Nevada
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DOE/NV--810

Corrective Action Decision Document/Closure Report for Corrective Action Unit 405: Area 3 Septic Systems, Tonopah Test Range, Nevada

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CORRECTIVE ACTION DECISION DOCUMENT/ CLOSURE REPORT FOR CORRECTIVE ACTION UNIT 405: AREA 3 SEPTIC SYSTEMS, TONOPAH TEST RANGE, NEVADA

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

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CORRECTIVE ACTION DECISION DOCUMENT/CLOSURE REPORT
FOR CORRECTIVE ACTION UNIT 405:
AREA 3 SEPTIC SYSTEMS,
TONOPAH TEST RANGE, NEVADA

Approved by: Signature Approved Date: 04/17/2002

Janet Appenzeller-Wing, Project Manager
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Environmental Restoration Division

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List of Acronyms and Abbreviations

ACM	Asbestos-containing material
bgs	Below ground surface
BN	Bechtel Nevada
CADD/CR	Corrective Action Decision Document/Closure Report
CAI	Corrective Action Investigation
CAIP	Corrective Action Investigation Plan
CAS	Corrective Action Site
CAU	Corrective Action Unit
CFR	*Code of Federal Regulations*
CLP	Contract Laboratory Program
COC	Contaminant of concern
COPC	Contaminant of potential concern
DOE	U.S. Department of Energy
dpm/100 cm^2	Disintegrations per minute per 100 square centimeters
DQI	Data Quality Indicator
DQO	Data Quality Objective
DRO	Diesel-range organics
EPA	U.S. Environmental Protection Agency
FADL	Field activity daily log
FFACO	*Federal Facility Agreement and Consent Order*
FSL	Field-screening levels
ft	Foot (feet)
ft^3	Cubic feet
GPS	Global Positioning System
GRO	Gasoline-range organics
HWAA	Hazardous Waste Accumulation Area
ICP	Inductively coupled plasma

List of Acronyms and Abbreviations *(Continued)*

IDL	Instrument detection limit
IDW	Investigation-derived waste
ITLV	IT Corporation, Las Vegas Office
LCS	Laboratory control sample
LCSD	Laboratory control sample duplicate
m	Meter
m^3	Cubic meters
MDL	Method Detection Limit
mi	Mile
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MRL	Minimum reporting limits
MS	Matrix spike
MS/MSD	Matrix spike/matrix spike duplicate
MSD	Matrix spike duplicate
NAC	*Nevada Administrative Code*
NCR	Nonconformance report
NDEP	Nevada Division of Environmental Protection
NIST	National Institute for Standards and Technology
NNSA/NV	U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office
NTS	Nevada Test Site
PAL	Preliminary action level
PCB	Polychlorinated biphenyl
pCi/g	Picocuries per gram
pCi/L	Picocuries per liter
PID	Photoionization detector
POC	Performance objective criteria

List of Acronyms and Abbreviations *(Continued)*

PPE	Personal protective equipment
ppm	Parts per million
PRG	Preliminary remediation goal
QA	Quality assurance
QAPP	Quality Assurance Project Plan
QC	Quality control
RCRA	*Resource Conservation and Recovery Act*
REOP	Real Estate/Operations Permit
ROTC	Record of Technical Change
RPD	Relative percent difference
RSD	Relative standard deviation
SAA	Satellite Accumulation Area
SC	Site characterization
SDG	Sample delivery group
SSHASP	Site-specific health and safety plan
SVOC	Semivolatile organic compound
SWS	Septic Waste System
TCLP	Toxicity characteristic leaching procedure
TPH	Total petroleum hydrocarbons
TTR	Tonopah Test Range
VOC	Volatile organic compound
yd^3	Cubic yards
µg/kg	Micrograms per kilogram
µg/L	Micrograms per liter
%R	Percent recovery

Executive Summary

This Corrective Action Decision Document/Closure Report has been prepared for Corrective Action Unit 405, Area 3 Septic Systems, Tonopah Test Range, Nevada, in accordance with the *Federal Facility Agreement and Consent Order* (FFACO, 1996). Corrective Action Unit 405 is located in and near Area 3 of the Tonopah Test Range in Nevada and is comprised of the following Corrective Action Sites:

- CAS 03-05-002-SW03, Septic Waste System
- CAS 03-05-002-SW04, Septic Waste System
- CAS 03-05-002-SW07, Septic Waste System

The purpose of this Corrective Action Decision Document/Closure Report is to justify and recommend that no further action is required at Corrective Action Unit 405. To achieve this, the following actions are required:

- Review the current site conditions, including the concentration and extent of contamination.
- Perform closure activities to address the presence of substances regulated by the *Nevada Administrative Code* 445A.2272 (NAC, 1996) and the presence of septic tanks that had not been closed in accordance with *Nevada Administrative Code* 444.818 (NAC, 1999).
- Document Notice of Completion and closure of Corrective Action Unit 405.

From July 10 through July 27, 2001, and on November 29, 2001, corrective action investigation activities were performed as set forth in the Corrective Action Investigation Plan (DOE/NV, 2001). The purpose of the corrective action investigation is described as follows:

- Identify the nature and extent of contaminants of potential concern at the Corrective Action Unit.
- Provide sufficient information and data to develop appropriate corrective actions for the Corrective Action Unit.

Analytes detected during the corrective action investigation were evaluated against preliminary action levels to determine contaminants of concern for the Corrective Action Sites within Corrective Action Unit 405. Assessment of the data generated from corrective action investigation activities indicates that preliminary action levels were not exceeded for contaminants of potential concern in the soil of

Corrective Action Unit 405, except for arsenic. The concentrations of arsenic are considered ambient at this site (NMBG, 1998; Moore, 1999). Therefore, no corrective action is necessary for the soil. The septic tanks at Corrective Action Sites 03-05-002-SW04 and 03-05-002-SW07 and the distribution box at Corrective Action Site 03-05-002-SW03 were found to contain media that contained substances regulated by the *Nevada Administrative Code* 445A.2272 (NAC, 1996). This media requires removal and proper disposal. In addition, the structures must be closed in accordance with the *Nevada Administrative Code* 444.818 (NAC, 1999).

Closure activities were performed to remove and properly dispose of the media remaining in these structures and properly close the structures. Based on the results of the closure activities, no further action is necessary for these structures.

The U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office provides the following recommendations:

- No further corrective action is required at Corrective Action Unit 405.
- No Corrective Action Plan is required.
- A Notice of Completion to U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office is requested from Nevada Division of Environmental Protection for the closure of Corrective Action Unit 405.
- Corrective Action Unit 405 should be moved from Appendix III to Appendix IV of the *Federal Facility Agreement and Consent Order.*

No use restrictions are required to be placed on this corrective action unit because the investigation showed no evidence of soil contamination. The septic tanks and distribution boxes associated with Corrective Action Unit 405 have been closed in accordance with applicable regulations.

1.0 Introduction

This Corrective Action Decision Document/Closure Report (CADD/CR) has been prepared for Corrective Action Unit (CAU) 405: Area 3 Septic Systems, Tonopah Test Range (TTR), Nevada, in accordance with the *Federal Facility Agreement and Consent Order* (FFACO) that was agreed to by the State of Nevada, U.S. Department of Energy (DOE), and the U.S. Department of Defense (FFACO, 1996). The Corrective Action Sites (CASs) within CAU 405 are:

- CAS 03-05-002-SW03, Septic Waste System
- CAS 03-05-002-SW04, Septic Waste System
- CAS 03-05-002-SW07, Septic Waste System

For the purpose of this document, and to maintain consistency with the Corrective Action Investigation Plan (CAIP), the CASs hereafter will be referred to as follows:

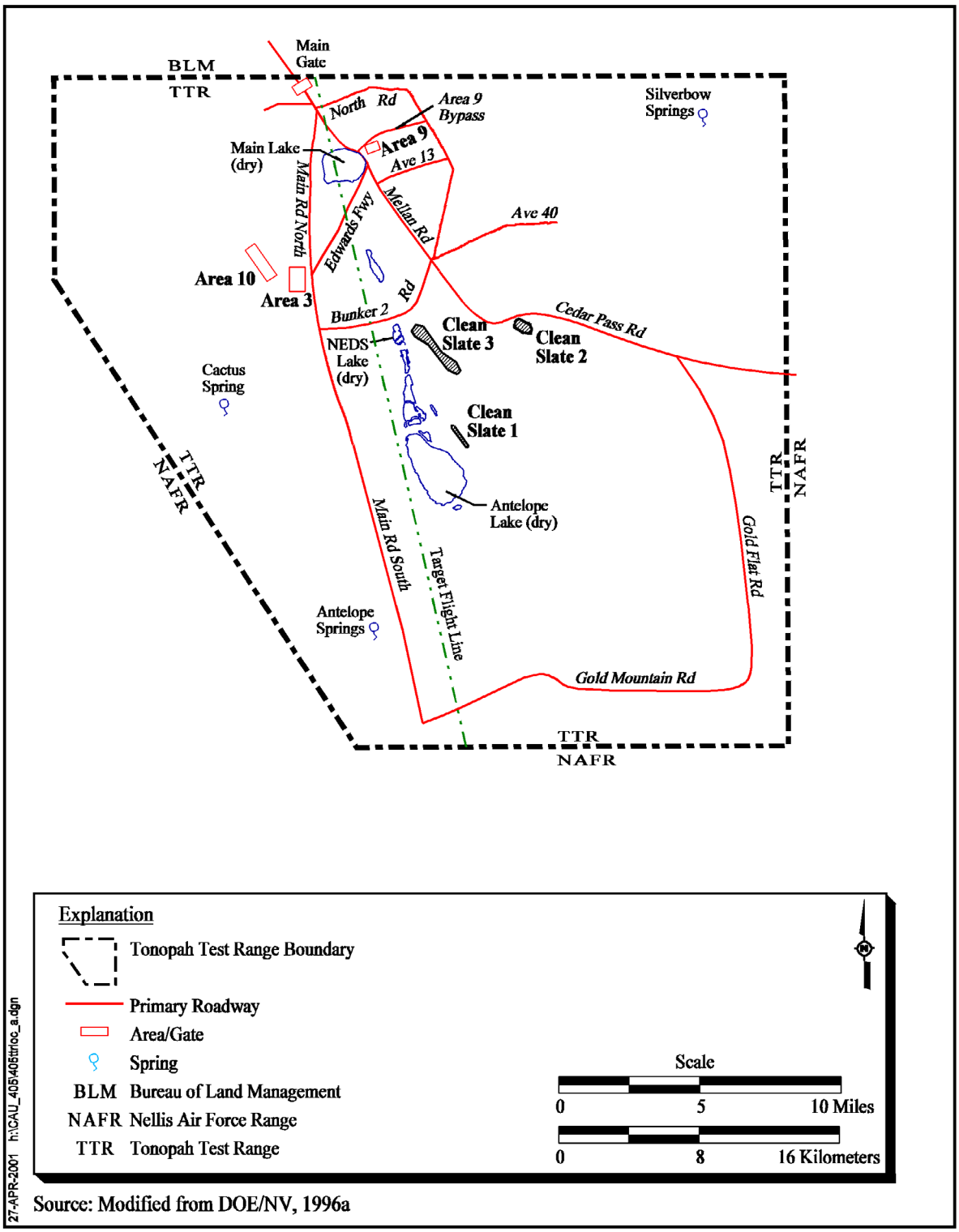
- CAS 03-05-002-SW03 – Septic Waste System (SWS) 3
- CAS 03-05-002-SW04 – SWS 4
- CAS 03-05-002-SW07 – SWS 7

Corrective Action Unit 405 is located within the TTR. The TTR is approximately 235 miles (mi) north of Las Vegas, Nevada (Figure 1-1). The CASs within CAU 405 are located in or near Area 3 of the TTR (Figure 1-2).

The CADD and CR have been combined into one report because no further action is recommended for this CAU. The CADD/CR provides or references the specific information necessary to support this recommendation.

1.1 Purpose

The CAU consists of three systems of leachfields and associated collection systems that were installed in or near Area 3 for wastewater disposal until a consolidated sewer system was installed in 1990. Historically, the TTR has been a research facility with the mission to perform defense-related projects. Industrial operations, experiments, and site maintenance operations associated with these projects may have resulted in impacts to the environment. Operations within various buildings in and near Area 3 of the TTR generated sanitary and industrial waste waters potentially contaminated with contaminants of potential concern (COPCs) and disposed of in septic tanks and leachfields



Source: Modified from DOE/NV, 1996a

Figure 1-1
Area 3 Location Map Tonopah Test Range, Nevada

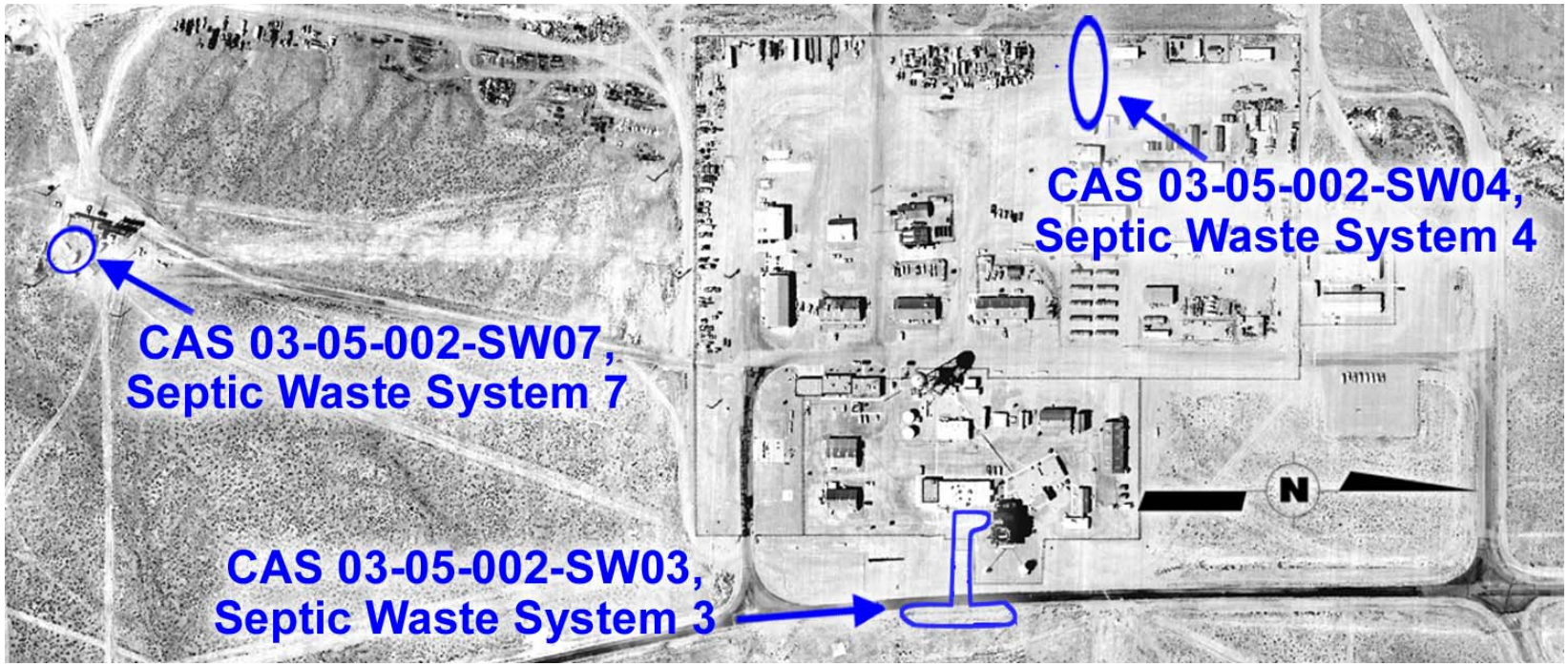


Figure 1-2
Corrective Action Site Locations

(DOE/NV, 1996a). Additional information relating to the site history, planning, and scope of the investigation is presented in the CAIP (DOE/NV, 2001) and will not be repeated in this report.

