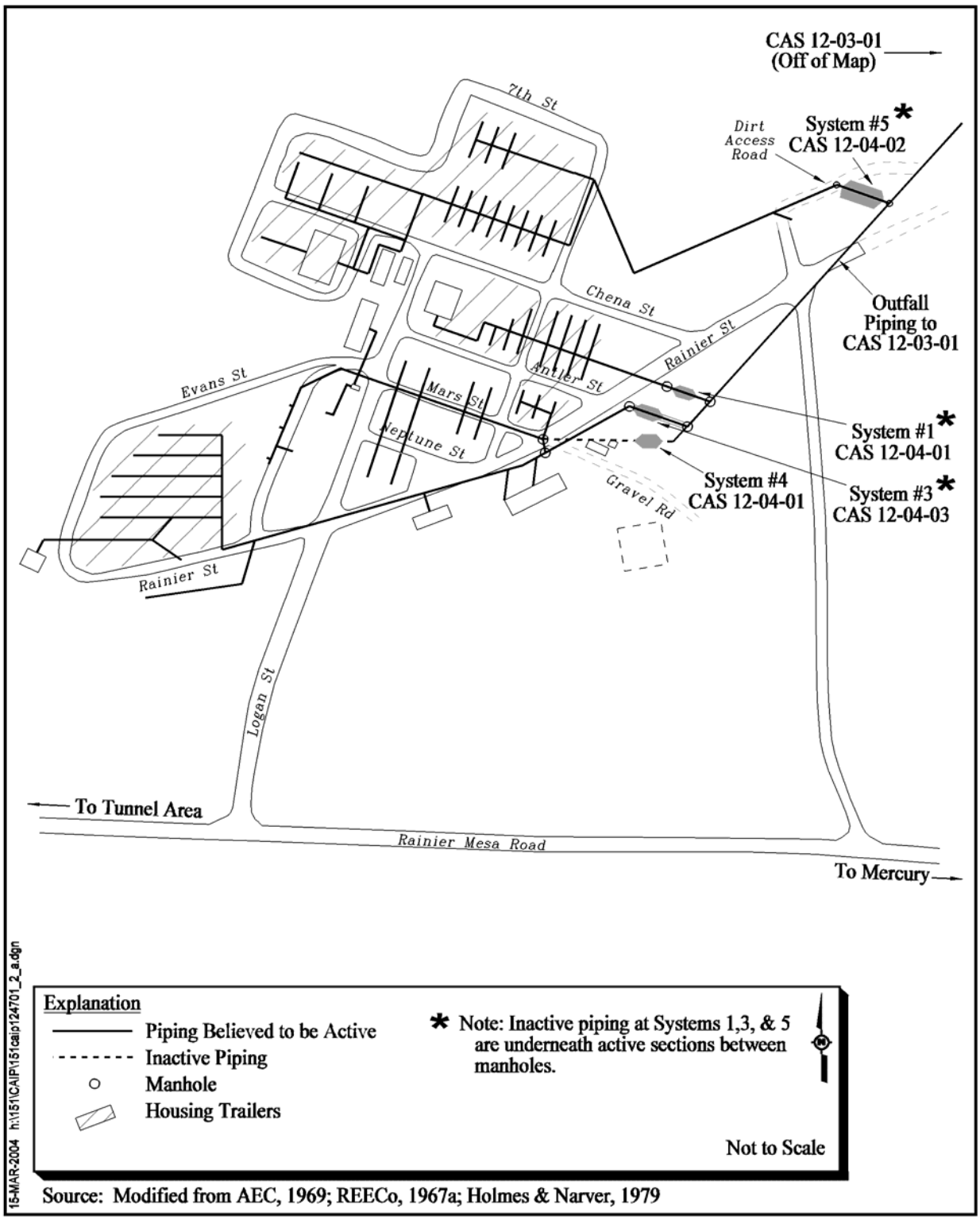


Figure A.1-4
CAU 151, CAS 12-04-01, 12-04-02, and 12-04-03

Corrective Action Site 12-04-01 addresses Systems #1 and #4. System #1 was installed around 1961 and consists of two septic tanks, two manholes, four access covers, and the associated 6-in. VCP. There is approximately 5,000 gal of septage and liquid in each tank. System #4 was constructed prior to 1961 and originally contained only two septic tanks and associated VCP. This system was updated between 1961 and 1965 to include two additional tanks. This system (named A121 on engineering drawings) is comprised of four tanks that contained 3,500 gal of liquid at the time of the survey. All of the tanks in Systems #1 and #4 are documented as 8 by 25 ft with a 7,500-gal capacity (Bingham, 1992; REECo, 1967a, 1992a and b, and 1995). Figure A.1-5 depicts the layout of Systems #1 and #4.

Corrective Action Site 12-04-02 includes System #5. This system was constructed between 1961 and 1962 and consists of six septic tanks, two manholes, and eight visible access covers. The same 6-in. VCP and tank size applies to this system as for Systems #1 and #4. This system (named A125 on engineering drawings) is comprised of six tanks, which each contained approximately 3,500 to 5,000 gal. Figure A.1-6 provides the configuration of System #5 (Bingham, 1992; REECo, 1992a and 1995).

Corrective Action Site 12-04-03 addresses System #3. Originally the CAS included System #2; however, System #2 may have never been completed. Geophysical surveys are planned to verify the absence or presence of this system. System #3 consists of two manholes, one visible access cover, and 6-in. VCP associated with the tanks. This system (named A124 west on engineering drawings) is shown on engineering drawings to have a total of four tanks, but after excavation, only three tanks were identified during the sampling event in 1995 (REECo, 1995). In the three identified tanks, there was approximately 5,000 gal of liquid and sludge remaining in each tank. There was a solid cover of vegetation over the liquid and sludge in two of the tanks. The vegetation cover was approximately 4 to 6 in. thick and there was approximately 3 ft of liquid underneath the cover. Figure A.1-7 provides the layout of System #3 (Bingham, 1992; REECo, 1992a and 1995).

Sources of Potential Contamination - Sources of influent (liquid and/or sludge) to these three CASs are from buildings within Area 12 Camp. Although a sanitary system, there is a potential for industrial waste to have been disposed of via these septic systems. The Area 12 Camp is still partially active. Although these systems are connected to active and inactive portions of the camp, the piping

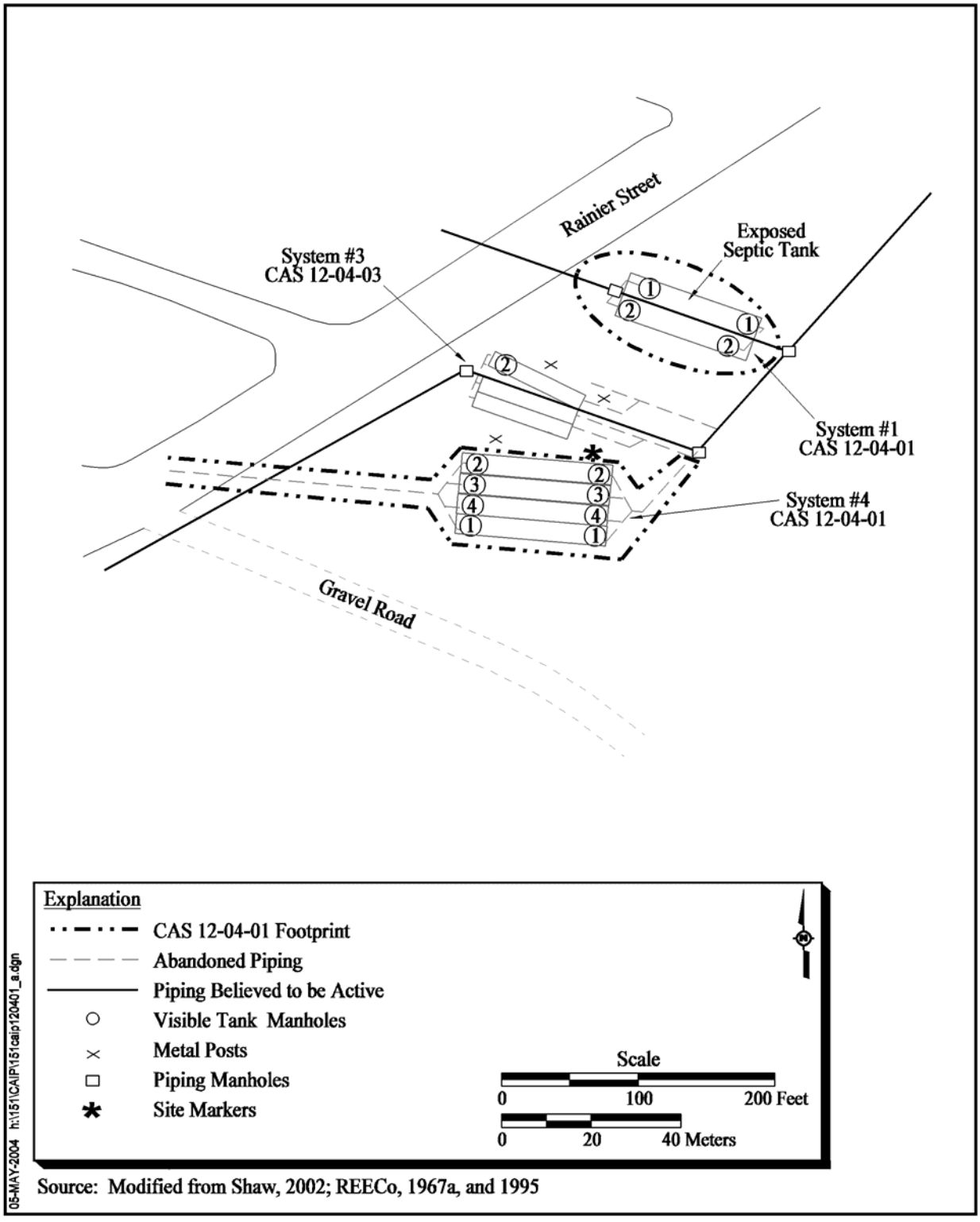


Figure A.1-5
CAU 151, CAS 12-04-01 Site Map

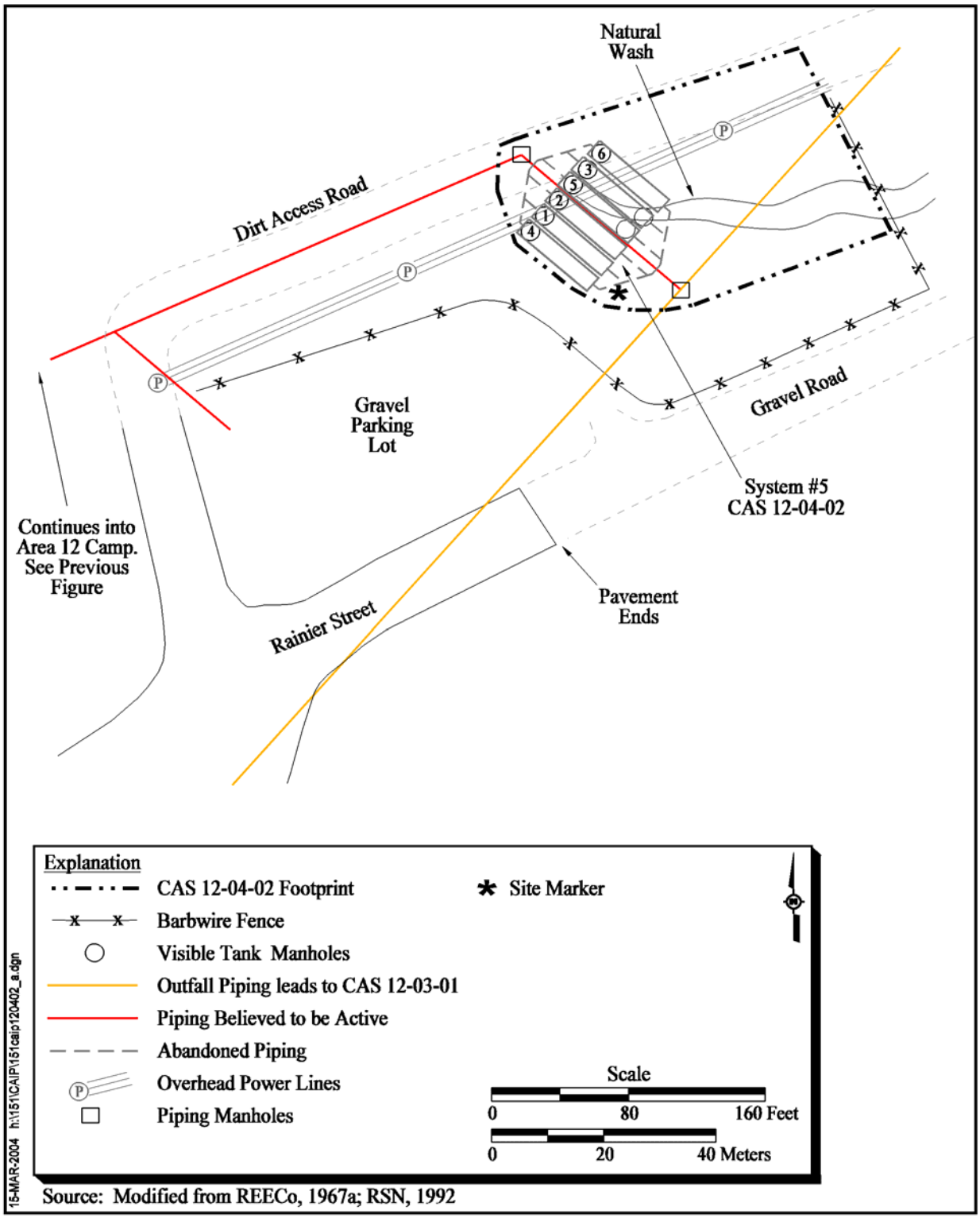


Figure A.1-6
CAU 151, CAS 12-04-02 Site Map

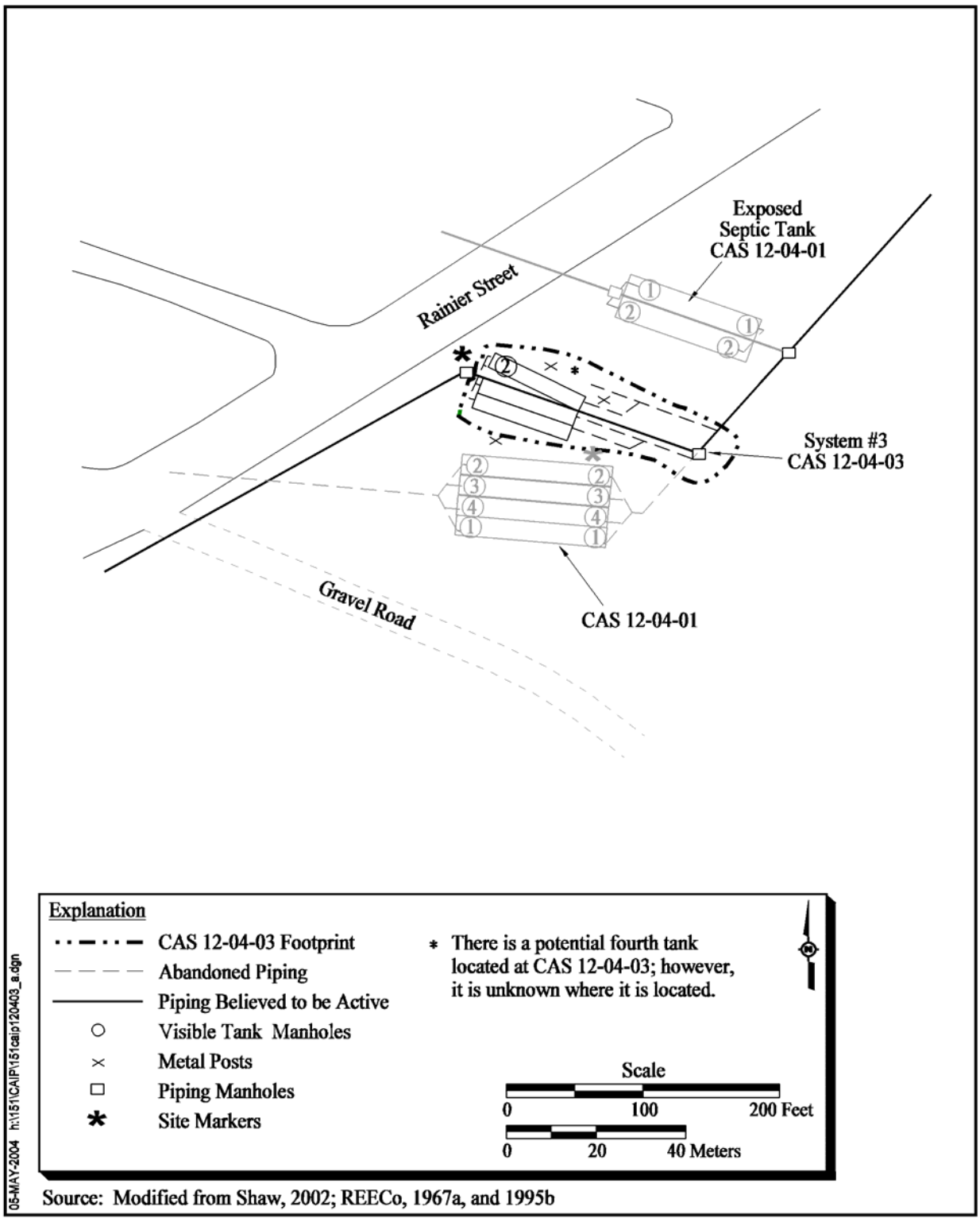


Figure A.1-7
CAU 151, CAS 12-04-03 Site Map

associated with these tanks has been bypassed into active systems; therefore, only inactive piping directly adjacent to the tanks is subject to this investigation. The piping is likely to be ACM.

Previous Investigation Results - The following results were identified for the Septic Systems #1, #3, #4, and #5:

- Septic System #1: Samples were collected from each tank and submitted for laboratory analysis. One sludge sample contained trichloroethylene at 13 mg/L. The TPH oil sludge samples had results of 4,700; 300; and 4,900 mg/kg. Analytes detected in sludge include barium; chlorobenzene; 1,4-dichlorobenzene; m,p-cresol; 1,1-dichloroethlyene; methyl ethyl ketone; tetrachloroethylene; PCBs; and vinyl chloride. Liquid detects include trichloroethene; toluene; 1,2-dichloroethene; 1,4-dichlorobenzene; and petroleum oil and diesel (REECo, 1995).

- Septic System #3: Of the liquid and sludge samples collected, petroleum hydrocarbons as oil were above the TPH action levels of 100 ppm (NAC, 2003). 1,4-dichlorobenzene was identified in two samples with levels of 0.05 and 160 mg/L. Detects were identified in liquid samples for the following constituents: barium; mercury; TPH as diesel, gas, and oil; acetone; toluene; bis(2-ethylhexyl) phthalate; 1,4-dichlorobenzene; 4-chloroaniline; 1,2-dichlorobenzene; 2-methylphenol; and 4-methylphenol. Sludge detects were identified for the following constituents: barium; TPH as diesel, gas, and oil; trichloroethene; 2-methylphenol; chlorobenzene; methyl ethyl ketone; tetrachloroethylene; 4-methylphenol; and PCBs. Radiochemcial samples were collected for analysis of gamma, tritium, and plutonium (REECo, 1995).

- Septic System #4: Liquid and sludge samples were collected from the interior of each of the tanks and submitted for laboratory analysis. Petroleum hydrocarbons were identified in all sludge samples with levels ranging from 480 to 2,100 mg/kg. There were three detects in liquid for acetone (0.017 mg/L), barium (0.016 mg/L), and for 1,4-dichlorobenzene at 3.9 mg/L. Analytes, that were detected in sludge include barium; methyl ethyl ketone; trichloroethylene; chlorobenzene; acetone; 1,2-dichlorobenzene; 1,4-dichlorobenzene; diesel; gasoline; and PCBs. Radioanalytical results had detects for gamma, tritium, and plutonium (REECo, 1995).

- Septic System #5: The liquid material was sampled, but the solid material was not sampled because there was such a small amount present and it was likely that soil had fallen into the tank and had collected. Liquid and sludge samples were collected. 1,4-dichlorobenzene and barium were detected in the liquid samples. Sludge samples identified hydrocarbons (oil) with results of 200 mg/kg. Other analytes detected in sludge were acetone; barium; benzoic acid; bisphthalate (2-ethylhexyl); chromium; 1,4-dichlorobenzene; 2,4-dichlorophenol; di-n-butylphthalate; methyl ethyl ketone; pyrene; pyride; TPH for gas; diesel, and oil; PCBs; benzene; chlorobenzene; dichloromethane; mercury; and tetrachloroethene.

- Geophysical surveys were conducted for CAU 151 during March 2003. The survey conducted for CAS 12-04-01 identified Anomaly "A" as System #1 and Anomaly "C" as System #4. System #1 showed the presence of two tanks, while System #4 identified the presence of four tanks. All tanks appeared to trend in an east-west direction. System #1 appeared to be about 3 to 5 ft bgs, while System #4 appeared to be about only 1 to 2 ft bgs. An underground utility was observed in the vicinity of System #1 that was consistent with the location of the sanitary sewer line that was identified in the engineering drawing that was used. There were utilities identified for System #4. The document states that a video inspection team that was conducting surveys in the area reported that some of the piping was greater than 4 ft bgs and was of vitrified clay construction. The document also includes the figures showing the results of the survey (SAIC, 2003).

- Geophysical surveys were conducted for CAU 151 during March 2003. The results of the survey for CAS 12-04-02 indicated that an anomaly was identified that was consistent with the location of the suspected septic tank field. There were no anomalies identified for the piping; however, there were two manhole covers observed in the location believed to be where the piping fed into the tanks. There are six septic tanks suspected, with a soil covering of 0 to 5 ft. The document also includes the figures showing the results of the survey (SAIC, 2003).

- Geophysical surveys conducted for CAU 151 during March 2003. The survey conducted for CAS 12-04-03 identified Anomaly "B" as System #3, showing the presence of four tanks. All tanks appeared to trend in an east-west direction. The tanks are between 3 and 5 ft bgs. The presence of piping at Anomaly "B" could not be confirmed. The document also includes the figures showing the results of the survey (SAIC, 2003). Although the results state that all four tanks appear to still be present, only three of the four tanks were identified during the sampling activities in 1994 and 1995.

- Geophysical surveys were conducted at CAS 12-04-03 to verify the absence or presence of System #2. The geophysical surveys indicated that there are no tanks in the location identified on previous engineering drawings where System #2 was to be installed (SNJV, 2004). Based on engineering drawings and this geophysical survey, it is determined that although System #2 was proposed, later engineering drawings support that this system was never installed and System #3 was used to support the housing trailers (REECo, 1967a).

- Walk-over surveys were conducted on February 18 and February 19, 2003, to determine if radiological contamination was present in surficial soil concentrations statistically greater than surficial soil from undisturbed background locations. The survey that was conducted for CASs 12-04-01 and 12-04-03 encompassed an area of approximately 38,500 ft^2. A total of 4,929 data points were recorded with a mean gamma radiation emission rate of 198 cps versus the mean undisturbed background gamma radiation emission rate of 181 cps. The maximum gamma radiation emission rate was 277 cps. With the exception of a few elevated gamma emissions in the surficial soil, the gamma radiation emission rate is uniformly distributed. The document states that currently the site poses no risk to individuals from residential radiological contamination. The document also includes a figure showing the results of the survey (Nicosia, 2003).

Contaminants of Potential Concern - The COPCs for CASs 12-04-01, 12-04-02, and 12-04-03 were established as a part of the known investigations and historical knowledge of this site. The analytes are as follows:

- General COPCs associated with the discharge of effluent into the septic tanks includes sewage and chemical discharges from the Area 12 Camp.
- Analytical results suggest that analytes were identified during previous sampling events. Table A.1-3 identifies the suspected contaminants for each septic system.
- Because the historical documentation is not definitive, total VOCs, total SVOCs, and TPH have been added to the analytical suite.
- NTS-specific analytes shall be added to suite if not already identified from historical or process knowledge. These analytes include gamma-emitting radionuclides, PCBs, and RCRA metals with beryllium.
- Based on the historical knowledge of this CAS, pH has been added to the list of analytes determine soil characteristics. Historical documentation suggests that acids and bases may have been discharged into the septic tanks.
- Asbestos is associated with the inactive system piping and considered for health and safety purposes.
- Sewage sludge, if encountered, will also be analyzed for fecal coliform bacteria for health and safety purposes.

A.1.1.5 Corrective Action Site 12-47-01, Wastewater Pond

Physical Setting and Operational History - Corrective Action Site 12-47-01 consists of two sumps (evaporation ponds) and associated inactive piping located at the Area 12 Fleet Operations at the NTS (Figure A.1-8). It is documented that three buildings and a women's restroom trailer fed into these sumps: Building 12-8, Area 12 Construction Shops, was constructed before 1964 and demolished in 2002; Building 12-16, Motor Pool Equipment Maintenance Shop, was constructed around 1965 and was demolished in 2002; while Building 12-910, Crafts Building, was constructed in 1987 and its wastewater was diverted to the new septic tank and leachfield system that was constructed in the late 1980s or early 1990s, and the women's restroom trailer was added in 1971. Both sumps were constructed to receive sewage waste from Buildings 12-8 and 12-16. However, when the new sump was built in 1970, sewage from both buildings were diverted to the new sump, as were

Table A.1-3
Suspected Contaminants for CASs 12-04-01, 12-04-02, and 12-04-03[a]

COPC	CAS 12-04-01, System #1	CAS 12-04-03, System #3	CAS 12-04-01, System #4	CAS 12-04-02, System #5
Organics				
VOCs				
1,1-Dichlorobenzene	X	--	--	--
1,4-Dichlorobenzene	X	X	X	X
Acetone	--	--	--	X
Benzene	X	X	X	X
Chlorobenzene	X	X	X	X
Dichloromethane	--	--	--	X
Methyl Ethyl Ketone	X	X	X	X
Tetrachloroethylene	--	X	--	--
Toluene	X	X	--	--
Trichloroethylene	X	--	X	--
Vinyl Chloride	X	--	--	--
SVOCs				
1,2-Dichlorobenzene	--	X	X	--
2-Dichlorophenol	--	--	--	X
2-Methylophenol	--	X	--	--
4-Chloroaniline	--	X	--	--
4-Methylphenol	--	X	--	--
Benzoic Acid	--	--	--	X
Bis (2-Ethyl) Hexyl Phthalate	--	X	--	X
Di-n-Butyl Phthalate	--	--	--	X
m,p-Cresol	X	--	--	--
Pyrene	--	--	--	X
TPH				
Diesel	X	X	X	X
Gas	--	X	X	X
Other				
PCBs	X	X	X	X
Metals				
Barium	X	X	X	X
Chromium	--	--	--	X
Mercury	--	X	--	X
Radionuclides				
Radiological Constituents[b]	X	X	X	X

[a]REECo, 1995
[b]Radiological constituents include Americium-241, Cesium-137, Plutonium 238, Plutonium-239/240, Strontium-90, Uranium-234, Uranium-235, and Uranium-238.

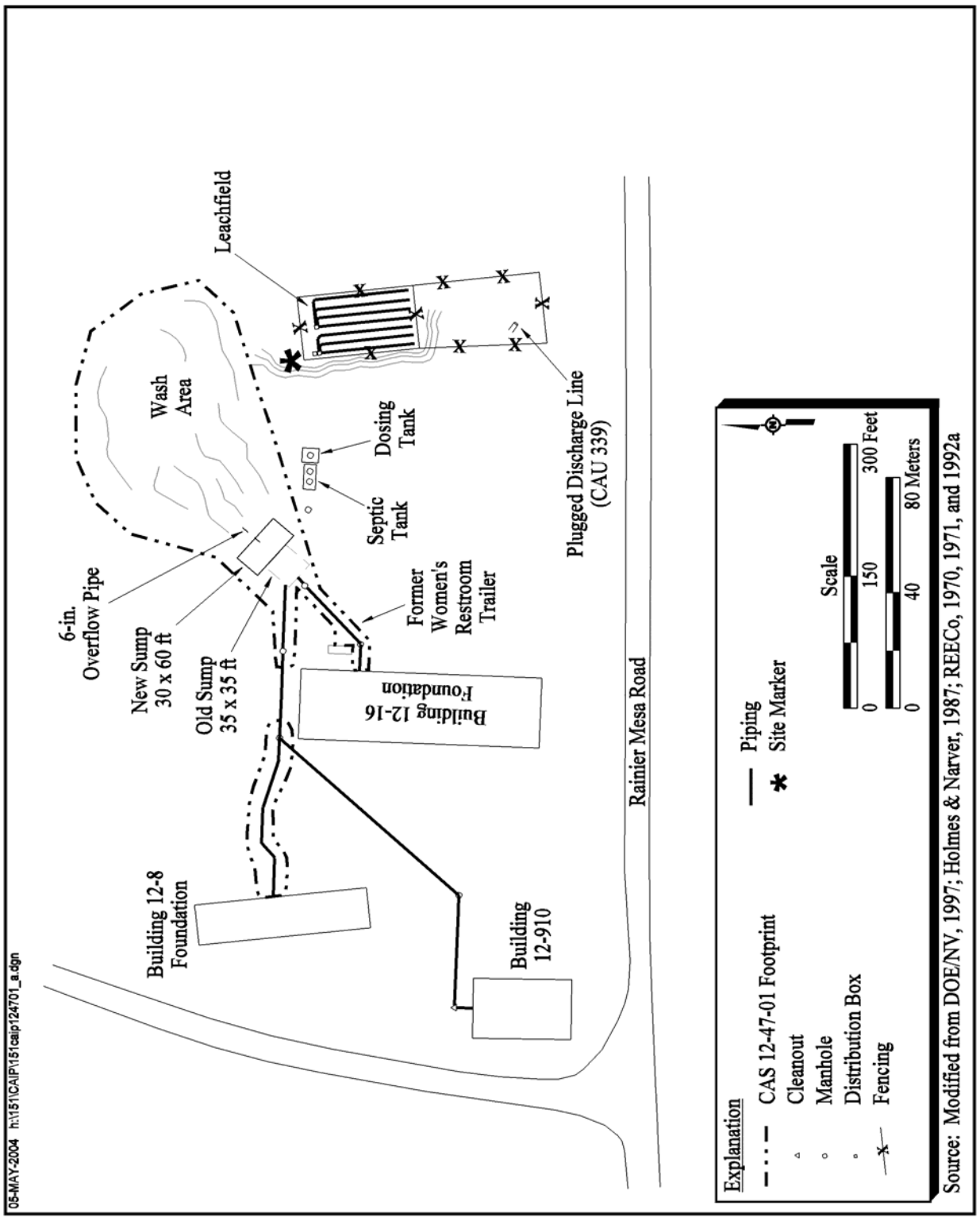


Figure A.1-8
CAU 151, CAS 12-47-01 Site Map

Building 12-910 and the women's restroom trailer. The old unlined sump is approximately 35 by 35 ft and was constructed between 1964 and 1966. This sump is located southwest to the new sump. The new sump, which is also included in this CAS, is approximately 30 by 60 ft and was constructed around 1970. In the late 1980s it was proposed to replace these sumps with a septic tank and a leachfield. On as-built drawings from 1992 the new leachfield and septic system replaced this system. The added system (e.g., two septic tanks and a leachfield) facilitate Building 12-910 and is currently active. At the time of the addition of the septic tanks and leachfield, the new sump and the old sump were backfilled. Additionally, it has been well documented that the sumps have overflown on occasion onto the surrounding area (DOE, 1988 a and b).

In addition to the sanitary effluent drains from Buildings 12-8, 12-16, and 12-910, there are drains located within Building 12-16 that were used during steam cleaning and vehicle maintenance activities. Documentation suggests that these drains may have been discharged into the new sump. It has been documented that the effluent discharged into these sumps may have been hazardous (DOE, 1988 a and b).

Sources of Potential Contamination - There are several sources of contamination for CAS 12-47-01. The following are a list of activities that contributed to the contamination at this location:

- Building 12-8 included two toilets, two urinals, and three sinks that were connected to the system. This building discharged into both the old and new sumps at CAS 12-47-01 (DOE, 1988 a and b).

- Building 12-16 included three toilets, three urinals, two sinks, and one floor drain that was connected to the system. This building discharged into both the old and new sumps at CAS 12-47-01. This building was used as the Motor Pool Equipment Maintenance Shop and prior to 1990 discharged the effluent from the steam-cleaning jenny onto the soil outside of Building 12-16 (CAU 339). Documentation suggests that the discharge may have been routed into the drain that discharges into the new sump (DOE/NV, 1990).

- A new women's restroom trailer was added to the area in 1971 that discharged into the new sump (REECo, 1971).

- Building 12-910 includes, two toilets, one urinal, two sinks, a janitor's sink, three floor drains, one lunchroom sink, and two drinking fountains that are connected to the system. This building only discharged into the new sump (Holmes & Narver, 1987).

Previous Investigation Results - Two documents provided information on sampling that was performed at this CAS and at the discharge area east of Building 12-16:

- In April 1989, samples were collected from one of the unspecified sumps and analyzed for RCRA hazardous wastes. The results included detections for 1,2-dichlorobenzene; 1,4-dichlorobenzene; and pyrene (Haworth, 1989).

- CAU 339, Area 12 Fleet Operations Steam Cleaning Discharge Area, is adjacent to CAS 12-47-01. The discharge east of Building 12-16 revealed that TPH exceeded guidelines for oil at this location. Other analytes detected include acetone, 2-hexanone, methylene chloride, methyl ethyl ketone, methyl-isobutyl-ketone, and toluene (DOE/NV, 1997). Although this location is not included in CAU 151, the proximity of the building to the CAS provides current information of contaminants that may be associated with CAU 151.

Contaminants of Potential Concern **-** The COPCs for CAS 12-47-01 were established as a part of the known investigations and historical knowledge of this site. The analytes are as follows:

- General COPCs associated with the discharge of effluent into the sumps includes sewage and chemical discharges from the Area 12 Fleet Operations.

- Analytical results indicate that oil; 1,2- dichlorobenzene; 1,4-dichlorobenzene; pyrene; acetone; 2-hexanone; methylene chloride; methyl ethyl ketone; methyl-isobutyl-ketone; and toluene are suspected COPCs for this CAS (DOE/NV, 1990; Haworth, 1989).

- Because oil was a constituent at CAU 339 (DOE/NV, 1997), it is added to this CAS based on previous operational documentation.

- Because the historical documentation is not definitive, total VOCs, total SVOCs, and TPH have been added to the analytical suite.

- NTS-specific analytes shall be added to suite if not already identified from historical or process knowledge. These analytes include gamma-emitting radionuclides, PCBs, and RCRA metals with beryllium.

- Asbestos is associated with the system piping and considered for health and safety purposes.

- Sewage sludge, if encountered, will also be analyzed for fecal coliform bacteria for health and safety purposes.

A.1.1.6 Area 17 Camp Background

Two of the CASs in CAU 151 are located in Area 17 Camp. A background of the entire camp has been provided to explain how the systems in the camp interact and may impact both of the CASs in CAU 151. Area 17 Camp was constructed during the early 1960s and was inactive and abandoned by the late 1980s. The camp provided support services for drilling activities on Pahute Mesa. Activity within the camp was highest from the mid to late 1960s; thereafter, the camp was likely used only intermittently. While active, the Area 17 Camp contained many facilities including a security compound, the cafeteria and restrooms, fire station and first aid building, U.S. Geological Survey (USGS) compound, service station, and construction area. The construction area included the teamsters shop, carpenter shop, electricians shop, linemans shop, laborer shop, painter shop, ironworkers shop, and a pipefitters shop (American Aerial Survey, Inc., Date Unknown a; DRI, 1988).

Two CASs in CAU 151 are located in the Area 17 Camp. The facilities listed above fed into the system and into the lagoons between the northern and southern piping. For CAS 18-03-01, Sewage Lagoon, all of the buildings associated with the Area 17 Camp are associated with this system. The other CAS 18-99-09, Sewer Line (Exposed), is not very well defined and may be linked to the system of CAS 18-03-01 (AEC, Date Unknown).

A.1.1.7 Corrective Action Site 18-03-01, Sewage Lagoons

Physical Setting and Operational History - Corrective Action Site 18-03-01, Sewage Lagoons, is located in the Area 17 Camp of Area 18 at the NTS (Figure A.1-9). This site includes two septic lagoons and the associated piping that was constructed during the early 1960s and was active until the late 1980s (Shaw, 2003a). The lagoons will be referred to as the northern and southern lagoons. The northern lagoon measures 163 by 93 ft and is approximately 18 ft deep. The southern lagoon is 141 by 113 by 10 ft. Both of the lagoons are dry and contain vegetation. The partially exposed VCP (CAS 18-99-09) is located northeast of the lagoons and may not be associated with these lagoons. There are no drawings that indicate CAS 18-99-09 and CAS 18-03-01 are connected, and geophysical survey results did not indicate a tie-in of the pipe to the sewage lagoon (AEC, Date Unknown; SAIC, 2003; Shaw, 2003b).

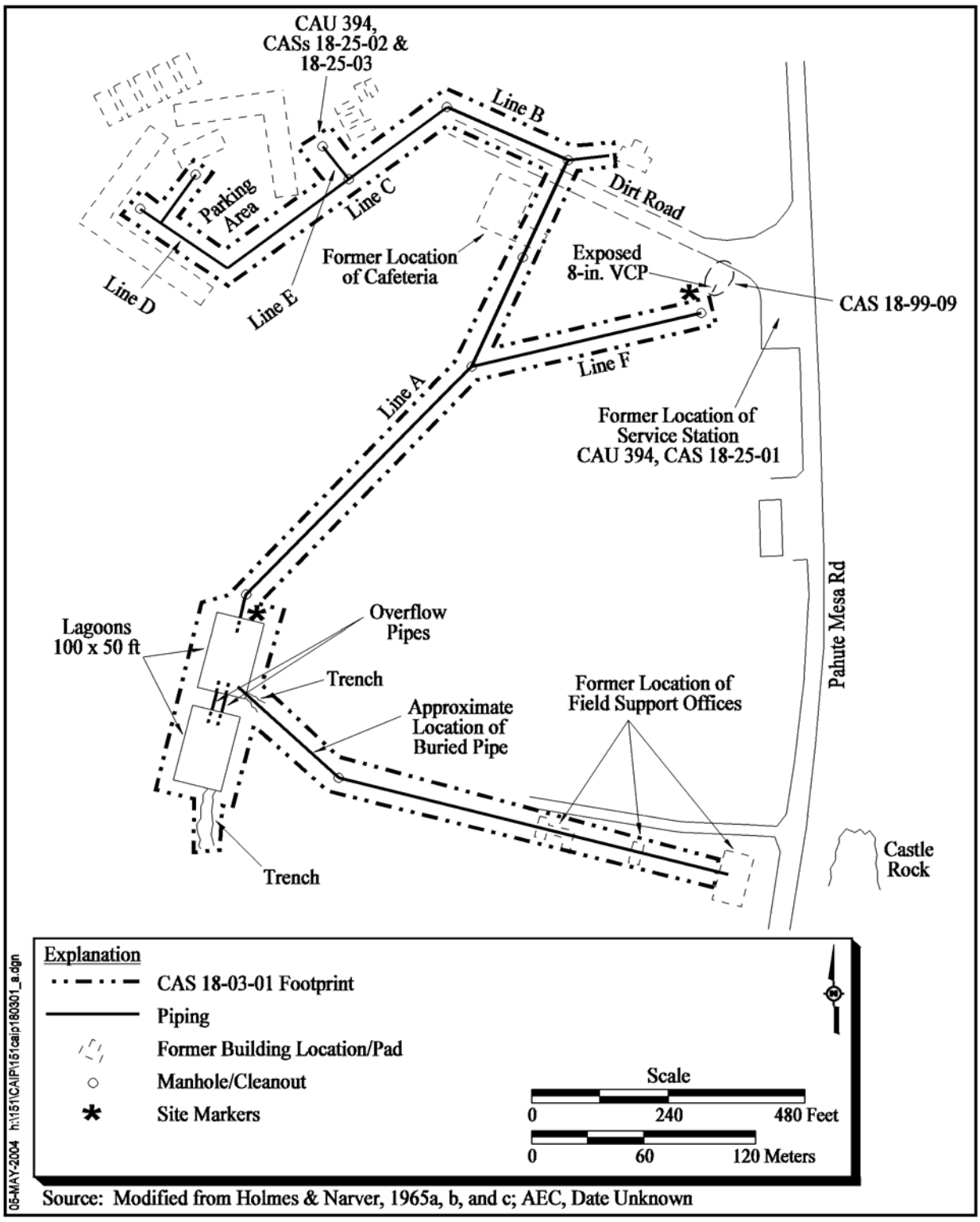


Figure A.1-9
CAU 151, CAS 18-03-01 Site Map

Because the drawing and surveys indicate that the CASs 18-03-01 and 18-99-09 are not related, they shall remain separate CASs and approached separately unless the investigation determines that they are connected.

Sources of Potential Contamination - The sources of potential contamination at CAS 18-03-01 include:

- The sewage lagoons were associated with the Area 17 Camp in Area 18. Restrooms discharged into these lagoons from the Area 17 Camp (Holmes & Narver, 1965a, b, and c).
- The piping systems associated with the lagoons may have been constructed using asbestos.

Previous Investigation Results - There are no prior sampling results available for this CAS.