This CADD/CR provides justification for the closure of CAU 405 without further action. This justification is based on process knowledge, the results of the investigative activities conducted in accordance with the CAIP (DOE/NV, 2001), and the results of closure activities.

The technical rationale for implemented closure activities is that regulated constituents and inadequately closed septic tanks were identified during the investigation. The closure activities included removal and proper disposal of media containing regulated constituents and proper closure of septic tanks. No further action is appropriate because all necessary closure activities have been completed.

1.2 Scope

The scope of this CADD/CR is to justify and recommend that no further corrective action is required at CAU 405. To achieve this scope, the following actions were implemented:

- Review the current site conditions, including the concentration and extent of contamination.
- Perform closure activities to address the presence of substances regulated by the *Nevada Administrative Code* (NAC) 445A.2272 (NAC, 1996) and the presence of septic tanks that had not been closed in accordance with NAC 444.818 (NAC, 1999).
- Document Notice of Completion and closure of CAU 405.

1.3 CADD/CR Contents

This CADD/CR is divided into the following sections:

Section 1.0 - Introduction: summarizes the purpose, scope, and contents of this CADD/CR.

Section 2.0 - Corrective Action Investigation Summary: summarizes the investigation field activities, the results of the investigation, and the justification for no further action.

Section 3.0 - Recommendation: recommends no further action and closure of CAU 405.

Section 4.0 - References: provides a list of all referenced documents.

Appendix A: *Corrective Action Investigation Report for CAU 405: Area 3 Septic Systems, Tonopah Test Range, Nevada*: provides a description of the project objectives, field investigation and sampling activities, investigation results, waste management, and quality assurance.

Appendix B: *Data Assessment of Sample Results for CAU 405: Area 3 Septic Systems, Tonopah Test Range, Nevada*: summarizes the investigation results as they meet the requirements set forth during the data quality objective (DQO) process.

Appendix C: *Closure Activity Summary for CAU 405: Area 3 Septic Systems, Tonopah Test Range, Nevada*: summarizes the closure activities and associated results.

Appendix D: *Hazardous Waste Accumulation Area and Satellite Accumulation Area Inspection Checklists for CAU 405: Area 3 Septic Systems, Tonopah Test Range, Nevada*: provides the Hazardous Waste Accumulation Area (HWAA) and Satellite Accumulation Area (SAA) Inspection Checklists created for management of these areas.

Appendix E: *Geodetic Surveys for CAU 405: Area 3 Septic Systems, Tonopah Test Range, Nevada*: provides land coordinates for investigation sample locations and septic system features.

Appendix F: Response to NDEP comment.

The field investigation was performed in accordance with the following documents:

- *Corrective Action Investigation Plan for Corrective Action Unit 405: Area 3 Septic Systems, Tonopah Test Range, Nevada* (DOE/NV, 2001)
- *Work Plan for Leachfield Corrective Action Units: Nevada Test Site and Tonopah Test Range, Nevada* (Leachfield Work Plan) (DOE/NV, 1998b)
- *Industrial Sites Quality Assurance Project Plan* (QAPP) (DOE/NV, 1996b)
- *Federal Facility Agreement and Consent Order* (1996)
- *Project Management Plan* (DOE/NV, 1994)

2.0 Corrective Action Investigation Summary

The following sections summarize the CAU 405 investigation activities, investigation results, and present the justification for no further action. For detailed investigation activities and results, refer to Appendix A. Refer to Appendix C for detailed closure activities and results.

2.1 Investigation Activities

Corrective action investigation activities were performed as set forth in the CAU 405 CAIP (DOE/NV, 2001) from July 10 through July 27, 2001, and November 29, 2001. The scope of the investigation included:

- Inspect collection system piping for sediment and sample if the quantity is adequate to conduct analyses.
- Sample the contents of the septic tanks and distribution boxes, if any.
- Conduct exploratory trenching and excavations of particular subsurface components for visual inspection and to access sampling horizons.
- Conduct discrete field screening.
- Collect environmental samples for laboratory analyses of COPCs, and for geotechnical and hydrological analyses.
- Collect additional samples for waste management purposes.
- Conduct subsurface sampling from soil borings, if necessary, to define the vertical extent of COPCs.

Each element of the scope is addressed for each SWS in the following text.

Excavations were necessary to access the collection system pipes for visual inspections at each SWS. The contents of a collection system pipe, septic tanks, and a distribution box were collected for analyses with hand tools. Exploratory trenching was used to confirm leachfield configurations. Subsurface soil samples were collected using excavations and submitted for laboratory analyses to determine the presence and concentrations of COPCs. Laboratory analyses for samples typically included total Volatile Organic Compounds (VOCs), total Semivolatile Organic Compounds

(SVOCs), total *Resource Conservation and Recovery Act* (RCRA) metals (CFR, 2000a), and Total Petroleum Hydrocarbons (TPH) (Diesel-Range Organics [DRO] and Gasoline-Range Organics [GRO]). Additional analyses were performed on sediment, sludge, and liquid samples to support future waste determinations. As appropriate to the sample matrix, these analyses typically included Toxicity Characteristic Leaching Procedure (TCLP) VOCs, TCLP SVOCs, TCLP RCRA metals, fecal coliform, tritium, gross alpha and beta, and gamma spectrometry. Other analyses performed on select soil samples include gamma spectrometry (used to support waste determinations), polychlorinated biphenyls (PCBs) (CFR, 2000b) (not required by CAIP), and isotopic uranium (performed on all SWS 4 samples).

Field screening was conducted on soil samples using the headspace method for volatiles, gas chromatography for petroleum hydrocarbons, and handheld instrument surveys for alpha and beta/gamma radiation.

Samples were collected for geotechnical and hydrological analyses; however, they were not analyzed because the results would not impact corrective action decisions. Samples were collected for waste management purposes and are discussed in Appendices A and C. Drilling was not required because excavations were adequate for collection of all necessary subsurface samples.

2.1.1 Septic Waste System 3

The collection system piping was inspected and found to contain a stained, odoriferous sediment in a section of pipe at the effluent end of the septic tank. A sample of the sediment was collected and submitted for analyses. The remaining sediment, approximately one gallon, was removed from the pipe and managed as hydrocarbon waste. The septic tank inspection determined that it had been previously backfilled. A sample of the backfill material was collected for analysis via the effluent pipe access point to confirm that the contaminated sediment did not extend into the septic tank. The distribution box contained approximately one inch of sludge. The sludge was sampled for analyses.

Exploratory trenching confirmed the configuration of the leachfield as expected. Integrity samples were collected from soil near the effluent pipe of the septic tank, and below the base of the influent end of the septic tank, the effluent end of the septic tank, and the east (opposite influent) end of the

distribution box. Soil samples were collected at the leachrock/native soil interface and 2.5 feet (ft) below the interface.

All soil samples associated with the septic tank, distribution box, and leachrock/native soil interface and select soil samples from below the leachfield were submitted for laboratory analyses of COPCs.

2.1.2 Septic Waste System 4

The collection system piping was inspected using a video mole and found to be plugged (i.e., grouted) between the septic tank and the source building. The pipe did not contain residual sediment. The septic tank inspection located manholes on the influent and effluent ends. Contents were observed in both ends and sampled for analyses. The system did not have a distribution box.

Exploratory trenching determined that the configuration of the leachfield was not as expected. The actual configuration and proposed sample locations and intervals were presented to the Nevada Division of Environmental Protection (NDEP). An NDEP representative provided verbal approval and the investigation proceeded accordingly. A Record of Technical Change (ROTC) to the CAIP was issued and approved to reflect the actual configuration and sample locations. Integrity samples were collected from soil below the base of the influent and effluent ends of the septic tank. Soil samples were collected at the leachrock/native soil interface and 2.5 ft below the interface. Soil samples were also collected at the distribution pipe/native soil interface and 2.5 ft below this interface because the distribution pipe was perforated along its entire length, including the portion between the leachrock and septic tank. Additional soil samples were collected from stepout locations around the influent end of the septic tank because the influent end integrity sample TPH field-screening result was near the field-screening level.

The initial stepout location south of the septic tank revealed buried debris not associated with SWS 4. The debris (i.e., wire, soda bottle, burned wood, asphalt) and stained soil was found approximately 15 ft south of the SWS 4 septic tank and 4 to 5.5 ft bgs. Soil adjacent to the debris was sampled for analyses and field screened. The field-screening results for TPH exceeded the field-screening level; therefore, an additional stepout location was completed and sampled between the septic tank influent end and the buried debris. The DOE, National Nuclear Security Administration Nevada Operations

Office (NNSA/NV), has proposed the buried debris be entered into the FFACO as CAS 03-19-001 in CAU 410, Waste Disposal Trenches (TTR).

All soil samples associated with the septic tank and leachfield were submitted for laboratory analyses of COPCs. On-site analysis was performed on septic tank contents to determine fecal coliform bacteria concentrations.

2.1.3 Septic Waste System 7

The collection system piping was inspected and found to be grouted at the influent end of the septic tank and between the septic tank and distribution box. The collection system pipe leading to the influent end of the septic tank was identified as transite (i.e., asbestos-containing material). Asbestos fibers were confirmed by laboratory analysis of the pipe. A video survey was not attempted in this portion of the collection system because the abrasive nature of the video survey may have caused the asbestos to become friable. A break in the pipe above the grouted section did not reveal sediment in the pipe. The septic tank inspection determined that the influent chamber had been previously backfilled. The effluent chamber contained sludge and liquid. Samples of the sludge and liquid were collected for analyses. The distribution box inspection determined that it had been previously backfilled.

Exploratory trenching confirmed the configuration of the leachfield as expected. Integrity samples were collected from soil below the base of the influent and effluent ends of the septic tank and the effluent end of the distribution box. Soil samples were collected at the leachrock/native soil interface and 2.5 ft below the interface. An additional sample was collected at one location below the second interval based on field-screening results for TPH.

All soil samples associated with the septic tank, distribution box, and leachrock/native soil interface, and select soil samples from below the leachfield were submitted for laboratory analyses of COPCs. On-site analysis was performed on septic tank contents to determine fecal coliform bacteria concentrations.

2.1.4 Conceptual Model

A general conceptual model was developed for CAU 405 as presented in the CAIP (DOE/NV, 2001) based on historical information, previous septic tank sample analyses, and process knowledge. This general conceptual model was used as the basis for identifying appropriate sampling strategies and data collection methods at CAU 405. This model assumed that any contamination would be located in the subsurface. The extent of underlying soil impact was expected to be dependent upon the nature of COPCs and other factors.

To address the conceptual model, subsurface samples were collected for analyses designed to define the extent of the COPCs identified in the CAIP. A biased strategy was developed to focus the investigation on areas of potential contamination. The model assumed that the contamination would be limited to the boundaries of the site due to the minimal potential for migration based on the geological and historical information for the site.

Implementation of the investigation design has shown that contamination did not extend beyond the septic system components; therefore, it did not extend beyond the boundaries of the CAS as presented in Appendix A. This is reasonable because the model predicts that the extent of impact of any contaminated effluent released to soil is limited (DOE/NV, 2001).

The presence of contamination was identified in septic system components by sample results showing COPC concentrations exceeding regulatory thresholds for future disposal of affected media, thereby defining contaminants of concern (COCs) at the CASs. Soil sample results demonstrated that COCs were not identified in soil within the physical boundaries of the general subsurface model defined in the CAIP (DOE/NV, 2001). The CAS-specific investigation findings, analytical results, and descriptions of site conditions are presented in Appendix A.

No variations to the conceptual model were identified at SWS 3 or SWS 7; therefore, the general conceptual model developed in the CAIP (DOE/NV, 2001) is valid for these sites. Significant variations to the leachfield configuration were identified at SWS 4. The originally assumed configuration is depicted in Figure 2-3 of the CAIP. The actual configuration is depicted in Figure 2-3 of ROTC Number 1 to the CAIP. This change in configuration did not remove this site from the general conceptual model for leachfield systems presented in the Leachfield Work Plan

(DOE/NV, 1998b). Samples were ultimately collected from the perforated distribution pipe/native soil and leachrock/native soil interfaces. The leachrock/native soil interfaces were sampled on all four sides of the leachfield. Therefore, the general conceptual model developed in the CAIP (DOE/NV, 2001) is valid for this site.

2.2 Results

Summary characterization data from the corrective action investigation are provided in Section 2.2.1. This information illustrates the degree of characterization accomplished through the investigation and identifies those COPCs that exceeded preliminary action levels (PALs) (DOE/NV, 1998b; DOE/NV, 2001) as COCs. Section 2.2.2 summarizes the assessment made in Appendix B, which demonstrates the correlation between the investigation results and the DQOs.

2.2.1 Summary of Characterization Data

Chemical and radiological results for characterization sample concentrations exceeding PALs (DOE/NV, 1998b; DOE/NV, 2001) are summarized for each SWS and presented in Sections 2.2.1.1 through 2.2.1.3.

2.2.1.1 Septic Waste System 3

The analytical results for soil samples collected at SWS 3 indicated that COCs are not present in the soil at this site. The analytical results were compared to PALs for the following parameters (COPCs): VOCs, SVOCs, TPH (DRO and GRO), and RCRA metals (CFR, 2000a). Although not considered as COPCs, results for PCBs and gamma-emitting radionuclides were evaluated and determined to be less than preliminary remediation goals (PRGs) for industrial soil (EPA, 2000) and not distinguishable from isotopic concentrations found in the background environment (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989, respectively).

Arsenic was detected above the PAL of 2.7 milligrams per kilogram (mg/kg) in all soil samples analyzed. Arsenic concentrations ranged from 4.6 to 23.5 mg/kg. The PAL for arsenic is lower than the 7 to 8 mg/kg mean concentration of arsenic in silt from the Nellis Air Force Range (NBMG, 1998; Moore, 1999) and lower than the concentrations ranging from 6 to 43 mg/kg in soils from locations near the TTR (SNL, 1999). Data from previous sampling efforts at Area 3 also demonstrate arsenic

concentrations consistently greater than the PAL and as high as 24.1 mg/kg at an undisturbed location (DOE/NV, 1998a). Arsenic concentrations exceeded the PAL, but are considered representative of ambient conditions at the site. Therefore, arsenic is not considered to be a COC for soil at this site.

The septic tank effluent pipe sediment sample results indicated the presence of TPH as motor oil exceeding the NDEP action level (NAC, 1996); however, the sediment was removed from the pipe and managed as hydrocarbon waste during the investigation.

The distribution box sludge sample results indicated the presence of TPH as diesel and motor oil exceeding the NDEP action level (NAC, 1996) and arsenic above its PAL; however, only TPH exceeded an action level for disposal purposes. This result indicates that the sludge meets the criteria for the NTS disposal site for hydrocarbon burdened solid waste (NDEP, 1997).

2.2.1.2 Septic Waste System 4

The analytical results for soil samples collected at SWS 4 indicated that COCs are not present in the soil at this site. The analytical results were compared to PALs for the following parameters (COPCs): VOCs, SVOCs, TPH (DRO and GRO), RCRA metals, and isotopic uranium. Although not considered as COPCs, results for PCBs and gamma-emitting radionuclides were evaluated and determined to be less than PRGs for industrial soil (EPA, 2000) and not distinguishable from isotopic concentrations found in the background environment (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989, respectively).