Contaminants of Potential Concern - Based on the process knowledge, domestic sewage is the probable contaminant for this CAS. However, based on previous site investigations, it is known that similar facilities at the NTS may have not been used for their intended purpose. Other chemicals may have been discharged into drains; therefore, an array of chemicals used at adjacent facilities may have been disposed of into this system. Indicators for potential contamination include total VOCs, total SVOCs, TPH, and pesticides. In addition, to maintain continuity with the NTS list of common analytes to this suite, NTS-specific analytes shall be added to suite including gamma-emitting radionuclides, PCBs, and RCRA metals with beryllium.

Asbestos is associated with the lagoon system piping and considered for health and safety purposes. Sewage sludge, if encountered, will also be analyzed for fecal coliform bacteria for health and safety purposes.

A.1.1.8 Corrective Action Unit 18-99-09, Sewer Line (Exposed)

Physical Setting and Operational History - Corrective Action Site 18-99-09, Sewer Line (Exposed), is located in the Area 17 Camp of Area 18 at the NTS (Figure A.1-10). This 6-in. VCP is in the vicinity of CAS 18-03-01, Sewage Lagoons; however, documentation and geophysical surveys indicate that the pipe is not attached to the system associated with the sewage lagoons. There is approximately 3 ft of the pipe exposed at the surface under a fence. The southern end of the pipe is elbowed downward. The origin and terminus of the pipe are not known and there is minimal

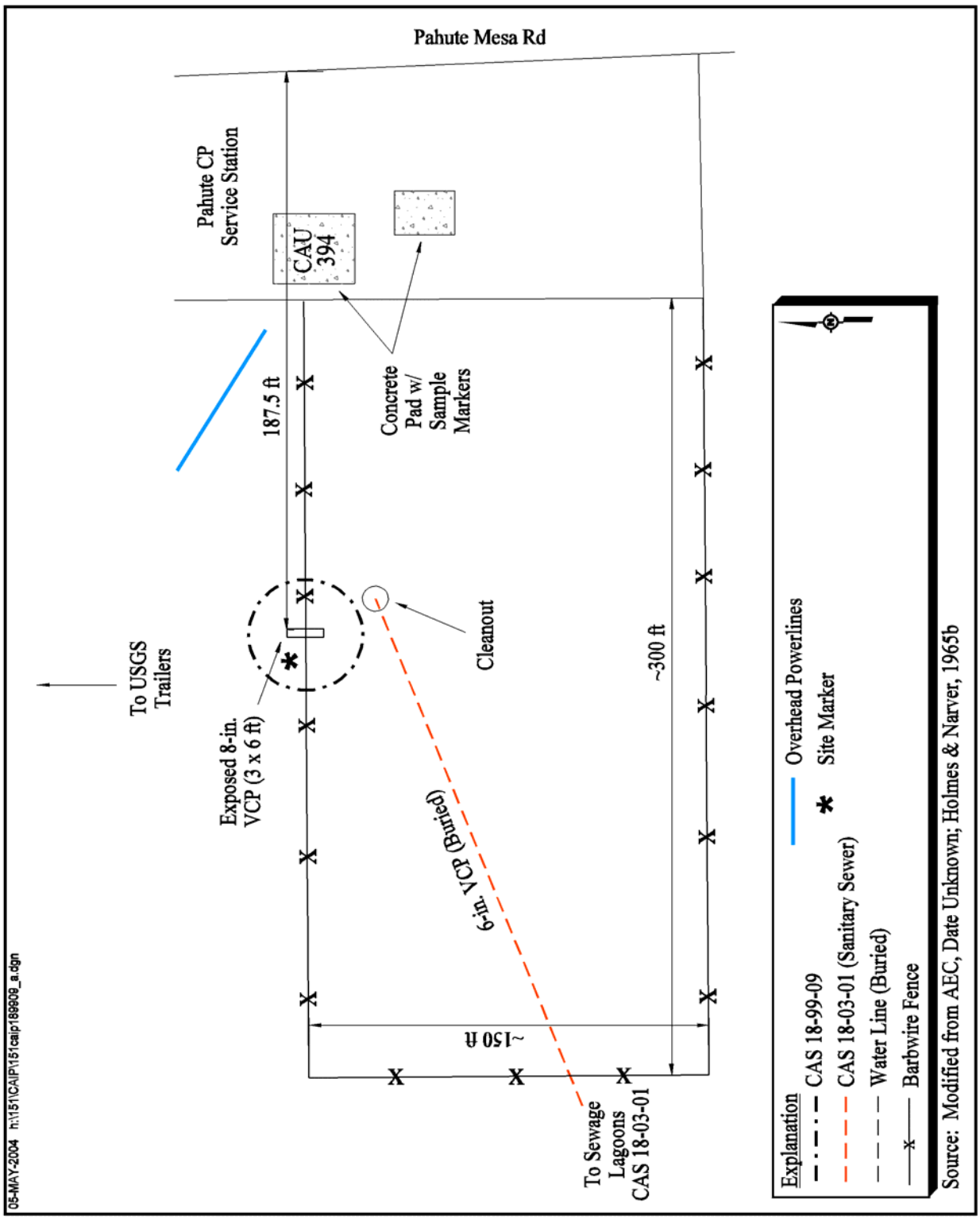


Figure A.1-10
CAU 151, CAS 18-99-09 Site Map

documentation as to what structures are associated with this pipe. The timeline for the site is assumed to be the same as the Area 17 Camp, that was constructed in the early 1960s and was abandoned and inactive by the late 1980s.

Sources of Potential Contamination - The origin and terminus are unknown for this CAS. Since there is no definitive information for this site, the COPC list has not been determined based on process knowledge or previous sampling activities. However, knowing that the type of pipe is the same and its proximity is close to the sewage line from CAS 18-03-01, it can be assumed that if this location is associated, then the COPCs will be the same as those established for CAS 18-03-01.

Previous Investigation Results - No previous analytical investigation results are available for CAS 18-99-09.

Geophysical survey were conducted at CAS 18-99-09 between March 5 and 27, 2003. The report states that the CAS consists of a partially exposed VCP sewer pipe located on the west side of the abandoned Area 17 Camp gas station. The pipe is 8 in. in diameter and approximately 10 ft long. A barbwire fence runs east to west, perpendicular to the pipe. The origin and termination points for the exposed pipe are unknown; thus, the purpose of the survey was to determine the origin, terminus, and location of the clay pipe within the survey area and to determine if a leachfield or tank is associated with the piping. Four distinct anomalies were identified in the survey. Anomaly A runs east to west and is believed to be related to the barbwire fence that bisects the site. Anomaly B and C both run northwest to southeast and are believed to be underground utilities. Anomaly B was traced to the southeast to where it terminated at a 6-in. diameter steel pipe outfall opening to a drainage swale. The origin of this facility could not be determined. Anomaly C was traced to wooden markers and signs that were labeled as underground cable. Finally, Anomaly D was characterized as a group of isolated targets that are most likely metallic debris contained within a drainage swale that parallels the west side of road RSMP P38. No features characteristic of a septic tank were identified within the limits of the survey.

Ten survey traverses were also conducted in the vicinity of the exposed pipe and the suspected underground utility. The survey traverses seemed to indicate a weak existence of an underground utility. These results suggest that the exposed pipe continues a north-south trend and extends beyond

the limits of the survey area. The origin and termination points of this utility were not determined (SAIC, 2003).

Radiological surveys of Areas 18 and 20 were conducted during October 10 through November 13, 1985 (EG&G/EM, 1985). Surveys of the two areas were conducted simultaneously and exposure rate contour maps for total terrestrial gamma-ray activity were generated for both areas. The most frequently occurring range of exposure rates was 17 to 25 μR/h for both areas. Background for the NTS is 10 to 20 μR/h. To show the extent of man-made contamination in Area 18, an isocount rate contour map showing the distribution of count rates measured in a spectral window sensitive to cobalt-60 was used (EG&G/EM, 1985).

Contaminants of Potential Concern - The same suite of analytes for CAS 18-03-01 will be used for this site due to the proximity and uncertainties of the CAS.

A.1.1.9 Corrective Action Site 20-19-02, Photochemical Drain

Physical Setting and Operational History - Corrective Action Site 20-19-02, Photochemical Drain, consists of a surface discharge from a drain in a photoprocessing Trailer 992 at the Area 20 Camp (Figure A.1-11). The discharge of photochemicals from Trailer 992 onto the soil beneath the trailer occurred during the operations of the trailer for film processing from 1967 through 1991. The trailer was not active the entire year, but was operational a few weeks of each year to support the tests conducted in the area (Maddox, 1991).

Area 20 Camp was used as a support camp. After 1991, portions of the camp were demolished. Presently there are two metal buildings and concrete pads that remain at the camp. It is not known, nor documented, whether or not the site had been graded as a part of the demolition activities. The location of Trailer 992 has not been determined. Discussions with employees who have worked at the Area 20 Camp indicate that the trailer may have been located approximately 100 ft west of the metal buildings (Templeton, 2004).

Although CAS 20-19-02 has been identified in audits and is documented, it has not been physically identified during field visits. Documentation suggests that the discharge of the photochemicals was directly onto the ground surface. However, in 1990 the operations at the trailer changed and the

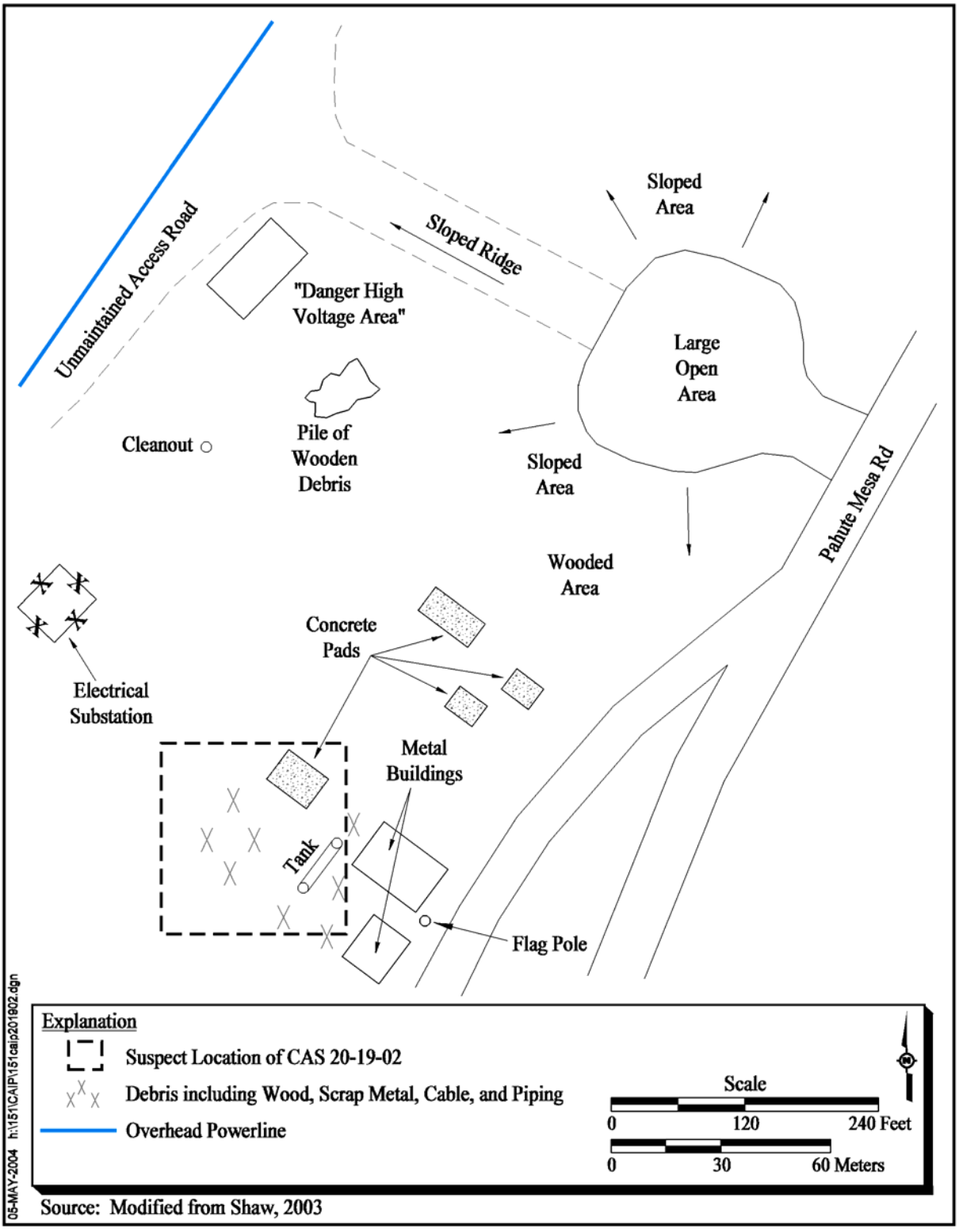


Figure A.1-11
CAU 151, CAS 20-19-02

photochemicals would be contained in 55-gal drums that were stored alongside the trailer (Maddox, 1991).

Sources of Potential Contamination - Photoprocessing was conducted in Trailer 992 for the Area 20 tests performed from 1967 through 1991. Trailer 992 discharged into a "photochemical drain" below the trailer to the surface and subsurface (Maddox, 1991).

Previous Investigation Results - An aerial radiological survey was performed on Areas 18 and 20 in November 1985 and the results of the survey are consistent with the activities associated with testing in the area. The exposure rate for the vicinity of CAS 20-19-02 was 17 to 20 microrem/hour. Background for the NTS is 10 to 20 μR/h (EG&G/EM, 1985). Radiological contamination is not expected to be a concern at the Area 20 Camp; however, due to the uncertainty of activities at NTS, radiological constituents will remain a COPC for this CAS.

No extended assessments directly related to the photochemical drain were identified.

Contaminants of Potential Concern - The COPCs for CAS 20-19-02 were established as a part of the known investigations and historical knowledge of this site. The analytes are as follows:

- General COPCs associated with the discharge of photoprocessing chemicals onto the surface of a location within the Area 20 Camp.
- Suspected COPCs identified for CAS 20-19-02 are silver and silver compounds, hydroquinone and potassium hydroxide (Maddox, 1991; Moeller, 2003). These COPCs have been identified as the best possible analytical indicators.
- Because the historical documentation is not definitive, total VOCs, total SVOCs, and TPH have been added to the analytical suite.
- NTS-specific analytes shall be added to suite if not already identified from historical or process knowledge. These analytes include gamma-emitting radionuclides, PCBs, pH, and RCRA metals with beryllium.

A.1.2 Step 1 – State the Problem

This initial step of the DQO process identifies the planning team members and decision makers, describes the problem that has initiated the CAU 151 CAI, and develops the CSM.

A.1.2.1 Planning Team Members

The DQO planning team consists of representatives from NDEP, NNSA/NSO, Stoller-Navarro Joint Venture (SNJV), and Bechtel Nevada (BN). The primary decision-makers include NDEP and NNSA/NSO representatives. Table A.1-4 lists representatives from each organization in attendance at the March 31, 2004, DQO planning meeting.

Table A.1-4
DQO Meeting Participants

Participant	Affiliation
Greg Raab	NDEP
Kevin Cabble	NNSA/NSO
Brian Hoenes	SNJV
David Strand	SNJV
Jill Dale	SNJV
Lynn Kidman	SNJV
C.H. Tung	SNJV
Barbara Quinn	SNJV
Charlotte Franky	SNJV
Jack Ellis	SNJV
Jeanne Wightman	SNJV
Julie Snelling-Young	SNJV
Kathy Umbarger	BN

BN – Bechtel Nevada
SNJV – Stoller-Navarro Joint Venture
NDEP – Nevada Division of Environmental Protection
NNSA/NSO – U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office

A.1.2.2 Describe the Problem

Corrective Action Unit 151, Septic Systems and Discharge Areas, is being investigated because effluent potentially contaminated with hazardous and/or radioactive constituents may have discharged to the various systems that comprise the unit. Designed releases to lagoons, ponds, sumps, and drains could have resulted in contamination of the native soils associated with the CASs. Additionally, accidental releases caused by breaches in associated piping systems, overflow of

collection systems (e.g., lagoons, ponds, sumps, septic tanks), or potential spills could have resulted in surface or subsurface soils contamination. The problem statement for CAU 151 is:

> "Existing information on the nature of potential contaminants and, if present, the extent of contamination is insufficient to evaluate and recommend corrective action alternatives for CAU 151."

A.1.2.3 Develop A Conceptual Site Model

Conceptual site models describe the most probable scenarios for current conditions at a CAS and define the assumptions that are the basis for identifying appropriate sampling strategy and data collection methods. They are the basis for assessing how contaminants could reach receptors both in the present and future by addressing contaminant nature and extent, transport mechanisms and pathways, potential receptors, and potential exposures to those receptors. Accurate CSMs are important because they serve as the basis for all subsequent inputs and decisions throughout the DQO process. Land-use descriptions help define exposure scenarios that are the basis for assessing how contaminants could reach potential receptors both in the present and future. Table A.1-5 summarizes the land-use designations and associated descriptions for the CAU 151 CASs (DOE/NV, 1998b). Based on land use, current and future receptors is limited to industrial and construction workers as well as military personnel conducting training. These human receptors may be exposed to COPCs through oral ingestion, inhalation, dermal contact (absorption) of soil and/or debris due to inadvertent disturbance of these materials or irradiation by radioactive materials.

The graphical CSM for CAU 151 (Figure A.1-12), is a general model that shows the affected media, transport mechanisms, preferential pathways, and release points common to the various CASs within CAU 151. The CSM addresses the associated components common to the CASs and addresses associated systems with subsurface piping and captures the commonalities of the CASs. This will apply to all of the CASs with the exception of CAS 20-19-02, which has a separate CSM (Figure A.1-13). The CSMs for CAU 151 were developed using information from the physical setting, potential contaminant sources, knowledge from similar sites, release information, historical background information, and physical and chemical properties of the potentially affected media and COPCs. The CAU 151 CASs included in each model are divided based on the function of the system components and the varying potential for contamination based on applicable components as they apply to each CAS. The CSM for septic and/or discharge collection systems is based on the *Work*

Table A.1-5
Land Use

Land-Use Designation	Land-Use Description	CASs
Nuclear and High Explosive Test Zone	The area is designated within the Nuclear Test Zone for additional underground nuclear weapons tests and outdoor high explosive tests. This zone includes compatible defense and nondefense research, development, and testing activities.	02-05-01, 12-03-01, 12-04-01, 12-04-02, 12-04-03, and 12-47-01
Nuclear Test Zone	This area is reserved for dynamic experiments, hydrodynamic tests, and underground nuclear weapons and weapons effects tests. This zone includes compatible defense and nondefense research, development, and testing activities.	20-19-02
Reserved Zone	This area includes land and facilities that provide widespread flexible support for diverse short-term testing and experimentation. The reserved zone is also used for short duration exercises and training such as nuclear emergency response and Federal Radiological Monitoring and Assessment Central training and U.S. Department of Defense land-navigation exercises and training.	18-03-01 and 18-99-09

Plan for Leachfield Corrective Action Units: Nevada Test Site and Tonopah Test Range, Nevada (DOE/NV, 1998a). As shown in Table A.1-6, the general components of the CAU 151 CASs are septic and/or discharge collection systems.

The piping element of the CSM applies to all of the CASs where piping is present. This component of the CSM covers the integrity of the pipe and whether or not the system has been breached. For all of the systems, only the inactive piping directly attached to a feature at the point where that pipe terminates or is intercepted by an active system applies. The exact configuration of distribution piping for CAS 18-99-09 is unknown; however, geophysical surveys will provide additional information about the configuration of the exposed 6-in. VCP. Although inactive piping is a part of active systems for CASs 12-03-01, 12-04-01, 12-04-02, 12-04-03, and 12-47-01, systems will be verified to the extent of the inactive portion of the system only as it is connected to other components of the CSM (i.e., septic tank, manhole, lagoon).

The septic tank component of the CSM applies to CASs 12-04-01, 12-04-02, and 12-04-03 within CAU 151. The component of the CSM includes the tanks and their contents. For this component of the CSM, the effluent, upon release from the source (i.e., restroom, floor drain in a building), travels through discharge lines and is routed into the system element (i.e., septic tank).

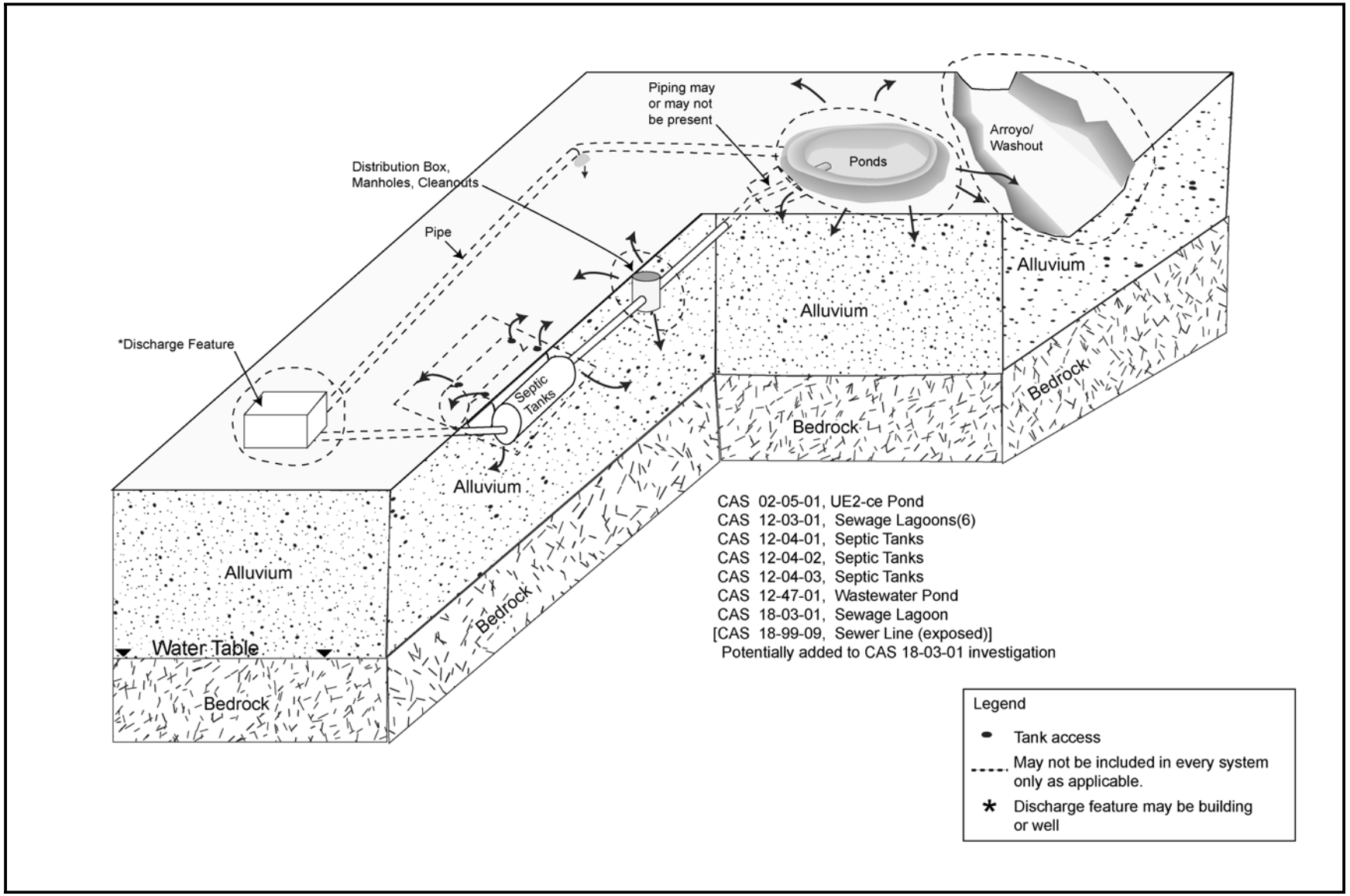


Figure A.1-12
CSM Type 1 - Septic and/or Discharge Collection Systems

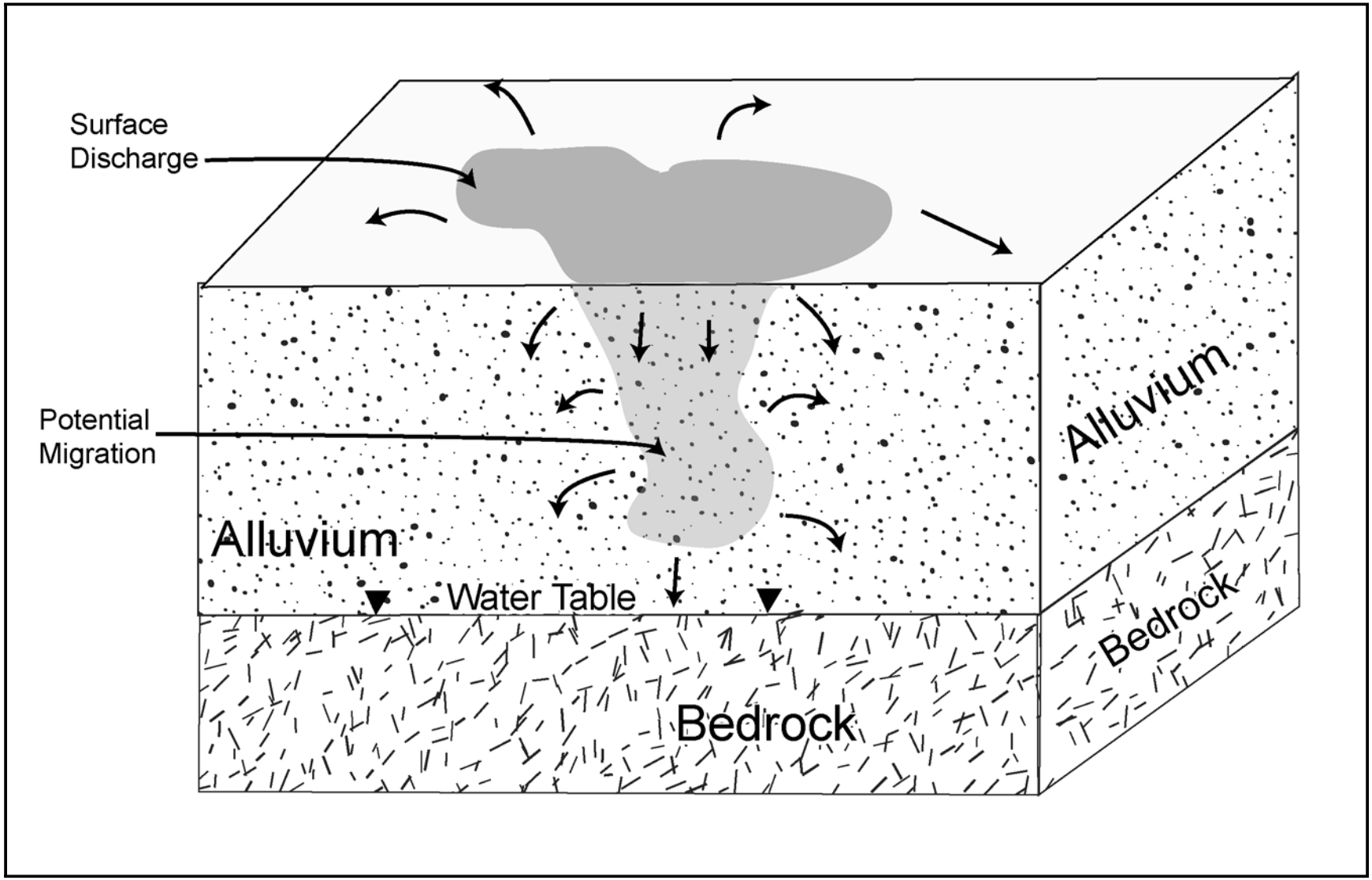


Figure A.1-13
CSM Type 2 - Surface Release

Table A.1-6
Conceptual Site Model Components, Elements, and Applicable CASs

CSM	CSM Component	Corrective Action Site						
		02-05-01	12-03-01	12-04-01, 12-04-02, 12-04-03	12-47-01	18-03-01	18-99-09	20-19-02
Septic Component CSM	Piping	---	Interconnecting Piping Between Lagoons/Ponds	Piping Associated with the Septic System	Piping from Activities Associated with Sumps	Piping Associated with the Sewage Lagoons	Exposed 6-in. VCP	---
	Manholes, Cleanouts, and Distribution Boxes	---	Distribution Boxes (2) and Manhole (1)	Manholes and Cleanouts	Manholes and Cleanouts	Manholes and Cleanouts	---	---
	Septic Systems	---	---	Septic tanks (4)	---	---	---	---
	Lagoons/Sumps or Ponds	Pond	Lagoons and Ponds (7 total)	---	Old and New Sumps	Sewage Lagoons (2)	---	---
Surface Release CSM	Unconfined Surface Discharge	---	---	---	---	---	---	Surface/ Subsurface Discharge

The lagoon, sump, and pond component of the CSM applies to CASs 02-05-01, 12-03-01, 12-47-01, 18-03-01, and potentially 18-99-09. Effluent was dispersed throughout the feature by way of distribution pipes located in the subsurface or from a surface trench. Initially lagoons/sumps were constructed to contain and act as a holding area for effluent and eventually allow liquid to percolate down into the underlying native soil. Systems were eventually updated or the areas were closed and these components were either bypassed or became obsolete. Documentation suggests that many of these systems experienced overflow in the past; therefore, areas outside of the bermed areas will be included in the boundaries of this component.

A separate CSM applies to CAS 20-19-02, Photochemical Drain. This CSM shows conceptually that effluent was released via direct discharge at the surface and was assumed to be unconfined. This component is a surface discharge of effluent for disposal purposes where liquids were allowed to evaporate as well as percolate down into the underlying native soil.

If components are identified during the CAI that are not covered by the CSM or if the investigation extends beyond the spatial boundaries for the CAS(s), the planned approach will be to rescope the boundaries of the investigation. The DQOs will be reviewed and any significant deviation from the approved plan will be presented with corrective recommendations for approval.

Affected media - The following information provides the affected media per component of the CSM:

- The affected media within the piping element is the pipe and the surrounding soil.
- Within the manholes, cleanouts, and distribution boxes, the affected media includes the component itself. If the component overflowed, then the surface soils surrounding the component may be affected by the release of effluent. If the manhole, cleanout, or distribution box was broken or had been impacted by the closure of these systems, then the subsurface soils may have been impacted by a release of effluent.
- For the septic component of the CSM, the affected media is the underground storage tank (UST) that came in direct contact with the effluent and the subsurface soil surrounding these structures if a breach or rupture of the system occurred. Surface soils adjacent to the tank or distribution box structure may be impacted if an overflow or accidental spill occurred.
- The affected media for the lagoon, sump, and pond component are subsurface soil immediately beneath the effluent pipe or discharge point and the extent of the affected area within the lagoon (i.e., lagoon bottom, outfall). Berms and/or the surface soil adjacent to the

lagoon may have been impacted if an overflow of the feature occurred. It is not known if the soil covers placed over the features are affected. At several locations, there are arroyos/washouts adjacent or within the boundary of the CAS, contamination due to overflow may have impacted the soils and has the potential to have been transported via this feature.

- For the surface discharge CSM for CAS 20-19-02, the affected media is the surface and subsurface soils at the location.

Location of Contamination/Release Points - For the CAU 151 CASs, the presence of COPCs in soils may have resulted from designed or accidental releases as previously discussed and depicted on the CSM (Figure A.1-12 and Figure A.1-13). The location of contamination at the CAU 151 CASs is assumed consistent with the CSM.

Transport Mechanisms - An important element of a CSM is the expected fate and transport of contaminants in the environment. The transport mechanism infers how contaminants move through site media and where they can be expected in the environment. The expected fate and transport is based on distinguishing physical and chemical characteristics of the suspected contaminants and media. Contaminant characteristics include biodegradation potential, solubility, density, and affinity for nonmobile particles (adsorption). Media characteristics include permeability, porosity, hydraulic conductivity, total organic carbon content, and adsorption coefficients. In general, contaminants with low solubility and high density can be expected to be found relatively close to release points. Contaminants with high solubility and low density are more susceptible to factors that can move them through various media; therefore, can be expected to be found further from release points.

Migration of potential contamination is assumed to be minimal based on the affinity of the COPCs for soil particles, and the low precipitation and high evapotranspiration rates typical of the NTS environment. Run-off could cause lateral migration of contaminants over the ground surface for the release scenarios described. Contaminants may also have been transported by infiltration and percolation of precipitation through soil, that would serve as the primary driving force for downward migration. Mixing of the surface soil as a result of grading or construction activities could also move the COPCs into deeper intervals (e.g., the sumps within CAS 12-47-01). The migration of organic constituents (e.g., petroleum hydrocarbons, PCBs) can be controlled to some extent by their affinity for organic material present in soil. However, this mechanism is considered insignificant because of the lack of organic carbon in the desert soil. Migration of certain inorganic constituents (e.g., metals

in waste oil) is controlled by geochemical processes, such as adsorption, ion exchange, and precipitation of solids from solution.

It is assumed that groundwater is not impacted because of its significant depth at the NTS. The groundwater level for CAU 151 are approximately 1,448 ft bgs in Area 2; 2,053 ft bgs in Area 12; 1,081 ft bgs in Area 18; and 2,050 ft bgs in Area 20. The average annual precipitation for the sites is less than 6 in. for Area 2; 8 to12 in. for Area 12; 8 in. for Area 18; and 7 in. for Area 20. Also, the environmental conditions at the NTS (i.e., arid climate, relatively low permeability soils) are not conducive to significant downward migration (DOE/NV, Date Unknown).

Airborne release subsequent to the initial contaminant release is not considered a significant release pathway. The main process of migration through the air would be through windblown dust. The COPCs adsorbed to the fine soil particles and migration could occur via the airborne pathway and this process could result in the deposition of contaminants beyond the CAS boundaries. For all transport mechanisms, it would be expected that contaminant levels decrease with distance from the point of release and distributed consistent with the prevailing wind direction.

Preferential Pathways - Preferential pathways for contaminant migration at the CAU 151 CASs are not expected to be present or have only had a minor impact on contaminant migration. The presence of relatively impermeable layers (e.g., caliche layers, concrete pads) may modify transport pathways both on the ground surface and in the shallow subsurface. Arroyos or washouts, if present, could channelize run-off and increase lateral transport prior to infiltration. When the systems were operational, a breach in distribution piping may have allowed liquids to contaminate soils preferentially along the pipeline due to the disturbed nature of the subsurface soils. Contamination could travel laterally to a small degree under these scenarios. Although the preferential pathways for contaminant migration will be considered in the development of sampling strategies and sampling contingencies discussed in the CAIP, primary consideration will be given to the release and transport mechanisms.

Lateral and Vertical Extent of Contamination - If contamination is present at a CAS, it is expected to be confined to the surface and shallow subsurface at the site. Concentrations of contaminants are expected to decrease with distance (both horizontally and vertically) from the release point(s). For releases at the surface, migration may occur as a result of storm events when precipitation rates

exceed infiltration (stormwater run-off). Surface migration is a biasing factor considered in the selection of sampling locations. As stated previously, downward contaminant transport is expected to be limited, but is unknown because the quantities of hazardous material released is unknown. There is an exception for CAS 20-19-02, where the amount and type of contaminants are known; however, the location of the site has not been physically identified. Process knowledge and historical interviews indicate a possible location for this site.

A.1.3 Step 2 – Identify the Decision

Step 2 of the DQO process identifies the decisions statements and defines alternative actions. Also presented is this section is the decision logic for the entire process.

A.1.3.1 Develop Decision Statements

The primary problem statement is: "Existing information on the nature of potential contaminants and, if present, the extent of contamination is insufficient to evaluate and recommend corrective action alternatives for CAS (s)."

Therefore, the following two decision statements have been established for all of the CASs, except for CAS 20-19-02, as criteria for determining the adequacy of the data collected during the CAI to resolve the problem statement.

Because the location of CAS 20-19-02 has not been clearly defined, two Decision I statements have been developed for this CAS. Decision I(a) for CAS 20-19-02 is: "Where is the release location of the surface discharge?" The location of the surface discharge will be identified as any location with detection above PALs for total Ag. Decision I(b) for CAS 20-19-02 is: "Is a COPC present at a concentration that could pose an unacceptable risk to human health and the environment?" Any contaminant detected at a concentration exceeding the corresponding PAL, as defined in Section A.1.4.2, will be considered a COC. The presence of a contaminant within a CAS is defined as the analytical detection of a COC. Samples used to resolve Decision I statements for CAS 20-19-02 are referred to as Decision I(a) and Decision I(b) samples.

There is only one decision statement for all other CASs in CAU 151. Decision I (will be identified as Decision I/I(b) for the document): "Is a COPC present at a concentration that could pose an

unacceptable risk to human health and the environment?" Any contaminant detected at a concentration exceeding the corresponding PAL, as defined in Section A.1.4.2, will be considered a COC. The presence of a contaminant within a CAS is defined as the analytical detection of a COC. Samples used to resolve Decision I are referred to as Decision I samples.

A Decision II statement has been developed to satisfy the results of COPCs identified from Decision I/I(b)

Decision II: "If a COC is present, is sufficient information available to evaluate appropriate corrective action alternatives?" Sufficient information is defined as the data needs identified in this DQO to include the lateral and vertical extent all COCs associated with a CAS. Samples used to resolve the decision are identified as Decision II samples.

A.1.3.2 Alternative Actions to the Decisions

For each decision identified in the previous section there is an alternate action.

Alternate action for Decision I(a) for CAS 20-19-02 is: "If the location of the surface discharge is not identified, the stakeholders will reconvene to determine the next course of action for the CAS." If the location is identified, resolve Decision I(b).

During the DQO meeting on March 31, 2004, it was determined that if there was no evidence of contamination to resolve the Decision I(a) statement, a decision would be made for further action at this site. In April 2004, samples were collected to resolve Decision I(a) for CAS 20-19-02, Photochemical Drain. Samples were collected in accordance with the systematic grid-based sampling method developed for this CAS. Two hundred ninety-three samples were submitted from the systematic grid and from biased locations determined from the field conditions and interviews. None of the results presented the evidence of CAS 20-19-02. It was determined by SNJV, NNSA, and NDEP to move this CAS to CAU 5000, Archived Corrective Action Sites, based on the research and results of the systematic grid-based sampling effort. Therefore, Decision I(b) will not be resolved during this investigation.

Alternate action for Decision I and I(b) (as identified as Decision I/I(b) for this document) is: "If a COC is not present, further assessment of the CAS is not required." If a COC is present, resolve Decision II.

Alternate action for Decision II is: "If the extent of the COC is defined in both the lateral and vertical direction, further characterization of the CAS is not required." If the extent of a COC is not defined, re-evaluate site conditions and collect additional samples.

A.1.4 Step 3 – Identify the Inputs to the Decisions

The objectives of Step 3 are to identify the information needed, determine sources for information, determine the basis for establishing action levels, and identify sampling and analysis methods that can meet the data requirements.

To determine if a COC is present, each sample result is compared to a PAL (Section A.1.4.2). Any COPC detected above its corresponding PAL is considered a COC.

A.1.4.1 Information Needs and Information Sources

Table A.1-7 lists the information needs, the source of information for each need, and the proposed methods to collect the data needed to resolve Decisions I(a), I/I(b), and II, as well as the QA/QC data type. The data type is determined by the intended use of the resulting data in decision making. Data types are discussed in the Industrial Sites QAPP (NNSA/NV, 2002). All data to be collected are classified into one of three measurement quality categories: quantitative, semiquantitative, and qualitative. Additionally, the status of obtaining the data needed is presented in the last column of Table A.1-7.

To determine the location of the surface release for the Decision I(a) statement for CAS 20-19-02, a systematic grid-based sampling method has been developed to identify a hot spot based on historical interviews and process knowledge. This method was developed using Visual Sample Plan software (PNNL, 2002) of a 396 by 528 ft area assuming a hot spot with a 15 ft radius in Area 20 Camp that conservatively encompasses the probable location of the surface discharge. Based on inputs, 270 sample locations were generated using a triangular grid. Assumptions about the area developed using methods from Gilbert (1987) are the following:

- The target (hot spot) is circular, the measurements (sample locations) are taken on a triangular grid.

Table A.1-7
Information Needs and Status to Resolve Decisions I and II
(Page 1 of 2)

Information Need	Information Source	Collection Method	Data Type/Metric	Status
Decision I(a): Determine the location of the surface discharge.				
Source and location of release points	Analytical results to identify hot spot	Perform sampling as determined by parameters, review, and interpret the results of the effort.	Quantitative - Sampling results will be submitted for laboratory analysis by ICP.	A systematic grid-based sampling event with a 95% confidence interval is proposed for this location to determine the location of the surface discharge at CAS 20-19-02.
Decision I/I(b): Determine if a COC is present. Criterion 1: Samples must be collected in areas most likely to contain a COC.				
Source and location of release points	Process knowledge compiled during the Preliminary Assessment process and previous investigations of similar sites	Information documented in CSM and public reports. Complete for all CASs with the exception of CAS 20-19-09 where information is collected, but location of the discharge is unknown.	Qualitative - At present, CSM is assumed to be accurate.	Further investigation and background is being compiled about CAS 20-19-02 to determine the location.
	Site visit and field observations	Conduct site visits and document field observations.	Qualitative - At present, CSM is assumed to be accurate.	All sites have been visited, and it has been determined that further geophysical surveys shall be completed on CAS 12-04-03 to locate Septic System #2 and on CAS 18-99-03 to determine if the VCP ties in with any adjacent systems. During the field visit, it was observed that features are not locatable at CAS 12-47-01 to include one manhole on the southwestern portion of the site and the exact locations of the sumps are not clearly defined. Further site visits to confirm engineering drawings will be performed to verify. Additional information is being compiled about CAS 20-19-02 to determine the location.
	Aerial photographs	Review and interpret aerial photographs.	Semiquantitative - Sampling based on biasing criteria stipulated in DQO Step 3.	Completed.
	Radiological Survey	Review and interpret radiological surveys.	Semiquantitative - Sampling based on biasing criteria stipulated in DQO Step 3.	Completed.
	Geophysical Survey	Review and interpret survey results.	Semiquantitative - Sampling based on biasing criteria stipulated in DQO Step 3.	Geophysical surveys completed at applicable CASs. Additional locations have recently been identified for surveys to verify presence of systems that are conflicting between historical documentation and engineering drawings.
	Video Mole Survey	Review and interpret to identify breaches in the systems.	Semiquantitative - Sampling based on biasing criteria stipulated in DQO Step 3.	CAIP Implementation. At present assuming 100% coverage of abandoned lines. Piping currently in use will not be surveyed.

Table A.1-7
Information Needs and Status to Resolve Decisions I and II
(Page 2 of 2)

Information Need	Information Source	Collection Method	Data Type/Metric	Status
Source and location of release points (continued)	Field screening during sampling	Review and interpret field-screening results.	Semiquantitative - Sampling based on biasing criteria stipulated in DQO Step 3.	CAIP Implementation
Decision I/I(b): Determine if a COC is present. (continued) Criterion 2: Analyses must be sufficient to detect any COCs in samples.				
Identification of all potential contaminants	Process knowledge compiled during PA process and previous investigations of similar sites	Information reported in CSM and public reports - no additional data needed.	Qualitative - At present, CSM is assumed to be accurate.	Completed
Analytical results	Data packages	Appropriate sampling techniques and approved analytical methods will be used.	Quantitative - Detection limits will be less than PALs.	Post-CAIP Implementation
Decision II: Determine the extent of a COC.				
Identification of applicable COCs	Data packages	Review analytical results to select COCs.	Quantitative	Post-CAIP Implementation
Extent of Contamination	Field observations	Document field observations.	Qualitative - At present, CSM is assumed to be accurate.	CAIP Implementation
	Field screening	Conduct field screening with appropriate instrumentation.	Semiquantitative - FSRs will be compared to FSLs.	CAIP Implementation
	Decision I analytical results	Appropriate sampling techniques and approved analytical methods will be used to bound COCs.	Quantitative - Validated analytical results will be compared to PALs to determine COC extent.	Post-CAIP Implementation

- The distance between the grid points is much larger than the actual area sampled or cored, the target will have measurable contamination.

- There will be no measurement misclassification errors (e.g., no errors are made when a hot spot has been hit).

In order to determine if a COC is present at all CASs, the Decision I/I(b) samples must be collected and analyzed following these criteria: (1) samples must be collected in areas most likely to be contaminated, and (2) the analytical suites selected and associated method detection limits must be sufficient to detect a COC below its corresponding PAL. In order to determine the extent of contamination for a COC, Decision II samples will be collected to assess the lateral and vertical extent. Decision II samples will include the same analytical suites as the Decision I samples. The data required to satisfy the information needs for Decision II for each COC is a sample concentration that is below the corresponding PAL.

Biasing factors for sample collection include:

- Previous sample results, if available
- Documented process knowledge on source and location of release
- Experience and data from investigations of similar sites
- Field observations
- Aerial photograph review
- Radiological survey results
- Geophysical survey results
- Field-screening data including VOC, TPH, and radiological (Section A.1.4.3.2)
- Professional judgement

Step-out locations from either Decision I/I(b) or Decision II sample locations will be selected based on the CSM, biasing factors considered above, and FSRs. When FSRs or other biasing factors suggest that the COC concentrations at step-out location(s) may still exceed the PAL, then additional step-out distances will be used to define the lateral extent of contamination. If a location where the PAL is exceeded is surrounded by clean locations, then lateral step-outs may not be necessary. In that case, sampling may consist only of sampling from deeper intervals at or near the original location to determine the vertical extent of contamination.

Vertical extent samples will be collected from depth intervals that will meet DQOs and in a manner that will conserve resources during possible remediation. Biasing factors to support depth interval

sampling will be primarily based on FSRs and professional judgement. Sampling locations may be moved due to access problems, underground utilities, or safety issues; however, the modified locations must meet the decision requirements and criteria necessary to fulfill the information needs.

Data types are discussed in the following text. All data to be collected are classified into one of three measurement quality categories: quantitative, semiquantitative, and qualitative. The categories for measurement quality are defined in the following sections.

Quantitative Data

Quantitative data results from direct measurement of a characteristic or component within the population of interest. These data require the highest level of QA/QC in collection and measurement systems because the intended use of the data is to resolve primary decision (i.e., rejecting or accepting the null hypothesis) and/or verifying closure standards have been met. Laboratory analytical data are usually assigned as quantitative data.

Semiquantitative Data

Semiquantitative data is generated from a measurement system that indirectly measures the quantity or amount of a characteristic or component of interest. Inferences are drawn about the quantity or amount of a characteristic or component because a correlation has been shown to exist between results from the indirect measurement and the quantitative measurement. The QA/QC requirements on semiquantitative collection and measurement systems are high but may not be as rigorous as a quantitative measurement system. Semiquantitative data contribute to decision making, but are not generally used alone to resolve primary decisions. The data are often used to guide investigations toward quantitative data collection.

Qualitative Data

Qualitative data identifies or describes the characteristics or components of the population of interest. The QA/QC requirements for qualitative data are the least rigorous on data collection methods and measurement systems. Professional judgement is often used to generate qualitative data. The intended use of the data is for information purposes, to refine CSMS, and guide investigations rather

than resolve the primary decisions. This measurement of quality is typically associated with historical information and data where QA/QC may be highly variable or not known.

A.1.4.2 Determine the Basis for the Preliminary Action Levels

Site workers and military personnel may be exposed to contaminants through oral ingestion, inhalation, external (radiological), or dermal contact (absorption) of soil during disturbance of environmental media. Laboratory analytical results for soils will be compared to the following PALs to evaluate if COPCs are present at levels that may pose an unacceptable risk to human health and/or the environment (i.e., COCs):

- EPA *Region 9 Risk-Based Preliminary Remediation Goals* for Industrial Soils (EPA, 2002b).
- Background concentrations for RCRA metals will be evaluated when natural background exceeds the PAL, as is often the case with arsenic. Background is considered the mean plus two times the standard deviation of the mean based on data published in *Mineral and Energy Resource Assessment of the Nellis Air Force Range* (NBMG, 1998; Moore, 1999).
- TPH concentrations above the action level of 100 mg/kg per NAC 445A.2272 (NAC, 2003).
- For COPCs without established PRGs, a protocol similar to EPA Region IX will be used to establish an action level; otherwise, an established PRG from another EPA region may be chosen.
- The PALs for material, equipment, and structures with residual surface contamination are the allowable total residual surface contamination values for unrestricted release of material and equipment listed in DOE Order 5400.5 (DOE, 1993), which is also Table 4-2 of the NV/YMP RadCon Manual (DOE/NV, 2000).
- The PALs for radiological contaminants are based on the NCRP Report No. 129 recommended screening limits for construction, commercial, industrial land-use scenarios (NCRP, 1999) scaled from 25- to 15-mrem per year dose and the generic guidelines for residual concentration of radionuclides in DOE Order 5400.5 (DOE, 1993). Table A.1-8 provides the radiological PALs.

The selected nonradiological PALs are based on the EPA Region IX Industrial Land Use PRGs (EPA, 2002b). The PRGs are risk-based tools for evaluating and cleaning up contaminated sites that estimate contaminant concentrations in environmental media (soil, air, and water) that EPA considers protective of humans (including sensitive groups) over a lifetime. The toxicity based PALs have been calculated for an industrial-use scenario. The industrial-use scenario is applicable to sites at the NTS

Table A.1-8
Preliminary Action Level Concentrations for Radionuclides

Isotope	PAL (pCi/g)
Am-241	7.62
Cs-137	7.30
Pu-238	7.78
Pu-239/240	7.62
Sr-90	503
Th-230[a]	5/15
Th-232[b]	5/15
U-234	85.9
U-235	10.5
U-238	63.2

References: (NCRP, 1999) and (DOE, 1993)

[a]Th-230 and its daughters Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, and Po-210 are considered to be in equilibrium and will use the DOE 5400.5 general guidance of 5 pCi/g for surface samples and 15 pCi/g for subsurface samples.
[b]Th-232 and its daughters Ra-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Ac-228, Bi-212, Pb-212, Po-212, and Tl-208 are considered to be in equilibrium and will use the DOE 5400.5 general guidance of 5 pCi/g for surface samples and 15 pCi/g for subsurface samples.

based on future land-use scenarios as presented in Section A.1.2.3 and agreements between NDEP and NNSA/NSO.

The conservative level of 100 ppm for TPH is based on the Nevada action limit for hydrocarbon-impacted soil from the State of Nevada and is used as a "clean-up" level (NAC, 2003).

A.1.4.3 Potential Sampling Techniques and Appropriate Analytical Methods

As discussed in Section A.1.4.1, the collection, measurement, and analytical methods are selected so the results will be generated for all potential contaminants at CAU 151. Sampling and analysis of residual materials such as hold-up in piping, tank contents, etc. is included to support the decision-making process for waste management and to ensure an efficient field program.

The analytical methods and laboratory requirements (e.g., detection limits, precision, and accuracy) to be followed are provided in Table 3-5 and Table 3-4 of the CAIP. Sample volumes are laboratory- and method-specific and will be determined in accordance with laboratory requirements. Specific analyses required for the disposal of IDW are identified in Section 5.0 of the CAIP. To ensure that laboratory analyses are sufficient to detect contamination in soil samples at concentrations exceeding the minimum reporting limit, COPC parameters of interest have been selected.

Total silver will be the only analyte for Decision I(a) samples at CAS 20-19-02 because of the constituents known to be discharged at this site, it has been determined that silver is a defensible indicator of those constituents. The VOC and SVOC compounds expected to be analyzed for in Decision I/I(b) soil samples are listed in Table A.1-9 and Table A.1-10, respectively. The radionuclides, PCBs, and metals compounds expected to be analyzed for in Decision I soil samples are listed in Table A.1-11. The pesticide compounds are listed in Table A.1-12.

Table A.1-9
Analytes Reported from VOC Analysis

1,1,1-Trichloroethane	4-Methyl-2-pentanone	Chloromethane
1,1,1,2-Tetrachloroethane	Acetone	Dibromochloromethane
1,1,2,2-Tetrachloroethane	Benzene	Dibromomethane
1,1,2-Trichloroethane	Bromobenzene	Dichlorodifluoromethane
1,1-Dichloroethane	Bromochloromethane	Ethylbenzene
1,1-Dichloroethene	Bromodichloromethane	Iodomethane
cis-1,2-Dichloroethene	Bromoform	Isopropylbenzene
trans-1,2-Dichloroethene	Bromomethane	Methyl tertbutyl ether
1,2-Dichloroethane	Carbon disulfide	Methylene chloride
1,2-Dichloropropane	Carbon tetrachloride	N-Butylbenzene
1,2,3-Trichloropropane	Chlorobenzene	N-Propylbenzene
1,2,4-Trimethylbenzene	Chloroethane	sec-Butylbenzene
1,2-Dibromo-3-chloropropane	Chloroform	Styrene
1,2-Dibromoethane		tert-Butylbenzene
1,3,5-Trimethylbenzene		Tetrachloroethene
cis-1,3-Dichloropropene		Toluene
trans-1,3-Dichloropropene		Trichloroethene
2-Butanone		Trichlorofluoromethane
2-Chlorotoluene		Trichlorotrifluoroethane
		Vinyl acetate
		Vinyl chloride
		Xylene

Table A.1-10
Analytes Reported from SVOC Analysis

1,2,4-Trichlorobenzene (a)	Acenaphthylene	Di-n-butyl Phthalate
1,2-Dichlorobenzene (a)	Aniline	Di-n-octyl Phthalate
1,3-Dichlorobenzene (a)	Anthracene	Fluoranthene
1,4-Dichlorobenzene (a)	Benzo(a)anthracene	Fluorene
2,4,5-Trichlorophenol	Benzo(a)pyrene	Hexachlorobenzene
2,4,6-Trichlorophenol	Benzo(b)fluoranthene	Hexachlorobutadiene (a)
2,4-Dichlorophenol	Benzo(g,h,i)perylene	Hexachlorocyclopentadiene
2,4-Dimethylphenol	Benzo(k)fluoranthene	Hexachloroethane
2,4-Dinitrophenol	Benzoic Acid	Hydroquinone
2,4-Dinitrotoluene	Benzyl Alcohol	Indeno(1,2,3-cd)pyrene
2,6-Dinitrotoluene	Bis(2-chloroethoxy) methane	Isophorone
2-Chloronaphthalene	Bis(2-chloroethyl)ether	Naphthalene (a)
2-Chlorophenol	Bis(2-chloroisopropyl)ether	Nitrobenzene
2-Methylphenol	Bis(2-ethylhexyl) phthalate	N-Nitroso-di-n-propylamine
2-Nitroaniline	Butyl benzyl phthalate	N-Nitrosodimethylamine
3,3-Dichlorobenzidine	Carbazole	N-Nitrosodiphenylamine
4-Bromophenyl phenyl ether	Chrysene	Pentachlorophenol
4-Chloroaniline	Dibenzo(a,h)anthracene	Phenanthrene
4-Methylphenol	Dibenzofuran	Phenol
4-Nitrophenol	Diethyl Phthalate	Pyrene
Acenaphthene	Dimethyl Phthalate	Pyridine

(a) May be reported with VOCs

A.1.4.3.1 Video-Mole Survey

A video-mole survey of discharge and outfall lines may be conducted to inspect the current physical condition and layout of the CAS distribution systems, as necessary. Video-mole surveys allow a visual assessment of the system's integrity and can be used to identify breaches that may have resulted in a release. Subsurface features may be excavated to gain additional access for inspection or sampling or to introduce the video system. Piping that is currently in use will not be subject to video-mole surveys.

Table A.1-11
Analytes Reported from Radionuclides, PCB, and Metals Analyses

Radionuclides	PCB		Metals	
Gamma-emitting radionuclides	Aroclor-1016	Aroclor-1248	arsenic	lead
Strontium-90	Aroclor-1221	Aroclor-1254	barium	mercury
Uranium- 234, 235, 238	Aroclor-1232	Aroclor-1260	beryllium	selenium
Plutonium- 238, 239/240	Aroclor-1242		cadmium	silver
Tritium			chromium	

Table A.1-12
Analytes Reported from Pesticides Analyses

Pesticides	
alpha-BHC	Dieldrin
gamma-BHC (Lindane)	Endrine
Heptachlor	4,4'-DDD
Aldrin	Endosulfan II
beta-BHC	4.4'-DDT
delta-BHC	Endrin aldehyde
Heptachlor Epoxide	Methoxychlor
Endosulfan I	Endosulfan sulfate
gamma-chlordane	Endrin ketone
alpha-chlordane	Toxaphene
4,4'-DDE	

A.1.4.3.2 Field Screening

Field-screening activities will be conducted for the following analytes and/or parameters:

- Alpha and Beta/Gamma Radiation - a handheld radiological survey instrument or method will be used based on the possibility that radiologically contaminated or elevated measurements (i.e., hot spots) are present in soil, concrete, or other materials. If determined appropriate, on-site gamma spectroscopy or an equivalent instrument or method, may also be used to screen samples. The FSL for samples is the mean background activity plus two times the standard deviation of the mean background activity.

- VOCs - a photoionization detector (PID), or equivalent instrument or method, will be used for field screening of VOCs at the CAU 151 CASs. If PID results greater than 10 ppm are encountered, then headspace field screening will be performed. The FSL for the headspace analysis is 20 ppm or 2.5 times background, whichever is greater.

- TPH - a gas chromatograph, or equivalent equipment or method, may be used at all the CASs because TPH is representative of general characteristics of sewage and may be in decontamination rinsate. The FSL for TPH is 75 ppm.

The techniques and FSLs are based on the applications for other CAU investigations and common NTS practices. These field-screening techniques will provide semiquantitative data that can be used to guide confirmatory soil sampling activities and waste management decisions.

A.1.4.3.3 Sampling Methods

Hand sampling, augering, direct-push, excavation, drilling, or other appropriate sampling methods will be used to collect soil samples. Sample collection and handling activities will only be conducted

in accordance with approved Standard Quality Practices (SQPs). It may be appropriate to use excavation in selected areas to determine if contaminated soil has been covered with clean fill. The following details the components involved in the investigation at CAU 151.

Based on the results of the video-mole survey, piping will be excavated at points of suspected residual hold-up or breaches and visually inspected. If an adequate volume of residual material is present and accessible, samples will be collected. Soil beneath detectable breaches also will be sampled.

Liquid and sludge material in septic tanks will be sampled using a Composite Liquids Waste Sampler (COLIWASA) (with extensions as necessary), bailer, bacon bomb sampler, or similar device. An attempt will be made to collect a column sample that represents the entire depth of the liquid phase and then a separate column sample representing the entire depth of the solid phase. In the event that the tank contents are dry, a long-handled tool such as a rake or shovel may be used. Contents in distribution boxes, manholes, and cleanouts will be sampled in a similar manner.

For lagoons and ponds that have not been filled in, the sampling method will be surface and subsurface collection via hand auger or backhoe for locations that extend past the use of hand augers. The proximal, distal, midpoint, and lowest point will be sampled from within the feature. Lagoons, ponds, and sumps that have been filled in will have a cross section excavated to determine the horizons and the native soil interface. At these locations, the proximal, distal, and midpoint will be sampled. Soils with apparent staining will be sampled and the horizon below the feature will be sampled. If historical or engineering drawings provide information about engineered low points, they will be sampled.

For CAS 20-19-02, a systematic sampling method to determine a hot spot has been developed using Visual Sample Plan software (PNNL, 2002) around a potential biased location. The methodology assumes a sample area of 396 by 528 ft and the surface discharge (hot spot) has a 15-ft radius. The samples will be gridded in a triangular pattern and will be approximately 29 ft apart. The samples will be collected using hand collection method.

A.1.4.3.4 Analytical Methods

The analytical program for CAU 151 CASs shown in Table A.1-13 has been developed based on the COPC information presented in Section A.1.1 and summarized in Table A.1-1. Section 3.0 and Section 6.0 of the CAIP provide additional analytical methods and laboratory requirements (e.g., detection limits, precision, and accuracy) to be followed during this CAI. Sample volumes are laboratory- and method-specific and will be determined in accordance with laboratory requirements. Analytical requirements (e.g., methods, detection limits, precision, and accuracy) are specified in the Industrial Sites QAPP (NNSA/NV, 2002), unless superseded by the CAIP. These requirements will ensure that laboratory analyses are sufficient to detect contamination in samples at concentrations exceeding the minimum reporting level (MRL). Specific analyses, if any, required for the disposal of IDW are identified in Section 5.0 of the CAIP.

A.1.5 Step 4 - Define the Study Boundaries

The purpose of this step is to define the target population of interest, specify the spatial and temporal features of that population that are pertinent for decision making, determine practical constraints on data collection, and define the scale of decision making relevant to target populations for Decision I(a), Decision I/I(b), and Decision II.

A.1.5.1 Define the Target Population

Decision I(a) target populations are represented by a systematic grid as defined by known parameters to identify a hot spot and using Ag as an indicator of contamination. Decision I/I(b) target populations represent locations that are most likely to contain COCs and residual materials in piping, tanks, and other features. Decision II target populations include vertical delineation of COCs at Decision I/I(b) sample locations if suspected based on exceedance of FSLs, COC concentrations at the perimeter of CAS investigation area(s) to assess nature and extent of COCs, and step-out locations adjacent to Decision II sample locations if biasing factors indicate COC concentrations extend beyond the present investigation area of a CAS. The target population for Decision II step-out locations are COC concentrations in samples adjacent to contaminated areas that are less than PALs.

Table A.1-13
Analytical Methods for Laboratory Analysis

Analytical Parameter	Analytical Method	
	Liquid	Soil/Sediment/Sludge
Volatile Organic Compounds	SW-846 8260B[a]	SW-846 8260B[a]
Semivolatile Organic Compounds	SW-846 8270C[a]	SW-846 8270C[a]
RCRA Metals plus beryllium	SW-846 6010B[a] (mercury - 7470A[a])	SW-846 6010B[a] (mercury - 7471A[a])
Polychlorinated Biphenyls	SW-846 8082[a]	SW-846 8082[a]
Total Petroleum Hydrocarbons (C_6 - C_{38})	SW-846 8015B[a] (modified)	SW-846 8015B[a] (modified)
Pesticides	SW 846-8081[a]	SW-846 8081[a]
Asbestos	NA	Visual Inspection of Piping
Gamma Spectroscopy (to include Cesium-137, Americium-241, Cobalt-60)	EPA Procedure 901.1[b]	HASL-300[c]
Strontium-90	ASTM D5811-00[d]	HASL-300[c]
Tritium	EPA 906.0	Lab Specific
Isotopic Plutonium	ASTM D3865-02[e]	ASTM HASL-300[f]
Isotopic Uranium	ASTM D3972-02[g]	ASTM C1000-00[h]

ASTM = American Society for Testing and Materials
RCRA = *Resource Conservation and Recovery Act*
SW = Solid Waste

[a]*EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, Parts 1-4, SW-846* (EPA, 1996)
[b]*Prescribed Procedure for Measurements of Radioactivity in Drinking Water* (EPA, 1980)
[c]*The Procedures Manual of the Environmental Measurements Laboratory* (DOE, 1997)
[d]*Standard Test Method for Strontium-90 in Water* (ASTM, 2000)
[e]*Standard Test Method for Plutonium in Water* (ASTM, 2002)
[f]*General Radiochemistry and Routine Analytical Services Protocol* (GRASP) (EG&G, Rocky Flats, 1991). The chemical yield only applies to plutonium, uranium, and strontium.
[g]*Standard Test Method for Isotopic Uranium in Water by Radiochemistry* (ASTM, 2002a)
[h]*Standard Test Method for Radiochemical Determination of Uranium Isotopes in Soil by Alpha Spectroscopy* (ASTM, 2002c)

A.1.5.2 Identify the Spatial and Temporal Boundaries

The spatial boundaries (geographic) boundaries are defined as the expected maximum vertical or horizontal extent of COCs. Intrusive sampling activities are not intended to extend into the boundaries of neighboring areas of environmental concern (e.g., other CASs). The horizontal boundaries at each CAS reflects the investigation area (i.e., the suspected lateral extent of

contamination) where COCs potentially exist. The spatial boundaries as presented in Table A.1-14 may be further refined based on visual inspection of the CASs.

Temporal boundaries are time constraints due to time-related phenomena, such as weather conditions, seasons, activity patterns, etc. Significant temporal constraints due to weather conditions are not expected; however, snow events may affect site activities during winter months. Moist weather may place constraints on sampling and field screening of contaminated soils because of the attenuating effect of moisture in samples. There are no time constraints on collecting samples.

A.1.5.3 Identify Practical Constraints

The primary practical constraints anticipated at the CASs are the presence of underground utilities, posted contamination area requirements, physical barriers (e.g., fences) and areas requiring access authorization. Utility surveys will be conducted at each CAS prior to the start of investigation activities to determine if utilities exist and, if so, determine the limit of spatial boundaries for intrusive activities. Additionally, piping that is still in use will not be video surveyed or sampled. No other practical constraints have been identified.

A.1.5.4 Define the Scale of Decision Making

For CAU 151, the scale of decision making for Decision I(a) and Decision I/I(b) are defined as presence of COCs. The scale of decision making for Decision II is defined as the extent of COC contamination originating from individual CASs.

A.1.6 Step 5 – Develop a Decision Rule

This step integrates outputs from the previous steps, with the inputs developed in this step into a decision rule ("*If..., then...")* statement. This decision rule describes the conditions under that possible alternative actions would be chosen.

A.1.6.1 Specify the Population Parameter

The population parameter for Decision I(a) at CAS 20-19-02 is data collection from the systematic grid sampling event to identify a hot spot with a given dimension with concentrations above PALs for silver.

Table A.1-14
Decisions I and II Spatial Boundaries
(Page 1 of 2)

CAS	Spatial Boundaries
CAS 02-05-01, UE-2ce Pond	For lagoons, sumps, and ponds: Locations for Decision II samples are not to exceed 20 ft from feature, and for step-out locations not to exceed 20 ft from feature and 100 ft in the arroyo or washout.
CAS 12-03-01, Sewage Lagoons (6)	For lagoons, sumps, and ponds: Locations for Decision II samples are not to exceed 20 ft from feature, and for step-out locations not to exceed 20 ft from feature and 100 ft in the arroyo or washout. For piping, distribution boxes, cleanouts, and manholes: Decision II samples will be collected at Decision I locations laterally and vertically where the FSRs are below FSLs not to exceed 20 ft from feature. For Decision II step-out samples, the boundary is not to exceed 20 ft laterally or vertically.
CAS 12-04-01, Septic Tanks	For septic tanks: Locations for Decision II samples are not to exceed 20 ft from feature, and for step-out locations not to exceed 20 ft from feature and 100 ft in the arroyo or washout. For piping, distribution boxes, cleanouts, and manholes: Decision II samples will be collected at Decision I locations laterally and vertically where the FSRs are below FSLs not to exceed 20 ft from feature. For Decision II step-out samples, the boundary is not to exceed 20 ft laterally or vertically.
CAS 12-04-02, Septic Tanks	For septic tanks: Locations for Decision II samples are not to exceed 20 ft from feature, and for step-out locations not to exceed 20 ft from feature and 100 ft in the arroyo or washout. For piping, distribution boxes, cleanouts, and manholes: Decision II samples will be collected at Decision I locations laterally and vertically where the FSRs are below FSLs not to exceed 20 ft from feature. For Decision II step-out samples, the boundary is not to exceed 20 ft laterally or vertically.
CAS 12-04-03, Septic Tanks	For septic tanks: Locations for Decision II samples are not to exceed 20 ft from feature, and for step-out locations not to exceed 20 ft from feature and 100 ft in the arroyo or washout. For piping, distribution boxes, cleanouts, and manholes: Decision II samples will be collected at Decision I locations laterally and vertically where the FSRs are below FSLs not to exceed 20 ft from feature. For Decision II step-out samples, the boundary is not to exceed 20 ft laterally or vertically.

Table A.1-14
Decisions I and II Spatial Boundaries
(Page 2 of 2)

CAS	Spatial Boundaries
CAS 12-47-01, Wastewater Pond	For lagoons, sumps, and ponds: Locations for Decision II samples are not to exceed 20 ft from feature, and for step-out locations not to exceed 20 ft from feature and 100 ft in the arroyo or washout. For piping, distribution boxes, cleanouts, and manholes: Decision II samples will be collected at Decision I locations laterally and vertically where the FSRs are below FSLs not to exceed 20 ft from feature. For Decision II step-out samples, the boundary is not to exceed 20 ft laterally or vertically.
CAS 18-03-01, Sewage Lagoon	For lagoons, sumps, and ponds: Locations for Decision II samples are not to exceed 20 ft from feature, and for step-out locations not to exceed 20 ft from feature and 100 ft in the arroyo or washout. For piping, distribution boxes, cleanouts, and manholes: Decision II samples will be collected at Decision I locations laterally and vertically where the FSRs are below FSLs not to exceed 20 ft from feature. For Decision II step-out samples, the boundary is not to exceed 20 ft laterally or vertically.
CAS 18-99-09, Sewer Line (Exposed)	For piping, distribution boxes, cleanouts, and manholes: Decision II samples will be collected at Decision I locations laterally and vertically where the FSRs are below FSLs not to exceed 20 ft from feature. For Decision II step-out samples, the boundary is not to exceed 20 ft laterally or vertically.
CAS 20-19-02, Photochemical Drain	The systematic grid sampling to determine the location of the hot spot, an area of 396 by 528 ft has been identified for Decision I(a). Locations for Decision I(b) and II samples are not to exceed 20 ft vertically and 100 ft laterally from the gridded area of concern.

The population parameter for Decision I/I(b) data collected from biased sample locations is the maximum observed concentration of each COPC within the target population. For radiological surveys, the maximum observed activity of each COPC is considered the population parameter. If radiological sampling and analysis is performed to support the radiological survey results, the maximum observed activity of each COPC identified in the sample will be the population parameter. Radiological sampling and analysis will supersede radiological survey results.

The population parameter for Decision II data is the observed concentration of each unbounded COC in any sample.

A.1.6.2 Choose an Action Level

Action levels are defined as the PALs, that are specified in Section A.1.4.2.

A.1.6.3 Decision Rule

These decision rules have been developed to combine the decision statement, parameter of interest, scale of decision making, and action level into a statement that describes the conditions that would lead to a specific regulatory response action.

For CAS 20-19-02 there was a Decision I(a) statement derived to address and define the location of the surface release. If there is total Ag detected in Area 20 Camp, then nature [Decision I(b)] of the surface discharge will be determined. If there are no total Ag results of the systematic grid-based sampling above PALs, then the stakeholders will reconvene and decide the next course of action for CAS 20-19-02.

As discussed in Section A.1.3.2, based on the results of the Decision I(a) sampling at CAS 20-19-02, the location of the photochemical drain was not identified. The stakeholders (i.e, SNJV, NNSA, NDEP) agreed that a no further action strategy would be set for CAS 20-19-02 and Decision I(b) would not be resolved.

If the concentration of any COPC in a target population exceeds the corresponding PAL in a Decision I/I(b) or Decision II sample, then that COPC is identified as a COC. If all COPC concentrations are less than the corresponding PALs, then the decision will be no further action.

If the observed population parameter of any COC in a Decision II sample exceeds the PALs, then samples will be collected to define the extent of contamination. If all observed COC population parameters are less than PALs, then the decision will be that the extent of contamination has been defined in the lateral and vertical directions.

If contamination is inconsistent with the CSM or extends beyond the identified spatial boundaries, then work will be suspended and the investigation strategy will be reevaluated. If contamination is consistent with the CSM and is within spatial boundaries, then the decision will be to continue sampling to define extent.

A.1.7 Step 6 – Specify the Tolerable Limits on Decision Errors

The sampling approach for the investigation relies on biased sampling locations (judgemental data collection) for all CASs except CAS 20-19-02 Decision I(a) samples. For Decision I(a) samples at CAS 20-19-02, a systematic grid-based sampling method has been developed. Only validated analytical results (quantitative data) will be used to determine if COCs are present (Decision I/I[b]) or the extent of a COC (Decision II), unless otherwise stated. The baseline condition (i.e., null hypothesis) and alternative condition for Decision I(a) for CAS 20-19-02 are:

- Baseline condition – The location of the surface release cannot be identified.
- Alternative condition – The location of the surface release can be identified.

The baseline condition (i.e., null hypothesis) and alternative condition for Decision I/I(b) are:

- Baseline condition – A COC is present.
- Alternative condition – A COC is not present.

The baseline condition (i.e., null hypothesis) and alternative condition for Decision II are:

- Baseline condition – The extent of a COC has not been defined.
- Alternative condition – Extent of a COC has been defined.

Decisions and/or criteria have an alpha (false negative) or beta (false positive) error associated with their determination (discussed in the following subsections). Since quantitative data compared to action levels on a point-by-point basis, statistical evaluations of the data such as averages or confidence intervals are not appropriate.

A.1.7.1 False Negative (Rejection) Decision Error

The false negative (rejection of the null hypothesis or alpha error) decision error would mean:

- Deciding that the location of the surface discharge is not present when it actually is (Decision I[a])
- Deciding that a COC is not present when it actually is (Decision I/I[b])
- Deciding that the extent of a COC has been defined when it actually has not (Decision II)

In all cases, this would result in an increased risk to human health and environment.

For Decision I(a), a false negative decision error (where the consequences are more severe) is controlled by meeting the following criteria:

- Having a high degree of confidence that the systematic grid-based sampling method has been developed with an adequate confidence interval (95 percent) and hot spot size to determine the location of the surface discharge.

- Having a high degree of confidence that Decision I(a) analyses selected for total Ag will be sufficient to detect the surface discharge.

For Decision I/I(b), a false negative decision error (where the consequences are more severe) is controlled by meeting the following criteria:

- Having a high degree of confidence that the Decision I/I(b) sample locations selected will identify COCs (above PALs) if present at the CAS.

- Having a high degree of confidence that Decision I/I(b) analyses selected will be sufficient to detect COCs present in the sampled media (results above PALs) to ensure an accurate quantification of the COCs.

For Decision II, the false negative decision error is reduced by:

- Having a high degree of confidence that the Decision II sample locations selected will identify the extent of COCs.

- Having a high degree of confidence that Decision II analyses conducted will be sufficient to detect any COCs present in the samples.

- Having a high degree of confidence that the dataset is of sufficient quality and completeness.

To satisfy the first criterion for both decisions, Decision I/I(b) biased samples will be collected in areas most likely to be contaminated by COPCs. The Decision II samples will be collected in areas that potentially represent the lateral and vertical extent of COCs. The following characteristics are considered to accomplish the first criterion:

- Accurate knowledge of the source and location of release
- Understanding of the chemical nature and fate properties of the COPCs
- Physical properties of the media and migration/transport pathways
- Hydrologic drivers

These characteristics were considered during the development of the CSM. The biasing factors listed in Section A.1.4.1 will be used to further ensure that these criteria are met.

To satisfy the second criterion for all samples used to define the nature and extent of contamination will be analyzed for the parameters listed in Section A.1.4.3.4. Analytical methods that are capable of producing quantitative data at concentrations equal to or below PALs will be used (unless stated otherwise in the CAIP).

To satisfy the third criterion for Decision II, the entire dataset, as well as individual sample results, will be assessed against the DQIs of precision, accuracy, comparability, completeness, and representativeness defined in the Industrial Sites QAPP (NNSA/NV, 2002). The goal for the completeness DQI is that 80 percent of the COPC results are valid for every sample. The COPCs are defined as those contaminants that may realistically be present within a CAS (Section A.1.4.3.4). In addition, sensitivity has been included as a DQI for laboratory analyses. Site-specific DQIs are discussed in more detail in Section 6.0 of the CAIP. Strict adherence to established procedures and QA/QC protocols also protects against false positives.

A.1.7.2 False Positive Decision Error

The false positive (acceptance of the null hypothesis or beta) decision error would mean:

- Deciding that the location is present when it actually is not (Decision I[a])
- Deciding that a COC is present when it actually is not (Decision I/I[b])
- Accepting that the extent of a COC has not been defined when it really has (Decision II)

These errors result in increased costs for unnecessary characterization or corrective actions.

The false positive decision error is controlled by protecting against false positive analytical results. False positive results are typically attributed to laboratory and/or sampling/handling errors. Quality control samples such as field blanks, trip blanks, laboratory control samples, and method blanks minimize the risk of a false positive analytical result. Other measures include proper decontamination of sampling equipment and using certified clean sample containers to avoid cross-contamination.

A.1.7.3 Quality Assurance/Quality Control

Field screening equipment will be calibrated and checked in accordance with the manufacturer's instructions or approved procedures.

Quality control samples will be collected as required by the Industrial Site QAPP (NNSA/NV, 2002) and in accordance with established procedures. The required QC field samples include:

- Trip blanks (1 per sample cooler containing environmental VOC samples)
- Equipment blanks (1 per sampling event for each type of decontamination procedure)
- Source blanks (1 per source lot per sampling event)
- Field duplicates (minimum of 1 per matrix per 20 environmental samples or 1 per CAS if less than 20 collected)
- Field blanks 1 per CAS or 1 per day or change in field conditions
- Matrix spike/matrix spike duplicate (minimum of 1 per matrix per 20 environmental samples) or 1 per CAS if less than 20 collected as required by the analytical method.

Additional QC samples may be submitted based on site-specific conditions.

A.1.8 Step 7 – Optimize the Design for Obtaining Data

This section presents an overview of the resource-effective strategy planned to obtain the data required to meet the project DQOs. As additional data or information is obtained such as that identified in Table A.1-7, this step will be reevaluated and refined, as necessary, to reduce uncertainty and increase the confidence that the nature and extent is accurately defined.

A.1.8.1 General Investigation Strategy

Intrusive soil and/or sludge sampling for field screening and laboratory analysis will be conducted at the CAU 151 CASs when media is available to sample. A judgemental or biased sampling design (a nonprobabilistic approach) has been developed for the general investigation strategy based on the *Work Plan for Leachfield Corrective Action Units: Nevada Test Site and Tonopah Test Range, Nevada* (DOE/NV, 1998a) for all of the CASs in CAU 151 with the exception of CAS 20-19-02. At

CAS 20-19-02 a systematic grid-based sampling method to identify a hot spot has been developed for Decision I(a) samples to identify the area of concern and then a judgemental or biased sampling design (a nonprobabilistic approach) will be used for Decision I/I(b) and II samples. The biased sampling approach for the remainder of the CASs will focus on specific sampling locations to support the decision statements presented in Section A.1.3 and the migration and release pathways identified in the CSMs. Chapter 7 of the EPA QA/G-4HW guidance document (EPA, 2000a) allows for judgmental (biased) sampling when chosen locations are based on expert knowledge.

The Decision I(a) locations for CAS 20-19-02, will be identified using a systematic grid-based sampling method for a hot spot plan. These samples are needed to identify the location and verify that the CAS (area with no biasing factors upon which to base the selection of a sampling location) does not pose an unacceptable risk to human health and the environment. A systematic grid-based sampling method has been developed using Visual Sample Plan software (PNNL, 2002) to determine the number and location of surface soil samples to be collected to adequately identify the location of CAS 20-19-02, Photochemical Drain.

The Decision I/I(b) locations for biased sampling will be determined based on biasing factors listed in Section A.1.4.1, the CSM, and the target populations as detailed in Section A.1.5. The selected biased locations may be modified during the CAI, but only if the modified locations meet the decision needs and criteria stipulated in Section A.1.4.1.

Decision II biased sampling locations at each CAS are based on Decision I/I(b) locations. If biasing factors indicate COCs extend beyond the proposed Decision II biased sample locations, further incremental step-out locations will be selected and samples may be collected without support of analytical results. In the event that step-out locations from different components or elements in a CAS approach each other, then the area will be considered as one area and samples would be collected only in an outward direction.

If there is no residue present and the system has not been breached, then there will be no samples collected from the location. Additionally, breaching systems may be necessary to completely evaluate the integrity of the site. In this case, samples will be collected to ensure that the breach has not released any constituents into the environment.

A.1.8.2 Detailed Investigation Strategy

The following sections discuss the approach for obtaining the information necessary to resolve the DQOs based on the CSM. The strategy may be further revised based on upcoming field inspections, geophysical surveys, and radiological surveys. Target populations to be sampled are detailed in Section A.1.5.1. The proposed sampling locations for Decision I/I(b) are illustrated for each CAS in Figure A.1-14 through Figure A.1-22.

A.1.8.2.1 Piping

Piping is common in all the CASs with the exception of CASs 02-03-01 and CAS 20-19-02. Sampling activities at CASs with piping will consist of video-mole survey of abandoned piping adjacent to a feature in the CAS to identify breaches or residual material. Site conditions and conditions of the piping may not allow 100 percent video survey. If the video survey identifies breaches and/or conditions that may have provided a means for effluent to reach the surrounding soils, then Decision I samples may be collected at those locations for laboratory analysis. If no breaches or residual material is identified during the survey, then Decision I sampling adjacent to and within the buried portions of the pipelines will not be necessary.

A.1.8.2.2 Manholes, Cleanouts, and Distribution Boxes

Corrective Action Site 12-03-01 has a covered distribution box that directed effluent to the lagoons, and CASs 12-47-01 and 18-03-01 has manhole/cleanouts along the piping that head into the sewage lagoons. Decision I activities at these CASs will consist of excavating (as appropriate) to locate the distribution box, manhole, and/or cleanout for collecting Decision I samples for laboratory analysis of residual contents in the feature (if present). Decision I soil samples will be collected beneath the inlet and outlet piping of the features if breaches are suspected and the soil horizon underlying the base of the box. Residual material, including soil, sludge, or water, in these features will be sampled, if present. Only the inactive features will be sampled and accessed for the purposes of this investigation. If a feature is broken or breached in a way that a release may have occurred, then samples will be collected from below the feature to ensure that a release has not occurred that may impact the environment. Decision II samples vertically from the base will be collected based on FSL exceedances and at additional locations encompassing the features.