Arsenic was detected above the PAL of 2.7 mg/kg in most of the soil samples analyzed. Arsenic concentrations ranged from 2.1 to 9.2 mg/kg. The PAL for arsenic is lower than the 7 to 8 mg/kg mean concentration of arsenic in silt from the Nellis Air Force Range (NBMG, 1998; Moore, 1999) and lower than the concentrations ranging from 6 to 43 mg/kg in soils from locations near the TTR (SNL, 1999). Data from previous sampling efforts at Area 3 also demonstrate arsenic concentrations consistently greater than the PAL and as high as 24.1 mg/kg at an undisturbed location (DOE/NV, 1998a). Most arsenic concentrations exceeded the PAL, but are considered representative of ambient conditions at the site. Therefore, arsenic is not considered to be a COC for soil at this site.

Total petroleum hydrocarbons as diesel were not detected in the septic tank sludge samples; however, the method detection limit for the effluent end sludge sample was elevated to 400 mg/kg. A review of the chromatogram for TPH as motor oil in the influent end sludge sample indicated that it is not present. A review of the chromatogram for TPH as motor oil in the effluent end sludge sample was indeterminate. Therefore, the septic tank contents may exceed the NDEP action level of 100 mg/kg (NAC, 1996) for TPH. The septic tank contents meet the disposal criteria for the NTS disposal site for hydrocarbon-burdened solid waste (NDEP, 1997). The fecal coliform bacteria results were negative for the septic tank content samples.

2.2.1.3 Septic Waste System 7

The analytical results for soil samples collected at SWS 7 indicated that COCs are not present in the soil at this site. The analytical results were compared to PALs for the following parameters (COPCs): VOCs, SVOCs, TPH (DRO and GRO), and RCRA metals. Although not considered as COPCs, results for PCBs and gamma-emitting radionuclides were evaluated and determined to be less than PRGs for industrial soil (EPA, 2000) and not distinguishable from isotopic concentrations found in the background environment (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989, respectively).

Arsenic was detected above the PAL of 2.7 mg/kg in all soil samples analyzed. Arsenic concentrations ranged from 4.8 to 20.1 mg/kg. The PAL for arsenic is lower than the 7 to 8 mg/kg mean concentration of arsenic in silt from the Nellis Air Force Range (NBMG, 1998; Moore, 1999) and lower than the concentrations ranging from 6 to 43 mg/kg in soils from locations near the TTR (SNL, 1999). Data from previous sampling efforts at Area 3 also demonstrate arsenic concentrations consistently greater than the PAL and as high as 24.1 mg/kg at an undisturbed location (DOE/NV, 1998a). Arsenic concentrations exceeded the PAL, but are considered representative of ambient conditions at the site. Therefore, arsenic is not considered to be a COC for soil at this site.

The septic tank effluent end sludge sample results indicated the presence of TPH as motor oil exceeding the NDEP action level (NAC, 1996). The results indicate that the sludge and liquid meet the disposal criteria for the NTS disposal site for hydrocarbon burdened solid waste provided it does not have free liquid remaining (NDEP, 1997). The fecal coliform bacteria results were negative for the septic tank content samples.

2.2.2 Data Assessment Summary

An assessment of CAU 405 investigation results was performed to determine whether the data collected met the DQOs and could support their intended use in the decision-making process. The assessment, provided in Appendix B, includes an evaluation of the data quality indicators (DQIs) to determine the degree of acceptability and usability of the reported data in the decision-making process. Additionally, a reconciliation of the data with the conceptual site model established for this project was conducted. Conclusions were based on the results of the quality assurance/quality control measurements provided in Appendix B and discussed in Section A.7.0 of Appendix A.

The overall results of the assessment indicate that the DQI goals for precision, accuracy, completeness, representativeness, and comparability have been achieved. Precision and accuracy of the data sets were demonstrated to be high except for TPH (GRO) and TCLP SVOCs. Refer to Appendix B for additional information. Evaluation of completeness indicates that sufficient information was collected to support decisions and meet the DQOs. Representativeness of site characteristics was demonstrated with the CAU 405 data. An evaluation of comparability provides a high confidence that the data sets for this project is comparable to all other data sets generated by accepted industry standard practices (e.g., U.S. Environmental Protection Agency [EPA] SW-846). Meeting all of the DQI goals supports acceptance of the CAU 405 data sets for meeting the DQOs established for this project and the subsequent use of this data in the decision-making process.

The conceptual models listed in the CAU 405 CAIP were the basis for the sample collection designs used for the investigation. If information generated during the investigation had required a significant change in the conceptual models, the sampling design may not have been adequate to meet the DQOs. The reconciliation of CAU 405 investigation results to the established conceptual models supports the assumptions documented in the models and demonstrates completeness, representativeness, and comparability. The sampling configuration generated sufficient information required to support the correction action decision presented in the following section.

2.3 Justification for No Further Action

Analytes detected in soil during the corrective action investigation were evaluated against PALs to determine the COCs for each SWS in CAU 405. Analytical results for soil did not exceed PALs

except for arsenic; however, the concentrations of arsenic are considered ambient at this site (NMBG, 1998; Moore, 1999). Therefore, no further action is necessary for the soil at CAU 405.

Closure activities were performed January 14, 2002 through February 2, 2002. The closure activities included the following:

Septic Waste System 3

- Conducted utility clearance.
- Excavated and removed the distribution box along with its contents.
- Grouted the influent and effluent pipes.
- Collected one soil cleanup verification sample.
- Backfilled and regraded to a natural slope.
- Transported and disposed of petroleum hydrocarbon waste at the NTS Area 6 Hydrocarbon Landfill.

Septic Waste System 4

- Conducted utility clearance.
- Excavated and removed the septic tank along with its contents.
- Collected two soil samples, one from under the influent pipe at the base of the septic tank and one from under the effluent pipe at the base of the septic tank.
- Collected two soil cleanup verification samples.
- Grouted the influent pipe formerly connected to the septic tank.
- Backfilled the excavation and regraded to a natural slope.
- Transported and disposed of petroleum hydrocarbon waste at the NTS Area 6 Hydrocarbon Landfill.

Septic Waste System 7

- Conducted utility clearance.
- Excavated and removed septic tank contents from the effluent side.
- Pressure washed septic tank.
- Solidified the septic tank contents and associated rinsate.
- Collected verification samples from the septic tank rinsate.
- Collected three soil cleanup verification samples.
- Grouted the influent pipe coming into the effluent chamber.
- Backfilled and grouted the top of septic tank.
- Excavated and removed approximately 20 ft of transite pipe.
- Backfilled and regraded the excavations to a natural slope.
- Transported and disposed of asbestos transite pipe and petroleum hydrocarbon waste at the NTS Area 6 Hydrocarbon Landfill.

The analytical results for the verification samples did not exceed corresponding levels of concern for TPH, SVOCs, and arsenic. Therefore, the septic tanks and distribution box have been closed in accordance with applicable regulations (NAC 444.818 [1999]). Refer to Appendix C for a more detailed description of closure activities, verification results, waste manifests, and disposal documentation.

3.0 Recommendation

Based on the results of the corrective action investigation discussed in Appendix A, no COCs have been identified in the soil at CAU 405. Results from the closure activities associated with the septic tanks and SWS 3 distribution box presented in Appendix C indicate that no further corrective action is necessary for these structures. Therefore, the NNSA/NV provides the following recommendations:

- No further corrective action is required at CAU 405.
- No Corrective Action Plan is required.
- A Notice of Completion to NNSA/NV is requested from NDEP for the closure of CAU 405.
- CAU 405 should be moved from Appendix III to Appendix IV of the FFACO.

No use restrictions are required to be placed on this CAU because the investigation showed no evidence of soil contamination. The septic tanks and distribution boxes associated with Corrective Action Unit 405 have been closed in accordance with applicable regulations.

4.0 References

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Appendix A

Corrective Action Investigation Report for CAU 405: Area 3 Septic Systems, Tonopah Test Range, Nevada

A.1.0 Introduction

This appendix details corrective action investigation (CAI) activities and analytical results for CAU 405. This CAU is located within and near Area 3 of the TTR (Figure 1-1), and is comprised of three CASs: CAS 03-05-002-SW03 (SWS 3), CAS 03-05-002-SW04 (SWS 4), CAS 03-05-002-SW07 (SWS 7) (Figure 1-2). The CAI was conducted in accordance with the CAIP for CAU 405 (DOE/NV, 2001) and the Leachfield Work Plan (DOE/NV, 1998), as developed under the FFACO (1996). Hereafter, any citations from the CAU 405 CAIP or the Leachfield Work Plan in this appendix will be associated with the aforementioned references listed in Section A.9.0.

The CAU consists of three systems of leachfields and associated collection systems that were installed in or near Area 3 for wastewater disposal until a consolidated sewer system was installed in 1990. Historically, the TTR has been a research facility with the mission to perform defense-related projects. Industrial operations, experiments, and site maintenance operations associated with these projects may have resulted in impacts to the environment. Operations within various buildings in and near Area 3 of the TTR generated sanitary and industrial waste waters potentially contaminated with COPCs and disposed of in septic tanks and leachfields (DOE/NV, 1996a).

This CAU was investigated because process knowledge indicated that contaminated effluent might have been discharged to these systems.

Additional information regarding the history of each site, planning, and the scope of the investigation is presented in the CAIP.

A.1.1 Objectives

The primary objectives of the investigation were to:

- Identify the nature and extent of COPCs.
- Provide sufficient information and data to develop appropriate corrective action alternatives for CAU 405.
- The selection of soil sample locations was based on site conditions and the strategy developed during the DQO process as outlined in the CAIP.

A.1.2 Report Content

This report contains information and data in sufficient detail to support the recommendation for no further action in the CADD/CR. The contents of this report are as follows:

- Section A.1.0 describes the investigation background, objectives, and report contents.
- Section A.2.0 provides an investigation overview.
- Section A.3.0 provides information regarding the SWS 3 field activities, sampling methods, and laboratory analyses results from the investigation samples.
- Section A.4.0 provides information regarding the SWS 4 field activities, sampling methods, and laboratory analyses results from the investigation samples.
- Section A.5.0 provides information regarding the SWS 7 field activities, sampling methods, and laboratory analyses results from the investigation samples.
- Section A.6.0 summarizes waste management activities.
- Section A.7.0 discusses the quality assurance (QA) and quality control (QC) procedures that were followed and the results of the QA/QC activities.
- Section A.8.0 is a summary of the investigation results.
- Section A.9.0 lists the cited references.

The complete field documentation and laboratory data, including field activity daily logs (FADLs), sample collection logs, analysis request/chain-of-custody forms, soil sample descriptions, laboratory certificates of analyses, analytical results, and surveillance results are retained in project files as hard copy files or electronic media.

A.2.0 Investigation Overview

The CAI consisted of soil sampling from backhoe excavations; septic tank and distribution box inspections and sample collection; and collection system pipe inspections. The field investigation was conducted from July 9, 2001, through July 27, 2001, and November 29, 2001.

The CAI was managed in accordance with the requirements set forth in the CAIP. Field activities were performed in accordance with the approved Site-Specific Health and Safety Plan (SSHASP) (IT, 2001b) which is consistent with the DOE Integrated Safety Management System. Samples were collected and documented following approved protocols and procedures indicated in the CAIP. Quality control samples (e.g., field blanks, equipment rinsate blanks, trip blanks, and field duplicates) were collected as required by the Industrial Sites QAPP (DOE/NV, 1996b) and approved procedures. During the CAI, waste minimization practices were followed according to approved procedures, including segregation of waste by waste stream.

Weather conditions at the site varied including rainy, sunny (moderate temperatures), intermittent cloudiness, and light to strong winds. Overnight rains delayed site operations for the first two days; thereafter, weather conditions were generally favorable. The presence of asbestos transite piping at SWS 7 caused minor delays while the proper administrative and site controls were put in place for worker protection. Mechanical failures with two backhoes resulted in additional delays.

The systems were characterized by subsurface soil samples collected by backhoe excavation and by septic tank and distribution box content samples collected by hand tools. Investigation intervals and soil samples were field screened for VOCs, TPH, and alpha and beta/gamma radiation. The results were compared against field-screening levels (FSLs) to guide the investigation. Select samples were shipped to off-site laboratories to be analyzed for appropriate chemical and radiological parameters.

Except for those noted in the following sections, CAU 405 sampling locations were accessible and sampling activities at planned locations were not restricted by buildings, storage areas, active operations, or aboveground and underground utilities. Sampling stepout locations were accessible and remained within anticipated CAS boundaries (except for one stepout location at SWS 4 which is

discussed in Section A.2.3). Modification to the sampling strategy was required for SWS 4. This modification is addressed in Record of Technical Change Number 1 to the CAIP (DOE/NV, 2001).

Sections A.2.1 through A.2.8 provide the investigation methodology, site geology and hydrology, and laboratory information. The SWS-specific investigation details are provided in Sections A.3.0, A.4.0, and A.5.0.

A.2.1 Preliminary Conceptual Model

With the exception of SWS 4, the conceptual model for SWSs 3 and 7 are consistent with generic conceptual model for leachfields provided in the Leachfield Work Plan and the site-specific conceptual models provided in the CAIP.

The SWS 4 configuration was determined to be different than anticipated. The revised conceptual model is discussed in Section A.4.4.

A.2.2 Sample Locations

Investigation locations selected for sampling were based on interpretation of engineering drawings, interviews with former and current site employees, and site conditions. Sampling points for each site were selected based on the approach provided in the Leachfield Work Plan and CAIP. The planned biased sample locations are shown in the CAIP. Actual sample locations are shown in figures in the SWS-specific subsections. Some locations were modified slightly from planned positions due to field conditions and observations. In some cases, field-screening results determined the need for stepout sampling locations. All sample locations were staked in the field, labeled appropriately, and surveyed with a global positioning system (GPS) instrument. The actual locations have been plotted on the figures based on the GPS coordinates, and what may appear as inaccuracies are due to the limited resolution of the technology. The GPS coordinates are located in Appendix E.

A.2.3 Excavations

Excavations by backhoe were used to inspect leachfield system components, confirm the configurations of leachfields, and access soil sample horizons.

At SWS 3, backhoe trenching located the septic tank, distribution box, and distribution pipes, exposed biased sampling horizons, and served to remove soil from excavations for sampling. A video survey was conducted by placing a video mole inside the collection system pipe running upstream from the influent sides of the distribution box and septic tank.

At SWS 4, backhoe trenching located the septic tank, distribution pipe, and extent of leach rock, exposed biased sampling horizons, and served to remove soil from excavations for sampling. A video survey was conducted by placing a video mole inside the collection system pipe running upstream from the influent side of the septic tank. Excavating the leachfield revealed that the leachfield and distribution pipes did not match the conceptual model defined in the CAIP. Using this information, biased sample locations were adjusted to properly characterize the leachfield. While excavating stepout sample locations, a buried debris pit unrelated to CAU 405 was discovered. The debris (i.e., wire, soda bottle, burned wood, asphalt) and stained soil was found approximately 15 ft south of the SWS 4 septic tank and 4 to 5.5 ft bgs. The adjacent soil was sampled and analyzed. The NNSA/NV has proposed the buried debris be entered into the FFACO as CAS 03-19-001 in CAU 410, Waste Disposal Trenches (TTR).

At SWS 7, backhoe trenching located the septic tank, distribution box, and distribution pipes, exposed biased sampling horizons, and served to remove soil from excavations for sampling. Through excavation, it was discovered that the elbows comprising the leachfield were constructed of asbestos transite. This information allowed for the proper health and safety controls to be put in place for worker protection. A video survey of the collection system pipe was not attempted upstream from the influent side of the septic tank because a portion of the pipe was previously grouted and made of asbestos-containing material.

Excavated soil was returned nearest its original location as practical. Spoils were staged next to excavations and placed on plastic sheeting when FSLs were exceeded or contamination was suspected. Spoils were stored to prevent runon and runoff when backfill could not be completed before the end of the day. Drilling was not required because excavations were adequate for sample collection.

A.2.3.1 Septic Tank and Distribution Box Integrity Sampling

Septic tank integrity samples were collected from SWSs 3, 4, and 7. Distribution box integrity samples were collected at SWSs 3 and 7. A distribution box was not present at SWS 4. The integrity samples were collected from below the base of the influent and effluent ends of septic tanks, the effluent end of the SWS 7 distribution box, and the east (opposite influent) end of the SWS 3 distribution box.

Soil was initially screened in the backhoe bucket for health and safety parameters prior to start of sampling. Additional screening was conducted during sample collection to guide the investigation. Labeled sample containers were filled according to the following sequence. The total VOCs sample container was filled with soil directly from the backhoe bucket, followed by collection of soil for VOC field screening using headspace analysis. Additional soil was transferred into a stainless-steel bowl, homogenized, and screened for alpha and beta/gamma radiation. Prior to being placed in the remaining sample containers, a sample was collected for TPH field screening by on-site gas chromatography. Excess soil was returned to the excavation and custody seals were applied to the samples.

A.2.3.2 Leachfield Sampling

At SWSs 3 and 7, backhoe trenching consisted of cutting linear trenches perpendicular to the long axis of the distribution pipes of the leachfield. Biased samples were collected with the backhoe from soil underlying the distribution pipes. Soil samples were either directly collected from the backhoe bucket or from the trench using hand tools.

Consistent with the CAIP, the first sample was collected from the interval 0 to 1 ft below the leachrock/native soil interface and the second sample was collected from 2.5 to 3.5 ft below the interface. All interface soil samples were submitted for laboratory analysis. Select soil samples below the interface were submitted for laboratory analysis. These samples included those collected below samples with field-screening results above FSLs and at least one from below the interface of each distribution pipe.

The revised sampling strategy at SWS 4 was based on the strategy discussed above. The single distribution pipe at SWS 4 was perforated along its length. Soil adjacent to the perforated pipe was

sampled from the 0- to 1-ft interval immediately below the pipe and 2.5- to 3.5-ft below the pipe/soil interface. Additional samples were collected from the leachrock/native soil interface and 2.5- to 3.5-ft below this interface.

A.2.4 Septic Tank and Distribution Box Inspections and Sampling

Collection system piping, septic tanks, and distribution boxes were inspected for sludge and liquid and sampled if contents were present. The planned inspections were conducted through a distribution box lid, through septic tank manholes, and by breaking pipes.

Contents of septic tanks and distribution boxes were sampled and analyzed to support disposal of the contents during anticipated closure activities. Conditions and content volumes of the septic tanks and distribution boxes are provided in the SWS-specific sections.

Liquid and sludge samples were analyzed in accordance with the requirements in the CAIP except as noted. Analyses are listed in SWS-specific sections. In addition, select samples were analyzed on site for coliform bacteria. Excess liquid and sludge was returned to the septic tank or distribution box after coliform bacteria analysis.

A.2.5 Field-Screening Methodology

Field-screening activities for VOC, TPH, and alpha and beta/gamma radiation were performed as specified in the CAIP. The FSL for VOC headspace was established at 20 ppm or 2.5 times background, whichever was greater. The FSL for TPH was 100 ppm. The site-specific FSLs for alpha and beta/gamma radiation were defined as the mean background activity level plus two times the standard deviation of readings from 20 background locations. The radiation FSLs are instrument-specific and were established for each instrument prior to use. Field screening was conducted using a photoionization detector for VOCs, a gas chromatograph for TPH, and an NE Technologies Electra for alpha and beta/gamma radiation.

A.2.6 Geology

The SWSs consist of reworked and compacted sands and gravels overlying native soil. The regional native soil consists of poorly graded, moderately consolidated, alluvial silty sands with gravel and

cobble-sized volcanic detritus (DOE/NV, 1996a). Soil below the leachfields ranged from gravelly sands and gravelly sands with fines to well-graded sands. The percentage of organic matter in the soil decreases with depth beyond the native soil interface. The general field description for each sample was recorded on sample collection logs by a sampling team member.

A.2.7 Hydrology

Of some importance to characterizing the SWSs are topographic influences on the drainage of surface water resulting from significant rainfall events. Dry washes provide channels that concentrate surface runoff, yet there is no perennial streamflow in the region. The Area 3 topography slopes gently in all directions with surface drainage flowing northwest.

Hydrologic conditions beneath the SWSs are less important to site characterization because the leachfields are less than 10 ft below grade and quaternary alluvium is likely to reach depths of greater than 100 ft below ground surface (bgs) (DOE/NV, 1996a). Groundwater at the TTR is not expected to be impacted by COPC migration due to the depth of groundwater. In Area 3, depth to groundwater is estimated at 361 to 394 ft bgs (DOE/NV, 1996a). No saturated zones (e.g., perched water) were found in the subsurface below the leachfield systems.

A.2.8 Laboratory Analytical Information

Chemical and radiological analyses were performed by Paragon Analytics, Inc., Fort Collins, Colorado. Chemical analyses were also performed by Severn Trent Laboratories, Earth City, Missouri. An asbestos transite sample was analyzed by Data Chem, Salt Lake City, Utah.

The analytical parameters and laboratory analytical methods used to analyze CAU 405 investigation samples are listed in Table A.2-1. Organic and inorganic analytical results are compared to the minimum reporting limits (MRLs) established in the Leachfield Work Plan (DOE/NV, 1998). Isotopic uranium analytical results are compared to the MRLs established in the CAIP.

The analytical results of samples collected from the CAU 405 investigation have been compiled and evaluated to determine the presence and/or extent of contamination in Sections A.3.0, A.4.0, and A.5.0. The analytical results reported above the minimum reporting limits are summarized. The complete laboratory data packages are available in the project files.

Table A.2-1
Laboratory Analytical Parameters and Methods, CAU 405 Investigation Samples

Analytical Parameter	Analytical Method
Total volatile organic compounds	SW-846 8260B[a]
Total semivolatile organic compounds	SW-846 8270C[a]
Total petroleum hydrocarbons - gasoline-range organics	SW-846 8015B (modified)[a]
Total petroleum hydrocarbons - diesel-range organics	SW-846 8015B (modified)[a]
Polychlorinated biphenyls	SW-846 8082[a]
Total RCRA metals	Water - SW-846 6010B or 6020/7470A[a]/6020 Soil - SW-846 6010B or 6020/7471A[a]/6020
TCLP volatile organic compounds	SW-846 1311/8260B[a]
TCLP semivolatile organic compounds	SW-846 1311/8270C[a]
TCLP RCRA metals	SW-846 1311/6010B/7470A[a]
Gamma spectrometry	Water and Soil PAI 713R6[b]
Isotopic uranium	Water and Soil PAI 714R5[c]
Gross alpha/beta	Water - PAI 724R6[d]
Tritium	Water - PAI 704R5[e]
Asbestos	Solid - NIOSH 9002[f]
Ignitability	SW-846 1010[a]

[a]EPA *Test Methods for Evaluating Solid Waste*, Physical/Chemical Methods, 3rd Edition, Parts 1-4, SW-846 (EPA, 1996)
[b]Standard Operating Procedure PAI713R6 is a variant of and incorporates all the intentions of EPA Procedure 901.1 and DOE/Environmental Measurements Laboratory Procedure 4.5.2.3 (PAI, 1999-2000).
[c]Standard Operating Procedure PAI714R5 is principally similar to DOE/Environmental Measurements Laboratory Procedure 4.5.2.1 and meets or exceeds the requirements referenced in EPA Procedures 907.0 and 908.0 (PAI, 1999-2000).
[d]Standard Operating Procedure PAI724R6 provides the calibration, data collection, and analysis portions of EPA Procedure 900.0 (PAI, 1999-2001).
[e]Standard Operating Procedure PAI704R5 provides the analysis portions of EPA Procedure 906.0 (PAI, 1999-2001).
[f]NIOSH *Manual of Analytical Methods* (NMAM), 4th Edition DHHS (NIOSH), Pub. 94-113, August. 1994.

The analytical parameters were selected through the application of site process knowledge according to the EPA's *Guidance for the Data Quality Objects Process* (EPA, 1994a). The PALs for off-site laboratory analytical methods (EPA, 1999) were determined during the DQO process (EPA, 1994a) and are documented in the Leachfield Work Plan (DOE/NV, 1998) and CAIP (DOE/NV, 2001). Sampling activities were conducted to confirm or disprove assumptions (i.e., conceptual models

outlined in CAIP) made in the DQO process. Analytical results that are detected above PALs are termed COCs. If COCs are present, corrective action must be considered.

Bioassessment samples were not collected because field-screening results and observations did not indicate the need.

The analytical method TPH (DRO) includes the carbon range C_{10} - C_{38}. The TPH (DRO) method was occasionally subdivided into two portions referred to in this document as TPH as diesel and TPH as motor oil. TPH as diesel typically includes the carbon range C_{10} - C_{24}, while TPH as motor oil typically includes the carbon range C_{24} - C_{38}. The full C_{10} - C_{38} range is referred to as TPH (DRO). When TPH is used without further designation, it refers to TPH in general and may be used in conjunction with sampling or field-screening methodology. Total petroleum hydrocarbon (GRO) includes the carbon range from C_6 - C_{10}.

A.3.0 Septic Waste System 3

Septic Waste System 3 consists of Septic Tank 33-7, a leachfield divided by a distribution box, and associated piping. Septic Waste System 3 began receiving sanitary sewage from Building 0351 (Administrative Building) in 1962. In 1980, Building 0357 (Operations and Control) was constructed and sanitary sewage from this building was also directed to this SWS (DOE/NV, 2001).

Septic Tank 33-7 is approximately 114 ft east of Building 0351, approximately 55 ft south of Building 0357, and has a capacity of about 5,000 gallons (DOE/NV, 2001). The septic tank was buried by approximately 1 ft of soil. The bottom of the influent end was 9.5 ft bgs. The bottom of the effluent end was 6.1 ft bgs. The surface of the septic tank measured 17.7 by 9.1 ft. The west edge of the leachfield is located parallel to and east of Main Road and approximately 233 ft east of Building 0351 (DOE/NV, 2001; IT, 2001a). The concrete distribution box is located approximately 100 ft east of the septic tank. It measures 4-ft long by 4-ft wide by 2.6-ft deep (internal) and is covered by a 4-inch thick concrete lid (IT, 2001a).

The leachfield configuration includes two separate drainage systems. The two drainage systems are connected at the center by the distribution box and drain in opposite directions, one to the north and the other to the south. The dimensions of each drainage system are approximately 100 ft by 18 ft. Each drainage system has three rows of 4-inch diameter drainage tiles (IT, 2001a).

A.3.1 Corrective Action Investigation

Thirty-five investigation samples were collected during investigation activities conducted at SWS 3 and are listed in Table A.3-1. The planned sample locations at SWS 3 are shown in Figure 4-1 of the CAIP. The actual sample locations are shown in Figure A.3-1.

A.3.1.1 CAIP Implementation

The following CAI activities were conducted at SWS 3 to meet CAIP requirements:

- Collected integrity samples from the influent and effluent ends of the septic tank and from the east (opposite influent) end of the distribution box.

Table A.3-1
Samples Collected from Septic Waste System 3
(Page 1 of 2)

Sample Identification Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
SS3STL02	SWS 3	NA	Water	Source Blank	1,2,3,5
SS3STL05	NA	NA	Water	Trip Blank	VOC
SS3STL03	Butler Bldg.	NA	Water	Source Blank	1,2,3,5
SS3STL04	Butler Bldg.	NA	Water	Trip Blank	VOC
SS3STL01	NA	NA	Water	Trip Blank	VOC
SS3STS06	SS3ST01	9.4 - 10.6	Soil	SC	1,2
SS3STS07	SS3ST02	6.1 - 7.1	Soil	SC	1
SS3STL08	NA	NA	Water	Trip Blank	VOC
SS3STS09	SS3ST02	2.2	Sediment	SC	1,2,5, TCLP RCRA Metals
SS3STS10	SS3ST02	3.8 - 4.2	Soil	SC	1,2
SS3DBL42	NA	NA	Water	Trip Blank	VOC
SS3DBS43	SS3DB	NA	Sludge	SC	1,2, TCLP RCRA Metals
SS3LFS44	SS3LF05	6 - 7	Soil	SC	1,5
SS3LFS45	SS3LF05	8.5 - 9.5	Soil	SC	1
SS3LFS46	SS3LF09	7 - 8	Soil	SC	1,2
SS3LFS47	SS3LF09	9.5 - 10.5	Soil	SC	1
SS3LFS48	SS3LF01	6 - 7	Soil	SC	1,2
SS3LFS49	SS3LF04	7 - 8	Soil	SC	1,2
SS3LFS50a	SS3LF04	9.5 - 10	Soil	SC	NA
SS3LFS50	SS3LF08	5.5 - 6.5	Soil	SC	1,2
SS3LFS51	SS3LF08	8 -9	Soil	SC	1
SS3LFS52	SS3LF12	6.5 - 7.5	Soil	SC	1,2
SS3LFS53	SS3LF12	9.5 - 10.5	Soil	SC	1
SS3LFS54	SS3LF01	8.5 - 9.5	Soil	SC	1
SS3LFL55	SWS 3	NA	Water	Field Blank	1,2,5
SS3LFS56	SS3LF02	5 - 6	Soil	SC, MS/MSD	1,2,5
SS3LFS57	SS3LF02	7.5 - 8.5	Soil	SC	1
SS3LFS58	SS3LF06	5 - 6	Soil	SC	1,2
SS3LFS59	SS3LF06	7.5 - 8.5	Soil	SC	1
SS3LFSGT1	SS3LFGT01	3 - 3.5	Soil	Geotechnical	Not Analyzed

Table A.3-1
Samples Collected from Septic Waste System 3
(Page 2 of 2)

Sample Identification Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
SS3LFS60	SS3LF10	5 - 6	Soil	SC	1
SS3LF261a	SS3LF10	7.5 - 8.5	Soil	SC	NA
SS3LFL61	NA	NA	Water	Trip Blank	VOC
SS3LFS62	SS3DB01	3.7 - 4.7	Soil	SC	1
SS3LFS63	SS3LF03	5.3 - 6.3	Soil	SC	1,2
SS3LFS64	SS3LF03	5.3 - 6.3	Soil	Field Duplicate of SS3LFS63	1,2,5
SS3LFS65	SS3LF03	7.8 - 8.8	Soil	SC	1
SS3LFS66	SS3LF07	5.5 - 6.5	Soil	SC	1
SS3LFS67a	SS3LF07	8 - 9	Soil	SC	NA
SS3LFS67	SS3LF11	5 - 6	Soil	SC	1
SS3LFS69a	SS3LF11	7.5 - 8.5	Soil	SC	NA
SS3001	SS3ST	NA	Soil	SC	TPH (DRO)
SS3002	SS3ST	NA	Soil	Field Duplicate of SS3001	TPH (DRO)
SS3003	SS3DB	NA	Sludge	SC	TPH (DRO), TCLP Mercury

ft = Feet
bgs = Below ground surface
SC = Site characterization
NA = Not applicable
MS/MSD = Matrix spike/matrix spike duplicate

Analytical Set 1: VOC, SVOC, TPH (GRO and DRO), RCRA Metals
Analytical Set 2: Gamma Spectrometry
Analytical Set 3: Isotopic Uranium
Analytical Set 5: PCB

- Inspected the collection system piping.
- Collected content samples from the distribution box.
- Conducted exploratory excavations to confirm leachfield configuration.
- Collected soil samples from the leachfield and a geotechnical and hydrological sample from the native soil below the leachfield.
- Field screened soil samples for VOCs, TPH, and alpha and beta/gamma radiation.
- Submitted select samples for off-site laboratory analysis.