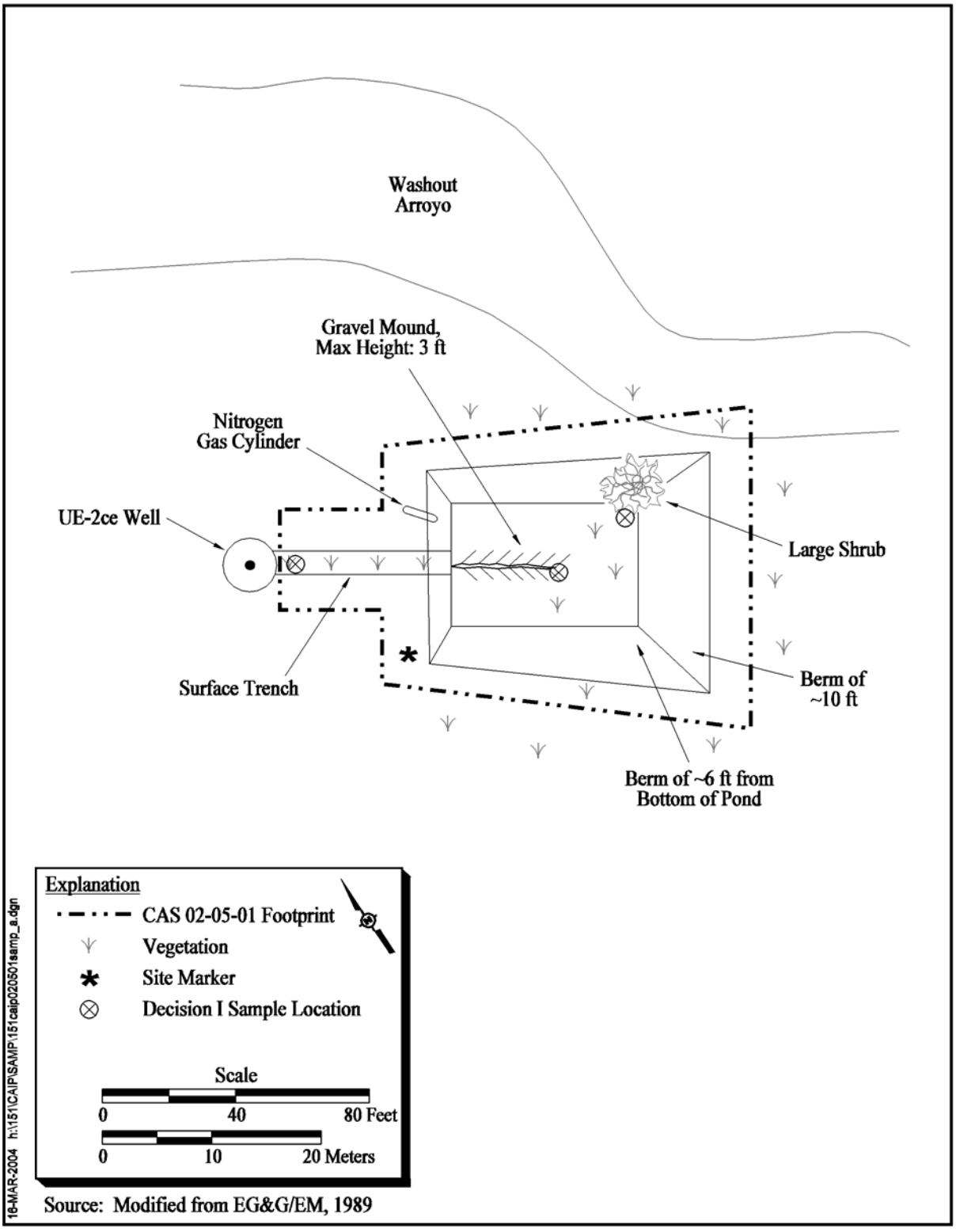


Figure A.1-14
CAU 151, CAS 02-05-01 Sample Locations

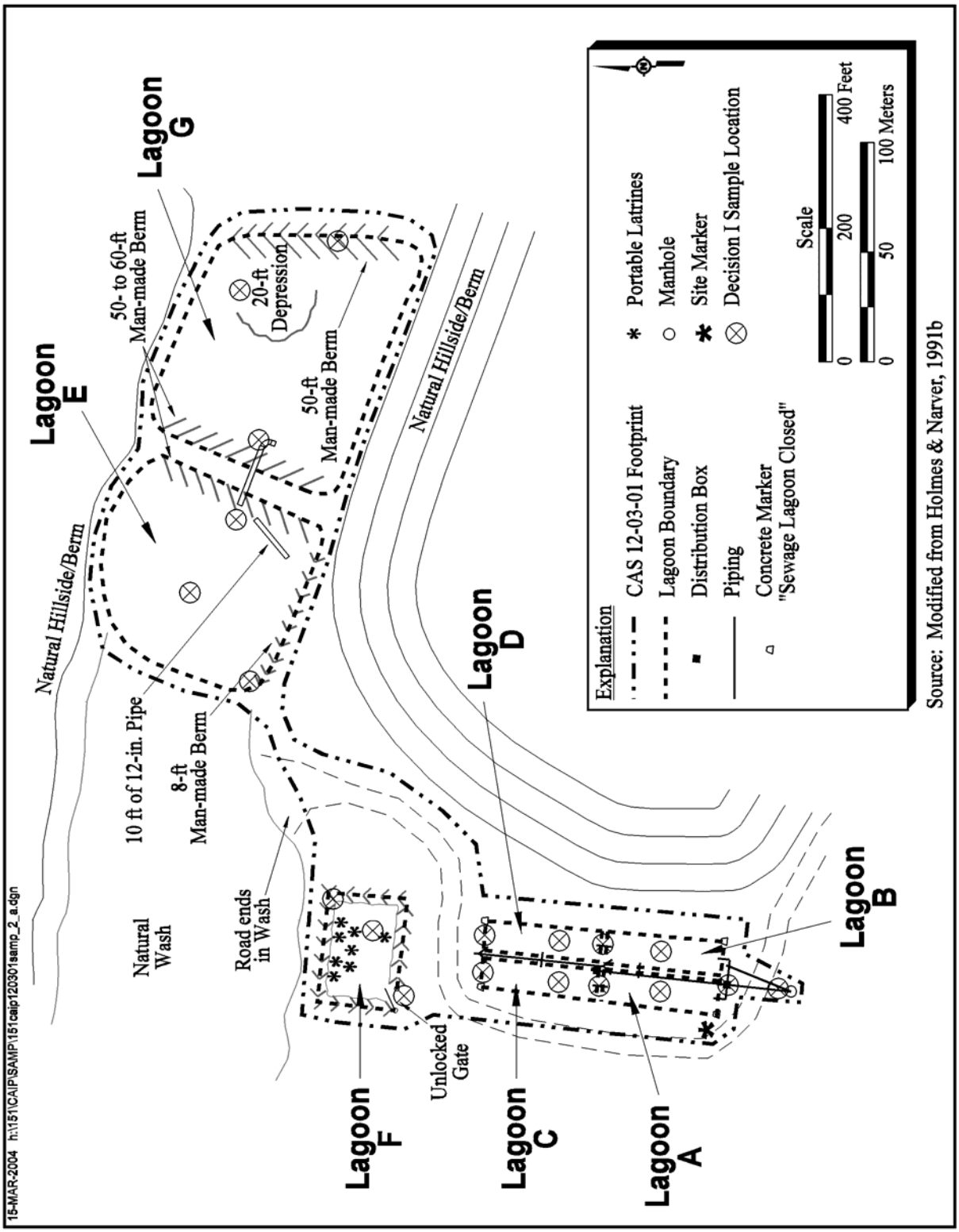


Figure A.1-15
CAU 151, CAS 12-03-01 Sample Locations

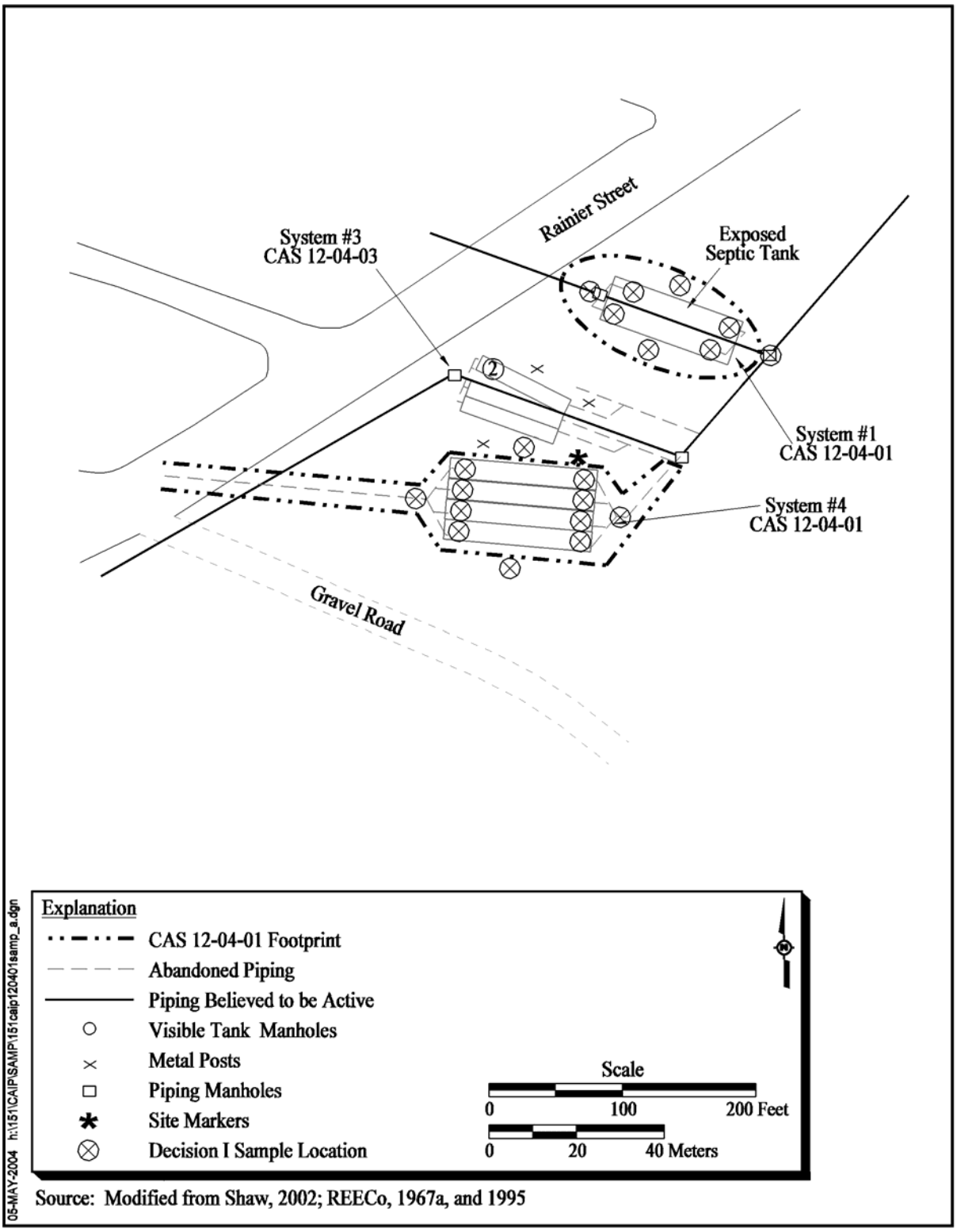


Figure A.1-16
CAU 151, CAS 12-04-01 Sample Locations

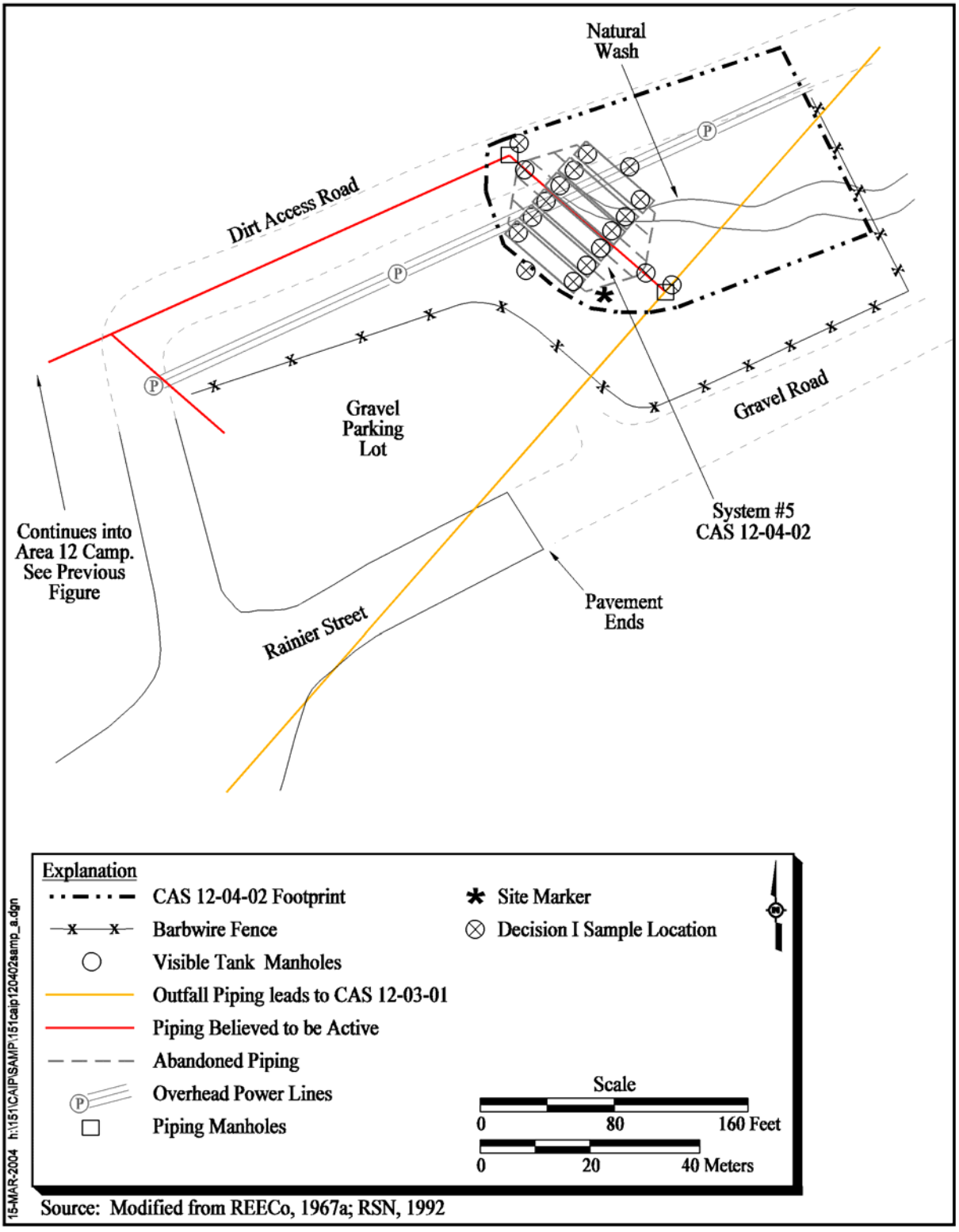


Figure A.1-17
CAU 151, CAS 12-04-02 Sample Locations

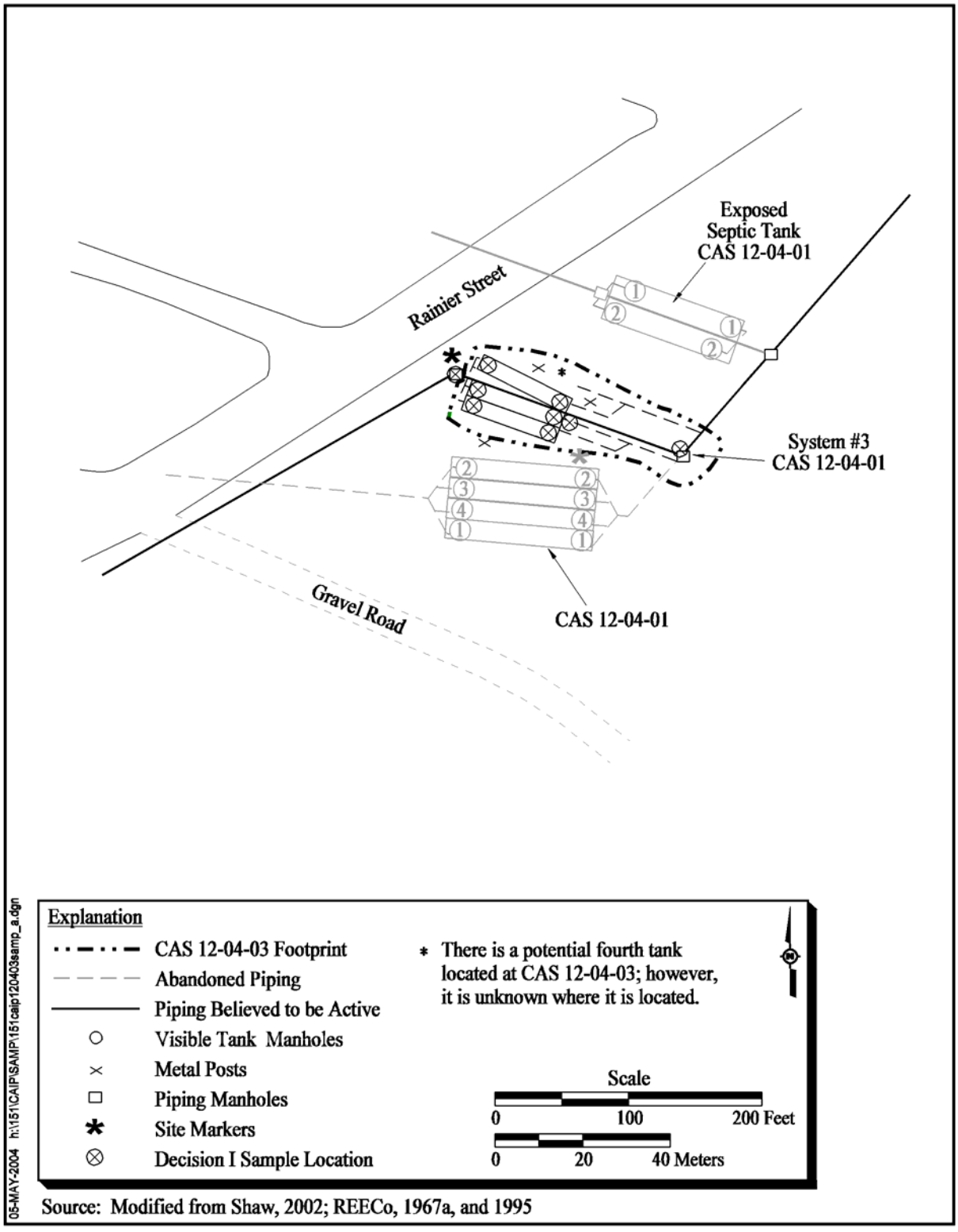


Figure A.1-18
CAU 151, CAS 12-04-03 Sample Locations

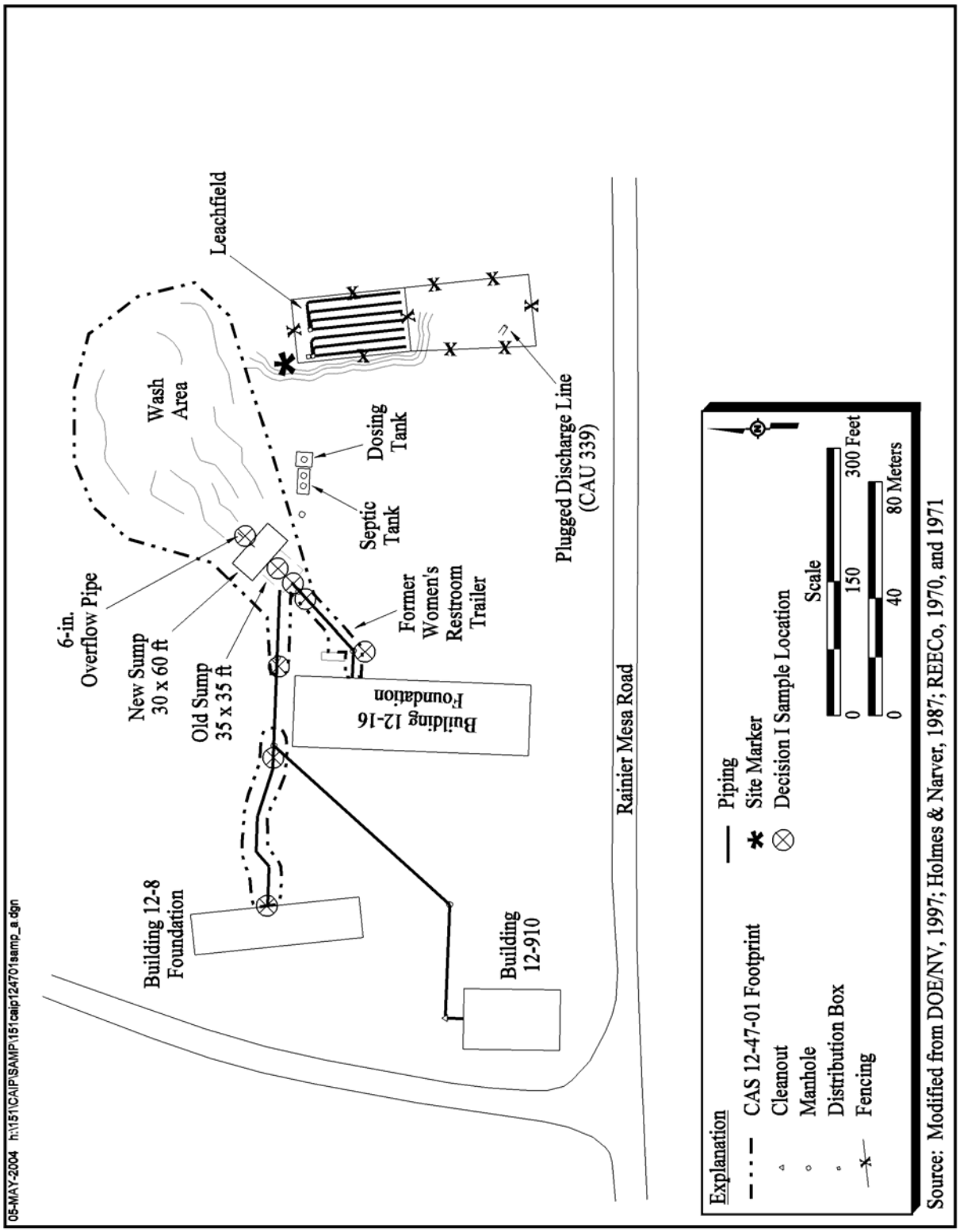
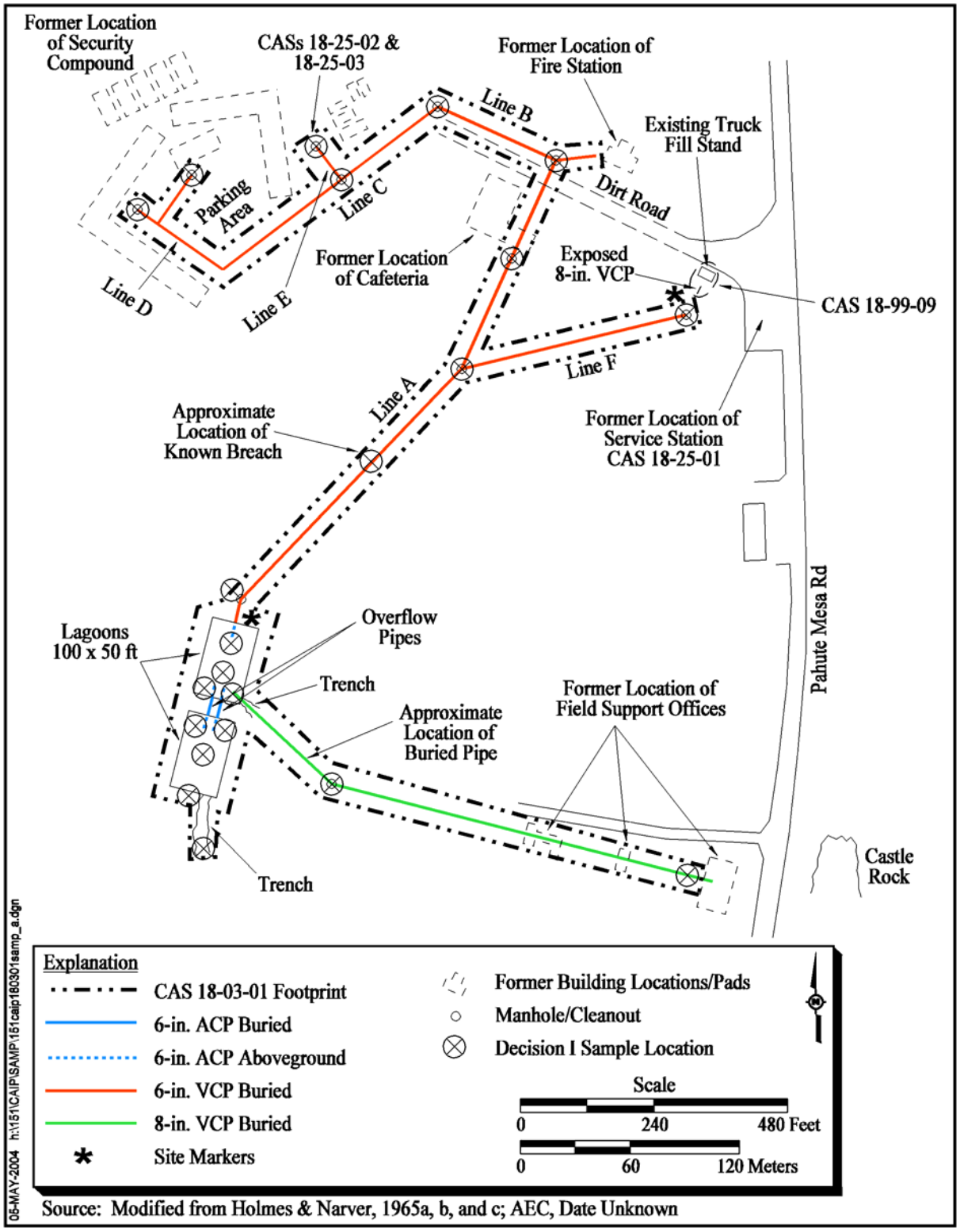


Figure A.1-19
CAU 151, CAS 12-47-01 Sample Locations



Source: Modified from Holmes & Narver, 1965a, b, and c; AEC, Date Unknown

Figure A.1-20
CAU 151, CAS 18-03-01 Sample Locations

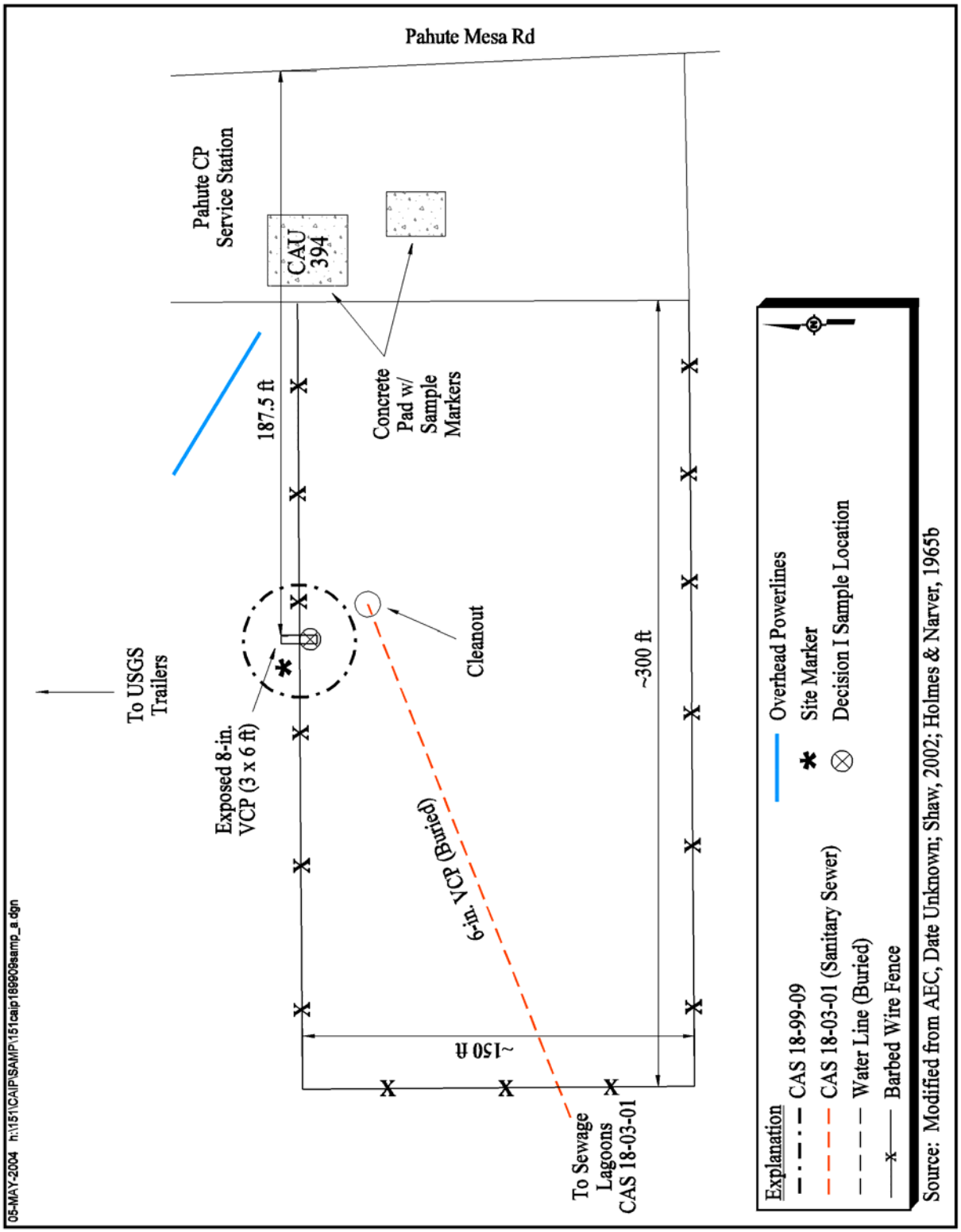


Figure A.1-21
CAU 151, CAS 18-99-09 Sample Locations

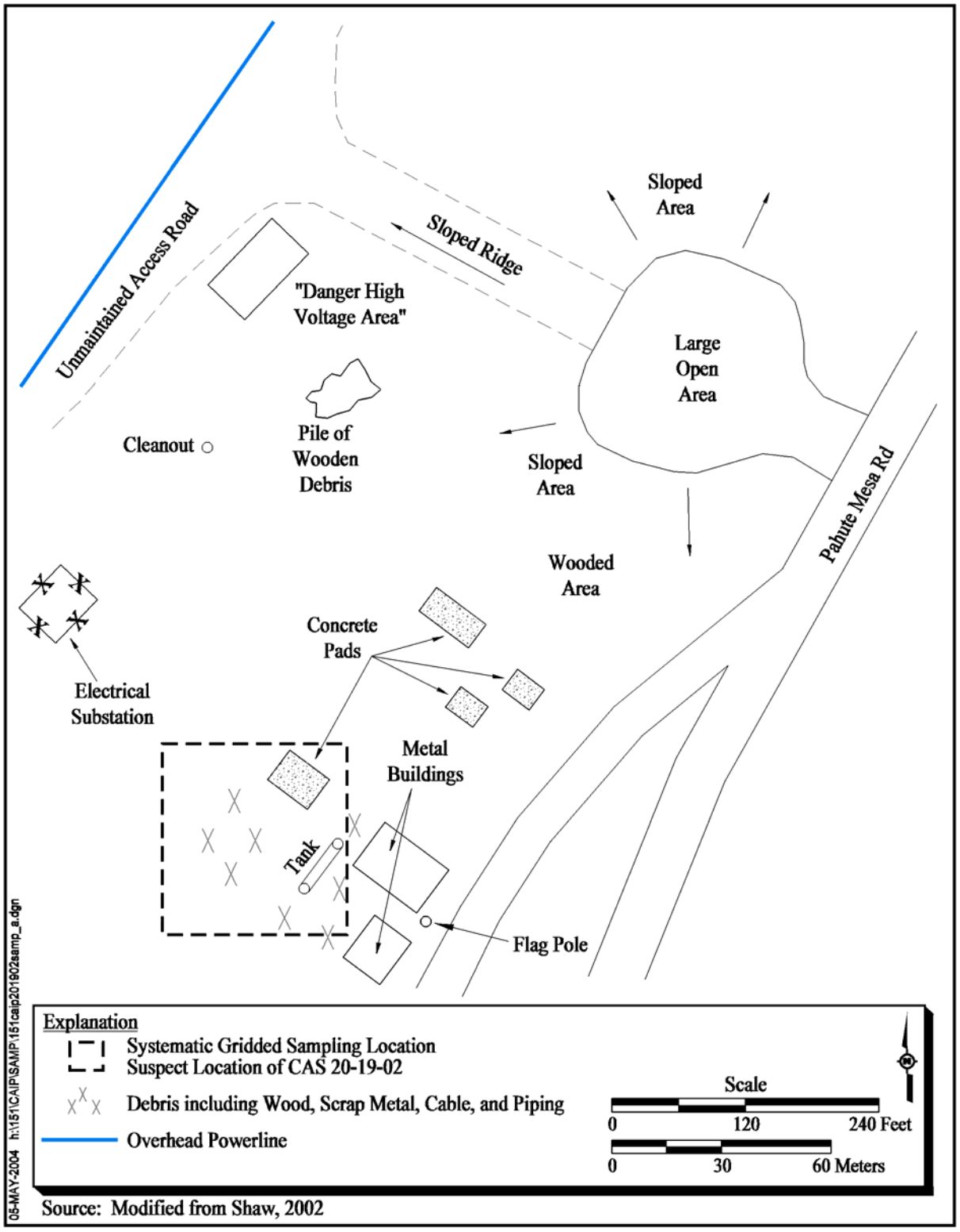


Figure A.1-22
CAU 151, CAS 20-19-02 Sample Locations

A.1.8.2.3 Septic Systems

Each of the CASs 12-04-01, 12-04-02, and 12-04-03 has at least three septic tanks. The tank configurations are similar for each site. Intrusive verification activities at CAS 12-04-03 may be necessary to locate one of the tanks because investigations are inconclusive whether or not there are three or four tanks. Activities at CASs 12-04-01, 12-04-02, and 12-04-03 include visual inspection of the inside of the septic tank and collecting Decision I samples for laboratory analysis from the tank residual if present. If sampling of residual material is necessary, samples of multi-phased liquid, sludge, and solids will be collected in their distinct phases using the appropriate methods. Decision I soil samples will be collected beneath the inlet and outlet end pipes, in the soil horizon underlying the base of the septic tanks, and in areas of potential overflow. Decision II samples in the area encompassing the tanks will be collected to define the lateral and vertical extent of the contamination.

A.1.8.2.4 Lagoons/Sumps/Ponds

Corrective Action Sites 02-05-01, 12-03-01, 12-47-01, and 18-03-01 each have a lagoon or lagoon-like (i.e., sump) component. Decision I activities at these CASs will consist of locating the distribution pipe or discharge area for each lagoon and collecting Decision I samples of lagoon sediments and soil beneath the lagoon at the native soil interface at the proximal, midpoint and distal ends. In the case of CAS 02-03-01, the discharge point is an open trench area. This will also be sampled at the proximal end beneath the well head. Decision II samples will be collected vertically at Decision I locations if FSLs are exceeded and until FSRs are less than FSLs and at locations encompassing the CAS. Decision II samples will also be collected at the perimeter locations of the lagoons.

For sites within CASs 12-03-01 and 12-47-01, the lagoons/sumps have been filled in. A similar strategy will be used to approach these sites; however, sample locations will need to be excavated to the native soil interface and collected. By trenching across the lagoons the interfaces with fill, clay, and native soil should be apparent. Any staining or odors identified will be chased to have the nature and extent defined during the investigation. Decision II samples will be required at any anomalous locations within the lagoons.

A.1.8.2.5 Surface Discharge

Corrective Action Site 20-19-02 is a surface discharge. Because the physical location of the surface discharge has not been precisely identified, for Decision I(a), a systematic grid-based sampling event has been proposed to determine the location of the surface discharge. If the systematic grid-based samples identify a location of the surface discharge, Decision I(b) activities at this CAS will consist of defining the contaminants of the location as defined in Table A.1-3. Decision II samples will be collected vertically and horizontally to define the boundaries of the discharge. Decision II samples will be collected vertically at Decision I(b) locations if FSLs are exceeded and until FSRs are less than FSLs and at locations encompassing the CAS.

Due to the uncertainty of the exact location Trailer 992 drained the wastes in Area 20, a comprehensive sampling effort will be conducted at the Area 20 Camp to locate CAS 20-19-02. This strategy was developed for an area of approximately 396 by 528 ft in the Area 20 Camp based on interview information and process knowledge about the possible location of the site and the buildings around the location. Assuming a hot spot size of at least 15-ft radius exists in this area, the VSP software calculates that we would need to collect surface soil samples from 270 locations to be 95 percent confident that we would identify the surface discharge for CAS 20-19-02 based on a Singer and Wickman algorithm (Gilbert, 1987; PNNL, 2002).

The strategy for sample collection at this CAS is to hand auger, excavate, or use other appropriate methods to define the discharge location for Decision I(a) and be submitted for total Ag to the laboratory for analysis. Decision I(b) and II samples may need the use of a backhoe to determine the depth of the CAS.

A.1.9 References

ASTM, see American Society for Testing and Materials.

American Aerial Surveys, Inc. Date Unknown a. Aerial photograph 002 showing Area 17 Camp. Nellis Air Force Base, NV: Remote Sensing Laboratory Photo Library.

American Aerial Surveys, Inc. Date Unknown b. Aerial photograph U2CE Pre-Test 2 showing the Nash test site. Covina, CA.

American Aerial Surveys, Inc. Date unknown c. Oblique photograph U2CE Post-Test 1 showing the U-2ce crater and U-2ce post-test hole. Covina, CA.

American Society for Testing and Materials. 2000. *Standard Test Method for Strontium-90 in Water*, D5811-2000. Philadelphia, PA.

American Society for Testing and Materials. 2002a. *Standard Test Method for Isotopic Uranium in Water by Radiochemistry*, D3972-2002. Philadelphia, PA.

American Society for Testing and Materials. 2002b. *Standard Test Method for Plutonium in Water*, D3865-02. Philadelphia, PA.

American Society for Testing and Materials. 2002c. *Standard Test Method for Radiochemical Determination of Uranium Isotopes in Soil by Alpha Spectroscopy*, C1000-2000. Philadelphia, PA.

Bingham, F.E., Reynolds Electrical & Engineering Co., Inc. 1992. Letter to J.D. Stewart (DOE/NV) entitled, "Survey of Nevada Test Site (NTS) Abandoned Septic Tank Systems - Tiger Team Finding SW/CF-3," 2 January. Las Vegas, NV.

Bordelois, B., IT Corporation. 1998. Memorandum to R. Jackson and R. Bull (IT Corporation) entitled, "CAU 234, CAS 02-05-01 Sampling Report," 20 March. Las Vegas, NV.

DOE, see U.S. Department of Energy.

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

DRI, see Desert Research Institute.

Desert Research Institute. 1988. *CERCLA Preliminary Assessment of DOE's Nevada Operations Office Nuclear Weapons Testing Areas*, Volume I. Prepared for the U.S. Department of Energy, Nevada Operations Office. Las Vegas, NV: Water Resources Center.

EG&G/EM, see EG&G Energy Measurements.

EPA, see U.S. Environmental Protection Agency.

EG&G Energy Measurements. 1985. *An Aerial Radiological Survey of Areas 18 and 20 Nevada Test Site*. November. Las Vegas, NV.

EG&G Energy Measurements. 1989. Aerial Photograph 6613-106 showing the UE-2ce pond and trench, 23 September. Nellis Air Force Base, NV: Remote Sensing Laboratory Photo Library.

Fiore, J.N., U.S. Department of Energy, Nevada Operations Office. 1992. Letter to J.D. Stewart (NTSO) entitled, "Environmental Compliance Inventory Forms," February. Las Vegas, NV.

Gilbert, R. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley and Sons. New York.

Haworth, O.L., Reynolds Electrical & Engineering Co., Inc. 1989. Letter to R.F. Friedricks (DOE/NV) entitled, "Sewage Lagoon Analysis Results and Proposed Monitoring Program," 5 April. Las Vegas, NV.

Holmes & Narver, see Holmes & Narver, Inc.

Holmes & Narver, Inc. 1965a. Engineering drawing 019-082-M10.1 entitled, "Nevada Test Site Pahute Mesa C.P. Sewage Dist. System Plans & Profiles," 1 February. Las Vegas, NV.

Holmes & Narver, Inc. 1965b. Engineering drawing 019-082-M5.5 entitled, "Nevada Test Site Pahute Mesa C.P. Water & Sewage Dist. System General Arrangement," 2 February. Las Vegas, NV.

Holmes & Narver, Inc. 1965c. Engineering drawing 019-082-M7.1 entitled, "Nevada Test Site Pahute Mesa C.P. Water & Sewage Distribution System Piping Details," 1 February. Las Vegas, NV.

Holmes & Narver, Inc. 1972. Aerial Photograph 73-002 showing an overall view of Area 12 Camp, 29 June. Nellis Air Force Base, NV: Remote Sensing Laboratory Photo Library.

Holmes & Narver, Inc. 1979. Engineering drawing 13S entitled, "Area 12 Camp Utilities Sewer," 1 April. Las Vegas, NV.

Holmes & Narver, Inc. 1987. Engineering drawing JS-012-910-C1.1 entitled, "Crafts Bldg. 12-910 Plot Plan," June. Las Vegas, NV.

Holmes & Narver, Inc. 1991. Engineering drawing JS-012-078-T12, entitled "Sewage Lagoons Title Sheet," 11 February. Las Vegas, NV.

IT, see IT Corporation.

IT Corporation. 1998. *"Radiological Survey,"* 16 September. Las Vegas, NV.

LLNL, see Lawrence Livermore National Laboratory.

Lawrence Livermore National Laboratory. 2003. *Hydrologic Resource Management Program and Underground Test Area Project FY 2001-2002 Progress Report*, August. Prepared by Eaton, G.F., A.B. Kersting, and T.P. Rose. Livermore, CA.

Maddox, J., EG&G Energy Measurements. 1991. Memorandum to distribution entitled, "EG&G/EM Trailer 992 at Area 20 -Nevada Test Site (NTS)," 2 July. Las Vegas, NV.

Mattes, J.J., Reynolds Electrical & Engineering Co., Inc. 1990. Memorandum entitled, "Sewage Lagoon RCRA Sampling Results," 4 January. Las Vegas, NV.

Moeller, A., Bechtel Nevada. 2003. Record of Telecon with C. Jallo (SAIC) regarding CAS 20-19-02, 26 February. Las Vegas, NV.

Moore, J., Science Applications International Corporation. 1999. Memorandum to M. Todd (SAIC) entitled, "Background Concentrations for NTS and TTR Soil Samples," 3 February. Las Vegas, NV.

NAC, see *Nevada Administrative Code*.

NBMG, see Nevada Bureau of Mines and Geology.

NCRP, see National Council on Radiological Protection and Measurement.

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

National Council on Radiation Protection and Measurements. 1999. *Recommended Screening Limits for Contaminated Surface Soil and Review of Factors Relevant to Site-Specific Studies*, Report No. 129. Washington, DC.

Nevada Administrative Code. 2003. NAC 445A, "Water Controls." Carson City, NV.

Nevada Bureau of Mines and Geology. 1998. *Mineral and Energy Resource Assessment of the Nellis Air Force Range*, Open-File Report 98-1. Reno, NV.

Nicosia, W.C., Shaw Environmental, Inc. 2003. Memorandum to M. England (SAIC) entitled, "Radiological Land Area Surveys of Various Locations at the Nevada Test Site for Preliminary Assessments," 3 March. Las Vegas, NV.

PNNL, see Pacific Northwest National Laboratory.

Pacific Northwest National Laboratory. 2002. *Visual Sample Plan Version 2.0 User's Guide,* September, PNNL-14002. Richland, WA.

REECo, see Reynolds Electrical & Engineering Co., Inc.

RSN, see Raytheon Services Nevada.

Rarrick, H., Retired Sandia National Laboratories. 2003. Record of Telecon with S. Mittleman (SAIC) regarding Area 12 Camp, 28 March. Las Vegas, NV.

Raytheon Services Nevada. 1992a. Engineering drawing JS-090-094-C135 entitled, "Nevada Test Site -- LLNL -- Area 2 Planning and Power Distribution Map." Las Vegas, NV.

Raytheon Services Nevada. 1992b. Engineering drawing JS-012-002-C92 entitled, "Area 12 Camp Site Plan Map," 29 December. Las Vegas, NV.

Reynolds Electrical & Engineering Co., Inc. 1967a. Engineering drawing RE-12-M21 entitled, "Modifications to Sewage Treatment System Stabilization Ponds," 31 August. Las Vegas, NV.

Reynolds Electrical & Engineering Co., Inc. 1967b. Engineering drawing RE-12-M22 entitled, "Modifications to Sewage Treatment System," 31 August. Las Vegas, NV.

Reynolds Electrical & Engineering Co., Inc. 1967c. Engineering drawing RE- 12-M23 entitled, "Modifications to Sewage Treatment System," 31 August. Las Vegas, NV.

Reynolds Electrical & Engineering Co., Inc. 1970. Engineering drawing 12-SP-C1 entitled, "Area 12 Utilities Sewage Pond & Line Extension Plot Plan & Topography," Sheet 1 of 1, 15 December. Las Vegas, NV.

Reynolds Electrical & Engineering Co., Inc. 1971. Engineering drawing 12-16-E9 entitled, "Building 16 Womens Restroom Trailer Plans, Detail & Notes," Sheet 1 of 1, 7 June. Las Vegas, NV.

Reynolds Electrical & Engineering Co., Inc. 1992a. Engineering drawing 12-SD-C1.1 entitled, "Fleet Operations Sewage Disposal System Plan, Profile & Section," Sheet 1 of 1, 27 May. Las Vegas, NV.

Reynolds Electrical & Engineering Co., Inc. 1992b. *Work Plan Phase 1 Preliminary Characterization of Abandoned Septic Tank Systems*. Las Vegas, NV.

Reynolds Electrical & Engineering Co., Inc. 1995. *Preliminary Characterization of Abandoned Septic Tank Systems,* Vols. 1 and 2. Las Vegas, NV.

SAIC, see Science Applications International Corporation.

Shaw, see Shaw Environmental, Inc.

SNJV, see Stoller Navarro Joint Venture.

Science Applications International Corporation. 2003. *Surface Geophysical Survey Final Report Corrective Action Unit 151 Nevada Test Site*. Prepared for Shaw Environmental, Inc. Harrisburg, PA.

Shaw Environmental, Inc. 2002. Site sketch from the CAU 151 Project Files. Las Vegas, NV.

Shaw Environmental, Inc. 2003a. Digital Photographs for CAU 151, CAS 18-03-01. Las Vegas, NV.

Shaw Environmental, Inc. 2003b. *Results of Geophysical Survey Selected FFACO Sites, Nevada Test Site*. Las Vegas, NV.

Stoller-Navarro Joint Venture. 2004. *Results of the Geophysical Surveys at CASs 12-03-04 and 18-99-09, Nevada Test Site*. Las Vegas, NV.

Templeton, W., Bechtel Nevada. 2004. Record of telecon with J. Dale (SNJV) regarding CAS 20-19-02, 18 February. Las Vegas, NV.

Trump, D.E., Reynolds Electrical & Engineering Co., Inc. 1992. Memorandum to D. Peck (REECo) entitled, "Request for Updated Information on Sampling Results," 2 November. Las Vegas, NV.

U.S. Atomic Energy Commission. Date Unknown. Engineering drawing entitled, "Pahute Mesa Control Point Master Plan." Las Vegas, NV.

U.S. Atomic Energy Commission. 1969. Engineering drawing entitled, "Area 12 Camp Facility Plan," March. Las Vegas, NV.

U.S. Department of Energy. 1993. DOE Order 5400.5, Change 2, *Radiation Protection of the Public and the Environment*, Washington, DC: U.S. Government Printing Office.

U.S. Department of Energy. 1997. *Environmental Measurements Laboratory Procedures Manual*, HASL-300, 28th Ed., Vol. I. New York, NY.

U.S. Department of Energy. 1988a. *Environmental Survey Preliminary Report, Nevada Test Site, Mercury, Nevada*, DOE/EH/OEV-15-P. Washington, DC: Environment, Safety, and Health Office of Environmental Audit.

U.S. Department of Energy. 1988b. *Environmental Survey Sampling and Analysis Plan*. Washington, DC: Environment, Safety, and Health Office of Environmental Audit.

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

U.S. Department of Energy, Nevada Operations Office. Date unknown. *Environmental Baseline Information for the Nevada Test Site, Hydrology.* Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1986. *Radionuclide Migration Program Strategy Document,* NVO-298. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1990. *Environmental Survey Action Plan*. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1996. *Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada*, DOE/EIS 0243. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1997. *Closure Report for CAU 339: Area 12 Fleet Operations Steam Cleaning Discharge Area Nevada Test Site,* DOE/NV–11718-167. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1998a. *Work Plan for Leachfield Corrective Action Units: Nevada Test Site and Tonopah Test Range, Nevada,* DOE/NV--514. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1998b. *Nevada Test Site Resource Management Plan,* DOE/NV--518. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 2000. *NV/YMP Radiological Control Manual*, Rev. 4, DOE/NV/11718-079, UC-702. Prepared by A.L. Gile of Bechtel Nevada. Las Vegas, NV.

U.S. Environmental Protection Agency. 1980. *Prescribed Procedures for Measurement of Radioactivity in Drinking Water*, EPA 600/4-80-032 (NTIS/PB80-224744; CD ROM; NEPIS/http://www.epa.gov/cincl). Washington, DC.

U.S. Environmental Protection Agency. 1996. *Test Method for Evacuating Solid Waste Physical/Chemical Methods*, SW-846, 3rd Edition, CD-ROM PB97-501928GEI. Washington, DC.

U.S. Environmental Protection Agency. 2000a. *Data Quality Objectives Process for Hazardous Waste Site Investigations,* EPA QA/G-4HW, EPA/600/R-00/007. Washington, DC.

U.S. Environmental Protection Agency. 2000b. *Guidance on Choosing a Sampling Design for Environmental Data Collection*, EPA QA/G-5S. Washington, DC.

U.S. Environmental Protection Agency. 2002a. *Guidance for Quality Assurance Project Plans,* EPA QA/G-5, EPA/240/R-02/009. Washington, DC.

U.S. Environmental Protection Agency. 2002b. *Region IX Preliminary Remediation Goals (PRGs)*. Prepared by S.J. Smucker. San Francisco, CA.

APPENDIX B

SAMPLE ANALYTICAL RESULTS

THIS PAGE INTENTIONALLY LEFT BLANK

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

Page 1 of 3

PROJECT / CLIENT INFORMATION

Project: CAU 151 | BN Org#: H300
Charge Number: FBIR02DS
Project Manager: Tom Thiele
Phone: 295-6711 | Fax: 295-7761 | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: 295-5804 | Fax: 295-7761 | M/S: NTS 306
Turnaround: ( ) Standard - 14 days IH, 28 days Non-rad Env, 45 days Rad Env
(X) RUSH Preliminary by: _____ (IH)
__1 __2 X 7 __14 (non-Rad Env)
__1 __7 __14 __28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAU 151 CAS 12-04-a
The samples submitted contain (check):
( ) Hazardous - *(list)* _____
( ) Radioactive - *(list)* _____
(X) Unknown contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (IH) V2998 (Non-Rad Env) _____ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation: _____
Subcontract Lab(s) used for this work: LIONVILLE

COPY

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: 3.4 Total Pesticides
† 120401-1-1L	10-17-07	11:30	Liquid	2	1 L				4°C	X
† 120401-1-2L	" "	11:45	" "	2	" "				4°C	X
† 120401-1-3L	" "	12:00	" "	2	" "				4°C	X Duplicate of 120401-1-2
† 120401-4-1L	" "	10:20	" "	2	" "				4°C	X
† 120401-4-2L	" "	10:35	" "	2	" "				4°C	X
† 120401-4-3L	" "	10:50	" "	2	" "				4°C	X
† 120401-4-4L	" "	11:05	" "	2	" "				4°C	X
† 120401-4-5L	" "	11:20	" "	2	" "				4°C	X Duplicate of 120401-4-4L
				end	10-17-07					

end 10-17-07

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
M Floyd	/s/ M Floyd	10/17/07 1600	Fedex		10/17/07 1600
P. Salvato	/s/ P Salvato	10-18-07 0745	FEDEX		10/18/07 900
R A King	/s/ R King	10-18-07 9:30	C/A CASTANEDA	/s/ C Castaneda	10/18/07 AM 0930
C/A Castaneda	/s/ C Castaneda	10/18/07 @ 1520	FED EX	SEE ATTACHED TRACKING #'S	10/18/07 1520

FRM-0732 (11/06)

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

Page 2 of 3

PROJECT / CLIENT INFORMATION

Project: CAU 151 | BN Org#: 4300
Charge Number: SBIB02DS
Project Manager: TOM THIELE
Phone: 5-6711 | Fax: 5-7741 | M/S: NTS 304

REPORT & TURNAROUND INFORMATION

Send Report to: REBECCA KING
Phone: 5-5864 | Fax: 5-7741 | M/S: NTS 30C
Turnaround: ( ) Standard – 14 days IH, 28 days Non-rad Env, 45 days Rad Env
(X) RUSH Preliminary by: _____ (IH)
__1 __2 X 7 __14 (non-Rad Env)
__1 __7 __14 __28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAU 151 CAS 12-04-03
The samples submitted contain (check):
( ) Hazardous - *(list)* _____
( ) Radioactive - *(list)* _____
(X) Unknown contamination. If known, identify contaminant
This information will ensure compliance with applicable regulations and allow for the safe handling of the sample mat

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (IH) V2998 (Non-Rad Env) _____ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation: _____
Subcontract Lab(s) used for this work: LIONVILLE

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. V	QC M	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: 3.4 TOTAL PETICIDES
120403-1L	10/17/07	1315	Liquid	2	1L				X
~~120403-2L MSF~~									
120403-3L	10/17/07	1330	Liquid	2	1L				X
120403-4L	↓	1345	↓	↓	↓				X
120403-5L	↓	1400	↓	↓	↓				X

Duplicate of 120408-5L

LAST ENTRY

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
M. FLOYD	/s/ M Floyd	10/17/07 1600	REFER		10/17/07 1606
P. SALUATO	/s/ P Saluato	10-18-07 0745	REFER		10/18/07 0800
R. KING	/s/ R King	10-18-07 9:30	C.A. CASTANEDA	/s/ C Castaneda	10/18/07 @ 0930
C.A. Castaneda	/s/ C Castaneda	10/18/07 @1500	FED EX	SEE ATTACHED - TRACKING #'s	10/18/07 @ 1500

FRM-0732 (

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

Page 3 of 3

PROJECT / CLIENT INFORMATION

Project: CAU 151 | BN Org#: 4300
Charge Number:
Project Manager: Tom Thiele
Phone: 5-6711 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: 5-5804 | Fax: | M/S: NTS 306
Turnaround: ( ) Standard – 14 days IH, 28 days Non-rad Env, 45 days Rad Env
(X) RUSH Preliminary by: _____ (IH)
__ 1 __ 2 X 7 __ 14 (non-Rad Env)
__ 1 __ 7 __ 14 __ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 12-04-02
The samples submitted contain (check):
( ) **Hazardous** - *(list)* _____
( ) **Radioactive** - *(list)* _____
( ) **Unknown** contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (IH) V2998 (Non-Rad Env) _____ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation: _____
Subcontract Lab(s) used for this work: LIONVILLE

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: 3.4 Pesticides	
120402-1L	10/18/07	1030	WATER	2GA	1L					X	
120402-2L		1020								X	
120402-3L		1010								X	
120402-4L		1600								X	
120402-5L		0950								X	
120402-6L		0940								X	
120402-7L		0830								X	duplicate of 120402-6L
LAST ENTRY											LAST ENTRY

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
M L FLOYD	/s/ M Floyd	10/18/07 1130	SHAUGHN BURNISON	/s/ S Burnison	10/18/07 11:31
SHAUGHN BURNISON	/s/ S Burnison	10/18/07 1320	C.A. CASTANEDA	/s/ C Castaneda	10/18/07 @ 1320
C.A. CASTANEDA	/s/ C Castaneda	10/18/07 @ 1520	FED EX	SEE ATTACHED - TRACKING #'S	10/18/07 @ 1520

FRM-0732 (11/06)

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List

RFW Batch Number: 0710L069 Client: NSTEC V2998 Work Order: 60052001001 Page: 1 Report Date: 10/26/07 14:11

	Cust ID:	120401-1-1L		120401-1-2L		120401-1-3L		120401-4-1L		120401-4-2L		120401-4-3L	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate: Tetrachloro-m-xylene		77	%	51	%	55	%	86	%	69	%	79	%
Decachlorobiphenyl		47	%	30	%	34	%	34	%	44	%	27	%
Alpha-BHC		0.050	U	0.050	U	0.050	U	0.050	U	0.020	J.I	0.050	U
gamma-BHC (Lindane)		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Beta-BHC		0.050	U	0.050	U	0.050	U	0.022	J.I	0.053		0.050	U
Heptachlor		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Delta-BHC		0.013	J.I	0.012	J.I	0.013	J.I	0.012	J.I	0.014	J.I	0.050	U
Aldrin		0.050	U	0.050	U	0.010	J	0.050	U	0.011	J.I	0.050	U
Heptachlor epoxide		0.050	U	0.011	J	0.050	U	0.050	U	0.021	J.I	0.050	U
gamma-Chlordane		0.050	U	0.050	U	0.018	J	0.050	U	0.029	J	0.050	U
Endosulfan I		0.050	U	0.050	U	0.010	J	0.018	J	0.055		0.050	U
alpha-Chlordane		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
4,4'-DDE		0.050	U	0.010	J	0.012	J	0.011	J	0.015	J	0.050	U
Dieldrin		0.050	U	0.050	U	0.014	J	0.050	U	0.050	U	0.050	U
Endrin		0.050	U	0.011	J.I	0.050	U	0.018	J.I	0.050	U	0.050	U
4,4'-DDD		0.050	U	0.050	U	0.050	U	0.050	U	0.030	J	0.050	U
Endosulfan II		0.050	U	0.050	U	0.050	U	0.050	U	0.022	J.I	0.050	U
4,4'-DDT		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endrin aldehyde		0.050	U	0.050	U	0.050	U	0.050	U	0.010	J.I	0.050	U
Endosulfan sulfate		0.050	U	0.050	U	0.050	U	0.050	U	0.034	J	0.050	U
Methoxychlor		0.050	U	0.021	J	0.024	J.I	0.050	U	0.013	J.I	0.050	U
Endrin ketone		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Toxaphene		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

	Cust ID:	120401-4-4L		120401-4-5L		120403-1L		120403-3L		120403-4L		120403-5L	
Sample Information	RFW#:	007		008		009		010		011		012	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate: Tetrachloro-m-xylene		81	%	64	%	73	%	75	%	78	%	84	%
Decachlorobiphenyl		38	%	42	%	32	%	39	%	39	%	41	%
Alpha-BHC		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
gamma-BHC (Lindane)		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Beta-BHC		0.050	U	0.017	J	0.013	J	0.050	U	0.050	U	0.050	U
Heptachlor		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Delta-BHC		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Aldrin		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Heptachlor epoxide		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
gamma-Chlordane		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endosulfan I		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
alpha-Chlordane		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
4,4'-DDE		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Dieldrin		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endrin		0.010	J,I	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
4,4'-DDD		0.023	J,I	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endosulfan II		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
4,4'-DDT		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endrin aldehyde		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endosulfan sulfate		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Methoxychlor		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endrin ketone		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Toxaphene		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

	Cust ID:	120402-1L		120402-2L		120402-3L		120402-4L		120402-5L		120402-6L	
Sample Information	RFW#:	013		014		015		016		017		018	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate: Tetrachloro-m-xylene		91	%	81	%	80	%	82	%	76	%	84	%
Decachlorobiphenyl		60	%	57	%	56	%	64	%	37	%	59	%
Alpha-BHC		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
gamma-BHC (Lindane)		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Beta-BHC		0.050	U	0.050	U	0.050	U	0.011	J,I	0.050	U	0.050	U
Heptachlor		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Delta-BHC		0.050	U	0.050	U	0.026	J,I	0.050	U	0.050	U	0.050	U
Aldrin		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Heptachlor epoxide		0.050	U	0.050	U	0.015	J	0.050	U	0.050	U	0.050	U
gamma-Chlordane		0.050	U	0.050	U	0.050	U	0.050	U	0.014	J	0.050	U
Endosulfan I		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
alpha-Chlordane		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
4,4'-DDE		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Dieldrin		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endrin		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
4,4'-DDD		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endosulfan II		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
4,4'-DDT		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endrin aldehyde		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endosulfan sulfate		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Methoxychlor		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endrin ketone		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Toxaphene		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

	Cust ID:	120402-7L	PBLKHU	PBLKHU BS	PBLKHU BSD
Sample Information	RFW#:	019	07LE0590-MB1	07LE0590-MB1	07LE0590-MB1
	Matrix:	WATER	WATER	WATER	WATER
	D.F..	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L
Surrogate: Tetrachloro-m-xylene		76 %	68 %	81 %	77 %
Decachlorobiphenyl		51 %	48 %	64 %	58 %
Alpha-BHC		0.050 U	0.050 U	95 %	89 %
gamma-BHC (Lindane)		0.050 U	0.050 U	109 %	103 %
Beta-BHC		0.050 U	0.050 U	98 %	92 %
Heptachlor		0.050 U	0.050 U	98 %	92 %
Delta-BHC		0.050 U	0.050 U	92 %	86 %
Aldrin		0.050 U	0.050 U	103 %	95 %
Heptachlor epoxide		0.050 U	0.050 U	105 %	96 %
gamma-Chlordane		0.050 U	0.050 U	106 %	96 %
Endosulfan I		0.050 U	0.050 U	121 * %	110 %
alpha-Chlordane		0.050 U	0.050 U	107 %	97 %
4,4'-DDE		0.050 U	0.050 U	125 * %	114 %
Dieldrin		0.050 U	0.050 U	108 %	99 %
Endrin		0.050 U	0.050 U	107 %	97 %
4,4'-DDD		0.050 U	0.050 U	107 %	97 %
Endosulfan II		0.050 U	0.050 U	110 %	100 %
4,4'-DDT		0.050 U	0.050 U	114 %	102 %
Endrin aldehyde		0.050 U	0.050 U	102 %	93 %
Endosulfan sulfate		0.050 U	0.050 U	107 %	97 %
Methoxychlor		0.050 U	0.050 U	97 %	88 %
Endrin ketone		0.050 U	0.050 U	112 %	102 %
Toxaphene		0.50 U	0.50 U	0.50 U	0.50 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

Page 1 of 4

PROJECT / CLIENT INFORMATION

Project: CAU 151 | BN Org#: #300
Charge Number: 5B1B 0206
Project Manager: Tom Thiele
Phone: 295-6711 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: 295-5804 | Fax: | M/S: NTS 306
Turnaround: ( ) Standard – 14 days HI, 28 days Non-rad Env, 45 days Rad Env
(X) RUSH Preliminary by: _____ (HI)
__1 __2 X7 __14 (non-Rad Env)
__1 __7 __14 __28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAU 151 CAS 12-04-01
The samples submitted contain (check):
( ) Hazardous - *(list)* _____
( ) Radioactive - *(list)* _____
( ) Unknown contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (HI) V3001 (Non-Rad Env) _____ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation: _____
Subcontract Lab(s) used for this work: LIONVILLE

COPY

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis e.g. HCl - VOCs	Pay Item, Analysis, Method: TCLP Pesticides
120401-1-1S	10-18-07	1410	Sludge	1	250mL				4°C	X
120401-1-2S	"	1418	"	"	"				"	X
120401-1-3S	"	1426	"	"	"				"	X
120401-4-1S	10/18/07	1300	"	"	"				"	X
120401-4-2S	"	1308	"	"	"				"	X
120401-4-3S	"	1316	"	"	"				"	X
120401-4-4S	"	1324	"	"	"				"	X
120401-4-5S	"	1332	"	"	"				"	X
			to end 10-17-07							

8.23 10-17-07 end 29

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
M. L. Floyd	/s/ M Floyd	10/19/07 1545	Refer		10/19/07 1545
Refer		10/23/07 0930	M. L. Floyd	/s/ M Floyd	10/23/07 0930
M. L. Floyd	/s/ M Floyd	10/23/07 0945	CD. Castaneda	/s/ C Castaneda	10/23/07 @ 0945
CD Castaneda	/s/ C Castaneda	10/23/07 @ 1310	Fed Ex	7992 0925 5343, 7925 8332 3713	10/23/07 @ 1300

FRM-0732 (11/06)

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

Project: CAU 151 | Bill Org#: H360
Charge Number: SBIB02D06
Project Manager: Tom Thiele
Phone: 5-6781 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: 5-5804 | Fax: | M/S: NTS 306
Turnaround: ( ) Standard – 14 days (H), 28 days Non-rad Env, 45 days Rad Env
(X) RUSH Preliminary by _____ (H)
__1 __2 X 7 __14 (non-Rad Env)
__1 __7 __14 __28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 12-04-03
The samples submitted contain (check):
( ) Hazardous - *(list)* _____
( ) Radioactive - *(list)* _____
( ) Unknown contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (H) V3001 (Non-Rad Env) _____ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation: _____
Subcontract Lab(s) used for this work: Lionville

COPY

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: 8.23 TCLP Pesticides
120403-1SS	10/18/07	1350	Sludge	1	250mL					X
120403-4S	↓	1340	↓	1	250mL					X
120403-5S	↓	1348	↓	1	250mL					X

Last Entry

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Mike Floyd	/s/ M Floyd	10/18/07 1545	ReSee		10/18/07 1545
ReSee		10/23/07 0930	Mike Floyd	/s/ M Floyd	10/23/07 0930
Mike Floyd	/s/ M Floyd	10/22/07 0940	C Castaneda	/s/ C Castaneda	10/23/07 1300
C Castaneda	/s/ C Castaneda	10/23/07 @ 1300	Fed Ex	799209015543, 799585323713	10/24/07 @ 1300

FRM-0732 (11/06)

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

Project: CBLL 151 | BN Org#: #306
Charge Number: SB1B02D6
Project Manager: Tom Thiele
Phone: 5-6711 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: 5-5804 | Fax: | M/S: NTS 306
Turnaround: ( ) Standard – 14 days IH, 28 days Non rad Env, 45 days Rad Env
(X) RUSH Preliminary by: ______ (IH)
__ 1 __ 2 X 7 __ 14 (non-Rad Env)
__ 1 __ 7 __ 14 __ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 12-04-01-1
The samples submitted contain (check):
( ) Hazardous - (list)
( ) Radioactive - (list)
( ) Unknown contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: ______ (IH) V3001 (Non Rad Env) ______ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation:
Subcontract Lab(s) used for this work: Lionville

COPY

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	8.23 TCLP Pesticides
120401-1-1S	10/18/07	1400	Sludge	1	250 ml					X
120401-1-2S	↓	1418	↓	1	↓					X
120401-1-3S	↓	1426	↓	1	↓					X

Last Entry

Last Entry

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Mike Floyd	/s/ M Floyd	10/18/07 1545	R. Lee		10/18/07 1545
[illegible]	see original	10/22/07 09:10	Russ [illegible]	see original	10/22/07 09:11
[illegible]	/s/ M Floyd	[illegible]	[illegible]		
Mike Floyd	/s/ M Floyd	10/23/07 0945	CD Castaneda	/s/ C Castaneda	10/23/07 @ 0945
CD Castaneda	/s/ C Castaneda	10/23/07 @ 1300	Fed. Ex. # 799209215543, 790585323712		10/23/07 @ 1300

FRM-0732 (11/06)

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

Page 4 of 4

PROJECT / CLIENT INFORMATION

Project: CAU 151 | BN Org#: 41200
Charge Number: SBIB02D6
Project Manager: TOM THiele
Phone: 5-6711 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: ReBECCA King
Phone: 5-5804 | Fax: - | M/S: NTS 306
Turnaround: ( ) Standard – 14 days RL, 28 days Non-rad Env, 45 days Rad Env
(X) RUSH Preliminary by _____ (RL)
__1 __2 X7 __14 (non-Rad Env)
__1 __7 __14 __28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 12-64-02
The samples submitted contain (check):
( ) Hazardous - *(list)* _____
( ) Radioactive - *(list)* _____
( ) Unknown contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (RL) V3001 _____ (Non-Rad Env) _____ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation: _____
Subcontract Lab(s) used for this work: LIONVILLE

COPY

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: 8.23	TCLP Pesticides
120402-15	10/22/07	1015	Sludge	1	250ml						X
120402-25		1025									X
120402-35		1035									X
120402-45		1045									X
120402-55		1055									X
120402-65		1105									X
120402-75		1115									X
	LAST ENTRY									LAST ENTRY	

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Mike Floyd	/s/ M Floyd	10/22/07	1200	Refer.	10/22/07 1200
Refer	/s/ M Floyd	10/23/07	0930	Mike Floyd	/s/ M Floyd 10/23/07 0930
Mike Floyd	/s/ C Castaneda	10/23/07	0942	C Castaneda	/s/ C Castaneda 10/23/07 0945
C Castaneda		10/23/07 1300	Fed Ex	799209155543, 799585323712	10/23/07 1300

FRM-0732 (11/06)

Lionville Laboratory, Inc.

Pesticide by GC, TCLP Leachate — Report Date: 10/31/07 13:02

RFW Batch Number: 0710L093 — Client. NSTEC V3001 — Work Order: 60052001001 — Page: 1

5, gk 11/1/07

	Cust ID:	120401-4-1S	120401-4-1S	120401-4-1S	120401-4-4S	120401-4-1S	120403-1S
Sample Information	RFW#:	019	019 MS	019 MSD	020	021	022
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate: Tetrachloro-m-xylene		89 %	92 %	89 %	75 %	80 %	82 %
Decachlorbiphenyl		72 %	69 %	70 %	60 %	50 %	72 %
Heptachlor		0.50 U	113 %	105 %	0.14 J.I	0.50 U	0.50 U
alpha-Chlordane		0.50 U	120 %	112 %	0.50 U	0.50 U	0.50 U
gamma-Chlordane		0.50 U	120 %	112 %	0.50 U	0.50 U	0.50 U
gamma-BHC (Lindane)		0.50 U	120 %	112 %	0.50 U	0.50 U	0.50 U
Endrin		1.0 U	135 * %	127 * %	1.0 U	1.0 U	1.0 U
Methoxychlor		5.0 U	126 %	128 %	0.16 J.I	5.0 U	0.21 J.I
Toxaphene		50 U	50 U	50 U	50 U	50 U	50 U
Heptachlor Epoxide		0.50 U	121 %	113 %	0.50 U	0.50 U	0.50 U

	Cust ID:	120403-4S	120401-1-1S	120401-1-2S	120401-1-3S	120402-1S	120402-2S
Sample Information	RFW#:	023	024	025	026	027	028
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate: Tetrachloro-m-xylene		75 %	83 %	82 %	85 %	84 %	79 %
Decachlorbiphenyl		76 %	88 %	92 %	86 %	76 %	42 %
Heptachlor		0.50 U	0.50 U	0.50 U	0.10 J.I	0.50 U	0.50 U
alpha-Chlordane		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
gamma-Chlordane		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
gamma-BHC (Lindane)		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Endrin		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methoxychlor		5.0 U	5.0 U	5.0 U	5.0 U	0.13 J.I	0.12 J.I
Toxaphene		50 U	50 U	50 U	50 U	50 U	50 U
Heptachlor Epoxide		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

	Cust ID:	120402-3S		120402-4S		120402-5S		120402-6S		120402-7S		120401-4-2S	
Sample Information	RFW#:	029		030		031		032		033		034	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate: Tetrachloro-m-xylene		73	%	79	%	85	%	78	%	72	%	82	%
Decachlorbiphenyl		56	%	76	%	41	%	56	%	77	%	76	%
Heptachlor		0.10	J	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
alpha-Chlordane		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
gamma-Chlordane		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
gamma-BHC (Lindane)		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
Endrin		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Methoxychlor		0.18	J.I	0.23	J.I	0.20	J.I	0.20	J.I	0.12	J.I	0.11	J.I
Toxaphene		50	U	50	U	50	U	50	U	50	U	50	U
Heptachlor Epoxide		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U

	Cust ID:	120401-4-3S		120403-5S		PBLKHY		PBLKHY BS		PBLKHZ		PBLKIA	
Sample Information	RFW#:	035		036		07LE0600-MB1		07LE0600-MB1		07LTO136-LB1		07LTO137-LB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate: Tetrachloro-m-xylene		73	%	83	%	70	%	84	%	83	%	73	%
Decachlorbiphenyl		90	%	80	%	61	%	83	%	93	%	81	%
Heptachlor		0.50	U	0.50	U	0.50	U	108	%	0.50	U	0.50	U
alpha-Chlordane		0.50	U	0.50	U	0.50	U	115	%	0.50	U	0.50	U
gamma-Chlordane		0.50	U	0.50	U	0.50	U	116	%	0.50	U	0.50	U
gamma-BHC (Lindane)		0.50	U	0.50	U	0.50	U	115	%	0.50	U	0.50	U
Endrin		1.0	U	1.0	U	1.0	U	122 *	%	1.0	U	1.0	U
Methoxychlor		0.11	J.I	0.12	J.I	5.0	U	121	%	5.0	U	5.0	U
Toxaphene		50	U	50	U	50	U	50	U	50	U	50	U
Heptachlor Epoxide		0.50	U	0.50	U	0.50	U	115	%	0.50	U	0.50	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

Project: CAU 151 BN Org: H306
Charge Number: 5B1B02DA5
Project Manager: Tom Thiele
Phone: 5-6711 Fax: M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: 5-5804 Fax: M/S: NTS 306
Turnaround: ( ) Standard – 14 days IH, 28 days Non rad Env, 45 days Rad Env ( ) RUSH Preliminary by: ______ (IH)
__ 1 __ 2 X 7 __ 14 (non Rad Env)
__ 1 __ 7 __ 14 __ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 12-04-01
The samples submitted contain (check):
( ) Hazardous - (list)
( ) Radioactive - (list)
( ) Unknown contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG ______ (IH) V3C32 (Non-Rad Env) ______ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation:
Subcontract Lab(s) used for this work: Lionville

Pay Item, Analysis, Method

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres - Analysis eg. HCl - VOCs	7.3 TCLP DichloroBenzene	8.1 Aroclor	TCLP-MSF Trichlorobenzene	6.11 TCLP Trichloroethane			
120401-V1	12-19-07	1325	SOIL	1	500ml					X	X					
120401-V1	↓	1325	↓	1	125								X			
120401-V2		1312		1	500					X	X					
120401-V2		1312		1	125								X			
120401-V3		1410		1	500					X	X					
120401-V3		1410		1	125								X			
120401-V4		1355		1	500					X	X					
120401-V4		1355		1	125								X			
120401-V5		1335		1	500					X	X					
120401-V5		1335		1	125								X			

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
M. K. Floyd	/s/ M Flovd	12/19/07 1600		Rebecca King	12/19/07 1600
[illegible]	see original	12/20/07 0925	C. CASTANEDA	/s/ C Castaneda	12/20/07 @ 0925
C. CASTANEDA	/s/ C Castaneda	12/20/07 @ 1300	Fed Ex	799772812560	12/20/07 @ 1300

NSTec

ANALYTICAL LABORATORY

SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

Project: CAU 151 | BN Org#: H300
Charge Number: 5B1B02D6
Project Manager: Tom Thiele
Phone: 5-6711 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Robecca King
Phone: 5-5804 | Fax: | M/S: NTS 306
Turnaround: ( ) Standard – 14 days IH, 28 days Non-rad Env, 45 days Rad Env
( ) RUSH Preliminary by ____ (IH)
__1 __2 X 7 __14 (non-Rad Env)
__1 __7 __14 __28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 12-04-01
The samples submitted contain (check):
( ) Hazardous - (list)
( ) Radioactive - (list)
( ) Unknown contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: ____ (IH) V3032 (Non-Rad Env) ____ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation:
Subcontract Lab(s) used for this work: LIONVILLE

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres - Analysis eg. HCl - VOCs	7.3 TCLP Dichlorobenzene	8.1 Aroclor-1254	6.11 TCLP Trichloroethene	1.31 Trip Blank TCLP VOC				
120401-Y6	12-19-07	1345	Soil	1	500 ml					X	X						
120401-U6	↓	1345	Soil	1	125 ml							X					
120401-TB1	↓	1230	WATER	2	40 ml				H2SO4				X				

Last Entry

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
M. W. Floyd	/s/ M Floyd	12/18/07 1600		R. Fox	12/18/07 1600
see original	R. Fox	12/20/07 0925	C A CASTANEDA	/s/ C Castaneda	12/20/07 @ 0925
C A CASTANEDA	/s/ C Castaneda	12/20/07 @ 1300	Fed. Ex.	7997 7281 2503	12/20/07 @ 1300

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, TCLP Leachate

RFW Batch Number: 0712L366 Client: NSTEC #V3032 Work Order: 60052001001 Report Date: 12/31/07 14:05 Page: 1a

	Cust ID:	120401-V1	120401-V1	120401-V1	120401-V2	120401-V3	120401-V4
Sample Information	RFW#:	008	008 MS	008 MSD	009	010	011
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
Surrogate Recovery	Nitrobenzene-d5	59 %	70 %	66 %	58 %	64 %	57 %
	2-Fluorobiphenyl	55 %	75 %	64 %	56 %	53 %	53 %
	Terphenyl-d14	96 %	90 %	93 %	98 %	100 %	97 %
	2-Fluorophenol	61 %	81 %	71 %	63 %	59 %	57 %
	Phenol-d5	50 %	77 %	59 %	51 %	57 %	52 %
	2,4,6-Tribromophenol	75 %	97 %	85 %	72 %	65 %	60 %
1,4-Dichlorobenzene		0.050 U	61 %	57 %	0.050 U	0.050 U	0.050 U

	Cust ID:	120401-V5	120401-V6	SBLKRG	SBLKRG BS	LCHBLK
Sample Information	RFW#:	012	013	07LE0722-MB1	07LE0722-MB1	07LTO157-LB1
	Matrix:	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	MG/L	MG/L	MG/L	MG/L	MG/L
Surrogate Recovery	Nitrobenzene-d5	65 %	76 %	65 %	72 %	55 %
	2-Fluorobiphenyl	55 %	69 %	62 %	69 %	50 %
	Terphenyl-d14	112 %	121 %	114 %	87 %	94 %
	2-Fluorophenol	63 %	76 %	81 %	75 %	54 %
	Phenol-d5	60 %	74 %	77 %	76 %	53 %
	2,4,6-Tribromophenol	75 %	72 %	87 %	92 %	69 %
1,4-Dichlorobenzene		0.050 U	0.050 U	0.050 U	53 %	0.050 U

*= Outside of EPA CLP QC limits.

Sample Information	Cust. ID	120401-TB1	120401-V1	120401-V1MS	120401-V1MSD	120401-V2	120401-V3	120401-V4
	RFW#	007	014	014 MS	014 MSD	015	016	017
	Matrix:	Water	Water	Water	Water	Water	Water	Water
	D.F.:	1	5	5	5	5	5	5
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate 1,2-Dichloroethane-d4		108%	98%	116%	107%	101%	100%	102%
Recovery: Toluene-d8		94%	100%	108%	102%	107%	98%	99%
Bromofluorobenzene		109%	111%	119%	110%	119%*	113%	112%
Trichloroethene		5U	25U	99%	103%	25U	25U	25U

Sample Information	Cust. ID	120401-V5	120401-V6	LCHBLK	VBLK	VBLK BS
	RFW#	018	019	07LTV158-LB1	07LVK191-MB1	07LVK191-MB1S
	Matrix:	Water	Water	Water	Water	Water
	D.F.:	5	5	5	1	1
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate 1,2-Dichloroethane-d4		104%	101%	92%	94%	96%
Recovery: Toluene-d8		98%	97%	95%	101%	109%
Bromofluorobenzene		112%	109%	104%	110%	115%
Trichloroethene		25U	25U	25U	5U	106%

* = outside of QC limits

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 12/31/07 08:18

RFW Batch Number: 0712L366 Client: NSTEC #V3032 Work Order: 60052001001 Page: 1

	Cust ID:	120401-V1	120401-V1	120401-V1	120401-V2	120401-V3	120401-V4
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate:	Tetrachloro-m-xylene	104 %	107 %	104 %	96 %	103 %	96 %
	Decachlorobiphenyl	107 %	102 %	102 %	78 %	96 %	96 %
Aroclor-1254		16 U	16 U	16 U	15 U	15 U	14 U
Aroclor-1016		16 U	96 %	92 %	15 U	15 U	14 U
Aroclor-1260		16 U	105 %	102 %	15 U	15 U	14 U

	Cust ID:	120401-V5	120401-V6	PBLKLC	PBLKLC BS
Sample Information	RFW#:	005	006	07LE0720-MB1	07LE0720-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate:	Tetrachloro-m-xylene	95 %	96 %	91 %	106 %
	Decachlorobiphenyl	95 %	94 %	102 %	101 %
Aroclor-1254		14 U	14 U	13 U	13 U
Aroclor-1016		14 U	14 U	13 U	89 %
Aroclor-1260		14 U	14 U	13 U	97 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

NSTec

ANALYTICAL LABORATORY

SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

Project: CAU 151 — BN Org#: H300

Charge Number: SBIB02DD5

Project Manager: Tom Thiele

Phone: 5-6711 — Fax: — M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King

Phone: 5-5804 — Fax: — M/S: NTS 306

Turnaround: ( ) Standard - 14 days IH, 28 days Non-rad Env, 45 days Rad Env; ( ) RUSH - Preliminary by ___ (IH)

___ 1 ___ 2 ___ 7 ___ 14 (non-Rad Env)

___ 1 X 7 ___ 14 ___ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 12-04-01

The samples submitted contain (check):

( ) Hazardous - (list)

( ) Radioactive - (list)

( ) Unknown contamination. If known, identify contaminants. This information will ensure compliance wi[th] applicable regulations and allow for the safe handling of th[e] sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: ______ (IH) ______ (Non-Rad Env) V3033 ______ (Rad Env)

Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO

Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A

If not, identify the variation:

Subcontract Lab(s) used for this work: GEL

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	NGS-A-002 Cesium-137 Gamma Spec						
120401-V1	12-19-07	1325	Soil	1	500 mL											
120401-V2	↓	1312	↓	1	↓					X						
120401-V3	↓	1410	↓	1	↓					X						
120401-V4	↓	1355	↓	1	↓					X						
120401-V5	↓	1335	↓	1	↓					X						
120401-V6	↓	1345	↓	1	↓					X						
				1						X						
LAST ENTRY										LAST ENTRY						

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
M. L. Floyd	/s/ M Floyd	12/15/07 1600		Re Fen	12/15/07 1600
see original Rotek		12/20/07 0931	CD CASTANEDA	/s/ C Castaneda	12/20/07 0931
CD CASTANEDA	/s/ C Castaneda	12/20/07 @ 1300	Fed. Ex #	7914 6187 5816	12/20/07 @ 1300

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030--4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V1
Sample ID: 199912001
Matrix: Soil
Collect Date: 19-DEC-07
Receive Date: 21-DEC-07
Collector: Client

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd
Rad Gamma Spec Analysis													
Gammaspec, Gamma, Solid													
Actinium-228		1.82	+/-0.344	0.182	+/-0.351		pCi/g		MJH1	12/26/07	0601	713642	1
Americium-241	X	0.229	+/-0.131	0.213	+/-0.134	0.200	pCi/g						
Antimony-125	U	0.0801	+/-0.0662	0.125	+/-0.0676		pCi/g						
Cerium-144	U	-0.105	+/-0.175	0.297	+/-0.178		pCi/g						
Cesium-134	X	0.101	+/-0.0523	0.071	+/-0.0534	0.100	pCi/g						
Cesium-137		0.0628	+/-0.0418	0.0541	+/-0.0427	1.00	pCi/g						
Cobalt-60	U	-0.0133	+/-0.0336	0.0552	+/-0.0343		pCi/g						
Europium-152	U	-0.0486	+/-0.110	0.136	+/-0.112		pCi/g						
Europium-154	U	-0.0412	+/-0.120	0.167	+/-0.122		pCi/g						
Europium-155	U	0.0997	+/-0.134	0.163	+/-0.137		pCi/g						
Lead-212		2.07	+/-0.183	0.0798	+/-0.187		pCi/g						
Potassium-40		31.1	+/-2.38	0.356	+/-2.43		pCi/g						
Promethium-144	U	-0.0229	+/-0.0283	0.0439	+/-0.0289		pCi/g						
Promethium-146	U	0.00354	+/-0.0353	0.0578	+/-0.036		pCi/g						
Ruthenium-106	U	-0.155	+/-0.254	0.415	+/-0.259		pCi/g						
Thorium-234		1.89	+/-1.36	1.73	+/-1.39		pCi/g						
Uranium-235	U	0.00177	+/-0.192	0.325	+/-0.196	0.200	pCi/g						
Uranium-238		1.89	+/-1.36	1.73	+/-1.39	2.00	pCi/g						
Yttrium-88	U	-0.00581	+/-0.0235	0.0345	+/-0.0239		pCi/g						

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

** Analyte is a surrogate compound
< Result is less than value reported
> Result is greater than value reported
A The TIC is a suspected aldol-condensation product
B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
BD Results are either below the MDC or tracer recovery is low

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030--4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V1
Sample ID: 199912001

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst Date	Time	Batch	Mtd

C Analyte has been confirmed by GC/MS analysis
D Results are reported from a diluted aliquot of the sample
H Analytical holding time was exceeded
J Value is estimated
M M if above MDC and less than LLD
N/A RPD or %Recovery limits do not apply.
ND Analyte concentration is not detected above the detection limit
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
R Sample results are rejected
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI Gamma Spectroscopy--Uncertain identification
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y QC Samples were not spiked with this compound
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h Preparation or preservation holding time was exceeded
The above sample is reported on a dry weight basis.