Bldg.
0357

Bldg.
0351

4-in. S

1-1/2"-in. LPG

6-in. S

6-in. S

SS3ST02
[1,2,TCLP RCRA Metals,5] SS3STS09

SS3ST02
[1,2] SS3STS10

Septic Tank 33-7

SS3ST01
[1,2] SS3STS06

SS3ST
[TPH-DRO] SS3001
[TPH-DRO] SS3002

SS3ST02
[1] SS3STS07

LPG

Propane Tank

73.3 ft (Video Survey
Truncation Point)

73.6 ft (Video Survey
Truncation Point)

Leachfield
(North Drainage Basin)

SS3LF04
[1,2] SS3LFS49

SS3LF12
[1,2] SS3LFS52
[1] SS3LFS53

SS3LF08
[1,2] SS3LFS50
[1] SS3LFS51

Main Road

SS3LF07
[1] SS3LFS66

SS3LF03
[1,2] SS3LFS63
[1,2,5] SS3LFS64
[1] SS3LFS65

SS3LF11
[1] SS3LFS67

SS3DB01
[1] SS3LFS62

Distribution Box

SS3LFGT01
[Not Analyzed]

SS3DB
[1,2,TCLP RCRA Metals] SS3DBS43
[TPH-DRO, TCLP Mercury] SS3003

SS3LF02
[1,2,5] SS3LFS56
[1] SS3LFS57

SS3LF10
[1] SS3LFS60

SS3LF06
[1,2] SS3LFS58
[1] SS3LFS59

Main Road

SS3LF05
[1,5] SS3LFS44
[1] SS3LFS45

SS3LF09
[1,2] SS3LFS46
[1] SS3LFS47

SS3LF01
[1] SS3LFS54
[1,2] SS3LFS48

Leachfield
(South Drainage Basin)

Explanation

- Road
- Fence
- Sample Location
- Leachfield Distribution Pipe
- Sewer Pipe
- Barrier Pole
- = Missing Sewer Pipe

ft = Feet
in. = Inch
LPG = Liquid Propane Gas

Analyses Conducted:

[1] = Total VOCs, Total SVOCs, TPH (DRO & GRO), Total RCRA Metals
[2] = Gamma Spectrometry
[4] = TCLP VOC, TCLP SVOC, TCLP RCRA Metals
[5] = PCB

Figure Not to Scale

Source: Modified from DOE/NV, 2001 and IT, 2001a

Figure A.3-1
Septic Waste System 3
Sample Locations

h:\CAU_405\CADD\405cadd3samp_b.dgn
17-APR-2002

A.3.1.2 Deviations

There were no significant deviations to the CAIP requirements. A minor deviation was made for the location of sample SS3STS07 due to the concrete slab at the bottom of the effluent end of the septic tank. The sample was collected 1 ft south of the septic tank effluent pipe instead of directly underneath, as required for integrity samples. The distribution box and pipe content samples were not analyzed for TCLP VOCs or TCLP SVOCs. This did not impact decisions because the total VOCs and total SVOCs results were adequate for waste determination; therefore, the CAIP requirements were met.

A.3.2 Investigation Results

The following subsections provide SWS-specific details of the inspection and sampling of leachfield features, field-screening results, and sample selection and analysis.

A.3.2.1 Septic Tank and Distribution Box Integrity Sampling

Four integrity soil samples were collected from three sample locations adjacent to the influent and effluent ends of the septic tank and the east end of the distribution box. The samples were collected from the soil horizons underlying the base of the septic tank and the distribution box. One sample was collected at 9.4 ft bgs from the influent end of the septic tank. The two samples collected from the effluent end of the septic tank were collected from two separate locations. The septic tank effluent integrity sample was collected at 6.1 ft bgs adjacent to a concrete slab at the base of the septic tank 1 ft south of the effluent pipe. A pipe integrity sample was collected at the effluent end of the septic tank because the pipe contained stained media that exceeded the TPH FSL. This sample was collected 1.8 ft north of the effluent pipe and 3.8 ft bgs. The distribution box integrity sample was collected from the east (opposite influent) end at 3.7 ft bgs.

A.3.2.2 Inspection and Sampling of Collection System Components

The distribution box and portions of the collection system pipe were inspected. The distribution box contained approximately one inch of sludge from which one sample was collected. The septic tank was found to have two manholes. The septic tank was filled with sandy gravel as part of the previous

Area 3 septic tank abandonment program. Excavation and video survey of the pipe on the effluent end of the septic tank revealed that approximately 22 ft of pipe was previously removed (likely during the installation of a nearby communication line installed perpendicular to this pipe). Approximately 3 ft of pipe (cast iron) remained connected to the effluent end of the septic tank. A portion of the pipe contained an organic rich sediment. This sediment was removed and sampled for laboratory analyses.

Additional field work was conducted on November 29, 2001, to determine if the sludge present in the septic tank effluent pipe extended into the septic tank. The remaining sludge was removed and containerized as waste. Backfill material was observed in the septic tank effluent chamber. Two samples (one duplicate) of the fill material were collected via the effluent pipe. An additional sludge sample was collected from the distribution box to supplement rejected analytical results for the original sample.

In order to inspect the collection system pipe for contents, a video survey was conducted in the collection system pipe from the influent ends of the distribution box and septic tank. The video mole met refusal at 73.3 ft from the septic tank in the proximity of the collection system pipe tie-in from Building 0357. The video mole met refusal at 73.6 ft from the distribution box in the proximity of a communication line. Neither video survey showed contents or additional breaches in the collection system pipe.

A.3.2.3 Leachfield Sampling

Backhoe excavations were conducted to access sampling horizons and collect samples at the biased locations presented in the CAIP. Excavations provided a visual verification of leachfield configuration (Figure A.3-1). Twenty-five soil samples were collected from beneath the distribution pipes as specified in the CAIP. All samples collected at the leachrock/native soil interface were submitted for laboratory analyses. Select samples collected at 2.5 ft below the interface were submitted for laboratory analyses. The interface was found at depths ranging from 5 to 7 ft bgs. In addition, one QC soil duplicate was collected and analyzed. One matrix spike/matrix spike duplicate (MS/MSD) was performed on one sample.

A geotechnical/hydrological soil sample was collected from native soils beneath the leachfield from 3 to 3.5 ft bgs (below distribution header depth); however, it was not analyzed because contamination above PALs was not identified in soil characterization samples.

A.3.2.4 Field-Screening Results

Soil samples were field screened for VOCs, TPH, and alpha and beta/gamma radiation. The field-screening results were compared to field-screening levels to guide sampling decisions. Integrity sample SS3STS06 collected from the influent end of the septic tank had a TPH field-screening result of 275 parts per million (ppm). This result prompted the request for "quick turn" analysis by the laboratory to facilitate the identification of additional sample needs. The pipe content sample, SS3STS09, collected from the pipe at the effluent end of the septic tank had a TPH field-screening result of 1,189 ppm. This result prompted the collection of sample SS3STS10 from soil below and near the pipe.

Sample SS3DBS43 collected from within the distribution box had elevated total alpha and total beta/gamma field-screening results. The field-screening results for alpha and beta/gamma were 129 and 2,094 disintegrations per minute per 100 square centimeters (dpm/100 cm^2), respectively. The alpha and beta/gamma background radiological levels established for this SWS were 88.3 and 1,816 dpm/100 cm^2, respectively. This result did not prompt the need for additional samples because it was from within the distribution box. The sample was analyzed for gamma-emitting radionuclides.

A.3.2.5 Sample Analyses

Select investigation samples were analyzed for CAIP-specified COPCs which included total VOCs, total SVOCs, total RCRA metals, TPH (DRO and GRO), TCLP RCRA metals, PCBs (not required in the CAIP), and gamma-emitting radionuclides.

The analytical parameters and laboratory analytical methods used to analyze the investigation samples are listed in Table A.2-1. Table A.3-1 lists the sample-specific analytical parameters.

A.3.2.6 Analytes Detected Above Minimum Reporting Limits

The analytical results detected at concentrations exceeding the correlated MRLs (DOE/NV, 1998; DOE/NV, 2001) at SWS 3 are summarized in the following sections. A portion of the SWS 3 analytical results were rejected; however, these rejected data did not impact closure decisions as discussed in the Completeness Section (B.1.1.3) of Appendix B.

A.3.2.6.1 Total Volatile Organic Compound Analytical Results for Soil Samples

No total VOCs analytical results for soil samples exceeded the MRLs or PALs established in the Leachfield Work Plan and CAIP.

A.3.2.6.2 Total Semivolatile Organic Compound Analytical Results for Soil Samples

No total SVOCs analytical results for soil exceeded the MRLs or PALs established in the Leachfield Work Plan and CAIP.

A.3.2.6.3 Total Petroleum Hydrocarbon Analytical Results for Soil Samples

No TPH (DRO and GRO) analytical results for soil exceeded the MRLs or PAL established in the Leachfield Work Plan. Analytical results were not reported for a portion of the samples requested for TPH as motor oil. This discrepancy is discussed in the Completeness Section (B.1.1.3) of Appendix B.

A.3.2.6.4 Total RCRA Metals Analytical Results for Soil Samples

The total RCRA metals detected in soil samples at concentrations exceeding MRLs are listed in Table A.3-2 and discussed below. Only arsenic exceeded the PALs for RCRA metals established in the Leachfield Work Plan and CAIP.

Arsenic was detected above the PAL of 2.7 mg/kg in all soil samples analyzed. Arsenic concentrations ranged from 4.6 to 23.5 mg/kg. The PAL for arsenic is lower than the 7 to 8 mg/kg mean concentration of arsenic in silt from the Nellis Air Force Range (NBMG, 1998; Moore, 1999) and lower than the concentrations ranging from 6 to 43 mg/kg in soils from locations near the TTR (SNL, 1999). Data from previous sampling efforts at Area 3 also demonstrate arsenic concentrations

Table A.3-2
Soil Sample Results for Total RCRA Metals Detected Above Minimum Reporting Limits for Septic Waste System 3

Sample Identification Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)				
		Arsenic	Barium	Chromium	Lead	Mercury
Preliminary Action Levels[a]		**2.7**	**100,000**	**450**	**750**	**610**
SS3LFS44	6 - 7	12.9 (J)[b]	164 (J)[c]	6.3 (J)[d]	13.4 (J)[c]	--
SS3LFS45	8.4 - 9.4	4.6 (J)[b]	181 (J)[c]	3.9 (J)[d]	5.8 (J)[c]	--
SS3LFS46	5 - 6	6.1 (J)[b]	151 (J)[c]	5.2 (J)[d]	6.6 (J)[c]	--
SS3LFS47	7.1 - 8.1	8.1 (J)[b]	171 (J)[c]	3.7 (J)[d]	8.6 (J)[c]	--
SS3LFS48	6 - 7	7.9 (J)[b]	232 (J)[c]	5.4 (J)[d]	9.1 (J)[c]	--
SS3LFS49	7 - 8	10.8 (J)[b]	146 (J)[c]	7.4 (J)[d]	10.0 (J)[c]	--
SS3LFS50	5.4 - 6.4	7.0 (J)[b]	137 (J)[c]	6.2 (J)[d]	8.1 (J)[c]	--
SS3LFS51	8 - 9	7.5 (J)[b]	257 (J)[c]	6.4 (J)[d]	8.2 (J)[c]	--
SS3LFS52	6.4 - 7.4	5.9 (J)[b]	253 (J)[c]	5.1 (J)[d]	8.7 (J)[c]	--
SS3LFS53	9.4 - 10.4	4.9 (J)[b]	268 (J)[c]	4.7 (J)[d]	5.1 (J)[c]	--
SS3LFS54	8.4 - 9.4	7.7 (J)[b]	126 (J)[c]	5.1 (J)[d]	7.4 (J)[c]	--
SS3LFS56	5 - 6	18.1 (J)[b]	280 (J)[c]	5.6 (J)[d]	25.5 (J)[c]	--
SS3LFS57	7.4 - 8.4	8.1 (J)[b]	163 (J)[c]	4.6 (J)[d]	7.9 (J)[c]	--
SS3LFS58	5 - 6	9.3 (J)[b]	194 (J)[c]	9.6 (J)[d]	8.8 (J)[c]	--
SS3LFS59	7.4 - 8.4	12.3 (J)[b]	198 (J)[c]	4.3 (J)[d]	8.9 (J)[c]	--
SS3LFS60	5 - 6	15.3 (J)[b]	212 (J)[c]	5.4 (J)[d]	7.9 (J)[c]	--
SS3LFS62	3.4 - 4.4	21.0	242	4.6	8.5	0.037 (J)[e]
SS3LFS63	5.3 - 6.3	17.1	190	3.8	9.1	--
SS3LFS64	5.3 - 6.3	17.1	193	3.6	7.7	--
SS3LFS65	7.8 - 8.8	11.9	106	2.7	7.7	--
SS3LFS66	5.4 - 6.5	23.5	98.9	3.5	7.2	--
SS3LFS67	5 - 6	13.8	117	3.8	8.6	0.037
SS3STS06	9.4 - 10.6	16.8	132*	2.5	6.8 (J)[f]	--
SS3STS07	8.4 - 9.4	20.3	245 (J)[g]	3.8 (J)[c]	7.6 (J)[h]	--
SS3STS10	3.8 - 4.2	18.9	180 (J)[g]	3.9 (J)[c]	5.7 (J)[h]	--

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000).
[b]Qualifier added to laboratory data; record accepted. Duplicate precision analyses were outside control limits.
[c]Qualifier added to laboratory data; record accepted. Spike recovery was outside control limits. Duplicate precision analyses were outside control limits.
[d]Qualifier added to laboratory data; record accepted. Inductively coupled plasma serial dilution recovery was not met.
[e]Qualifier added to laboratory data; record accepted. No calibration record available.
[f]Qualifier added to laboratory data; record accepted. Serial dilution percent was outside control limits.
[g]Qualifier added to laboratory data; record accepted. Spike recovery was outside control limits.
[h]Qualifier added to laboratory data; record accepted. Poor matrix spike recovery/<30 percent recovery. Duplicate precision analyses were outside control limits.

ft = Feet
bgs = Below ground surface
mg/kg = Milligrams per kilogram
* = Duplicate analysis not within control limits
-- = Not detected above minimum reporting limits
J = Estimated value

consistently greater than the PAL and as high as 24.1 mg/kg at an undisturbed location (DOE/NV, 1998). Arsenic concentrations presented in Table A.3-2 exceed the PAL, but are considered representative of ambient conditions at the site.

A.3.2.6.5 Polychlorinated Biphenyl Results for Soil Samples

No PCB analytical results for soil exceeded the MRLs or PALs established in the Leachfield Work Plan.

A.3.2.6.6 Gamma Spectrometry Results for Soil Samples

Gamma spectrometry was used to analyze select soil samples in support of waste management determinations only. The results did not indicate the presence of man-made radionuclides at concentrations exceeding established background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

A.3.2.6.7 Distribution Box and Pipe Content Sample Results

Results were compared to regulatory levels based on disposal options. If the waste has no hazardous component, the regulatory level is based on Nevada Test Site (NTS) disposal options at landfills and lagoons (BN, 1995; CFR, 2000a and b; NDEP, 1997a, b, and c). If the waste is hazardous, the release criteria is based on interpretation of the guidelines presented in the performance objective criteria (POC) (BN, 1995; Alderson, 1999). For waste destined for off-site disposal, the POC radiological levels must be met to certify that the waste has no added radioactivity.

One sludge sample (SS3DBS43) was collected from the distribution box and analyzed for total VOCs, total SVOCs, TPH (DRO and GRO), total RCRA metals, TCLP RCRA metals, and gamma spectrometry. An additional sample (SS3003) was collected from the distribution box and analyzed for TPH (DRO) and TCLP mercury. One sediment sample (SS3STS09) was collected from the septic tank effluent pipe and analyzed for PCBs in addition to those analyzed for sample SS3DBS43. Analytical results exceeding MRLs are listed in Table A.3-3.