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030—4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V2
Sample ID: 199912002
Matrix: Soil
Collect Date: 19-DEC-07
Receive Date: 21-DEC-07
Collector: Client

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd
Rad Gamma Spec Analysis													
Gammaspec, Gamma, Solid													
Actinium-228		1.94	+/-0.336	0.239	+/-0.343		pCi/g		MJH1	12/26/07	0602	713642	1
Americium-241	U	0.0488	+/-0.170	0.274	+/-0.173	0.200	pCi/g						
Antimony-125	U	-0.0219	+/-0.106	0.157	+/-0.108		pCi/g						
Cerium-144	U	0.0247	+/-0.179	0.308	+/-0.183		pCi/g						
Cesium-134	X	0.144	+/-0.0533	0.0811	+/-0.0544	0.100	pCi/g						
Cesium-137		0.0944	+/-0.0642	0.0638	+/-0.0655	1.00	pCi/g						
Cobalt-60	U	-8.34E-05	+/-0.0451	0.0676	+/-0.046		pCi/g						
Europium-152	U	-0.0784	+/-0.0949	0.153	+/-0.0969		pCi/g						
Europium-154	U	0.042	+/-0.120	0.211	+/-0.123		pCi/g						
Europium-155	U	0.118	+/-0.125	0.163	+/-0.128		pCi/g						
Lead-212		1.61	+/-0.179	0.114	+/-0.182		pCi/g						
Potassium-40		27.8	+/-2.66	0.474	+/-2.71		pCi/g						
Promethium-144	U	-0.000391	+/-0.034	0.0586	+/-0.0346		pCi/g						
Promethium-146	U	0.000134	+/-0.047	0.0804	+/-0.048		pCi/g						
Ruthenium-106	U	0.0381	+/-0.345	0.532	+/-0.352		pCi/g						
Thorium-234	U	1.13	+/-1.95	2.11	+/-1.99		pCi/g						
Uranium-235	U	0.0287	+/-0.184	0.323	+/-0.188	0.200	pCi/g						
Uranium-238	U	1.13	+/-1.95	2.11	+/-1.99	2.00	pCi/g						
Yttrium-88	U	0.0332	+/-0.0274	0.0573	+/-0.028		pCi/g						

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

** Analyte is a surrogate compound
< Result is less than value reported
> Result is greater than value reported
A The TIC is a suspected aldol-condensation product
B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
BD Results are either below the MDC or tracer recovery is low

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030—4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V2
Sample ID: 199912002

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst Date	Time	Batch	Mtd

C Analyte has been confirmed by GC/MS analysis
D Results are reported from a diluted aliquot of the sample
H Analytical holding time was exceeded
J Value is estimated
M M if above MDC and less than LLD
N/A RPD or %Recovery limits do not apply.
ND Analyte concentration is not detected above the detection limit
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
R Sample results are rejected
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI Gamma Spectroscopy --Uncertain identification
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y QC Samples were not spiked with this compound
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h Preparation or preservation holding time was exceeded
The above sample is reported on a dry weight basis.

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030--4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V3
Sample ID: 199912003
Matrix: Soil
Collect Date: 19-DEC-07
Receive Date: 21-DEC-07
Collector: Client

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd
Rad Gamma Spec Analysis													
Gammaspec, Gamma, Solid													
Actinium-228		1.97	+/-0.403	0.239	+/-0.411		pCi/g		MJH1	12/26/07	0603	713642	1
Americium-241	U	0.0984	+/-0.180	0.300	+/-0.184	0.200	pCi/g						
Antimony-125	U	0.0577	+/-0.111	0.172	+/-0.113		pCi/g						
Cerium-144	U	-0.00572	+/-0.230	0.352	+/-0.235		pCi/g						
Cesium-134	U	0.0877	+/-0.0578	0.0946	+/-0.059	0.100	pCi/g						
Cesium-137	U	0.0415	+/-0.0407	0.0753	+/-0.0416	1.00	pCi/g						
Cobalt-60	U	-0.017	+/-0.0495	0.0678	+/-0.0505		pCi/g						
Europium-152	U	-0.0196	+/-0.109	0.162	+/-0.111		pCi/g						
Europium-154	U	0.148	+/-0.174	0.233	+/-0.178		pCi/g						
Europium-155	X	0.246	+/-0.140	0.186	+/-0.143		pCi/g						
Lead-212		2.01	+/-0.194	0.0945	+/-0.198		pCi/g						
Potassium-40		28.1	+/-2.58	0.581	+/-2.63		pCi/g						
Promethium-144	U	0.0361	+/-0.0552	0.0649	+/-0.0563		pCi/g						
Promethium-146	U	0.0221	+/-0.0479	0.0833	+/-0.0489		pCi/g						
Ruthenium-106	U	-0.205	+/-0.343	0.567	+/-0.350		pCi/g						
Thorium-234	U	0.187	+/-1.92	2.49	+/-1.95		pCi/g						
Uranium-235	U	0.00826	+/-0.213	0.358	+/-0.217	0.200	pCi/g						
Uranium-238	U	0.187	+/-1.92	2.49	+/-1.95	2.00	pCi/g						
Yttrium-88	U	0.0243	+/-0.0321	0.0623	+/-0.0327		pCi/g						

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

** Analyte is a surrogate compound
< Result is less than value reported
> Result is greater than value reported
A The TIC is a suspected aldol-condensation product
B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
BD Results are either below the MDC or tracer recovery is low
C Analyte has been confirmed by GC/MS analysis

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030—4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V3
Sample ID: 199912003

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst Date	Time	Batch	Mtd

D Results are reported from a diluted aliquot of the sample
H Analytical holding time was exceeded
J Value is estimated
M M if above MDC and less than LLD
N/A RPD or %Recovery limits do not apply.
ND Analyte concentration is not detected above the detection limit
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
R Sample results are rejected
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI Gamma Spectroscopy—Uncertain identification
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y QC Samples were not spiked with this compound
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h Preparation or preservation holding time was exceeded
The above sample is reported on a dry weight basis.

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030--4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V4
Sample ID: 199912004
Matrix: Soil
Collect Date: 19-DEC-07
Receive Date: 21-DEC-07
Collector: Client

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd
Rad Gamma Spec Analysis													
Gammaspec, Gamma, Solid													
Actinium-228		1.80	+/-0.338	0.201	+/-0.345		pCi/g		MJH1	12/26/07	0605	713642	1
Americium-241	U	0.0897	+/-0.0934	0.157	+/-0.0953	0.200	pCi/g						
Antimony-125	U	0.00813	+/-0.0841	0.143	+/-0.0858		pCi/g						
Cerium-144	X	0.296	+/-0.173	0.282	+/-0.176		pCi/g						
Cesium-134	X	0.134	+/-0.0603	0.0815	+/-0.0615	0.100	pCi/g						
Cesium-137	U	0.00989	+/-0.0344	0.0606	+/-0.0351	1.00	pCi/g						
Cobalt-60	U	-0.0143	+/-0.0361	0.0581	+/-0.0368		pCi/g						
Europium-152	U	0.0645	+/-0.118	0.144	+/-0.121		pCi/g						
Europium-154	U	0.0475	+/-0.107	0.189	+/-0.109		pCi/g						
Europium-155	U	0.100	+/-0.120	0.148	+/-0.122		pCi/g						
Lead-212		1.76	+/-0.169	0.0751	+/-0.172		pCi/g						
Potassium-40		29.2	+/-2.36	0.525	+/-2.40		pCi/g						
Promethium-144	U	0.0122	+/-0.0347	0.0538	+/-0.0354		pCi/g						
Promethium-146	U	-0.0072	+/-0.0454	0.0658	+/-0.0464		pCi/g						
Ruthenium-106	U	0.0967	+/-0.301	0.521	+/-0.307		pCi/g						
Thorium-234	U	0.571	+/-1.07	1.43	+/-1.09		pCi/g						
Uranium-235	U	0.275	+/-0.256	0.289	+/-0.261	0.200	pCi/g						
Uranium-238	U	0.571	+/-1.07	1.43	+/-1.09	2.00	pCi/g						
Yttrium-88	U	0.00149	+/-0.0255	0.044	+/-0.0261		pCi/g						

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

** Analyte is a surrogate compound
< Result is less than value reported
> Result is greater than value reported
A The TIC is a suspected aldol-condensation product
B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
BD Results are either below the MDC or tracer recovery is low
C Analyte has been confirmed by GC/MS analysis

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030—4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V4
Sample ID: 199912004

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst Date	Time	Batch	Mtd

D Results are reported from a diluted aliquot of the sample
H Analytical holding time was exceeded
J Value is estimated
M M if above MDC and less than LLD
N/A RPD or %Recovery limits do not apply.
ND Analyte concentration is not detected above the detection limit
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
R Sample results are rejected
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI Gamma Spectroscopy—Uncertain identification
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y QC Samples were not spiked with this compound
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h Preparation or preservation holding time was exceeded
The above sample is reported on a dry weight basis.

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030—4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V5
Sample ID: 199912005
Matrix: Soil
Collect Date: 19-DEC-07
Receive Date: 21-DEC-07
Collector: Client

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd
Rad Gamma Spec Analysis													
Gammaspec, Gamma, Solid													
Actinium-228		2.02	+/-0.352	0.170	+/-0.359		pCi/g		MJH1	12/26/07	0606	713642	1
Americium-241	U	0.0601	+/-0.0941	0.153	+/-0.096	0.200	pCi/g						
Antimony-125	U	0.0168	+/-0.0656	0.118	+/-0.0669		pCi/g						
Cerium-144	U	0.141	+/-0.164	0.266	+/-0.167		pCi/g						
Cesium-134	X	0.0808	+/-0.0456	0.0775	+/-0.0465	0.100	pCi/g						
Cesium-137	U	0.0379	+/-0.0444	0.0488	+/-0.0453	1.00	pCi/g						
Cobalt-60	U	-1.45E-05	+/-0.0309	0.0444	+/-0.0315		pCi/g						
Europium-152	U	0.053	+/-0.0847	0.123	+/-0.0864		pCi/g						
Europium-154	U	0.0405	+/-0.0954	0.167	+/-0.0973		pCi/g						
Europium-155	X	0.147	+/-0.126	0.138	+/-0.129		pCi/g						
Lead-212		1.80	+/-0.164	0.0694	+/-0.167		pCi/g						
Potassium-40		27.9	+/-2.52	0.435	+/-2.58		pCi/g						
Promethium-144	U	-0.0484	+/-0.035	0.047	+/-0.0357		pCi/g						
Promethium-146	U	0.0228	+/-0.0321	0.0588	+/-0.0327		pCi/g						
Ruthenium-106	U	-0.10	+/-0.229	0.373	+/-0.233		pCi/g						
Thorium-234		2.38	+/-1.55	1.29	+/-1.58		pCi/g						
Uranium-235	U	0.123	+/-0.255	0.264	+/-0.261	0.200	pCi/g						
Uranium-238		2.38	+/-1.55	1.29	+/-1.58	2.00	pCi/g						
Yttrium-88	U	-0.018	+/-0.0271	0.0397	+/-0.0276		pCi/g						

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

** Analyte is a surrogate compound
< Result is less than value reported
> Result is greater than value reported
A The TIC is a suspected aldol-condensation product
B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
BD Results are either below the MDC or tracer recovery is low

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030--4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V5
Sample ID: 199912005

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst Date	Time	Batch	Mtd

C Analyte has been confirmed by GC/MS analysis
D Results are reported from a diluted aliquot of the sample
H Analytical holding time was exceeded
J Value is estimated
M M if above MDC and less than LLD
N/A RPD or %Recovery limits do not apply.
ND Analyte concentration is not detected above the detection limit
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
R Sample results are rejected
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI Gamma Spectroscopy--Uncertain identification
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y QC Samples were not spiked with this compound
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h Preparation or preservation holding time was exceeded
The above sample is reported on a dry weight basis.

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030--4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V6
Sample ID: 199912006
Matrix: Soil
Collect Date: 19-DEC-07
Receive Date: 21-DEC-07
Collector: Client

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd
Rad Gamma Spec Analysis													
Gammaspec, Gamma, Solid													
Actinium-228		1.95	+/-0.379	0.201	+/-0.386		pCi/g		MJH1	12/26/07	0606	713642	1
Americium-241	U	-0.0894	+/-0.204	0.244	+/-0.208	0.200	pCi/g						
Antimony-125	U	-0.043	+/-0.0874	0.143	+/-0.0892		pCi/g						
Cerium-144	U	0.293	+/-0.255	0.294	+/-0.260		pCi/g						
Cesium-134	X	0.0859	+/-0.0473	0.0781	+/-0.0482	0.100	pCi/g						
Cesium-137	U	0.00106	+/-0.033	0.0573	+/-0.0337	1.00	pCi/g						
Cobalt-60	U	0.0338	+/-0.0437	0.059	+/-0.0446		pCi/g						
Europium-152	U	0.0615	+/-0.112	0.130	+/-0.114		pCi/g						
Europium-154	U	-0.0649	+/-0.120	0.194	+/-0.122		pCi/g						
Europium-155	U	0.109	+/-0.100	0.177	+/-0.102		pCi/g						
Lead-212		1.84	+/-0.174	0.0872	+/-0.177		pCi/g						
Potassium-40		26.9	+/-2.29	0.291	+/-2.34		pCi/g						
Promethium-144	U	-0.00765	+/-0.0329	0.0558	+/-0.0335		pCi/g						
Promethium-146	U	0.00559	+/-0.0409	0.0696	+/-0.0417		pCi/g						
Ruthenium-106	U	0.0688	+/-0.274	0.486	+/-0.279		pCi/g						
Thorium-234	U	0.685	+/-1.28	2.18	+/-1.31		pCi/g						
Uranium-235	U	0.054	+/-0.221	0.327	+/-0.225	0.200	pCi/g						
Uranium-238	U	0.685	+/-1.28	2.18	+/-1.31	2.00	pCi/g						
Yttrium-88	U	0.0206	+/-0.0237	0.0247	+/-0.0241		pCi/g						

The following Analytical Methods were performed

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

** Analyte is a surrogate compound
< Result is less than value reported
> Result is greater than value reported
A The TIC is a suspected aldol-condensation product
B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
BD Results are either below the MDC or tracer recovery is low
C Analyte has been confirmed by GC/MS analysis

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : National Security Technologies, LLC
Address : 2621 Losee Road
M/S NTS273
North Las Vegas, Nevada 89030--4134
Contact: Mr. Ted Redding
Project: Environmental Rad Analysis

Report Date: December 28, 2007

Client Sample ID: 120401-V6
Sample ID: 199912006

Project: NEVA00207
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst Date	Time	Batch	Mtd

D Results are reported from a diluted aliquot of the sample
H Analytical holding time was exceeded
J Value is estimated
M M if above MDC and less than LLD
N/A RPD or %Recovery limits do not apply.
ND Analyte concentration is not detected above the detection limit
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
R Sample results are rejected
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI Gamma Spectroscopy--Uncertain identification
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y QC Samples were not spiked with this compound
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h Preparation or preservation holding time was exceeded
The above sample is reported on a dry weight basis.

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Client : National Security Technologies, LLC
2621 Losee Road
M/S NTS273
North Las Vegas, Nevada
Contact: Mr. Ted Redding

Workorder: 199912

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 713642										
QC1201486068 199912001 DUP										
Actinium-228		1.82		1.91	pCi/g	0.293		(0% - 20%)	MJH1	12/26/0717:53
	Uncert:	+/-0.344		+/-0.404						
	TPU:	+/-0.351		+/-0.413						
Americium-241	X	0.229	U	0.0812	pCi/g	1.93		(0% - 100%)		
	Uncert:	+/-0.131		+/-0.0678						
	TPU:	+/-0.134		+/-0.0692						
Antimony-125	U	0.0801	U	0.0609	pCi/g	0.286		N/A		
	Uncert:	+/-0.0662		+/-0.111						
	TPU:	+/-0.0676		+/-0.113						
Cerium-144	U	-0.105	U	-0.0426	pCi/g	0.458		N/A		
	Uncert:	+/-0.175		+/-0.196						
	TPU:	+/-0.178		+/-0.200						
Cesium-134	X	0.101	X	0.166	pCi/g	1.29		(0% - 100%)		
	Uncert:	+/-0.0523		+/-0.0805						
	TPU:	+/-0.0534		+/-0.0821						
Cesium-137		0.0628		0.194	pCi/g	2.75		(0% - 100%)		
	Uncert:	+/-0.0418		+/-0.0817						
	TPU:	+/-0.0427		+/-0.0833						
Cobalt-60	U	-0.0133	U	-0.0143	pCi/g	0.0274		N/A		
	Uncert:	+/-0.0336		+/-0.0573						
	TPU:	+/-0.0343		+/-0.0585						
Europium-152	U	-0.0486	U	0.0567	pCi/g	1.27		N/A		
	Uncert:	+/-0.110		+/-0.116						
	TPU:	+/-0.112		+/-0.118						
Europium-154	U	-0.0412	U	0.060	pCi/g	1.02		N/A		
	Uncert:	+/-0.120		+/-0.148						
	TPU:	+/-0.122		+/-0.151						
Europium-155	U	0.0997	X	0.221	pCi/g	1.19		(0% - 100%)		
	Uncert:	+/-0.134		+/-0.143						
	TPU:	+/-0.137		+/-0.146						
Lead-212		2.07		1.99	pCi/g	0.545		(0% - 20%)		
	Uncert:	+/-0.183		+/-0.200						
	TPU:	+/-0.187		+/-0.204						
Potassium-40		31.1		27.8	pCi/g	1.80		(0% - 20%)		
	Uncert:	+/-2.38		+/-2.57						
	TPU:	+/-2.43		+/-2.62						
Promethium-144	U	-0.0229	U	-0.0255	pCi/g	0.0898		N/A		
	Uncert:	+/-0.0283		+/-0.0486						
	TPU:	+/-0.0289		+/-0.0496						
Promethium-146	U	0.00354	U	0.0201	pCi/g	0.497		N/A		
	Uncert:	+/-0.0353		+/-0.0532						

QC Summary

Workorder: 199912

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 713642										
	TPU:	+/-0.036		+/-0.0543						
Ruthenium-106	U	-0.155	U	0.490	pCi/g	2.17		N/A		
	Uncert:	+/-0.254		+/-0.511						
	TPU:	+/-0.259		+/-0.522						
Thorium-234		1.89		1.58	pCi/g	0.330		(0% - 100%)		
	Uncert:	+/-1.36		+/-1.24						
	TPU:	+/-1.39		+/-1.26						
Uranium-235	U	0.00177	U	0.0786	pCi/g	0.435		N/A		
	Uncert:	+/-0.192		+/-0.279						
	TPU:	+/-0.196		+/-0.285						
Uranium-238		1.89		1.58	pCi/g	0.330		(0% - 100%)		
	Uncert:	+/-1.36		+/-1.24						
	TPU:	+/-1.39		+/-1.26						
Yttrium-88	U	-0.00581	U	-0.00716	pCi/g	0.0605		N/A		
	Uncert:	+/-0.0235		+/-0.0359						
	TPU:	+/-0.0239		+/-0.0367						
QC1201486069 LCS										
Actinium-228				1.61	pCi/g					12/26/0707:16
	Uncert:			+/-0.739						
	TPU:			+/-0.754						
Americium-241	16.0			15.9	pCi/g		100	(75%-125%)		
	Uncert:			+/-1.37						
	TPU:			+/-1.39						
Antimony-125			U	-0.0469	pCi/g					
	Uncert:			+/-0.294						
	TPU:			+/-0.300						
Cerium-144			U	0.0772	pCi/g					
	Uncert:			+/-0.507						
	TPU:			+/-0.517						
Cesium-134			U	0.0894	pCi/g					
	Uncert:			+/-0.122						
	TPU:			+/-0.124						
Cesium-137	6.10			6.64	pCi/g		109	(75%-125%)		
	Uncert:			+/-0.627						
	TPU:			+/-0.640						
Cobalt-60	8.46			8.83	pCi/g		104	(75%-125%)		
	Uncert:			+/-0.841						
	TPU:			+/-0.859						
Europium-152			U	0.0861	pCi/g					
	Uncert:			+/-0.244						
	TPU:			+/-0.249						
Europium-154			U	0.125	pCi/g					
	Uncert:			+/-0.199						
	TPU:			+/-0.204						
Europium-155			U	-0.0455	pCi/g					
	Uncert:			+/-0.202						
	TPU:			+/-0.206						
Lead-212				1.11	pCi/g					

QC Summary

Workorder: 199912

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 713642										
	Uncert:			+/-0.189						
	TPU:			+/-0.193						
Potassium-40			U	0.658	pCi/g					
	Uncert:			+/-0.684						
	TPU:			+/-0.697						
Promethium-144			U	0.0337	pCi/g					
	Uncert:			+/-0.0898						
	TPU:			+/-0.0916						
Promethium-146			U	-0.148	pCi/g					
	Uncert:			+/-0.119						
	TPU:			+/-0.121						
Ruthenium-106			U	0.133	pCi/g					
	Uncert:			+/-0.819						
	TPU:			+/-0.836						
Thorium-234			U	0.610	pCi/g					
	Uncert:			+/-1.35						
	TPU:			+/-1.37						
Uranium-235			U	0.328	pCi/g					
	Uncert:			+/-0.502						
	TPU:			+/-0.512						
Uranium-238			U	0.610	pCi/g					
	Uncert:			+/-1.35						
	TPU:			+/-1.37						
Yttrium-88				1.28	pCi/g					
	Uncert:			+/-0.207						
	TPU:			+/-0.212						
QC1201486067 MB										
Actinium-228			U	-0.0421	pCi/g					12/26/0706:07
	Uncert:			+/-0.0726						
	TPU:			+/-0.0741						
Americium-241			U	0.0195	pCi/g					
	Uncert:			+/-0.0484						
	TPU:			+/-0.0494						
Antimony-125			U	0.0178	pCi/g					
	Uncert:			+/-0.0384						
	TPU:			+/-0.0392						
Cerium-144			U	0.006	pCi/g					
	Uncert:			+/-0.0746						
	TPU:			+/-0.0761						
Cesium-134			U	0.00297	pCi/g					
	Uncert:			+/-0.0171						
	TPU:			+/-0.0175						
Cesium-137			U	0.00704	pCi/g					
	Uncert:			+/-0.012						
	TPU:			+/-0.0123						
Cobalt-60			U	0.00306	pCi/g					
	Uncert:			+/-0.0151						
	TPU:			+/-0.0154						

QC Summary

Workorder: 199912

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 713642										
Europium-152			U	-0.0618	pCi/g					
	Uncert:			+/-0.0537						
	TPU:			+/-0.0548						
Europium-154			U	-0.00738	pCi/g					
	Uncert:			+/-0.0398						
	TPU:			+/-0.0406						
Europium-155			U	-0.0187	pCi/g					
	Uncert:			+/-0.0366						
	TPU:			+/-0.0374						
Lead-212			U	-0.00138	pCi/g					
	Uncert:			+/-0.0345						
	TPU:			+/-0.0352						
Potassium-40			U	0.0393	pCi/g					
	Uncert:			+/-0.219						
	TPU:			+/-0.224						
Promethium-144			U	0.00996	pCi/g					
	Uncert:			+/-0.0171						
	TPU:			+/-0.0175						
Promethium-146			U	-0.00644	pCi/g					
	Uncert:			+/-0.0227						
	TPU:			+/-0.0231						
Ruthenium-106			U	0.221	pCi/g					
	Uncert:			+/-0.147						
	TPU:			+/-0.150						
Thorium-234			U	0.054	pCi/g					
	Uncert:			+/-0.493						
	TPU:			+/-0.503						
Uranium-235			U	0.0349	pCi/g					
	Uncert:			+/-0.0905						
	TPU:			+/-0.0923						
Uranium-238			U	0.054	pCi/g					
	Uncert:			+/-0.493						
	TPU:			+/-0.503						
Yttrium-88			U	0.00291	pCi/g					
	Uncert:			+/-0.0156						
	TPU:			+/-0.0159						

Notes:
The Qualifiers in this report are defined as follows:

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low

QC Summary

Workorder: 199912

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time

C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
H	Analytical holding time was exceeded
J	Value is estimated
M	M if above MDC and less than LLD
N/A	RPD or %Recovery limits do not apply.
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI	Gamma Spectroscopy--Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.
** Indicates analyte is a surrogate compound.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

COPY

NSTec

ANALYTICAL LABORATORY

SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT / CLIENT INFORMATION

Project: ER | BN Org#: H330

Charge Number: 5B1B 02D5

Project Manager: Rebecca King

Phone: 702 295-7804 | Fax: 702 295-7761 | M/S: NTS306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King

Phone: 702 295-7804 | Fax: 702 295-7761 | M/S: NTS306

Turnaround: ( ) Standard – 14 days IH, 28 days Non-rad Env, 45 days Rad Env
( ) RUSH Preliminary by: _____ (IH)
__1 __2 X 14 (non-Rad Env)
__1 __7 __14 __28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAU 151

The samples submitted contain (check);
( ) **Hazardous** - *(list)* _____
( ) **Radioactive** - *(list)* _____
(X) **Unknown** contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (IH) V3047 (Non-Rad Env) _____ (Rad Env)

Samples submitted are associated with a signed Project SOW. (Y) YES ( ) NO

Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A

If not, identify the variation: _____

Subcontract Lab(s) used for this work: LIONVILLE

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: 7.3	6.11	1.31					
										1,4 DCB TCLP	TCE TCLP	VCC TRIP BLANK					
Drum 4	1-15-08	1030	liquid	2	340ml				none	X	X						
Drum 5		1106	liquid	2	340ml					X	X						
Drum 31		1115	sludge	2	625ml					X	X						
Drum 32		1125	sludge	2	625ml					X	X						
Drum 63		1135	sludge	2	625ml (BAK)					X	X						
Drum 64		1147	sludge	3	~~625~~ 750 ml		X	X		X	X						
Trip Blank		0810	water	2	80ml				H2SO4		CAN ~~X~~	X					
	LAST ITEM																

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Reed Poderis	/s/ R Poderis	1-15-08 1300	ER Affiliate	NA	1-15-08 1300
Rebecca King	/s/ R King	1-16-08 900	C.A. CASTANEDA	/s/ C Castaneda	1-16-08 @ 0800
CACASTANEDA	/s/ C Castaneda	1-16-08@1300	Fed Ex	7914 7829 0484	1-16-08@1300

FRM-0732 (11/06)

Lionville Laboratory, Inc.

Volatiles by GC/MS, TCLP Leachate

Report Date: 01/23/08 15:37

RFW Batch Number: **0801L464** Client. **NSTEC V3047** Work Order: 60052001001 Page: 1a

	Cust ID:	TRIP BLANK	DRUM 5	DRUM 31	DRUM 31	DRUM 32	DRUM 32
Sample Information	RFW#:	007	014	015	015 DL	016	016 DL
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	5.00	5.00	50.0	5.00	200
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	109 %	112 %	111 %	119 %	113 %	113 %
	Toluene-d8	96 %	101 %	99 %	101 %	98 %	103 %
	Bromofluorobenzene	106 %	104 %	101 %	103 %	100 %	107 %
Trichloroethene		5 U	25 U	3900 E	3900 D	18000 E	24000 D

	Cust ID:	DRUM 63	DRUM 63	DRUM 63	DRUM 64	DRUM 4	VBLKSB
Sample Information	RFW#:	017	017 MS	017 MSD	018	019	08LVG010-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	5.00	5.00	5.00	5.00	5.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	110 %	111 %	113 %	107 %	119 %	102 %
	Toluene-d8	98 %	104 %	104 %	97 %	96 %	95 %
	Bromofluorobenzene	102 %	102 %	105 %	102 %	102 %	101 %
Trichloroethene		7 J	106 %	102 %	5 J	25 U	5 U

*= Outside of EPA CLP QC limits.

		Cust ID:	**VBLKSB BS**		**VBLKSC**		**VBLKSC BS**		**LCHBLK**	
Sample Information		RFW#:	**08LVG010-MB1**		**08LVG011-MB1**		**08LVG011-MB1**		**08LTV008-LB1**	
		Matrix:	WATER		WATER		WATER		WATER	
		D.F.	1.00		1.00		1.00		5.00	
		Units:	ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4		99	%	116	%	112	%	104	%
	Toluene-d8		101	%	105	%	107	%	101	%
	Bromofluorobenzene		104	%	107	%	108	%	104	%
Trichloroethene			101	%	5	U	98	%	25	U

*= Outside of EPA CLP QC limits.

	Cust ID:	DRUM 4	DRUM 5	DRUM 31	DRUM 31	DRUM 32	DRUM 32
Sample Information	RFW#:	008	009	010	010 DL	011	011 DL
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	5.00	1.00	10.0
	Units:	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
Surrogate Recovery	Nitrobenzene-d5	83 %	67 %	110 %	72 %	91 %	61 %
	2-Fluorobiphenyl	70 %	54 %	80 %	56 %	72 %	46 %
	Terphenyl-d14	111 %	131 %	105 %	83 %	64 %	58 %
	2-Fluorophenol	80 %	61 %	94 %	61 %	75 %	52 %
	Phenol-d5	87 %	73 %	86 %	65 %	70 %	58 %
	2,4,6-Tribromophenol	96 %	107 %	130 * %	78 %	104 %	55 %
1,4-Dichlorobenzene		0.15	0.13	1.7 E	1.3 D	3.1 E	2.2 D

	Cust ID:	DRUM 63	DRUM 64	DRUM 64	DRUM 64	SBLKRS	SBLKRS BS
Sample Information	RFW#:	012	013	013 MS	013 MSD	08LE0028-MB1	08LE0028-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
Surrogate Recovery	Nitrobenzene-d5	96 %	72 %	99 %	66 %	77 %	82 %
	2-Fluorobiphenyl	76 %	56 %	85 %	60 %	62 %	83 %
	Terphenyl-d14	120 %	58 %	142 * %	97 %	130 %	116 %
	2-Fluorophenol	97 %	63 %	93 %	61 %	74 %	89 %
	Phenol-d5	104 * %	69 %	91 %	70 %	67 %	65 %
	2,4,6-Tribromophenol	120 %	97 %	136 * %	91 %	106 %	115 %
1,4-Dichlorobenzene		0.026 J	0.019 J	100 %	67 %	0.050 U	65 %

*= Outside of EPA CLP QC limits.

Cust ID: **LCHBLK**

Sample Information

RFW#: **08LTO006-LB1**
Matrix: WATER
D.F.: 1.00
Units: MG/L

Surrogate Recovery	Nitrobenzene-d5	114	%
	2-Fluorobiphenyl	95	%
	Terphenyl-d14	195 *	%
	2-Fluorophenol	105 *	%
	Phenol-d5	120 *	%
	2,4,6-Tribromophenol	127 *	%

1,4-Dichlorobenzene		0.050	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/31/08

CLIENT: NSTEC V3047 LVL LOT #: 0801L490

WORK ORDER: 60052-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	DRUM 31	Total Organic Carbon	48300	MG/KG	681	10.0
-004	DRUM 32	Total Organic Carbon	53800	MG/KG	635	10.0
-005	DURM 63	Total Organic Carbon	72000	MG/KG	610	10.0
-006	DRUM 64	Total Organic Carbon	67200	MG/KG	627	10.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/31/08

CLIENT: NSTEC V3047 LVL LOT #: 0801L490

WORK ORDER: 60052-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	08LTZ001-MB1	Total Organic Carbon	4.7 u	MG/KG	4.7	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/31/08

CLIENT: NSTEC V3047 LVL LOT #: 0801L490

WORK ORDER: 60052-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-006	DRUM 64	Total Organic Carbon	202000	67200	118000	114.4	20.0
BLANK10	08LTZ001-MB1	Total Organic Carbon	439	4.7 u	400	109.8	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/31/08

CLIENT: NSTEC V3047 LVL LOT #: 0801L490

WORK ORDER: 60052-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-006REP	DRUM 64	Total Organic Carbon	67200	65000	3.3	10.0

COPY

NSTec

ANALYTICAL LABORATORY

SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT / CLIENT INFORMATION

Project: ER | BN Org#: H330

Charge Number: 5B1B02D5

Project Manager: Rebecca King

Phone: 702 295-7804 | Fax: | M/S:

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King

Phone: 702 295-7804 | Fax: 702 295-7761 | M/S: NTS306

Turnaround: ( ) Standard – 14 days IH, 28 days Non-rad Env, 45 days Rad Env
( ) RUSH Preliminary by: _____ (IH)
__1 __2 __7 __14 (non-Rad Env)
__1 X 7 __14 __28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAU 151

The samples submitted contain (check):
( ) **Hazardous** - *(list)* _____
( ) **Radioactive** - *(list)* _____
(X) **Unknown** contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (IH) _____ (Non-Rad Env) V3048 (Rad Env)

Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO

Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A

If not, identify the variation: _____

Subcontract Lab(s) used for this work: PARAGON

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: NAS-A-002 Gamma Cs-137	Pay Item, Analysis, Method: NAS-A-006 Pu 239/240
Drum 4	1-15-08	1030	liquid	1	500 ml				none	X	X
Drum 5	↓	1038	liquid	1	↓				↓	X	X
Drum 31		1115	sludge	1						X	X
Drum 32		1125	sludge	1						X	X
Drum 63		1135	sludge	1						X	X
Drum 64	↓	1147	sludge	1	↓				↓	X	X
LAST ITEM											

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Rod Poderis	/s/ R Poderis	1-15-08 1300	ER refrigerator	NA	1-15-08 1300
Rebecca King	/s/ R King	1-16-08 0820	C.D. CASTANEDA	/s/ C Castaneda	1-16-08 @ 0820
C.D. CASTANEDA	/s/ C Castaneda	1-16-08 @ 1300	Fed Exp #	7924 8894 1081	1/16/08 @ 1300

FRM-0732 (11/06)

Isotopic Plutonium By Alpha Spectroscopy Sample Results Summary

Client Name: National Security Technologies, LLC
Client Project Name: CAU 151
Client Project Number: V3048

Laboratory Name: Paragon Analytics
PAI Work Order: 0801128

Reported on: Thursday, January 31, 2008 11:53:42 AM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	Units	Matrix	Prep Batch	Date Analyzed	Flags
0801128-1	Drum 4	Sample	Pu-239/240	5.67E-03 +/- 4.72E-03	2.56E-03	pCi/g	WLIQUID	AS080118-1	1/21/2008	LT
0801128-2	Drum 5	Sample	Pu-239/240	1.83E-01 +/- 4.43E-02	1.11E-02	pCi/g	WLIQUID	AS080118-1	1/22/2008	
0801128-3	Drum 31	Sample	Pu-239/240	3.68E+00 +/- 6.14E-01	1.15E-02	pCi/g	SLUDGE	AS080118-1	1/21/2008	
0801128-4	Drum 32	Sample	Pu-239/240	3.22E+00 +/- 5.38E-01	6.71E-03	pCi/g	SLUDGE	AS080118-1	1/21/2008	
0801128-5	Drum 63	Sample	Pu-239/240	2.62E+00 +/- 4.43E-01	9.91E-03	pCi/g	SLUDGE	AS080118-1	1/21/2008	
0801128-6	Drum 64	Sample	Pu-239/240	5.60E+00 +/- 9.44E-01	7.65E-03	pCi/g	SLUDGE	AS080118-1	1/21/2008	

Comments:

Data Package ID: *PU0801128-1*

Qualifiers/Flags:
U - Result is less than the sample specific MDC.
LT - Result is less than Requested MDC, greater than sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:
TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Gamma Spectroscopy Results

PAI 713 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0801128
Client Name: National Security Technologies, LLC
ClientProject ID: CAU 151 V3048

Field ID: Drum 4
Lab ID: 0801128-1

Library: LNG_GAM-A-001

Sample Matrix: WLIQUID
Prep SOP: PAI 739 Rev 9
Date Collected: 15-Jan-08
Date Prepared: 18-Jan-08
Date Analyzed: 22-Jan-08

Prep Batch: GS080118-2
QCBatchID: GS080118-2-1
Run ID: GS080118-2A
Count Time: 30 minutes
Report Basis: As Received

Final Aliquot: 56.7 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: 080176d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
10045-97-3	Cs-137	1.83E-01 +/- 1.48E-01	2.05E-01	1.00E+00	U,G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

SQ - Spectral quality prevents accurate quantification.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *GSS0801128-1*

Gamma Spectroscopy Results

PAI 713 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0801128
Client Name: National Security Technologies, LLC
ClientProject ID: CAU 151 V3048

Field ID: Drum 6
Lab ID: 0801128-2
Library: LNG_GAM-A-001

Sample Matrix: WLIQUID
Prep SOP: PAI 739 Rev 9
Date Collected: 15-Jan-08
Date Prepared: 18-Jan-08
Date Analyzed: 22-Jan-08

Prep Batch: GS080118-2
QCBatchID: GS080118-2-1
Run ID: GS080118-2A
Count Time: 30 minutes
Report Basis: As Received

Final Aliquot: 52.3 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: 080177d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
10045-97-3	Cs-137	6.19E-01 +/- 2.58E-01	2.76E-01	1.00E+00	LT,G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *GSS0801128-1*

Gamma Spectroscopy Results

PAI 713 Rev 9

Sample Duplicate Results

Lab Name: Paragon Analytics
Work Order Number: 0801128
Client Name: National Security Technologies, LLC
ClientProject ID: CAU 151 V3048

Field ID: Drum 5
Lab ID: 0801128-2DUP

Library: LNG_GAM-A-001

Sample Matrix: WLIQUID
Prep SOP: PAI 739 Rev 9
Date Collected: 15-Jan-08
Date Prepared: 18-Jan-08
Date Analyzed: 22-Jan-08

Prep Batch: GS080118-2
QCBatchID: GS080118-2-1
Run ID: GS080118-2A
Count Time: 30 minutes
Report Basis: As Received

Final Aliquot: 56.0 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: 080178d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
10045-97-3	Cs-137	4.26E-01 +/- 2.45E-01	3.33E-01	1.00E+00	LT,G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
LT - Result is less than Requested MDC, greater than sample specific MDC.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

D - DER is greater than Control Limit of 3

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.
TI - Nuclide identification is tentative.
R - Nuclide has exceeded 6 halflives.
G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)
MDC - Minimum Detectable Concentration (see PAI SOP 709)
BDL - Below Detection Limit

Data Package ID: *GSS0801128-1*

Gamma Spectroscopy Results

PAI 713 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0801128
Client Name: National Security Technologies, LLC
ClientProject ID: CAU 151 V3048

Field ID: Drum 31
Lab ID: 0801128-3

Library: LNG_GAM-A-001

Sample Matrix: SLUDGE
Prep SOP: PAI 739 Rev 9
Date Collected: 15-Jan-08
Date Prepared: 18-Jan-08
Date Analyzed: 22-Jan-08

Prep Batch: GS080118-2
QCBatchID: GS080118-2-1
Run ID: GS080118-2A
Count Time: 30 minutes
Report Basis: Dry Weight

Final Allquot: 30.4 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 080183d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
10045-97-3	Cs-137	1.31E+01 +/- 1.99E+00	5.14E-01	1.00E+00	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

MS - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *GSS0801128-1*

Gamma Spectroscopy Results

PAI 713 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0801128
Client Name: National Security Technologies, LLC
ClientProject ID: CAU 151 V3048

Field ID: Drum 32
Lab ID: 0801128-4

Library: LNG_GAM-A-001

Sample Matrix: SLUDGE
Prep SOP: PAI 739 Rev 9
Date Collected: 15-Jan-08
Date Prepared: 18-Jan-08
Date Analyzed: 22-Jan-08

Prep Batch: GS080118-2
QCBatchID: GS080118-2-1
Run ID: GS080118-2A
Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 31.5 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 080179d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
10045-97-3	Cs-137	1.30E+01 +/- 1.97E+00	6.02E-01	1.00E+00	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

SDL - Below Detection Limit

Data Package ID: *GSS0801128-1*

Gamma Spectroscopy Results

PAI 713 Rev 9

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0801126
Client Name: National Security Technologies, LLC
ClientProject ID: CAU 151 V3048

Field ID: Drum 69
Lab ID: 0801126-5

Library: LNG_GAM-A-001

Sample Matrix: SLUDGE
Prep SOP: PAI 739 Rev 9
Date Collected: 15-Jan-08
Date Prepared: 18-Jan-08
Date Analyzed: 22-Jan-08

Prep Batch: GS080118-2
QCBatchID: GS080118-2-1
Run ID: GS080118-2A
Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 30.0 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g
File Name: 080180d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
10045-97-3	Cs-137	1.25E+01 +/- 1.95E+00	7.24E-01	1.00E+00	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *GSS0801126-1*

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

Page ____ of ____

PROJECT / CLIENT INFORMATION

ect: CAU 151 | BN Org#: 306
ge Number: 5B1B02DS
ect Manager: Tom Thiele
ne: 5-6711 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: 5-5804 | Fax: 5-7918 | M/S: NTS306
Turnaround: ( ) Standard – 14 days IH, 28 days Non rad Env, 45 days Rad Env
(X) RUSH Preliminary by: ______ (IH)
__ 1 __ 2 X 7 __ 14 (non-Rad Env)
__ 1 __ 7 __ 14 __ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: CAS 12-24-01
The samples submitted contain (check):
( ) Hazardous - (list)
( ) Radioactive - (list)
( ) Unknown contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

S: ______ (IH) V3060 (Non-Rad Env) ______ (Rad Env)
nples submitted are associated with a signed Project SOW. (X) YES ( ) NO
alyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
ot, identify the variation:
ocontract Lab(s) used for this work: LIONVILLE

Pay Item, Analysis, Method

DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	1.31 7.3 Total 1,4 Dichlorobenzene	1.31 Total Trichloroethene						
Liquid Composite 1)	2/25/08	1525	WATER	2	1040				4° C	X	X						
Liquid Composite 2)	2/25/08	1528	"	"	"				4° C	X	X						
rip BLANK A	2/25/08	1500	"	1	40ml				H_2SO_4		X						
LAST	ITEM																

USTODY TRANSFER

mpled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Mike Floyd	/s/ M Floyd	2/25/08 1630	Kelridge		
Kelridge		2/26/08 9:00	Rebecca King	/s/ R King	2/26/08
Rebecca King	/s/ R King	2/26/08 9:10	(CA) CASTANEDA	/s/ C Castaneda	2/26/08 @ 0910
D CASTANEDA	/s/ C Castaneda	2/26/08 @ 1300	Fed Ex #	7909 4771 5355	2/26/08 @ 1300

FRM-0732 (11/06)

Lionville Laboratory, Inc.

Volatiles by GC/MS, TCLP Leachate

RFW Batch Number: **0802L670** Client: **NSTEC V3060** Work Order: 60052001001 Page: 1a

Report Date: 03/05/08 12:09

	Cust ID:	TRIP BLANK A		151 LIQ COMP OSITE 1		151 LIQ COMP OSITE 2		VBLKUV		VBLKUV BS		VBLKUU	
Sample Information	RFW#:	003		004		005		08LVG039-MB1		08LVG039-MB1		08LVG037-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		5.00		5.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4	108	%	105	%	104	%	97	%	97	%	99	%
	Toluene-d8	98	%	99	%	98	%	94	%	101	%	99	%
	Bromofluorobenzene	109	%	104	%	106	%	102	%	107	%	102	%
Trichloroethene		5	U	25	U	25	U	5	U	99	%	5	U
1,4-Dichlorobenzene		5	U	150		150		5	U	97	%	5	U

	Cust ID:	VBLKUU BS		LCHBLK	
Sample Information	RFW#:	08LVG037-MB1		08LTV013-LB1	
	Matrix:	WATER		WATER	
	D.F.:	1.00		5.00	
	Units:	ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4	99	%	99	%
	Toluene-d8	104	%	99	%
	Bromofluorobenzene	109	%	107	%
Trichloroethene		99	%	25	U
1,4-Dichlorobenzene		99	%	25	U

*= Outside of EPA CLP QC limits.

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

Page 1 of 3

PROJECT / CLIENT INFORMATION

CAU 151 | BN Org#: H300
Number: 5B1B 02D5
Manager: Tom Thiele
5-6711 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: 5-5804 | Fax: 5-7918 | M/S: NTS306
Turnaround: ( ) Standard – 14 days (H), 28 days Non-rad Env, 45 days Rad Env
(X) RUSH Preliminary by: _____ (H)
__1 __2 X 7 __14 (non-Rad Env)
__1 __7 __14 __28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: _____
The samples submitted contain (check):
( ) **Hazardous** - *(list)* _____
( ) **Radioactive** - *(list)* _____
( ) **Unknown** contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

_____ (H) V3061 _____ (Non-Rad Env) _____ (Rad Env)
es submitted are associated with a signed Project SOW. (Y) YES ( ) NO
ses entered here agree with the SOW. (Y) YES ( ) NO ( ) N/A
identify the variation: _____
ntract Lab(s) used for this work: LIONVILLE

SCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: TCLP 1,4 Dichlorobenzene	TCLP Trichloroethylene	6011
51 D-20	2/26/08	1311	Sludge	PK 2	500 RK 625ml	✓	✓	✓	4°C	X	X	
51 D-21		1321	"	PK 1 2	125 RK 625ml					X	X	
51 D-22		1333	"	1 2	125 625ml					X	X	
51 D-23		1340	"	1 2	125 RK 625ml					X	X	
51 D-24		1348	"	1 2	125 625ml					X	X	
51 D-25		1357	" RK	1 2	125 625ml					X	X	
51 D-26		1403	"	1 2	625ml					X	X	
51 D-27		1413	"	1 2	625ml RK					X	X	
51 D-28		1422	"	1 2	625ml					X	X	
151 D-29	↓	1441	"	1 2	625ml				↓	X	X	

CUSTODY TRANSFER

Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
J. Floyd	/s/ M Floyd	2/26/08 1700	Rafea		2/26/08 1700
Reeds	see original	2/27/08 850	R A King	/s/ R King	2/27/08 8:50
R King	/s/ R King	2/27/08 904	C A Castaneda	/s/ C Castaneda	2/27/08 @ 0904
A Castaneda	/s/ C Castaneda	2/27/08 @ 1300	Fed Ex	790456915281	2/27/08 @ 1346

FRM-0732 (11/06)

NSTec

ANALYTICAL LABORATORY

SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

ject: CAU 151 | BN Org#: #300

ge Number: 5B1B 02D5

ect Manager: Tom Thiele

ne: 5-6711 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King

Phone: 5-5804 | Fax: 5-7918 | M/S: NTS 306

Turnaround: ( ) Standard – 14 days IH, 28 days Non rad Env, 45 days Rad Env

(X) RUSH Preliminary by: _____ (IH)

__ 1 __ 2 X 7 __ 14 (non-Rad Env)

__ 1 __ 7 __ 14 __ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: _____

The samples submitted contain (check):

( ) **Hazardous** - *(list)* _____

( ) **Radioactive** - *(list)* _____

( ) **Unknown** contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

S: _____ (IH) V3061 (Non-Rad Env) _____ (Rad Env)

mples submitted are associated with a signed Project SOW. (X) YES ( ) NO

alyses entered here agree with the SOW. (Y) YES ( ) NO ( ) N/A

ot, identify the variation: _____

ocontract Lab(s) used for this work: LIONVILLE

DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl – VOCs	Pay Item, Analysis, Method: 6.11 TCLP 1,4 Dichlorobenzene	TCLP Trichloroethylene
151 D-30	2/26/08	1454	Sludge	RAC 1 2	125ml RAC				4°C	X	X
151 D-90		1456	"	1 2	125ml					X	X
151 D-33		1507	"	1 2	125ml					X	X
151 D-34		1514	"	1 2	125ml	RAC				X	X
151 D-35		1525	"	1 2	125ml					X	X
151 D-36		1534	"	1 2	125ml					X	X
151 D-37		1541	"	1 2	125ml					X	X
151 D-38		1548	"	2	125ml					X	X
~~151 D~~			"	2	125ml					X	X
~~151 D~~			"	2	125ml					X	X

CUSTODY TRANSFER

Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
M Floyd	/s/ M Floyd	2/26/08 1700	Refer		2/26/08 1700
Refer	Refer	2/27/08 830	R A King	/s/ R King	2/27/08 830
R A King	/s/ R King	2/27/08 0904	C Castaneda	/s/ C Castaneda	2/27/08 0904
C Castaneda	/s/ C Castaneda	2/27/08 @ 1340	Fed Ex	7904 5691 5281	2/27/08 @ 1300

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

t: CAU 151 | BN Org# H300
e Number: 5B1B 02D5
t Manager: Tom Thiele
: 5-6711 | Fax: | M/S: NTS 360

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: S-5804 | Fax: S-7918 | M/S: NTS306
Turnaround: ( ) Standard – 14 days IH, 28 days Non-Rad Env, 45 days Rad Env
(X) RUSH Preliminary by: _____ (IH)
__1 __2 X 7 __14 (non-Rad Env)
__1 __7 __14 __28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: _____
The samples submitted contain (check):
( ) **Hazardous** - *(list)* _____
( ) **Radioactive** - *(list)* _____
( ) **Unknown** contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

_____ (IH) V3061 (Non-Rad Env) _____ (Rad Env)
ples submitted are associated with a signed Project SOW. (X) YES ( ) NO
yses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
t, identify the variation: _____
ontract Lab(s) used for this work: LIONVILLE

DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs
Equip Blank-B	2/26/08	0950	WATER	1	40ml				H_2SO_4
LAST ITEM									

Pay Item, Analysis, Method

1.31							
VOC TCLP							

STODY TRANSFER

pled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
R King	/s/ R King	2/26/08 1700	Rehidge		2/26/08 1700
Rehidge	Rehidge	2/27/08 8:30	R King	/s/ R King	2/27/08 8:30
R King	/s/ R King	2/27/08 @ 0904	C Castaneda	/s/ C Castaneda	2/27/08 @ 0904
C Castaneda	/s/ C Castaneda	2/27/08 @ 1340	Fed Ex	7904 5691 5281	2/27/08 @ 1340

Lionville Laboratory, Inc.

Volatiles by GC/MS, TCLP Leachate — Report Date: 03/06/08 12:33

RFW Batch Number: 0802L677 — Client: NSTEC V3061 — Work Order: 60052001001 — Page: 1a

	Cust ID:	TRIP BLANK-B	151 D-20	151 D-20	151 D-20	151 D-21	151 D-22
Sample Information	RFW#:	019	020	020 MS	020 MSD	021	022
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	5.00	5.00	5.00	5.00	5.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	108 %	106 %	112 %	106 %	108 %	105 %
	Toluene-d8	100 %	95 %	101 %	103 %	96 %	98 %
	Bromofluorobenzene	107 %	108 %	113 %	113 %	105 %	105 %
Trichloroethene		5 U	25 U	111 %	111 %	25 U	25
1,4-Dichlorobenzene		5 U	170	94 %	92 %	120	160

	Cust ID:	151 D-23	151 D-24	151 D-25	151 D-26	151 D-27	151 D-28
Sample Information	RFW#:	023	024	025	026	027	028
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	5.00	5.00	5.00	5.00	5.00	5.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	104 %	105 %	102 %	77 %	101 %	100 %
	Toluene-d8	98 %	99 %	95 %	102 %	100 %	97 %
	Bromofluorobenzene	107 %	105 %	103 %	110 %	106 %	103 %
Trichloroethene		42	51	61	54	690	2000 E
1,4-Dichlorobenzene		170	170	190	290	570	980

*= Outside of EPA CLP QC limits.

	Cust ID:	151 D-28	151 D-29	151 D-29	151 D-30	151 D-30	151 D-90
Sample	RFW#:	028 DL	029	029 DL	030	030 DL	031
Information	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	25.0	5.00	25.0	5.00	50.0	5.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	1,2-Dichloroethane-d4	104 %	101 %	108 %	79 %	102 %	105 %
Surrogate	Toluene-d8	96 %	96 %	101 %	101 %	91 %	98 %
Recovery	Bromofluorobenzene	106 %	104 %	103 %	102 %	102 %	110 %
Trichloroethene		2000 D	1500 E	1500 D	5300 E	4200 D	3800 E
1,4-Dichlorobenzene		1000 D	2100 E	2300 D	5500 E	5500 D	3900 E

	Cust ID:	151 D-90	151 D-33	151 D-33	151 D-34	151 D-34	151 D-35
Sample	RFW#:	031 DL	032	032 DL	033	033 DL	034
Information	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	50.0	5.00	50.0	5.00	50.0	5.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	1,2-Dichloroethane-d4	100 %	107 %	105 %	102 %	104 %	101 %
Surrogate	Toluene-d8	92 %	99 %	95 %	97 %	94 %	95 %
Recovery	Bromofluorobenzene	101 %	107 %	105 %	105 %	106 %	105 %
Trichloroethene		3500 D	4900 E	4700 D	4800 E	4100 D	230
1,4-Dichlorobenzene		3900 D	3500 E	3800 D	2500 E	2600 D	430

*= Outside of EPA CLP QC limits.

	Cust ID:	151 D-36		151 D-37		151 D-37		151 D-38		VBLKUV		VBLKUV BS	
Sample Information	RFW#:	035		036		036 DL		037		08LVG039-MB1		08LVG039-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	5.00		5.00		25.0		5.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4	109	%	106	%	104	%	106	%	97	%	97	%
	Toluene-d8	100	%	96	%	88	%	96	%	94	%	101	%
	Bromofluorobenzene	108	%	104	%	104	%	107	%	102	%	107	%
Trichloroethene		740		1600	E	1400	D	160		5	U	99	%
1,4-Dichlorobenzene		380		1100	E	1100	D	330		5	U	97	%

	Cust ID:	VBLKUU		VBLKUU BS		VBLKUW		VBLKUW BS		VBLKUZ		VBLKUZ BS	
Sample Information	RFW#:	08LVG037-MB1		08LVG037-MB1		08LVG040-MB1		08LVG040-MB1		08LVG041-MB1		08LVG041-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4	99	%	99	%	102	%	97	%	115	%	111	%
	Toluene-d8	99	%	104	%	96	%	102	%	103	%	106	%
	Bromofluorobenzene	102	%	109	%	109	%	106	%	111	%	111	%
Trichloroethene		5	U	99	%	5	U	98	%	5	U	101	%
1,4-Dichlorobenzene		5	U	99	%	5	U	97	%	5	U	106	%

*= Outside of EPA CLP QC limits.

		Cust ID:	LCHBLK		LCHBLK	
Sample Information		RFW#:	08LTV014-LB1		08LTV015-LB1	
		Matrix:	WATER		WATER	
		D.F.:	5.00		5.00	
		Units:	ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4		103	%	103	%
	Toluene-d8		99	%	98	%
	Bromofluorobenzene		113	%	111	%
Trichloroethene			25	U	25	U
1,4-Dichlorobenzene			25	U	25	U

*= Outside of EPA CLP QC limits.

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

Project: CAU 151 | BN Org#: H30

Charge Number: 5B1B 02D5

Project Manager: Tom Thiele

Phone: ~~5-7761~~ NSF 5-6711 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King

Phone: 5-5804 | Fax: 5-7981 | M/S: NTS306

Turnaround: ( ) Standard – 14 days IH, 28 days Non-rad Env, 45 days Rad Env
~~X~~ RUSH Preliminary by: _____ (IH)
___ 1 ___ 2 ✓ 7 ___ 14 (non-Rad Env)
___ 1 ___ 7 ___ 14 ___ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: _____
The samples submitted contain (check):
( ) **Hazardous** - *(list)* _____
( ) **Radioactive** - *(list)* _____
( ) **Unknown** contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (IH) V30641 (Non-Rad Env) _____ (Rad Env)

COPY

Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO

Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A

If not, identify the variation: _____

Subcontract Lab(s) used for this work: Lionville

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: TCLP 1,4 Dichlorobenzene	TCLP Trichloroethene						
											6.11						
151D-39	2/27/08	1140	Sludge	1	125				4°C	X	X						
151D-40		1108								X	X						
151D-41		1115								X	X						
151D-42		1125								X	X						
151D-43		1132								X	X						
151D-44		1137								X	X						
151D-45		1245								X	X						
151D-46		1250								X	X						
151D-47		1257								X	X						
151D-48		1303								X	X						

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Mike Floyd	/s/ M Floyd	2/27/08 1700	Fedex		2/27/08 1700
Fedex		2/28/08 0900	R A King	/s/ R King	2/28/08 0900
R A King	/s/ R King	2/28/08 1907	C.D Castaneda	/s/ C Castaneda	2/28/08 @ 0907
C.D Castaneda	/s/ C Castaneda	2/28/08 @ 1300	Fedex Acct 792656875	411, 7918 5798 2753	2/28/08 @ 1300

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

Project: CAU 151 BN Org#: 4340
Charge Number: 5B1B 02D5
Project Manager: Tom Thiele
Phone: 5-6711 Fax: M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: 5-5804 Fax: M/S: NTS 306
Turnaround: ( ) Standard – 14 days IH, 28 days Non-rad Env, 45 days Rad Env
(X) RUSH Preliminary by: ______ (IH)
__ 1 __ 2 X 7 __ 14 (non-Rad Env)
__ 1 __ 7 __ 14 __ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: ______
The samples submitted contain (check):
( ) **Hazardous** - *(list)* ______
( ) **Radioactive** - *(list)* ______
( ) **Unknown** contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: ______ (IH) V3064 (Non-Rad Env) ______ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation: ______
Subcontract Lab(s) used for this work: LIONVILLE

COPY

Pay Item, Analysis, Method

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	TCLP 1,4 Dichlorobenzene	6.11 TCLP Trichloroethene	1.31 VOC - TCLP					
TRIP BLANK C	2/27/08	1122	Water	1	40ml				H2SO4			+					
151D 49	↓	1308	Sludge	1	125				4°C	X	X						
151D 50	↓	1314	↓	↓	↓				↓	X	X						
151D 91	↓	1316	↓	↓	↓				↓	X	X						
151D 51	↓	1325	↓	↓	↓				↓	X	X						
151D 52	↓	1332	↓	↓	↓				↓	X	X						
151D 53	↓	1337	↓	↓	↓				↓	X	X						
151D 54	↓	1343	↓	↓	↓				↓	X	X						
151D 55	↓	1350	↓	↓	↓				↓	X	X						
151D 56	↓	1405	↓	↓	↓				↓	X	X						

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Mike Floyd	/s/ M Floyd	2/27/08 1700	Refer		2/27/08 1700
Refer		2/28/08 0900	R A King	/s/ R King	2/28/08 0900
R A King	/s/ R King	2/28/08 0907	C.D. Castaneda	/s/ C Castaneda	2/28/08 @ 0907
C D Castaneda	/s/ C Castaneda	2/28/08 @ 1300	FEDEX# 792656875411,	791857982753	2/28/08 @ 1300

NSTec

ANALYTICAL LABORATORY

SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

Project: CAU 151 | BN Org#: 41300

Charge Number: 5RIB 0705

Project Manager: Tom Thiele

Phone: 5-6711 | Fax: | M/S: NLV 374

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King

Phone: 5-5804 | Fax: | M/S: NLV 306

Turnaround: ( ) Standard – 14 days IH, 28 days Non-rad Env, 45 days Rad Env

(✓) RUSH Preliminary by: _____ (IH)

___1 ___2 ✓7 ___14 (non-Rad Env)

___1 ___7 ___14 ___28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: _____

The samples submitted contain (check):

( ) **Hazardous** - *(list)* _____

( ) **Radioactive** - *(list)* _____

( ) **Unknown** contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (IH) V30604 (Non-Rad Env) _____ (Rad Env)

Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO

Analyses entered here agree with the SOW. (✓) YES ( ) NO ( ) N/A

If not, identify the variation: _____

Subcontract Lab(s) used for this work: LIONVILLE

COPY

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: TCLP 1,4 Dichlorobenzene	TCLP Trichloroethene	6.11
151D ~~56~~ 57	2/27/08	1412	Sludge	1	125				4°C	X	X	
151D 58		1422								X	X	
151D 59		1428								X	X	
151D 60		1439								X	X	
151D 61		1444								X	X	
151D 62		1450								X	X	
151D 65		1454								X	X	
151D 66		1503								X	X	
151D 68		1515								X	X	
151D 92		1520								X	X	

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Mike Floyd	C/s/ M Floyd	2/27/08 1700	Refer		2/27/08 1700
[illegible]		2/28/08 920	R King	/s/ R King	2/28/08 0907
R King	/s/ R King	2/28/08 0907	C Castaneda	/s/ C Castaneda	2/28/08 @ 1300
C Castaneda	/s/ C Castaneda	2/28/08 @ 1300	FEDEX # 792656875411	791857982753	

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT / CLIENT INFORMATION

Project: CAU 151 | BN Org# H300
Charge Number: SBIA 02D5
Project Manager: TOM Thiele
Phone: 5-674 | Fax: | M/S: NTS 306C

REPORT & TURNAROUND INFORMATION

Send Report to: Rebecca King
Phone: 5-5804 | Fax: | M/S NTS 306
Turnaround: ( ) Standard – 14 days IH, 28 days Non-rad Env, 45 days Rad Env
(X) RUSH Preliminary by: _____ (IH)
__ 1 __ 2 X 7 __ 14 (non-Rad Env)
__ 1 __ 7 __ 14 __ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site:
The samples submitted contain (check):
( ) **Hazardous** - *(list)*
( ) **Radioactive** - *(list)*
( ) **Unknown** contamination. If known, identify contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

SDG: _____ (IH) V30604 (Non-Rad Env) _____ (Rad Env)
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO
Analyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
If not, identify the variation:
Subcontract Lab(s) used for this work: LIONVILLE

COPY

ID/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	Pay Item, Analysis, Method: 6.11 TCLP 1,4 Dichlorobenzene	6.11 TCLP Trichloroethene
151D 69	2/27/08	1533	Sludge	1	125				4°C	X	X
151D 70	"	1538	"	"	"					X	X
151D 71	"	1545	"	"	"					X	X
LAST ITEM											

CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Mike Floyd	/s/ M Floyd	2/27/08 1700	Reser		2/27/08 1700
Reser	Reser	2/28/08 900	KA King	/s/ R King	2/28/08 0900
KA King	/s/ R King	2/28/08 0907	C.D. Castaneda	/s/ C Castaneda	2/28/08@ 0907
CD Castaneda	/s/ C Castaneda	2/28/08@ 1300	FED EX # 792656875411	791857982753	2/28/08@ 1300

FRM-0732 (11/06)

Lionville Laboratory, Inc.

Volatiles by GC/MS, TCLP Leachate — Report Date: 03/07/08 17:42

RFW Batch Number: **0802L684** Client: **NSTEC V3064** Work Order: 60052001001 Page: 1a

	Cust ID:	TRIP BLANK C	151 D-39	151 D-39	151 D-40	151 D-40	151 D-41
Sample Information	RFW#:	011	021	021 DL	022	022 DL	023
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	5.00	500	5.00	50.0	5.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	105 %	108 %	106 %	107 %	93 %	106 %
	Toluene-d8	106 %	96 %	97 %	98 %	103 %	96 %
	Bromofluorobenzene	114 %	113 %	106 %	113 %	105 %	108 %
Trichloroethene		5 U	35000 E	97000 D	6100 E	5800 D	4000 E
1,4-Dichlorobenzene		5 U	9600 E	16000 D	1300 E	1300 D	2700 E

	Cust ID:	151 D-41	151 D-42	151 D-42	151 D-43	151 D-44	151 D-44
Sample Information	RFW#:	023 DL	024	024 DL	025	026	026 DL
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	50.0	5.00	200	5.00	5.00	50.0
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	106 %	110 %	103 %	104 %	99 %	104 %
	Toluene-d8	96 %	96 %	97 %	91 %	92 %	97 %
	Bromofluorobenzene	108 %	124 * %	105 %	111 %	104 %	105 %
Trichloroethene		3400 D	15000 E	14000 D	770	5100 E	4300 D
1,4-Dichlorobenzene		2500 D	5800 E	5800 D	340	2200 E	1800 D

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles by GC/MS, TCLP Leachate

Report Date: 03/07/08 17:42

RFW Batch Number: **0802L684** Client: **NSTEC V3064** Work Order: 60052001001 Page: 2a

	Cust ID:	151 D-45		151 D-45		151 D-46		151 D-46		151 D-47		151 D-47	
Sample Information	RFW#:	027		027 DL		028		028 DL		029		029 DL	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	5.00		25.0		5.00		500		5.00		500	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4	103	%	110	%	102	%	106	%	98	%	106	%
	Toluene-d8	91	%	99	%	91	%	98	%	92	%	98	%
	Bromofluorobenzene	106	%	104	%	105	%	109	%	108	%	109	%
Trichloroethene		1800	E	1500	D	25000	E	45000	D	25000	E	44000	D
1,4-Dichlorobenzene		700		600	D	7700	E	12000	D	8300	E	13000	D

	Cust ID:	151 D-48		151 D-48		151 D-49		151 D-49		151 D-50		151 D-91	
Sample Information	RFW#:	030		030 DL		031		031 DL		032		033	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	5.00		500		5.00		500		500		100	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4	106	%	107	%	116	%	109	%	109	%	106	%
	Toluene-d8	93	%	96	%	104	%	97	%	97	%	104	%
	Bromofluorobenzene	108	%	101	%	104	%	108	%	105	%	107	%
Trichloroethene		32000	E	82000	D	28000	E	52000	D	73000		89000	E
1,4-Dichlorobenzene		8000	E	11000	D	9600	E	20000	D	20000		21000	E

*= Outside of EPA CLP QC limits.

	Cust ID:	**151 D-91**	**151 D-51**	**151 D-51**	**151 D-52**	**151 D-52**	**151 D-53**
Sample Information	RFW#:	**033 DL**	**034**	**034 DL**	**035**	**035 DL**	**036**
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	500	100	500	100	200	5.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	109 %	103 %	111 %	103 %	109 %	100 %
	Toluene-d8	98 %	102 %	99 %	102 %	100 %	101 %
	Bromofluorobenzene	109 %	103 %	110 %	101 %	108 %	104 %
Trichloroethene		85000 D	39000 E	43000 D	25000 E	25000 D	120
1,4-Dichlorobenzene		19000 D	8900	9600 D	5200	5100 D	170

	Cust ID:	**151 D-54**	**151 D-55**	**151 D-56**	**151 D-56**	**151 D-56**	**VBLKVC**
Sample Information	RFW#:	**037**	**038**	**039**	**039 MS**	**039 MSD**	**08LVG042-MB1**
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	5.00	5.00	5.00	5.00	5.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	100 %	103 %	102 %	104 %	100 %	105 %
	Toluene-d8	100 %	102 %	102 %	105 %	103 %	103 %
	Bromofluorobenzene	101 %	105 %	105 %	111 %	108 %	105 %
Trichloroethene		50	440	180	100 %	91 %	5 U
1,4-Dichlorobenzene		140	350	220	99 %	91 %	5 U

*= Outside of EPA CLP QC limits.

	Cust ID:	VBLKVC BS		VBLKUV		VBLKUV BS		VBLKVD		VBLKVD BS		VBLKUW	
Sample Information	RFW#:	08LVG042-MB1		08LVG039-MB1		08LVG039-MB1		08LVK044-MB1		08LVK044-MB1		08LVG040-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
1,2-Dichloroethane-d4		102	%	97	%	97	%	107	%	107	%	102	%
Surrogate Toluene-d8		110	%	94	%	101	%	98	%	100	%	96	%
Recovery Bromofluorobenzene		114	%	102	%	107	%	109	%	84	%	109	%
Trichloroethene		102	%	5	U	99	%	5	U	103	%	5	U
1,4-Dichlorobenzene		102	%	5	U	97	%	5	U	96	%	5	U

	Cust ID:	VBLKUW BS		VBLKUZ		VBLKUZ BS		LCHBLK		LCHBLK	
Sample Information	RFW#:	08LVG040-MB1		08LVG041-MB1		08LVG041-MB1		08LTV016-LB1		08LTV017-LB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		5.00		5.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L	
1,2-Dichloroethane-d4		97	%	115	%	111	%	106	%	119	%
Surrogate Toluene-d8		102	%	103	%	106	%	95	%	102	%
Recovery Bromofluorobenzene		106	%	111	%	111	%	113	%	108	%
Trichloroethene		98	%	5	U	101	%	25	U	25	U
1,4-Dichlorobenzene		97	%	5	U	106	%	25	U	25	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles by GC/MS, TCLP Leachate

Report Date: 03/07/08 16:23

RFW Batch Number: **0802L685** Client. **NSTEC V3064** Work Order: 60052001001 Page: 1a

	Cust ID:	151D-57	151D-58	151D-59	151D-60	151D-61	151D-62
Sample Information	RFW#:	014	015	016	017	018	019
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	5.00	5.00	5.00	5.00	5.00	5.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	110 %	109 %	109 %	110 %	102 %	98 %
	Toluene-d8	102 %	105 %	101 %	102 %	95 %	93 %
	Bromofluorobenzene	112 %	106 %	109 %	110 %	100 %	101 %
Trichloroethene		330	290	390	24 J	110	25 U
1,4-Dichlorobenzene		250	300	250	130	130	110

	Cust ID:	151D-65	151D-66	151D-68	151D-92	151D-69	151D-70
Sample Information	RFW#:	020	021	022	023	024	025
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	5.00	5.00	5.00	5.00	5.00	5.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	100 %	100 %	102 %	102 %	103 %	101 %
	Toluene-d8	93 %	92 %	92 %	93 %	96 %	95 %
	Bromofluorobenzene	99 %	101 %	101 %	104 %	98 %	106 %
Trichloroethene		25 U	97	48	67	120	8900 E
1,4-Dichlorobenzene		93	140	79	77	170	2900 E

*= Outside of EPA CLP QC limits.

	Cust ID:	151D-70	151D-71	VBLKUZ	VBLKUZ BS	VBLKVA	VBLKVA BS
Sample Information	RFW#:	025 DL	026	08LVG041-MB1	08LVG041-MB1	08LVK045-MB1	08LVK045-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	100	5.00	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	98 %	99 %	115 %	111 %	100 %	99 %
	Toluene-d8	91 %	93 %	103 %	106 %	91 %	93 %
	Bromofluorobenzene	100 %	103 %	111 %	111 %	95 %	93 %
Trichloroethene		14000 D	45	5 U	101 %	5 U	99 %
1,4-Dichlorobenzene		3300 D	95	5 U	106 %	5 U	102 %

	Cust ID:	VBLKVB	VBLKVB BS	LCHBLK
Sample Information	RFW#:	08LVK046-MB1	08LVK046-MB1	08LTV018-LB1
	Matrix:	WATER	WATER	WATER
	D.F.:	1.00	1.00	5.00
	Units:	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	102 %	98 %	110 %
	Toluene-d8	89 %	93 %	103 %
	Bromofluorobenzene	99 %	92 %	113 %
Trichloroethene		5 U	105 %	25 U
1,4-Dichlorobenzene		5 U	104 %	25 U

*= Outside of EPA CLP QC limits.

NSTec

ANALYTICAL LABORATORY
SERVICES REQUEST AND CHAIN OF CUSTODY RECORD

Page ____ of ____

PROJECT / CLIENT INFORMATION

oject: CAU 151 | BN Org#: H300
iarge Number: 5B1B 02D5
oject Manager: TOM Thiele
one: 5-6711 | Fax: | M/S: NTS 306

REPORT & TURNAROUND INFORMATION

Send Report to: REBECCA King
Phone: 5-5804 | Fax: | M/S: NTS 306
Turnaround: ( ) Standard – 14 days IH, 28 days Non-rad Env, 45 days Rad Env
(X) RUSH Preliminary by: ________ (IH)
__ 1 __ 2 X 7 __ 14 (non-Rad Env)
__ 1 __ 7 __ 14 __ 28 (Radiological Env)

SAMPLE INFORMATION

Sampling Site: ________
The samples submitted contain (check);
( ) Hazardous - *(list)* ________
( ) Radioactive - *(list)* ________
( ) Unknown contamination. If known, identify contaminants. This information will ensure compliance wit applicable regulations and allow for the safe handling of the sample materials.

SAMPLE MANAGEMENT INFORMATION

DG: ________ (IH) V3065 (Non-Rad Env) ________ (Rad Env)
imples submitted are associated with a signed Project SOW. (X) YES ( ) NO
nalyses entered here agree with the SOW. (X) YES ( ) NO ( ) N/A
not, identify the variation: ________
ibcontract Lab(s) used for this work: LIONVILLE

Pay Item, Analysis, Method

/DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	CONTAINER #	CONTAINER Est. Vol	QC MD	QC MS	QC MSD	Pres – Analysis eg. HCl - VOCs	TCLP 1,4 Dichlorobenzene	6.11 TCLP Trichloroethene	1.31 VOC - TCLP					
151D72	2/28/08	1010	Sludge	1	125 ml					x	x						
151D93	↓	1015	↓	↓	125					x	x						
151D73	↓	1025	↓	↓	500	X	X	X		x	x						
151D74	↓	1035	↓	↓	125					x	x						
151D75	↓	1045	↓	↓	125					x	x						
TRIP BLANK C	↓	~~0930~~ 0845	WATER	1	40ml							x					
LAST ITEM																	

USTODY TRANSFER

mpled/Relinquished (print)	Signature	DATE / TIME	Received by (print)	Signature	DATE / TIME
Mike FLOYD	/s/ M Floyd	2/28/08 1500	Rofee		2/28/08 1500
Roller	Roller	2/28/08 1620	R A King	/s/ R King	2/28/08 1620
R A King	/s/ R King	2/28/08 1640	C D CASTANEDA	/s/ C Castaneda	2/28/08 @ 1640
C CASTANEDA	/s/ C Castaneda	2/28/08 1300	Fed Ex	790950445367	2/29/08 @ 1300

FRM-0732 (11/0

Lionville Laboratory, Inc.
Volatiles by GC/MS, TCLP Leachate
Report Date: 03/11/08 13:55

RFW Batch Number: 0803L687 Client: NSTEC V3065 Work Order: 60052001001 Page: 1a

	Cust ID:	TRIP BLANK C		151 D-72		151 D-93		151 D-93		151 D-73		151 D-74	
Sample Information	RFW#:	006		007		008		008 DL		009		010	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		5.00		5.00		10.0		5.00		5.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4	106	%	106	%	107	%	98	%	107	%	98	%
	Toluene-d8	99	%	101	%	100	%	94	%	100	%	102	%
	Bromofluorobenzene	106	%	109	%	106	%	103	%	111	%	108	%
Trichloroethene		5	U	60		21	J	24	JD	25	U	21000	E
1,4-Dichlorobenzene		5	U	180		1300	E	1100	D	210		7700	E

	Cust ID:	151 D-74		151 D-75		VBLKVC		VBLKVC BS		VBLKVB		VBLKVB BS	
Sample Information	RFW#:	010 DL		011		08LVG042-MB1		08LVG042-MB1		08LVK046-MB1		08LVK046-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	500		5.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4	101	%	80	%	105	%	102	%	102	%	98	%
	Toluene-d8	91	%	108	%	103	%	110	%	89	%	93	%
	Bromofluorobenzene	101	%	113	%	105	%	114	%	99	%	92	%
Trichloroethene		35000	D	60		5	U	102	%	5	U	105	%
1,4-Dichlorobenzene		13000	D	75		5	U	102	%	5	U	104	%

*= Outside of EPA CLP QC limits.

		Cust ID.	VBLKVA		VBLKVA BS	
Sample Information		RFW#:	08LVK045-MB1		08LVK045-MB1	
		Matrix:	WATER		WATER	
		D.F	1.00		1.00	
		Units:	ug/L		ug/L	
Surrogate Recovery	1,2-Dichloroethane-d4		102	%	99	%
	Toluene-d8		92	%	93	%
	Bromofluorobenzene		96	%	93	%
Trichloroethene			5	U	99	%
1,4-Dichlorobenzene			5	U	102	%

*= Outside of EPA CLP QC limits.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C

WASTE DISPOSITION DOCUMENTATION

THIS PAGE INTENTIONALLY LEFT BLANK

NSTec Form FRM-0918

(4)

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☒ 6 ☐ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-01 System #4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Insulation (non-Asbestosform) ☐ Cement & concrete
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses
☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERA

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled W knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains onl site. I have verified this through the waste characterization method id prohibited and allowable waste items. I have contacted Property Man is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal
RCT Initials

____ **This container/load meets the criteria for no added man-made radioactive material**

____ **This container/load meets the criteria for Radcon Manual Table 4.2 release limits.**

✓ **This container/load is exempt from survey due to process knowledge and origin.**

SIGNATURE: see original **DATE:** 11/29/07

BN-0646 (10/05)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 11/29/07

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 46000 11-29-07 Signature of Certifier: /s/ Sandra Little

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☒ 6 ☐ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION
(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5704

Location / Origin: CAU 151 Area 12 Camp 12-04-01 System #4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES
Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:
☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.) ☐ Insulation (non-Asbestosform) ☐ Cement & concrete

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses
☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:
☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____
☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERAT

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Was knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only site. I have verified this through the waste characterization method ider prohibited and allowable waste items. I have contacted Property Manag is approved for disposal in the landfill.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 11/29/07

Radiological Survey Release for Waste Disposal
RCT Initials
____ **This container/load meets the criteria for no added man-made radioactive material**
____ **This container/load meets the criteria for Radcon Manual Table 4.2 release limits.**
____ **This container/load is exempt from survey due to process knowledge and origin.**
SIGNATURE: see original **DATE:** 11/29/07
BN-0646 (10/05)

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 59,250 11-29-07 Signature of Certifier: /s/ Sandra Little

(2)

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☒ 6 ☐ 9 ☒ **LANDFILL**

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS-12-04-01 System #4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt	☐ Metal	☐ Wood	☒ Soil	☐ Rubber (excluding tires)	☐ Empty containers	
☐ Plastic	☐ Wire	☐ Cable	☐ Cloth	☐ Insulation (non-Asbestosform)	☐ Demolition debris	☐ Cement & concrete

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos	☐ Drained automobiles and military vehicles	☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO)	☐ Drained fuel filters (gas & diesel)	☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO)	☐ Other _____	

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☒ Septic sludge	☐ Rags	☐ Drained fuel filters (gas & diesel)	☐ Crushed non-teme plated oil filters
☐ Plants	☒ Soil	☐ Sludge from sand/oil/water separators	☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Waste Management Area (CWMA) and to the best of my knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and have verified that this material/equipment is approved for disposal in the landfill.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 11/29/07

Note: "Food waste, office trash and animal carcasses do not require a radiological clea must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 46000 Signature of Certifier: 11-29-07 /s/ Sandra Little

Radiological Survey Release for Waste Disposal

RCT Initials

____ **This container/load meets the criteria for no added man-made radioactive material**

____ **This container/load meets the criteria for Radcon Manual Table 4.2 release limits.**

✓ **This container/load is exempt from survey due to process knowledge and origin.**

SIGNATURE: see original DATE: 11/29/07

BN-0646 (10/05)

#2

3R183 90725

NSTec Form FRM-0918	NTS LANDFILL LOAD VERIFICATION	08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-03

Waste Category: (check one) ☐ Commercial ☒ Industrial

Waste Type: (check one) ☐ NTS ☐ Non-Putrescible ☐ Putrescible ☐ Asbestos Containing Material ☒ FFACO-onsite ☐ FFACO-offsite ☐ WAC Exception ☐ Historic DOE/NV

Pollution Prevention Category: (check one) ☒ Environmental management ☐ Defense Projects ☐ YMP

Pollution Prevention Category: (check one) ☒ Clean-Up ☐ Routine

Method of Characterization: (check one) ☒ Sampling & Analysis ☐ Process Knowledge ☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill: ☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Insulation (non-Asbestosform) ☐ Cement & concrete
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses
☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: ______

Additional waste accepted at the Area 9 U10c Landfill:
☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other ______

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ Shipped to U10C per G Schmid.
☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: _____ **(if initialed, no radiological clearance is necess...**

The above mentioned waste was generated outside of a Controlle... ...ny knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains ... is ... site. I have verified this through the waste characterization metho... ... prohibited and allowable waste items. I have contacted Property ... ...ent is approved for disposal in the landfill.