Table A.3-3
Distribution Box Sludge and Pipe Sediment Sample Results
Detected Above Minimum Reporting Limits for Septic Waste System 3

Sample Identification Number	Sample Matrix	Parameter	Result	Units	Regulatory Limit	Regulatory Reference
Organics						
SS3003	Sludge	TPH (DRO)	740 (M)	mg/kg	100	NAC, 1996a
SS3DBS43	Sludge	TPH as Diesel	1,200 (J)[a]	mg/kg	100	NAC, 1996a
SS3DBS43RER (reanalysis)	Sludge	TPH as Motor Oil	6,500 (J)[c]	mg/kg	100	NAC, 1996a
SS3DBS43	Sludge	Methylene Chloride	8.6 (J)[d]	µg/kg	NA	CFR, 2000a
SS3DBS43RE (reanalysis)	Sludge	Toluene	9.7 (J)[e]	µg/kg	NA	CFR, 2000a
SS3DBS43	Sludge	Butyl Benzyl Phthalate	12,000 (J)[f]	µg/kg	NA	CFR, 2000a
SS3DBS43	Sludge	Bis(2-Ethylhexyl) Phthalate	2,400 (J)[g]	µg/kg	NA	CFR, 2000a
SS3STS09	Sediment	TPH as Motor Oil	1,000 (J)[c]	mg/kg	100	NAC, 1996a
SS3STS09	Sediment	TPH as Diesel	88	mg/kg	100	NAC, 1996a
SS3STS09	Sediment	Bis(2-Ethylhexyl) Phthalate	1,400 (J)	µg/kg	NA	CFR, 2000a
Inorganics						
SS3DBS43	Sludge	Arsenic	184 (J)[h]	mg/kg	NA	CFR, 2000a
SS3DBS43	Sludge	Barium	442 (J)[i]	mg/kg	NA	CFR, 2000a
SS3DBS43	Sludge	Cadmium	5.6	mg/kg	NA	CFR, 2000a
SS3DBS43	Sludge	Chromium	45.7 (J)[j]	mg/kg	NA	CFR, 2000a
SS3DBS43	Sludge	Lead	133 (J)[i]	mg/kg	NA	CFR, 2000a
SS3DBS43	Sludge	Selenium	11.4	mg/kg	NA	CFR, 2000a
SS3DBS43	Sludge	Silver	5.7*	mg/kg	NA	CFR, 2000a
SS3DBS43	Sludge	Mercury	4.5	mg/kg	NA	CFR, 2000a
SS3DBS43	Sludge	TCLP Cadmium	54.2	µg/L	1,000	CFR, 2000a
SS3STS09	Sediment	Mercury	0.74 (J)[k]	mg/kg	NA	CFR, 2000a
SS3STS09	Sediment	Arsenic	27.5	mg/kg	NA	CFR, 2000a
SS3STS09	Sediment	Barium	263 (J)[k]	mg/kg	NA	CFR, 2000a
SS3STS09	Sediment	Chromium	22.2 (J)[i]	mg/kg	NA	CFR, 2000a
SS3STS09	Sediment	Lead	129 (J)[l]	mg/kg	NA	CFR, 2000a
SS3STS09	Sediment	Selenium	5.6	mg/kg	NA	CFR, 2000a

[a]Qualifier added to laboratory data; record accepted. Peak pattern for diesel fuel does not match (see motor oil result). Surrogate recovery exceeded the upper limits.
[b]Qualifier added to laboratory data; record accepted. Exceeded holding time. No associated laboratory control sample. Surrogates diluted out.
[c]Qualifier added to laboratory data; record accepted. Exceeded holding time. No associated laboratory control sample.
[d]Qualifier added to laboratory data; record accepted. Internal standard area count exceeded the quality control limits. Surrogate recovery exceeded the upper limits.
[e]Qualifier added to laboratory data; record accepted. Internal standard area count exceeded the quality control limits.
[f]Qualifier added to laboratory data; record accepted. Internal standard area count exceeded the quality control limits. Matrix effects may exist. Value exceeded linear range of instrument.
[g]Qualifier added to laboratory data; record accepted. Internal standard area count exceeded the quality control limits. Matrix effects may exist.
[h]Qualifier added to laboratory data; record accepted. Duplicate precision analyses were outside control limits.
[i]Qualifier added to laboratory data; record accepted. Spike recovery was outside control limits. Duplicate precision analyses were outside control limits.
[j]Qualifier added to laboratory data; record accepted. Inductively coupled plasma serial dilution recovery was not met.
[k]Qualifier added to laboratory data; record accepted. Spike recovery was outside control limits.
[l]Qualifier added to laboratory data; record accepted. Poor matrix spike recovery/<30 percent recovery. Duplicate precision analyses were outside control limits.

µg/kg = Micrograms per kilogram
mg/kg = Milligrams per kilogram
µg/L = Micrograms per liter
NA = Not applicable
* = Duplicate analysis not within control limits.
J = Estimated value
M = A pattern resembling motor oil was detected.

Several COPCs were detected in the sludge sample collected from the distribution box. Regulatory thresholds for COPCs were not exceeded for TCLP RCRA metals. Total VOCs and total SVOCs results were reviewed for RCRA characterization purposes and did not exceed regulatory thresholds.

Total petroleum hydrocarbons was detected in the sludge sample (SS3DBS43) at 6,500 mg/kg as motor oil and 1,200 mg/kg as diesel. This level exceeds the NDEP action level of 100 mg/kg (NAC, 1996a) for TPH. It meets the disposal criteria for the NTS disposal site for hydrocarbon-burdened solid waste (NDEP, 1997b). Analytical results for the sediment sample (SS3STS09) indicated the presence of 1,000 mg/kg TPH as motor oil. This level exceeds the NDEP action level of 100 mg/kg (NAC, 1996a) for TPH. The remaining sediment (approximately 1 gallon) was removed during investigation activities and managed as hydrocarbon waste with the investigation-derived waste (IDW).

A.3.2.7 Contaminants of Concern

Based on the aforementioned analytical results, only the contents of the septic tank effluent pipe and distribution box contain contaminants. Arsenic and TPH were identified in the pipe and distribution box at concentrations above soil PALs; however, only TPH exceeded an action level for disposal purposes. No COCs were identified in the soil surrounding the septic tank or distribution box or under the leachfield.

A.3.3 Nature and Extent of Contamination

The pipe contents (associated with sample SS3STS09) were removed for sampling and waste management. Approximately 10 gallons of sludge remain in the distribution box (Note: This sludge was removed during closure activities as described in Appendix C). The pipe contents and distribution box sludge contain TPH exceeding the regulatory disposal action level of 100 mg/kg.

A.3.4 Revised Conceptual Model

No variations to the conceptual model were identified.

A.4.0 Septic Waste System 4

Septic Waste System 4 consists of Septic Tank 33-9, a leachfield, and associated piping. From 1980 to 1987, SWS 4 received effluent intermittently from trailers used as sleeping quarters and from Building 0376 (Pilots Lounge) (DOE/NV, 2001). The septic tank is approximately 120 ft west of Building 0376 and has a capacity of approximately 1,000 gallons. The leachfield is located 5 ft west of the septic tank. The leachfield consists of one perforated pipe draining into a 16- by 20-ft pea gravel bed. (IT, 2001a)

A.4.1 Corrective Action Investigation

Thirty-three investigation samples were collected during the CAI activities conducted at SWS 4 and are listed in Table A.4-1. The planned sample locations at SWS 4 are shown in Figure 4-2 of the CAIP. The actual characterization sample locations are shown in Figure A.4-1.

A.4.1.1 CAIP Implementation

The following CAI activities were conducted at SWS 4 to meet CAIP requirements:

- Collected integrity samples from the influent and effluent ends of the septic tank.
- Inspected the collection system piping.
- Collected content samples from the influent and effluent ends of the septic tank.
- Conducted on-site coliform bacteria analysis on the septic tank contents.
- Conducted exploratory excavations to confirm leachfield configuration.
- Collected soil samples from the leachfield and a geotechnical and hydrological sample from the native soil below the leachfield.
- Field screened soil samples for VOCs, TPH, and alpha and beta/gamma radiation.
- Submitted select samples for off-site laboratory analysis.

Table A.4-1
Samples Collected from Septic Waste System 4
(Page 1 of 2)

Sample Identification Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
SS4STX16	SS4ST	NA	Sludge	SC	1,2,3,4,5
SS4STS17	SS4ST01	6.5 - 7.5	Soil	SC	1,2,3
SS4STL18	NA	NA	Water	Trip Blank	VOC
SS4STL68	NA	NA	Water	Trip Blank	VOC
SS4STX69	SS4ST	NA	Sludge	SC	1,2,3,4,5
SS4STS70	SS4ST02	5.7 - 6.7	Soil	SC	1,3
SS4LFL71	NA	NA	Water	Trip Blank	VOC
SS4LFS72	SS4LF01	3.3 - 4.3	Soil	SC, MS/MSD	1,2,3,5
SS4LFS73	SS4LF01	5.8 - 6.8	Soil	SC	1,3
SS4LFS74	SS4LF02	3.3 - 4.3	Soil	SC	1,2,3
SS4LFS75	SS4LF02	4.5 - 5.5	Soil	Field Duplicate of SS4LFS74	1,2,3,5
SS4LFS76	SS4LF03	6 - 7	Soil	SC	1,2,3
SS4LFS77	SS4LF03	8.4 - 9.4	Soil	SC	1,3
SS4LFL80	SWS 4	NA	Water	Field Blank	1,2,3,5,6,7
SS4LFS78	SS4LF04	6 - 7	Soil	SC	1,3
SS4LFS79	SS4LF04	8.5 - 9.5	Soil	SC	1,3
SS4LFS81	SS4LF05	6 - 7	Soil	SC	1,2,3
SS4LFS82	SS4LF05	8.5 - 9.5	Soil	SC	1,3
SS4LFS83	SS4LF06	6 - 7	Soil	SC	1,2,3
SS4LFS84	SS4LF06	8.5 - 9.5	Soil	SC	1,3
SS4LFS85	SS4LF07	6 - 7	Soil	SC	1,2,3
SS4LFS86	SS4LF07	8.5 - 9.5	Soil	SC	1,3
SS4LFS87	Background	6 - 7	Soil	SC	3
SS4LFS88	Background	8 - 8.5	Soil	SC	3
SS4LFL89	NA	NA	Water	Trip Blank	VOC
SS4LFS90	SS4ST03	9 - 9.5	Soil	SC	1,2,3
SS4LFS91	SS4ST04	6.5 - 7.5	Soil	SC	1,2,3
SS4LFS92	SS4ST04	9 - 9.5	Soil	SC	1
SS4STS92	SS4ST04	9 - 9.5	Soil	SC	3
SS4STS93	SS4ST05	6.5 - 7.5	Soil	SC	1,2,3
SS4STS94	SS4ST05	9 - 9.5	Soil	SC	1,3

Table A.4-1
Samples Collected from Septic Waste System 4
(Page 2 of 2)

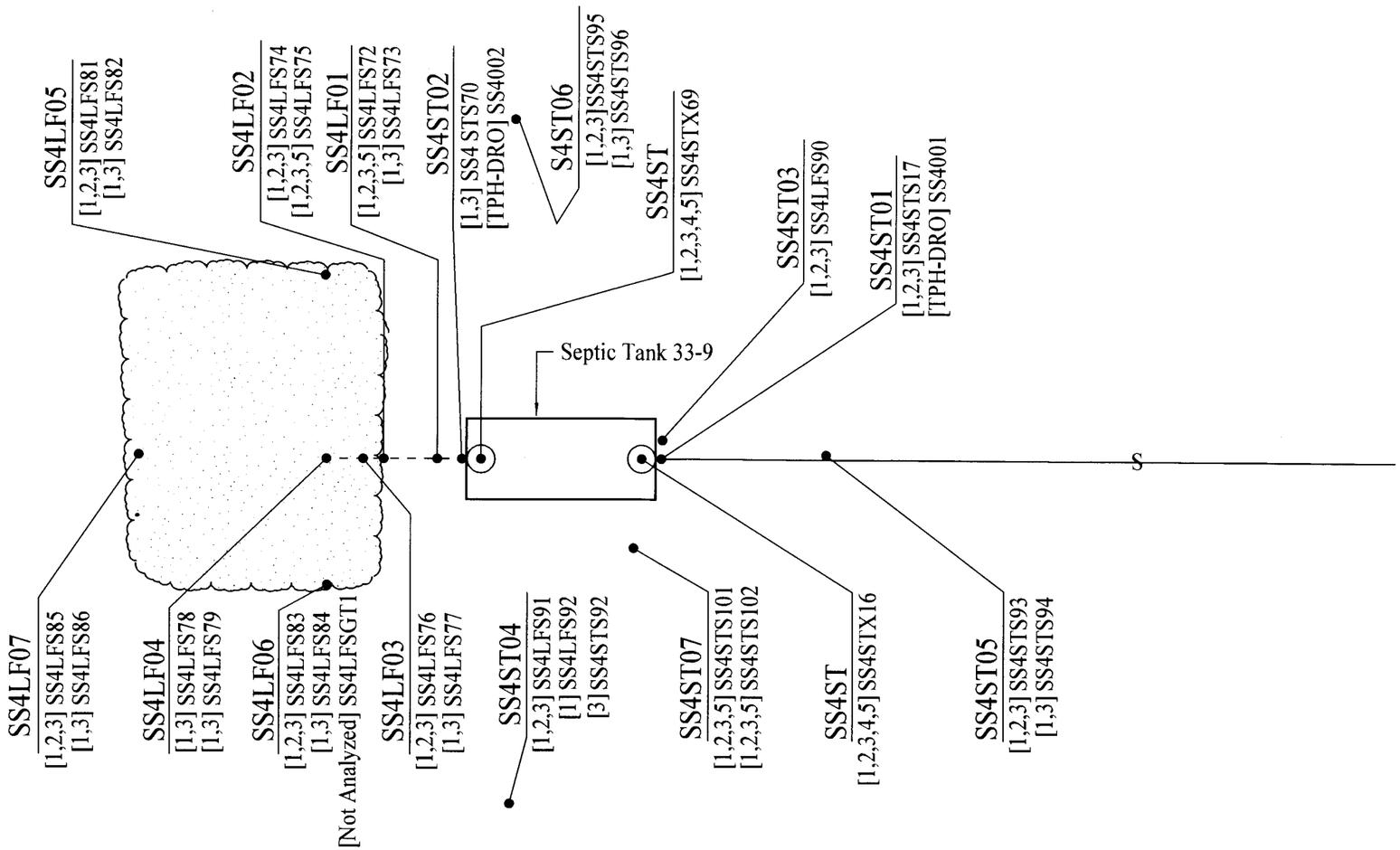
Sample Identification Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
SS4STS95	SS4ST06	6.5 - 7.5	Soil	SC	1,2,3
SS4STS96	SS4ST06	8.5 - 9	Soil	SC	1,3
SS4STL98	SWS 4	NA	Water	Equipment Rinsate Blank	2,3
SS4STL99	SWS 4	NA	Water	Source Blank	2,3
SS4STL100	SWS 4	NA	Water	Source Blank	2,3
SS4STS101	SS4ST07	6.5 - 7.5	Soil	SC	1,2,3,5
SS4STS102	SS4ST07	7.7 - 8.7	Soil	SC	1,2,3,5
SS4001	SS4ST01	6.5 - 7.5	Soil	SC	TPH (DRO)
SS4002	SS4ST02	5.7 - 6.7	Soil	SC	TPH (DRO)
SS4LFSGT1	SS4LF06	6 - 7	Soil	Geotechnical	Not Analyzed

ft = Feet
bgs = Below ground surface
SC = Site characterization
MS/MSD = Matrix spike/matrix spike duplicate
NA = Not applicable

Analytical Set 1: VOC, SVOC, TPH (GRO and DRO), RCRA Metals
Analytical Set 2: Gamma Spectrometry
Analytical Set 3: Isotopic Uranium
Analytical Set 4: TCLP VOC, TCLP SVOC, TCLP RCRA Metals
Analytical Set 5: PCB
Analytical Set 6: Gross Alpha and Beta
Analytical Set 7: Tritium

A.4.1.2 Deviations

The configuration for SWS 4 was considerably different than proposed in the CAIP. The sampling locations were reevaluated, verbally approved, implemented, and documented in Record of Technical Change Number 1 to the CAIP. The change had no impact on the DQOs as developed in the CAIP; therefore, the CAIP requirements were met.



Explanation

- ○ Septic Tank Manhole
- • Sample Location
- - - - - Leachfield Distribution Pipe
- —S— Sewer Pipe
- Pea Gravel

Analyses Conducted:

[1] = Total VOCs, Total SVOCs, TPH (DRO & GRO), Total RCRA Metals
[2] = Gamma Spectrometry
[3] = Isotopic Uranium
[4] = TCLP VOC, TCLP SVOC, TCLP RCRA Metals
[5] = PCB
[6] = Gross Alpha / Beta

Figure Not to Scale

Source: Modified from DOE/NV, 2001 and IT, 2001a

Figure A.4-1
Septic Waste System 4
Sample Locations

A.4.2 Investigation Results

The following subsections provide SWS-specific details of the inspection and sampling of leachfield features, field-screening results, and sample selection and analysis.

A.4.2.1 Septic Tank Integrity Sampling

Five integrity soil samples were collected from three sample locations adjacent to the influent and effluent ends of the septic tank. The samples were collected from the soil horizons underlying the base of the septic tank. Two samples were collected at 6.5 ft bgs and one was collected at 9 ft bgs from the influent end of the septic tank. The upper samples were collected under the influent pipe. The deeper sample was collected approximately 1 ft north of the upper sample. Two samples were collected 5.7 ft bgs from the effluent end of the septic tank.

A.4.2.2 Inspection and Sampling of Collection System Components

The SWS 4 septic tank and collection system pipe were inspected. The septic tank was found to have two manholes which revealed that the septic tank contained a moist gravelly sand like media in the influent end and a moist, clay like media in the effluent end. A sample was collected within each end of the septic tank for laboratory and coliform analyses. This SWS did not have a distribution box.

In order to inspect the collection system pipe for contents, a video survey was conducted in the collection system pipe beginning near the influent end of the septic tank. The video mole met refusal at 45.8 ft. Refusal appeared to be due to a plug (e.g., grout). The video survey showed no contents or breaches in the collection system pipe.

A.4.2.3 Leachfield Sampling

Backhoe excavations were conducted to access sampling horizons and collect samples at the biased locations presented in the CAIP. Excavations provided a visual verification of leachfield configuration (Figure A.4-1). Soil samples were collected from beneath the distribution pipe as specified in the CAIP. Twenty-five soil samples were collected and submitted for laboratory analysis. These samples were collected at the leachrock/native soil interface and at 2.5 ft below the interface. One sample collected at the distribution pipe/native soil interface was submitted for

laboratory analyses. The leachrock/native soil interface was 6 ft bgs. The distribution pipe/native interface was 3.3 ft bgs. In addition, one QC soil duplicate was collected and analyzed. One MS/MSD was performed on one sample.

A geotechnical/hydrological soil sample was collected from native soils beneath the leachfield from 6 to 7 ft bgs; however, it was not analyzed because contamination above PALs was not identified in soil characterization samples.

A.4.2.4 Field-Screening Results

Soil samples were field screened for VOCs, TPH, and alpha and beta/gamma radiation. The FSRs were compared to FSLs to guide sampling decisions.

The FSR for sample SS4STS17 was 1,652 dpm/100 cm^2 which exceeded the FSL for gross beta (FSL = 1,384 dpm/100 cm^2). The TPH field-screening result for this sample was 93 ppm which was slightly below the 100 ppm FSL. Because this semiquantitative result approached the FSL, additional samples were collected around and below this interval. The stepout location south of the septic tank identified a buried debris pit unrelated to SWS 4. Samples from this location (SS4ST04), below stained soil and debris, were potentially contaminated by a source unrelated to SWS 4; therefore, another location (SS4ST07) was sampled between the debris and septic tank.

A.4.2.5 Sample Analyses

Select investigation samples were analyzed for the CAIP-specified COPCs which included total VOCs, total SVOCs, total RCRA metals, TPH (DRO and GRO), TCLP VOCs, TCLP SVOCs, TCLP RCRA metals, PCBs (not required by CAIP), isotopic uranium, and gamma-emitting radionuclides. Septic tank content samples were analyzed for fecal coliform bacteria.

The analytical parameters and laboratory analytical methods used to analyze the investigation samples are listed in Table A.2-1. Table A.4-1 lists the sample-specific analytical parameters.

A.4.2.6 Analytes Detected Above Minimum Reporting Limits

The analytical results detected at concentrations exceeding the correlated MRLs (DOE/NV, 1998; DOE/NV, 2001) at SWS 4 are summarized in the following sections. A portion of the SWS 4 analytical results were rejected; however, these rejected data did not impact closure decisions as discussed in the Completeness Section B.1.1.3 of Appendix B.

A.4.2.6.1 Total Volatile Organic Compound Analytical Results for Soil Samples

The total VOC analytical results detected in soil samples above MRLs established in the Leachfield Work Plan along with associated PALs are presented in Table A.4-2. These results did not exceed the PALs established in the CAIP.

Table A.4-2
Soil Sample Results for Total VOCs Detected Above Minimum Reporting Limits for Septic Waste System 4

Sample Identification Number	Depth (ft bgs)	Contaminants of Potential Concern (µg/kg)	
		Acetone	Methylene chloride
Preliminary Action Levels[a]		**6,200,000**	**21,000**
SS4LFS73	6.2 - 7.2	--	35
SS4STS17	6.4 - 7.4	410 (J)	--

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000)

ft = Feet
bgs = Below ground surface
µg/kg = Micrograms per kilogram
-- = Not detected above minimum reporting limits
J = Estimate value. Qualifier added to laboratory data; record accepted. Relative response factor <0.05.

A.4.2.6.2 Total Semivolatile Organic Compounds Analytical Results for Soil Samples

No total SVOCs analytical results for soil exceeded the MRLs or PALs established in the Leachfield Work Plan and CAIP.

A.4.2.6.3 Total Petroleum Hydrocarbon Analytical Results for Soil Samples

No TPH (DRO and GRO) analytical results for soil exceeded the MRLs or PAL established in the Leachfield Work Plan. Analytical results were not reported for a portion of the samples requested for TPH as motor oil. This discrepancy is discussed in the Completeness Section (B.1.1.3) of Appendix B.

A.4.2.6.4 Total RCRA Metals Results in Soil Samples

The total RCRA metals detected in soil samples at concentrations exceeding MRLs are listed in Table A.4-3 and discussed below. Only arsenic exceeded the PALs for RCRA metals established in the Leachfield Work Plan and CAIP.

Arsenic was detected above the PAL of 2.7 mg/kg in most of the soil samples analyzed. Arsenic concentrations ranged from 2.1 to 9.2 mg/kg. The PAL for arsenic is lower than the 7 to 8 mg/kg mean concentration of arsenic in silt from the Nellis Air Force Range (NBMG, 1998; Moore, 1999) and lower than the concentrations ranging from 6 to 43 mg/kg in soils from locations near the TTR (SNL, 1999). Data from previous sampling efforts at Area 3 also demonstrate arsenic concentrations consistently greater than the PAL and as high as 24.1 mg/kg at an undisturbed location (DOE/NV, 1998). Most arsenic concentrations presented in Table A.4-3 exceed the PAL, but are considered representative of ambient conditions at the site.

A.4.2.6.5 Polychlorinated Biphenyl Results for Soil Samples

No PCB analytical results for soil exceeded the MRLs or PALs established in the Leachfield Work Plan.

A.4.2.6.6 Gamma Spectrometry Results in Soil Samples

Gamma spectrometry was used to analyze select soil samples in support of waste management determinations only. The results did not indicate the presence of man-made radionuclides at concentrations exceeding established background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

Table A.4-3
Soil Sample Results for Total RCRA Metals Detected Above Minimum Reporting Limits for Septic Waste System 4

Sample Identification Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)				
		Arsenic	Barium	Cadmium	Chromium	Lead
Preliminary Action Levels[a]		**2.7**	**100,000**	**810**	**450**	**750**
SS4LFS72	4.3 - 5.3	3.3	103	--	7.2	8.9
SS4LFS73	6.2 - 7.2	--	65.1	--	5.0	6.6
SS4LFS74	4.5 - 5.5	2.5	72.4	--	5.7	9.7
SS4LFS75	4.5 - 5.5	2.5	75.5	--	5.3	6.8
SS4LFS76	6 - 7	5.1	76.9	--	6.5	8.6
SS4LFS77	8.4 - 9.4	3.0	75.8	--	5.8	8.3
SS4LFS78	7 - 8	4.3	105	--	8.8	18.6
SS4LFS79	8.4 - 9.4	3.2	94.9	--	6.9	8.3
SS4LFS81	6 - 7	2.9	83.1	--	3.8	6.8
SS4LFS82	9 - 10	3.2	90.0	--	5.3	8.1
SS4LFS83	6 - 7	3.8	96.5	1.0	6.5	9.6
SS4LFS84	8.4 - 9.4	3.4	92.2	--	5.8	9.2
SS4LFS85	6 - 7	3.8	114	--	7.4	12.1
SS4LFS86	10.8 - 12.8	3.6	123	--	6.6	9.5
SS4LFS90	9 - 9.4	2.1	100	--	5.0	8.6
SS4LFS91	6.4 - 7.4	2.8	75.2	--	5.5	7.9
SS4STS17	6.4 - 7.4	5.9	107	--	5.4	7.3*
SS4STS70	NA	3.2	81.8	--	4.3	8.5
SS4STS92	7.7 - 8.7	3.6	81.4	--	5.2	8.7
SS4STS93	6.4 - 7.4	2.1	69.9	--	5.5	7.0
SS4STS94	8.4 - 9	9.2	88.7	--	4.7	9.6
SS4STS95	6.4 - 7.4	3.5	73.2	--	7.0	9.1
SS4STS96	8.4 - 9.4	2.7	97.2	--	7.3	9.0
SS4STS101	6.4 - 7.4	2.4	71.5	--	6.1	7.4
SS4STS102	7.7 - 8.7	5.0	156	--	4.3	10.2

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000)

ft = Feet
bgs = Below ground surface
mg/kg = Milligrams per kilogram
-- = Not detected above minimum reporting limits
* = Duplicate analysis not within control limits
NA = Not applicable

A.4.2.6.7 Isotopic Uranium Results for Soil Samples

The isotopic uranium results detected at concentrations exceeding MRLs are listed in Table A.4-4. None of these results are statistically distinguishable from background; therefore, they do not exceed PALs established in the CAIP.

A.4.2.6.8 Septic Tank Results for Sludge Samples

Results were compared to regulatory levels based on disposal options. If the waste has no hazardous component, the regulatory level is based on NTS disposal options at landfills and lagoons (BN, 1995; CFR, 2000a and b; NDEP, 1997a, b, and c). If the waste is hazardous, the release criteria is based on interpretation of the guidelines presented in the POC (BN, 1995; Alderson, 1999). For waste destined for off-site disposal, the POC radiological levels must be met to certify that the waste has no added radioactivity.

Two sludge samples (SS4STX16 and SS4STX69) were collected from the septic tank and analyzed for total VOCs, total SVOCs, TPH (DRO and GRO), total RCRA metals, TCLP VOCs, TCLP SVOCs, TCLP RCRA metals, PCBs, gamma spectrometry, isotopic uranium, and fecal coliform bacteria.

Several COPCs were detected in the sludge samples (Table A.4-5). Regulatory thresholds were not exceeded for the following analysis: TCLP VOCs, TCLP SVOCs, TCLP RCRA Metals, PCBs, gamma spectrometry, or isotopic uranium. Fecal coliform results were negative.

Total petroleum hydrocarbons as diesel were not detected in either sample; however, the method detection limit for sample SS4STX69 was elevated to 400 mg/kg. A review of the chromatogram for TPH as motor oil in sample SS4STX16 indicated that it is not present. A review of the chromatogram for TPH as motor oil in sample SS4STX69 was indeterminate. Therefore, the septic tank contents may exceed the NDEP action level of 100 mg/kg (NAC, 1996a) for TPH. The septic tank contents meet the disposal criteria for the NTS disposal site for hydrocarbon burdened solid waste (NDEP, 1997b).

Table A.4-4
Isotopic Uranium Sample Results Detected Above Minimum Reporting Limits for Septic Waste System 4

Sample Identification Number	Depth (ft bgs)	Contaminants of Potential Concern (pCi/g)		
		Uranium-234[a]	Uranium-235[a]	Uranium-238[b]
Preliminary Action Levels		**1.56**	**0.07**	**3.2**
SS4LFS72	4.3 - 5.3	1.24 ± 0.20	0.077 ± 0.027	1.2 ± 0.19
SS4LFS73	6.2 - 7.2	1.26 ± 0.20	0.115 ± 0.033	1.18 ± 0.19
SS4LFS74	4.5 - 5.5	1.47 ± 0.23	0.097 ± 0.031	1.43 ± 0.23
SS4LFS75	4.5 - 5.5	1.14 ± 0.18	0.083 ± 0.028	1.2 ± 0.19
SS4LFS76	6 - 7	1.25 ± 0.19	0.067 ± 0.025	1.1 ± 0.17
SS4LFS77	8.4 - 9.4	1.23 ± 0.19	0.091 ± 0.030	1.3 ± 0.21
SS4LFS78	7 - 8	1.32 ± 0.21	0.082 ± 0.028	1.13 ± 0.18
SS4LFS79	8.4 - 9.4	1.42 ± 0.22	0.091 ± 0.029	1.32 ± 0.21
SS4LFS81	6 - 7	1.17 ± 0.18	0.073 ± 0.025	1.16 ± 0.18
SS4LFS82	9 - 10	1.28 ± 0.20	0.113 ± 0.033	1.25 ± 0.20
SS4LFS83	6 - 7	1.31 ± 0.20	0.067 ± 0.024	1.21 ± 0.19
SS4LFS84	8.4 - 9.4	1.43 ± 0.22	0.098 ± 0.031	1.33 ± 0.21
SS4LFS85	6 - 7	1.2 ± 0.19	0.07 ± 0.025	1.12 ± 0.18
SS4LFS86	10.8 - 12.8	1.3 ± 0.20	0.072 ± 0.025	1.26 ± 0.20
SS4LFS87	6 - 7	1.14 ± 0.20	--	1.28 ± 0.22
SS4LFS88	8 - 8.4	1.18 ± 0.19	0.053 ± 0.022 (LT)	1.23 ± 0.19
SS4LFS90	9 - 9.4	1.27 ± 0.22	0.081 ± 0.033	1.34 ± 0.23
SS4LFS91	6.4 - 7.4	1.16 ± 0.21	0.055 ± 0.026 (LT)	1.26 ± 0.22
SS4LFS92	7.7 - 8.7	1.17 ± 0.20	0.083 ± 0.031	1.14 ± 0.19
SS4STS17	6.4 - 7.4	1.32 ± 0.25	--	1.32 ± 0.25
SS4STS70	NA	1.28 ± 0.24	0.092 ± 0.043	1.22 ± 0.23
SS4STS93	6.4 - 7.4	1.25 ± 0.21	0.072 ± 0.028	1.17 ± 0.20
SS4STS94	8.4 - 9	1.4 ± 0.24	0.066 ± 0.029	1.32 ± 0.23
SS4STS95	6.4 - 7.4	1.37 ± 0.24	0.057 ± 0.028 (LT)	1.17 ± 0.21
SS4STS96	8.4 - 9.4	1.31 ± 0.23	--	1.2 ± 0.21
SS4STS101	6.4 - 7.4	1.16 ± 0.20	0.064 ± 0.029	1.24 ± 0.22
SS4STS102	7.7 - 8.7	1.36 ± 0.23	0.074 ± 0.030	1.14 ± 0.20