> **Radiological Survey Release for Waste Disposal**
> **RCT Initials**
> ____ **This container/load meets the criteria for no added man-made radioactive material**
> [initials] **This container/load meets the criteria for Radcon Manual Table 4.2 release limits.**
> [initials] **This container/load is exempt from survey due to process knowledge and origin.**
> **SIGNATURE:** see original **DATE:** 11/29/07
> BN-0646 (10/05)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 4/29/07

"Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY 11-29-07

Load Weight (net from scale or estimate): 46040 Signature of Certifier: /s/ D Bickford

D

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☒ 6 ☐ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 6 Camp CAS 12-04-01 System #4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Insulation (non-Asbestosform) ☐ Cement & concrete
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses
☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: _____ **(if initialed, no radiological clearance is necessary.)**

The above mentioned waste was generated outside of a Controlled Wast knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only t site. I have verified this through the waste characterization method iden prohibited and allowable waste items. I have contacted Property Manag is approved for disposal in the landfill.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 11/29/07

Radiological Survey Release for Waste Disposal
RCT Initials

____ **This container/load meets the criteria for no added man-made radioactive material**
____ **This container/load meets the criteria for Radcon Manual Table 4.2 release limits.**
(E) **This container/load is exempt from survey due to process knowledge and origin.**

SIGNATURE: see original **DATE:** 11/29/07

BN-0646 (10/05)

here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 32,000 11-29-07 Signature of Certifier: /s/ Sandra Little

(1)

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☒ 6 ☐ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 181 Area 12 Camp CAS 12-04-03

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS ☐ Non-Putrescible	☐ Putrescible ☐ Asbestos Containing Material	☒ FFACO-onsite ☐ FFACO-offsite	☐ WAC Exception ☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.) ☐ Insulation (non-Asbestosform) ☐ Cement & concrete

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATO

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Waste knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only th site. I have verified this through the waste characterization method identif prohibited and allowable waste items. I have contacted Property Managen is approved for disposal in the landfill.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12-4-07

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal

RCT Initials

____ This container/load meets the criteria for no added man-made radioactive material

____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: see original DATE: 12/3/07

BN-0646 (10/05)

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

SWO USE ONLY

Load Weight (net from scale or estimate): 38,000 12-4-07 Signature of Certifier: /s/ R Everett

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☒ 6 ☐ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-03

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Paper	☐ Rocks / unaltered geologic materials	☐ Empty containers				
☐ Asphalt	☐ Metal	☐ Wood	☒ Soil	☐ Rubber (excluding tires)	☐ Demolition debris	
☐ Plastic	☐ Wire	☐ Cable	☐ Cloth	☐ Insulation (non-Asbestosform)	☐ Cement & concrete	

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos	☐ Drained automobiles and military vehicles	☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO)	☐ Drained fuel filters (gas & diesel)	☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO)	☐ Other _____	

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☒ Septic sludge	☐ Rags	☐ Drained fuel filters (gas & diesel)	☐ Crushed non-teme plated oil filters
☐ Plants	☒ Soil	☐ Sludge from sand/oil/water separators	☐ PCBs below 50 parts per million

REQUIRED: WASTE GENER.

Initials: _____ (if initialed, no radiological clearance is necessary.

The above mentioned waste was generated outside of a Controlled W knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains on site. I have verified this through the waste characterization method ic prohibited and allowable waste items. I have contacted Property Man is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal

RCT Initials

____ This container/load meets the criteria for no added man-made radioactive material

____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

✓ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: see original **DATE:** 12/3/07

BN-0646 (10/05)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12-4-07

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 37 500 12-4-07 Signature of Certifier: /s/ R Everett

(3)

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☒ 6 ☐ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-01 System #4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.) ☐ Insulation (non-Asbestosform) ☐ Cement & concrete

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 ppm

REQUIRED: WASTE GENERA

Initials: ____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Wa knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only site. I have verified this through the waste characterization method ide prohibited and allowable waste items. I have contacted Property Mana is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal

RCT Initials

- ✓ This container/load meets the criteria for no added man-made radioactive material
- ____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
- ____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: see original DATE: 12-4-07

BN-0646 (10/05)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12-4-07

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 38,000 12-4-07 Signature of Certifier: /s/ R Everett

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

(4)

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☒ 6 ☐ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-01 System #4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Paper ☐ Rocks / unaltered geologic materials ☐ Rubber (excluding tires) ☐ Insulation (non-Asbestosform) ☐ Empty containers ☐ Demolition debris ☐ Cement & concrete ☐ Plastic ☐ Wire ☐ Cable ☐ Cloth

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Light ballasts (contact SWO) ☐ Hydrocarbons (contact SWO) ☐ Drained automobiles and military vehicles ☐ Drained fuel filters (gas & diesel) ☐ Other _____ ☐ Solid fractions from sand/oil/water ☐ Deconned Underground and Above Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERAT

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Was knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only site. I have verified this through the waste characterization method ide prohibited and allowable waste items. I have contacted Property Manag is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal

RCT Initials

- ☑ This container/load meets the criteria for no added man-made radioactive material
- ____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
- ____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: see original DATE: 12-4-07

BN-0646 (10/05)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12-4-07

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 32 500 12-4-07 Signature of Certifier See Original

(5)

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☒ 6 ☐ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp 12-04-03

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☐ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☐ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☐ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.) ☐ Insulation (non-Asbestosform) ☐ Cement & concrete

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Waste M knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only tho site. I have verified this through the waste characterization method identifi prohibited and allowable waste items. I have contacted Property Managem is approved for disposal in the landfill.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/04/07

Radiological Survey Release for Waste Disposal

RCT Initials

____ This container/load meets the criteria for no added man-made radioactive material

____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

(Q) This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: see original DATE: 12/4/07

FRM-0646 (08/06)

If applicable, place Form [illegible] "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 38,900 12-4-07 Signature of Certifier: See Original

(4)

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-03

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt	☒ Metal	☐ Wood	☐ Soil	☐ Rocks / unaltered geologic materials	☐ Rubber (excluding tires)	☐ Empty containers
☐ Plastic	☐ Wire	☐ Cable	☐ Cloth	☐ Insulation (non-Asbestosform)		☐ Demolition debris
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)						☐ Cement & concrete

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos	☐ Drained automobiles and military vehicles	☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO)	☐ Drained fuel filters (gas & diesel)	☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO)	☐ Other _____	

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☐ Septic sludge	☐ Rags	☐ Drained fuel filters (gas & diesel)	☐ Crushed non-teme plated oil filters
☐ Plants	☐ Soil	☐ Sludge from sand/oil/water separators	☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERA

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Wa knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only site. I have verified this through the waste characterization method ide prohibited and allowable waste items. I have contacted Property Mana is approved for disposal in the landfill.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/4/07

Radiological Survey Release for Waste Disposal

RCT Initials

_____ **This container/load meets the criteria for no added man-made radioactive material**

_____ **This container/load meets the criteria for Radcon Manual Table 4.2 release limits.**

(E) **This container/load is exempt from survey due to process knowledge and origin.**

SIGNATURE: see original **DATE:** 12/11/07

BN-0646 (10/05)

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 5240 12-4-07 Signature of Certifier: /s/ D Bickford

6

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-03

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☒ Metal ☐ Wood ☐ Soil ☐ Paper ☐ Rubber (excluding tires) ☐ Rocks / unaltered geologic materials ☐ Insulation (non-Asbestosform) ☐ Empty containers ☐ Demolition debris ☐ Cement & concrete ☐ Plastic ☐ Wire ☐ Cable ☐ Cloth

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Light ballasts (contact SWO) ☐ Hydrocarbons (contact SWO) ☐ Drained automobiles and military vehicles ☐ Drained fuel filters (gas & diesel) ☐ Other _____ ☐ Solid fractions from sand/oil/water ☐ Deconned Underground and Above Ground Tanks

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts ...

REQUIRED: WASTE GENER...

Initials: _____ (if initialed, no radiological clearance is necessary.

The above mentioned waste was generated outside of a Controlled W... knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains on... site. I have verified this through the waste characterization method ic... prohibited and allowable waste items. I have contacted Property Man... is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal

RCT Initials

____ This container/load meets the criteria for no added man-made radioactive material

____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: see original DATE: 12/4/07

FRM-0646 (08/06)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/04/07

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 6940 12-4-07 Signature of Certifier: /s/ D Bickford

6

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-01 System # 4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Insulation (non-Asbestosform) ☐ Cement & concrete
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses
☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ Shipped to U10c per G. Schmidt

☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR S

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Waste Ma knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those site. I have verified this through the waste characterization method identifiec prohibited and allowable waste items. I have contacted Property Managemer is approved for disposal in the landfill.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/04/07

Radiological Survey Release for Waste Disposal
RCT Initials

____ This container/load meets the criteria for no added man-made radioactive material
____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
(a) This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: see original DATE: 12/4/07

FRM-0646 (08/06)

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 77,200 12-4-07 Signature of Certifier /s/ D Bickford

(4)

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-03

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Insulation (non-Asbestosform) ☐ Cement & concrete
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses
☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ Shipped to U10c per G Schmidt

☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR:

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Waste M knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only thos site. I have verified this through the waste characterization method identifie prohibited and allowable waste items. I have contacted Property Manageme is approved for disposal in the landfill.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/5/07

Radiological Survey Release for Waste Disposal

RCT Initials

____ This container/load meets the criteria for no added man-made radioactive material

____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

(C) This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: see original DATE: 12/6/07

FRM-0646 (08/06)

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 40,260 12/6/07 Signature of Certifier: /s/ R Everett

3

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-03

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers

☐ Asphalt ☒ Metal ☐ Wood ☐ Soil ☐ Rubber (excluding tires) ☐ Demolition debris

☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Insulation (non-Asbestosform) ☐ Cement & concrete

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks

☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ Sludge from sand/oil/wate[illegible] ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENEI

Initials: ____ (if initialed, no radiological clearance is necessar

The above mentioned waste was generated outside of a Controlled knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains site. I have verified this through the waste characterization method prohibited and allowable waste items. I have contacted Property M is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal

RCT Initials

This container/load meets the criteria for no added man-made radioactive material

____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: see original **DATE:** 12/05/07

BN-0646 (10/05)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/05/07

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 10000 12/6/07 Signature of Certifier: See Original

4

NSTec Form FRM-0918 | 08/23/06 Rev. 0 | Page 1 of 2

NTS LANDFILL LOAD VERIFICATION

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: ***WASTE GERERATOR INFORMATION***

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-01 System H4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge; Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: ***WASTE CONTENTS ALLOWABLE WASTES***

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☒ Metal ☐ Wood ☐ Soil ☐ Paper ☐ Rocks / unaltered geologic materials ☐ Rubber (excluding tires) ☐ Empty containers ☐ Demolition debris ☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Insulation (non-Asbestosform) ☐ Cement & concrete

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks

☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: ***WASTE GENEI***

Initials: _____ (if initialed, no radiological clearance is necessary

The above mentioned waste was generated outside of a Controlled ' knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains o site. I have verified this through the waste characterization method prohibited and allowable waste items. I have contacted Property Ma is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal

RCT Initials

RM **This container/load meets the criteria for no added man-made radioactive material**

____ **This container/load meets the criteria for Radcon Manual Table 4.2 release limits.**

____ **This container/load is exempt from survey due to process knowledge and origin.**

SIGNATURE: see original **DATE:** 12/05/07 t

BN-0646 (10/05)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/05/07

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 19,000 12/6/07 Signature of Certifier: See Original

(44)

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-01 System #4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☒ Metal ☐ Wood ☐ Soil ☐ Paper ☐ Rubber (excluding tires) ☐ Rocks / unaltered geologic materials ☐ Insulation (non-Asbestosform) ☐ Empty containers ☐ Demolition debris ☐ Cement & concrete ☐ Plastic ☐ Wire ☐ Cable ☐ Cloth

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks

☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENER

Initials: _____ (if initialed, no radiological clearance is necessary)

The above mentioned waste was generated outside of a Controlled \ knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains o site. I have verified this through the waste characterization method prohibited and allowable waste items. I have contacted Property Ma is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal

RCT Initials

___ **This container/load meets the criteria for no added man-made radioactive material**

RR **This container/load meets the criteria for Radcon Manual Table 4.2 release limits.**

___ **This container/load is exempt from survey due to process knowledge and origin.**

SIGNATURE: see original **DATE:** 12/06/07

BN-0646 (10/05)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/06/07

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate) 10,005 12/6/07 Signature of Certifier: See Original

8

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-03

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☒ Metal ☐ Wood ☐ Soil ☐ Paper ☐ Rubber (excluding tires) ☐ Rocks / unaltered geologic materials ☐ Insulation (non-Asbestosform) ☐ Empty containers ☐ Demolition debris ☐ Cement & concrete ☐ Plastic ☐ Wire ☐ Cable ☐ Cloth

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks

☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENER

Initials: _____ (if initialed, no radiological clearance is necessary)

The above mentioned waste was generated outside of a Controlled \ knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains o site. I have verified this through the waste characterization method prohibited and allowable waste items. I have contacted Property Ma is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal

RCT Initials

___ **This container/load meets the criteria for no added man-made radioactive material**

dlh **This container/load meets the criteria for Radcon Manual Table 4.2 release limits.**

___ **This container/load is exempt from survey due to process knowledge and origin.**

SIGNATURE: see original **DATE:** 12/06/07

BN-0646 (10/05)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/06/07

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 10,000 12/6/07 Signature of Certifier: See Original

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

9

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION
(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 157 Area 12 Camp CAS 12-04-01 System # 4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES
Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt	☒ Metal	☐ Wood	☐ Soil	☐ Rubber (excluding tires)	☐ Empty containers	☐ Demolition debris
☐ Plastic	☐ Wire	☐ Cable	☐ Cloth	☐ Insulation (non-Asbestosform)	☐ Cement & concrete	

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses
☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos	☐ Drained automobiles and military vehicles	☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO)	☐ Drained fuel filters (gas & diesel)	☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO)	☐ Other _____	

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☐ Septic sludge	☐ Rags	☐ Drained fuel filters (gas & diesel)	☐ Crushed non-teme plated oil filters	
☐ Plants	☐ Soil	☐ Sludge from sand/oil/water separators	☐ PCBs below 50 parts per million	

REQUIRED: WASTE GENER

Initials: _____ (if initialed, no radiological clearance is necessary.

The above mentioned waste was generated outside of a Controlled W knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains on site. I have verified this through the waste characterization method ic prohibited and allowable waste items. I have contacted Property Man is approved for disposal in the landfill.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/06/07

Radiological Survey Release for Waste Disposal
RCT Initials
This container/load meets the criteria for no added man-made radioactive material
This container/load meets the criteria for Radcon Manual Table 4.2 release limits.
This container/load is exempt from survey due to process knowledge and origin.
SIGNATURE: see original **DATE:** 12/06/07
BN-0646 (10/05)

nt

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 9,998 12/6/07 Signature of Certifier: See Original

13

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: **WASTE GERERATOR INFORMATION**

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp CAS 12-04-01 System #4

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: **WASTE CONTENTS ALLOWABLE WASTES**

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☒ Metal ☐ Wood ☐ Paper ☐ Soil ☐ Rocks / unaltered geologic materials ☐ Rubber (excluding tires) ☐ Insulation (non-Asbestosform) ☐ Empty containers ☐ Demolition debris ☐ Cement & concrete

☐ Plastic ☐ Wire ☐ Cable ☐ Cloth

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks

☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENER

Initials: _____ (if initialed, no radiological clearance is necessary.

The above mentioned waste was generated outside of a Controlled W knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains on site. I have verified this through the waste characterization method ic prohibited and allowable waste items. I have contacted Property Man is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal

RCT Initials

____ **This container/load meets the criteria for no added man-made radioactive material**

JM **This container/load meets the criteria for Radcon Manual Table 4.2 release limits.**

____ **This container/load is exempt from survey due to process knowledge and origin.**

SIGNATURE: see original **DATE:** 12/06/07

BN-0646 (10/05)

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/06/07

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 10,000 12/6/07 Signature of Certifier: See Original

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

(1)

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☒ 6 ☐ 9 ☐ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 2 12 Camp CAS 12-04-03

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☐ Metal ☐ Wood ☒ Soil ☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.) ☐ Insulation (non-Asbestosform) ☐ Cement & concrete

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☒ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☒ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERAT

Initials: ____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Was knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only site. I have verified this through the waste characterization method ide prohibited and allowable waste items. I have contacted Property Manac is approved for disposal in the landfill.

Radiological Survey Release for Waste Disposal

RCT Initials

RH This container/load meets the criteria for no added man-made radioactive material

____ This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

____ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE see original DATE: 12/06/07

BN-0646 (10/05)

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 12/06/07

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 30,000 12/6/07 Signature of Certifier: /s/ R Everett

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☐ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 18 Man camp CAS 18-03-01

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☒ NTS ☐ Non-Putrescible	☐ Putrescible ☐ Asbestos Containing Material	☐ FFACO-onsite ☐ FFACO-offsite	☐ WAC Exception ☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Paper ☐ Rocks / unaltered geologic materials ☐ Empty containers
☐ Asphalt ☐ Metal ☐ Wood ☐ Soil ☐ Rubber (excluding tires) ☐ Demolition debris
☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Insulation (non-Asbestosform) ☐ Cement & concrete
☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses
☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☒ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters
☐ Plants ☐ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: _____ **(if initialed, no radiological clearance is necessary.)**

The above mentioned waste was generated outside of a Controlled Waste Management Area (CWMA) and to the best of my knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above and a review of the above-mentioned prohibited and allowable waste items. I have contacted Property Management and hav[illegible] is approved for disposal in the landfill.

Print Name: Robert Baumert

Signature: /s/ Robert Baumert Date: 12/13/07

Note: "Food waste, office trash and animal carcasses do not require a radiological clear[illegible] must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal

RCT Initials

____ **This container/load meets the criteria for no added man-made radioactive material**

This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

____ **This container/load is exempt from survey due to process knowledge and origin.**

SIGNATURE: see original **DATE:** 12/13/07

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 1162 12-13-07 Signature of Certifier: /s/ D Bickford

(10)

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☐ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 18 man camp CAS 18-03-01

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☒ NTS	☐ Putrescrible	☐ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☒ Sampling & Analysis	☐ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt ☒ Metal ☒ Wood ☐ Soil ☐ Paper ☐ Rubber (excluding tires) ☐ Plastic ☐ Wire ☐ Cable ☐ Cloth ☐ Rocks / unaltered geologic materials ☐ Insulation (non-Asbestosform) ☐ Empty containers ☒ Demolition debris ☒ Cement & concrete

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos ☐ Drained automobiles and military vehicles ☐ Solid fractions from sand/oil/water

☐ Light ballasts (contact SWO) ☐ Drained fuel filters (gas & diesel) ☐ Deconned Underground and Above Ground Tanks

☐ Hydrocarbons (contact SWO) ☐ Other _____

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ _____

☐ Septic sludge ☐ Rags ☐ Drained fuel filters (gas & diesel) ☐ Crushed non-teme plated oil filters

☐ Plants ☐ Soil ☐ Sludge from sand/oil/water separators ☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERATOR SIGNATURE

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Waste Management Area (CWMA) and to the best of my knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only those materials that are allowed for disposal at this site. I have verified this through the waste characterization method identified above a prohibited and allowable waste items. I have contacted Property Management and ha is approved for disposal in the landfill.

Print Name: Robert Baumert

Signature: /s/ Robert Baumert Date: 12/13/07

Note: "Food waste, office trash and animal carcasses do not require a radiological clea must have signed removal certification statement with Load Verification."

Radiological Survey Release for Waste Disposal

RCT Initials

___ This container/load meets the criteria for no added man-made radioactive material

MA This container/load meets the criteria for Radcon Manual Table 4.2 release limits.

___ This container/load is exempt from survey due to process knowledge and origin.

SIGNATURE: see original DATE: 12/13/07

BN-0646 (10/05)

SWO USE ONLY

Load Weight (net from scale or estimate): 6540 12-13-07 Signature of Certifier: /s/ D Bickford

(10)

(3)

NSTec Form FRM-0918

NTS LANDFILL LOAD VERIFICATION

08/23/06 Rev. 0 Page 1 of 2

SWO USE (Select One) AREA ☐ 23 ☐ 6 ☒ 9 ☒ LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GERERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Rebecca King Phone Number: 5804

Location / Origin: CAU 151 Area 12 Camp

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescrible	☒ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☐ FFACO-offsite	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	☐ YMP
Pollution Prevention Category: (check one)		☒ Clean-Up	☐ Routine	
Method of Characterization: (check one)		☐ Sampling & Analysis	☒ Process Knowledge	☐ Contents

Prohibited Waste at all three NTS landfills: Radioactive waste; RCRA waste; Hazardous waste; Free liquids, PCBs above TSCA regulatory levels, and Medical wastes (needles, sharps, bloody clothing).

Additional Prohibited Waste at the Area 9 U10C Landfill: Sewage Sludge, Animal carcasses, Wet garbage (food waste); and Friable asbestos

REQUIRED: WASTE CONTENTS ALLOWABLE WASTES

Check all allowable wastes that are contained within this load:

NOTE: Waste disposal at the Area 6 Hydrocarbon Landfill must have come into contact with petroleum hydrocarbons or coolants, such as: gasoline (no benzene, lead); jet fuel; diesel fuel; lubricants and hydraulics; kerosene; asphaltic petroleum hydrocarbon; and ethylene glycol.

Acceptable waste at any NTS landfill:

☐ Asphalt	☒ Metal	☐ Wood	☒ Soil	☐ Rubber (excluding tires)	☐ Empty containers	
☐ Plastic	☐ Wire	☐ Cable	☐ Cloth	☐ Insulation (non-Asbestosform)	☐ Demolition debris	☐ Cement & concrete

☐ Manufactured items: (swamp coolers, furniture, rugs, carpet, electronic components, PPE, etc.)

Additional waste accepted at the Area 23 Mercury Landfill: ☐ Office Waste ☐ Food Waste ☐ Animal Carcasses

☐ Asbestos ☐ Friable ☐ Non-Friable (contact SWO if regulated load) Quantity: _____

Additional waste accepted at the Area 9 U10c Landfill:

☐ Non-friable asbestos	☐ Drained automobiles and military vehicles	☐ Solid fractions from sand/oil/water
☐ Light ballasts (contact SWO)	☐ Drained fuel filters (gas & diesel)	☐ Deconned Underground and Above Ground Tanks
☒ Hydrocarbons (contact SWO)	☐ Other _____	

Additional waste accepted at the Area 6 Hydrocarbon Landfill: ☐ Shipped to U10c per G. Schmidt

☐ Septic sludge	☒ Rags	☐ Drained fuel filters (gas & diesel)	☐ Crushed non-teme plated oil filters
☐ Plants	☒ Soil	☐ Sludge from sand/oil/water separators	☐ PCBs below 50 parts per million

REQUIRED: WASTE GENERA

Initials: _____ (if initialed, no radiological clearance is necessary.)

The above mentioned waste was generated outside of a Controlled Wa knowledge, does not contain radiological materials.

To the best of my knowledge, the waste described above contains only site. I have verified this through the waste characterization method ide prohibited and allowable waste items. I have contacted Property Mana is approved for disposal in the landfill.

Radiation Survey Release for Waste Disposal

RCT Initials

- ☒ This container/load is free of external radioactive contamination.
- ☐ This container/load is exempt from survey due to process knowledge and origin.
- ☐ This container/load is free of radioactive contamination based on radioanalysis.

SIGNATURE: see original DATE 1-10-08

BN-0646 (09/99)

Print Name: Robert E. Green

Signature: /s/ Robert Green Date: 1-10-08

If applicable, place FRM-0646, "Radiological Release Sticker" here. Onsite use only.

Note: "Food waste, office trash and animal carcasses do not require a radiological clearance. Freon-containing appliances must have signed removal certification statement with Load Verification."

SWO USE ONLY

Load Weight (net from scale or estimate): 880 Signature of Certifier: /s/ D Bickford 1-10-08

APPENDIX D

USE RESTRICTION DOCUMENTATION

THIS PAGE INTENTIONALLY LEFT BLANK

CAU Use Restriction Information

CAU Number/Description: CAU 151: Septic Systems and Discharge Area

Applicable CAS Numbers/Descriptions: CAS 12-03-01, Sewage Lagoons (6), Lagoon A

Contact (organization/project): NNSA/NSO Federal Sub-Project Director

Surveyed Area (UTM, Zone 11, NAD 27, meters):

UR Points	Northing	Easting
Point 1	4,117,101.685	575,420.722
Point 2	4,117,166.453	575,423.260
Point 3	4,117,163.818	575,456.197
Point 4	4,117,101.652	575,456.900

Survey Date: 01/22/2008 **Survey Method (GPS, etc):** GPS

Site Monitoring Requirements: Visual Inspections

Required Frequency (quarterly, annually?): Annual

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 and the Corrective Action Decision Document for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: /s/ Kevin Cabble **Date:** 4-8-08

cc with copy of survey map (paper and digital (dgn) formats):
CAU Files (2 copies)

CAU Use Restriction Information

CAU Number/Description: CAU 151: Septic Systems and Discharge Area

Applicable CAS Numbers/Descriptions: CAS 12-03-01, Sewage Lagoons (6), Lagoon B

Contact (organization/project): NNSA/NSO Federal Sub-Project Director

Surveyed Area (UTM, Zone 11, NAD 27, meters):

UR Points	Northing	Easting
Point 3	4,117,163.818	575,456.197
Point 4	4,117,101.652	575,456.900
Point 5	4,117,103.009	575,464.587
Point 6	4,117,162.937	575,471.585

Survey Date: 01/22/2008 **Survey Method (GPS, etc):** GPS

Site Monitoring Requirements: None

Required Frequency (quarterly, annually?): N/A

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: This use restriction restricts individuals from working on this site for more than 50 workdays to avoid overexposure to site contaminants. See the Closure Report and the Corrective Action Decision Document for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: /s/ Kevin Cabble **Date:** 4-8-08

cc with copy of survey map (paper and digital (dgn) formats):
CAU Files (2 copies)

CAU Use Restriction Information

CAU Number/Description: CAU 151: Septic Systems and Discharge Area

Applicable CAS Numbers/Descriptions: CAS 12-03-01, Sewage Lagoons (6), Lagoon E

Contact (organization/project): NNSA/NSO Federal Sub-Project Director

Surveyed Area (UTM, Zone 11, NAD 27, meters):

UR Points	Northing	Easting
Point 7	4,117,288.106	575,554.136
Point 8	4,117,379.143	575,568.270
Point 9	4,117,371.295	575,676.344
Point 10	4,117,281.211	575,640.772
Point 11	4,117,296.279	575,584.120

Survey Date: 01/22/2008 **Survey Method (GPS, etc):** GPS

Site Monitoring Requirements: None

Required Frequency (quarterly, annually?): N/A

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

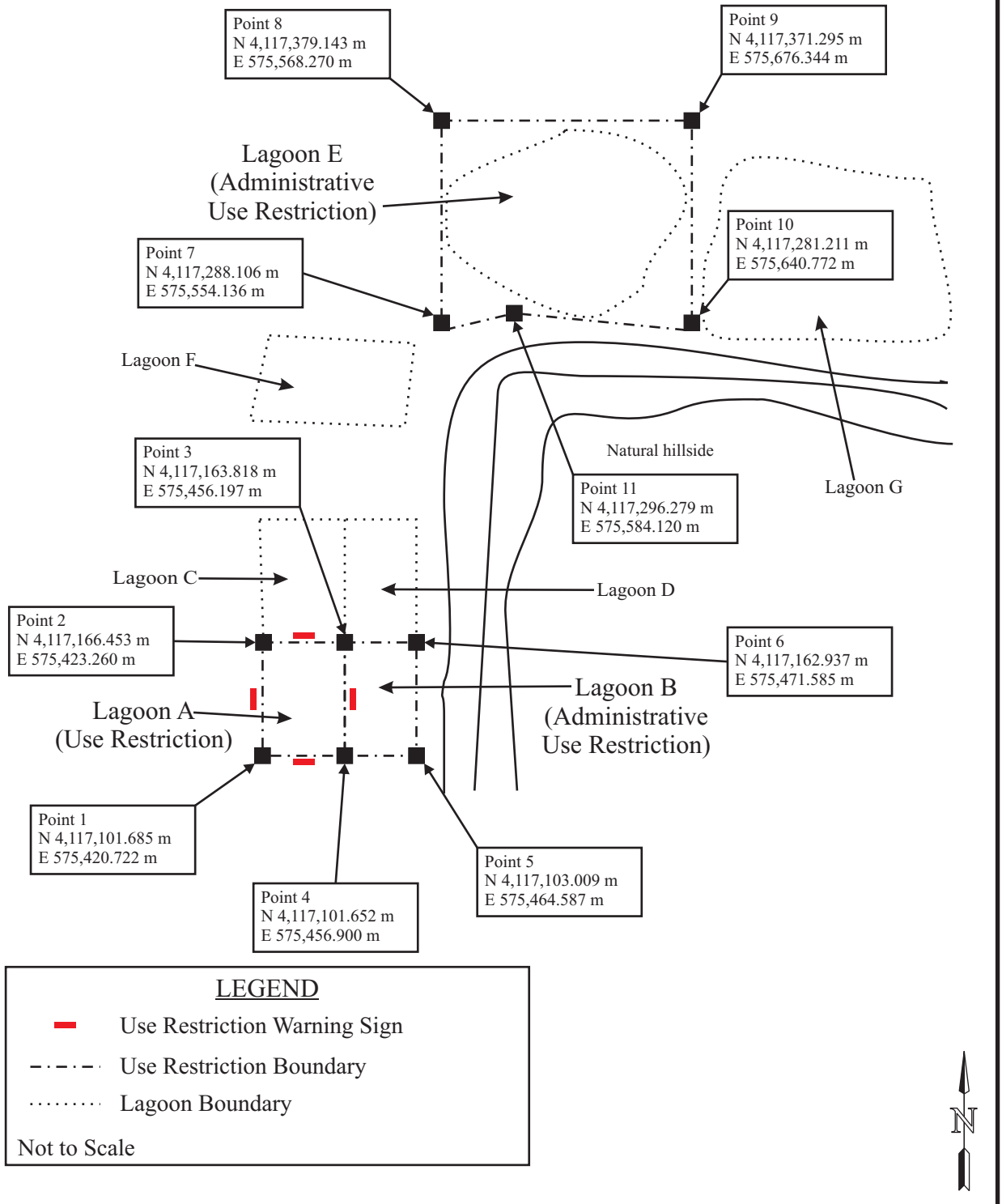
Use Restrictions

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: This use restriction restricts individuals from working on this site for more than 50 workdays to avoid overexposure to site contaminants. See the Closure Report and the Corrective Action Decision Document for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: /s/ Kevin Cabble **Date:** 4-8-08

cc with copy of survey map (paper and digital (dgn) formats):
CAU Files (2 copies)



CORRECTIVE ACTION SITE 12-03-01, SEWAGE LAGOONS (6),
USE RESTRICTION BOUNDARIES

CAU Use Restriction Information

CAU Number/Description: CAU 151: Septic Systems and Discharge Area

Applicable CAS Numbers/Descriptions: CAS 12-47-01, Wastewater Pond

Contact (organization/project): NNSA/NSO Federal Sub-Project Director

Surveyed Area (UTM, Zone 11, NAD 27, meters):

UR Points	Northing	Easting
Point 1	4,116,349.164	574,867.427
Point 2	4,116,361.820	574,859.611
Point 3	4,116,366.947	574,870.440
Point 4	4,116,377.344	574,865.110
Point 5	4,116,384.508	574,894.451
Point 6	4,116,361.218	574,904.814

Survey Date: 01/22/2008 **Survey Method (GPS, etc):** GPS

Site Monitoring Requirements: None

Required Frequency (quarterly, annually?): N/A

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

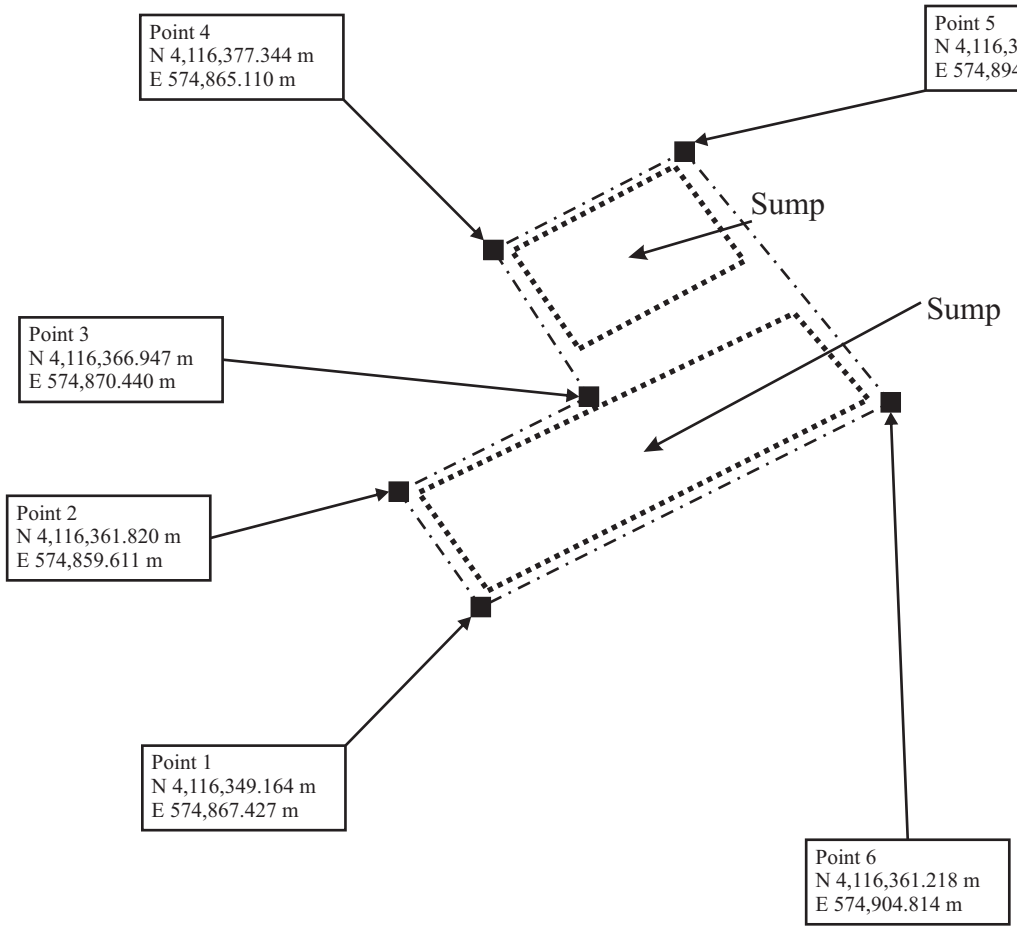
Use Restrictions

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: This use restriction restricts individuals from working on this site for more than 50 workdays to avoid overexposure to site contaminants. See the Closure Report and the Corrective Action Decision Document for additional information on the condition of the site(s) and any monitoring and/or inspection requirements.

Submitted By: /s/ Kevin Cabble **Date:** 4-8-08

cc with copy of survey map (paper and digital (dgn) formats):
CAU Files (2 copies)



LEGEND

Use Restriction Boundary

Sump

Not to Scale

N

CORRECTIVE ACTION SITE 12-47-01, WASTEWATER POND,
USE RESTRICTION BOUNDARY

APPENDIX E

SITE CLOSURE PHOTOGRAPHS

THIS PAGE INTENTIONALLY LEFT BLANK

PHOTOGRAPH LOG

PHOTOGRAPH NUMBER	DATE	CORRECTIVE ACTION SITE	DESCRIPTION
1	10/31/2007	18-03-01	Asbestos Cement Pipe and Wooden Walkway before Removal
2	11/13/2007	NA	Liquid Remediation Waste from Area 12 Septic Tanks in Area 12 Sewage Lagoon
3	11/20/2007	12-04-01	System #4 Septic Tanks Uncovered
4	11/20/2007	12-04-03	Septic Tanks Uncovered
5	11/20/2007	12-04-01	System #4 Septic Tanks Uncovered
6	11/20/2007	12-04-01	Pumping Liquid from System #1 Septic Tanks
7	11/20/2007	12-04-02	Filling Septic Tanks with Grout
8	11/20/2007	12-04-02	Septic Tank Filled with Grout
9	11/26/2007	12-04-01	Cutting System #4 Septic Tanks
10	11/26/2007	12-04-02	Area Backfilled after Closure Activities
11	11/28/2007	12-04-03	Sewage Lines on Adjacent Concrete Pad in Area 12 Grouted
12	11/28/2007	12-04-03	Sewage Lines on Adjacent Concrete Pad in Area 12 Grouted
13	11/28/2007	NA	Remaining Sewage Lines in Area 12 Grouted
14	11/29/2007	12-04-01	Solidification of Sludge in System #4 Septic Tanks
15	11/29/2007	NA	Tops of Septic Tanks in Area 12 after Removal
16	12/05/2007	12-04-01, System #4, and 12-04-03	Septic Tanks Removed from Ground Prior to Disposal
17	12/12/2007	18-03-01	Removal of Wooden Walkway
18	12/12/2007	18-03-01	Removal of Wooden Walkway
19	12/12/2007	18-03-01	Removal of Asbestos Cement Pipe
20	12/18/2007	18-03-01	After Closure Activities
21	12/18/2007	12-04-01	Packaging Mixed Waste Sludge from System #1 Septic Tanks into Drums
22	12/19/2007	12-04-01	After Removal of System #1 Septic Tanks
23	01/10/2008	12-03-01	Use Restriction Warning Signs at Lagoon A
24	01/10/2008	12-04-01	System #4 Area Backfilled
25	03/18/2008	12-04-01	System #4, Interior of Distribution Box before Grouting
26	03/18/2008	12-04-01	System #4, Exterior of Distribution Box before Grouting
27	03/19/2008	12-04-01	System #4, Distribution Box during Grouting
28	03/19/2008	12-04-01	System #4, Distribution Box after Grouting

THIS PAGE INTENTIONALLY LEFT BLANK

Photograph 1: CAS 18-03-01, Asbestos Cement Pipe and Wooden Walkway before Removal, 10/31/2007

Photograph 2: Liquid Remediation Waste from Area 12 Septic Tanks in Area 12 Sewage Lagoon, 11/13/2007

Photograph 3: CAS 12-04-01, System #4 Septic Tanks Uncovered, 11/20/2007

Photograph 4: CAS 12-04-03, Septic Tanks Uncovered, 11/20/2007

Photograph 5: CAS 12-04-01, System #4 Septic Tanks Uncovered, 11/20/2007

Photograph 6: CAS 12-04-01, Pumping Liquid from
System #1 Septic Tanks, 11/20/2007

Photograph 7: CAS 12-04-02, Filling Septic Tanks with Grout, 11/20/2007

Photograph 8: CAS 12-04-02, Septic Tank Filled with Grout, 11/20/2007

Photograph 9: CAS 12-04-01, Cutting System #4 Septic Tanks, 11/26/2007

Photograph 10: CAS 12-04-02, Area Backfilled after Closure Activities, 11/26/2007

Photograph 11: Sewage Lines on Adjacent Concrete Pad in Area 12 Grouted, 11/28/2007

Photograph 12: Sewage Lines on Adjacent Concrete Pad in Area 12 Grouted, 11/28/2007

Photograph 13: Remaining Sewage Lines in Area 12 Grouted, 11/28/2007

Photograph 14: CAS 12-04-01, Solidification of Sludge in System #4 Septic Tanks, 11/29/2007

Photograph 15: Tops of Septic Tanks in Area 12 after Removal, 11/29/2007

Photograph 16: CAS 12-04-01, System #4, and CAS 12-04-03, Septic Tanks Removed from Ground Prior to Disposal, 12/05/2007

Photograph 17: CAS 18-03-01, Removal of Wooden Walkway, 12/12/2007

Photograph 18: CAS 18-03-01, Removal of Wooden Walkway, 12/12/2007

Photograph 19: CAS 18-03-01, Removal of Asbestos Cement Pipe, 12/12/2007

Photograph 20: CAS 18-03-01, After Closure Activities, 12/18/2007

Photograph 21: CAS 12-04-01, Packaging Mixed Waste Sludge from System #1 Septic Tanks into Drums, 12/18/2007

Photograph 22: CAS 12-04-01, After Removal of System #1 Septic Tanks, 12/19/2007

Photograph 23: CAS 12-03-01, Use Restriction Warning Signs at Lagoon A, 01/10/2008

Photograph 24: CAS 12-04-01, System #4 Area Backfilled, 01/10/2008

Photograph 25: CAS 12-04-01, System #4, Interior of Distribution Box before Grouting, 03/18/2008

Photograph 26: CAS 12-04-01, System #4, Exterior of Distribution Box before Grouting, 03/18/2008

Photograph 27: CAS 12-04-01, System #4,
Distribution Box during Grouting, 03/19/2008

Photograph 28: CAS 12-04-01, System #4,
Distribution Box after Grouting, 03/19/2008

LIBRARY DISTRIBUTION LIST

THIS PAGE INTENTIONALLY LEFT BLANK

LIBRARY DISTRIBUTION LIST

U.S. Department of Energy National Nuclear Security Administration Nevada Site Office Technical Library P.O. Box 98518, M/S 505 Las Vegas, NV 89193-8518	1 (Uncontrolled, electronic copy)
U.S. Department of Energy Office of Scientific and Technical Information P.O. Box 62 Oak Ridge, TN 37831-0062	1 (Uncontrolled, electronic copy)
Southern Nevada Public Reading Facility c/o Nuclear Testing Archive P.O. Box 98521, M/S 400 Las Vegas, NV 89193-8521	2 (Uncontrolled, electronic copies)
Manager, Northern Nevada FFACO Public Reading Facility c/o Nevada State Library & Archives Carson City, NV 89701-4285	1 (Uncontrolled, electronic copy)

THIS PAGE INTENTIONALLY LEFT BLANK