[a]Background concentration listed in *Environmental Monitoring Report for the Proposed Ward Valley, California, Low-Level Radioactive Waste (LLRW) Facility* (US Ecology and Atlan-Tech, 1992)
[b]Background concentration listed or derived in *Off-Site Radiation Exposure Review Project, Phase II Soil Program* (McArthur and Miller, 1989)

ft - Feet
bgs = Below ground surface
pCi/g = Picocuries per gram
LT = Result is less than requested MDC, greater than sample-specific MDC
-- = Not detected above minimum reporting limit
NA = Not applicable

Table A.4-5
Septic Tank Sludge Sample Results Detected Above Minimum Reporting Limits for Septic Waste System 4

Sample Identification Number	Sample Matrix	Parameter	Result	Unit	Regulatory Limit	Regulatory Reference
Organics						
SS4STX16	Sludge	Acetone	210 (J)	µg/kg	NA	CFR, 2000a
SS4STX16	Sludge	Dimethyl Phthalate	4,700	µg/kg	NA	CFR, 2000a
Inorganics						
SS4STX16	Sludge	Arsenic	3.6	mg/kg	NA	CFR, 2000a
SS4STX16	Sludge	Barium	67.6	mg/kg	NA	CFR, 2000a
SS4STX16	Sludge	Chromium	3.2	mg/kg	NA	CFR, 2000a
SS4STX16	Sludge	Lead	5.6*	mg/kg	NA	CFR, 2000a
SS4STX69	Sludge	Arsenic	10.9	mg/kg	NA	CFR, 2000a
SS4STX69	Sludge	Barium	210	mg/kg	NA	CFR, 2000a
SS4STX69	Sludge	Cadmium	0.96	mg/kg	NA	CFR, 2000a
SS4STX69	Sludge	Chromium	13.0	mg/kg	NA	CFR, 2000a
SS4STX69	Sludge	Lead	32.4	mg/kg	NA	CFR, 2000a
SS4STX69	Sludge	TCLP Barium	629	µg/L	100,000	CFR, 2000a
Radionuclides						
SS4STX16	Sludge	Uranium-234	1.43 ± 0.27	pCi/g	100	NDEP, 1997b
SS4STX16	Sludge	Uranium-235	0.073 ± 0.040	pCi/g	100	NDEP, 1997b
SS4STX16	Sludge	Uranium-238	1.48 ± 0.28	pCi/g	100	NDEP, 1997b
SS4STX69	Sludge	Uranium-234	1.57 ± 0.26	pCi/g	100	NDEP, 1997b
SS4STX69	Sludge	Uranium-235	0.088 ± 0.039	pCi/g	100	NDEP, 1997b
SS4STX69	Sludge	Uranium-238	1.6 ± 0.26	pCi/g	100	NDEP, 1997b

mg/kg = Milligrams per kilogram
pCi/g = Picocuries per gram
µg/kg = Micrograms per kilogram
µg/L = Micrograms per liter
J = Estimated value. Qualifier added to laboratory data; record accepted. Relative response factor <0.05.
* = Duplicate analysis not within control limits.
NA = Not applicable

A.4.2.7 Contaminants of Concern

Based on the aforementioned analytical results, no COCs are present in the soil surrounding the septic tank or under the leachfield. The effluent end septic tank sludge may contain TPH between the PAL (100 mg/kg) and 400 mg/kg. Due to this uncertainty, TPH will be considered a COC for this media.

A.4.3 Nature and Extent of Contamination

The septic tank effluent end sludge may contain TPH exceeding the regulatory disposal action level of 100 mg/kg.

A.4.4 Revised Conceptual Model

Significant variations to the leachfield configuration were identified. The originally assumed configuration is depicted in Figure 2-3 of the CAIP. The actual configuration is depicted in Figure 2-3 of ROTC Number 1 to the CAIP. This change in configuration did not remove this site from the general conceptual model for leachfield systems presented in the Leachfield Work Plan (DOE/NV, 1998). Samples were ultimately collected from the perforated distribution pipe/native soil and leachrock/native soil interfaces. The leachrock/native soil interfaces were sampled on all four sides of the leachfield.

A.5.0 Septic Waste System 7

Septic Waste System 7 consists of Septic Tank 33-13, a distribution box, a leachfield, and associated piping. The Radio Shop (Building 0365) is the former source for SWS 7 (DOE/NV, 2001) and is located 70 ft northwest of the septic tank. The septic tank is concrete and estimated to have a capacity of 1,500 gallons (IT, 2001a). The septic tank was buried approximately 2.8 ft bgs. The base of the septic tank is approximately 6.6 ft bgs. The surface of the septic tank measured 8.1 ft by 4.3 ft.

The distribution box and leachfield are located approximately 6 ft southeast of the septic tank. The leachfield is approximately 25 by 55 ft with three parallel distribution pipes that drain to the southeast. The distribution pipes consist of separated 2-ft red clay sections. Each of the three distribution pipes was truncated by a perforated, tan colored, clay brick (IT, 2001a).

A.5.1 Corrective Action Investigation

Twenty-four investigation samples were collected during the investigation activities at SWS 7 and are listed in Table A.5-1. The planned sample locations at SWS 7 are shown in Figure 4-3 of the CAIP (DOE/NV, 2001). The actual characterization sample locations are shown in Figure A.5-1.

A.5.1.1 CAIP Implementation

The following CAI activities were conducted at SWS 7 to meet CAIP requirements:

- Collected integrity samples from the influent and effluent ends of the septic tank and from the effluent end of the distribution box.
- Collected content samples from the effluent end of the septic tank.
- Conducted on-site coliform bacteria analysis on septic tank contents.
- Conducted exploratory excavations to confirm leachfield configuration.
- Collected soil samples from the leachfield and a geotechnical and hydrological sample from the native soil below the leachfield.
- Field screened soil samples for VOCs, TPH, and alpha and beta/gamma radiation.
- Submitted select samples for off-site laboratory analysis.

Table A.5-1
Samples Collected from Septic Waste System 7
(Page 1 of 2)

Sample Identification Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
SS7STL11	NA	NA	Water	Trip Blank	VOC
SS7STL12	SS7ST	NA	Liquid	Field Duplicate for SS7STL13	1,2,5,6,7
SS7STL13	SS7ST	NA	Liquid	SC, MS/MSD	1,2,5,6,7
SS7STX14	SS7ST	NA	Sludge	Field Duplicate for SS7STX15	Total VOCs, TCLP VOCs, 2
SS7STL14	SS7ST	NA	Sludge	Field Duplicate for SS7STL15	1 and 4*,5
SS7STX15	SS7ST	NA	Sludge	SC, MS/MSD	TCLP VOC, Total VOC, 2
SS7STL15	SS7ST	NA	Sludge	SC, MS/MSD	1 and 4*,5
SS7STL19	NA	NA	Water	Trip Blank	VOC
SS7STS21	SS7ST01	6.6 - 7	Soil	SC	1,2
SS7STL22	SWS 7	NA	Water	Field Blank	1,2,5,6,7
SS7DBS23	SS7DB01	4.5 - 5.5	Soil	SC	1,2
SS7STS24	SS7ST02	6.8 - 7.8	Soil	SC	1
SS7STL25	NA	NA	Water	Trip Blank	VOC
SS7STL26	SWS 7	NA	Water	Equipment Rinsate Blank	1,2,3,5,6,7
SS7LFL27	NA	NA	Water	Trip Blank	VOC
SS7LFS28	SS7LF01	5.6 - 6.6	Soil	SC, MS/MSD	1,2,5
SS7LFS29a	SS7LF01	8.1 - 9.1	Soil	SC	NA
SS7LFS29	SS7LF02	5 - 6	Soil	SC	1,2
SS7LFS30	SS7LF02	5 - 6	Soil	Field Duplicate for SS7LFS29	1,2,5
SS7LFS31	SS7LF02	7.5 - 8.5	Soil	SC	1
SS7LFS32	SS7LF03	6 - 7	Soil	SC	1
SS7LFL33	NA	NA	Water	Trip Blank	VOC
SS7LFS34	SS7LF03	8.5 - 9.5	Soil	SC	1,5
SS7LFS35	SS7LF03	12 - 13	Soil	SC	1
SS7LFS36	SS7LF05	5.5 - 6.5	Soil	SC	1
SS7LFS36a	SS7LF05	8 - 9	Soil	SC	NA
SS7LFS37	SS7LF04	6.5 - 7.5	Soil	SC	1
SS7LFS38	SS7LF04	9 - 10	Soil	SC	1

Table A.5-1
Samples Collected from Septic Waste System 7
(Page 2 of 2)

Sample Identification Number	Sample Location	Depth (ft bgs)	Sample Matrix	Purpose	Analyses
SS7LFS39	SS7LF05	8 - 9	Soil	SC	1
SS7LFS40	SS7LF06	5.5 - 6.5	Soil	SC	1,2
SS7LFS41	SS7LF06	8 - 9	Soil	SC	1
SS7LFGT1	SS7LFGT01	6 - 7	Soil	Geotechnical	Not Analyzed
SS7PIPE1	SWS 7	4.5	Solid (transite pipe)	SC	8

ft = Feet
bgs = Below ground surface
SC = Site characterization
MS/MSD = Matrix spike/matrix spike duplicate
NA = Not applicable
*Sets 1 and 4 except Total VOCs and TCLP VOCs

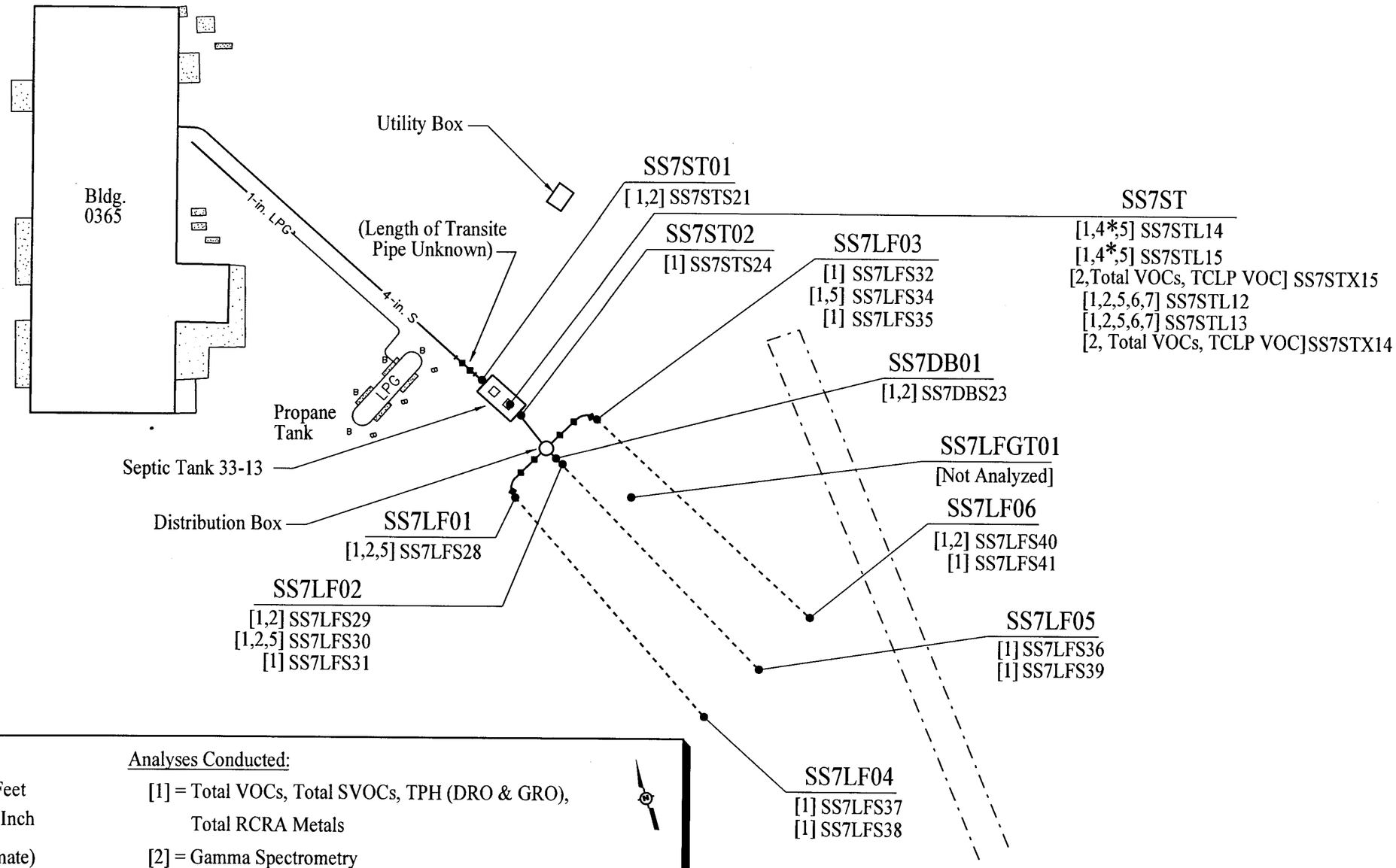
Analytical Set 1: VOC, SVOC, TPH (GRO and DRO), RCRA Metals
Analytical Set 2: Gamma Spectrometry
Analytical Set 3: Isotopic Uranium
Analytical Set 4: TCLP VOC, TCLP SVOC, TCLP RCRA Metals
Analytical Set 5: PCB
Analytical Set 6: Gross Alpha and Beta
Analytical Set 7: Tritium
Analytical Set 8: Asbestos fiber count

A.5.1.2 Deviations

The following deviations to the CAIP requirements were the result of unforeseen circumstances (i.e., presence of asbestos-containing material) and changes to the conceptual model:

- Video inspection of the collection system pipe was not conducted because the septic tank influent transite pipe contained asbestos and the abrasive nature of the video survey may have caused the asbestos to become friable. The septic tank influent pipe was grouted near the septic tank. A break in this pipe above this grout did not reveal sediment in the pipe.

- A third sample (SS7LFS35) was collected at the east proximal end of the leachfield due to an elevated TPH field-screening result for the second sample (SS7LFS34) previously collected at the same location. Refusal was met at 13 ft due to large boulders; therefore, the sample (SS7LFS35) was collected from 12 to 13 ft bgs instead of 13.5 to 14.5 ft bgs as required in the CAIP.



Explanation

	Concrete Pad	ft = Feet
— - —	Fence	in. = Inch
•	Sample Location (Approximate)	
—S—	Sewer Pipe	
- - - -	Leachfield Distribution Pipe	
LPG	Liquid Propane Gas	
B	Barrier Pole	
—◆—◆—	Asbestos Containing Material (i.e., Transite Pipe)	

Analyses Conducted:

[1] = Total VOCs, Total SVOCs, TPH (DRO & GRO), Total RCRA Metals
[2] = Gamma Spectrometry
[3] = Isotopic Uranium
[4] = TCLP VOC, TCLP SVOC, TCLP RCRA Metals
[5] = PCB
[6] = Gross Alpha / Beta
[7] = Tritium
* = Sets 1 and 4 except Total VOCs and TCLP VOCs

Figure Not to Scale

Source: Modified from DOE/NV, 2001 and IT, 2001a

Figure A.5-1
Septic Waste System 7
Sample Locations

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Despite these minor deviations, the pertinent CAIP requirements were met.

A.5.2 Investigation Results

The following subsections provide SWS-specific details of the inspection and sampling of leachfield features, field-screening results, and sample collection and analysis.

A.5.2.1 Septic Tank and Distribution Box Integrity Sampling

Three integrity soil samples were collected and analyzed from three sample locations adjacent to the influent and effluent ends of the septic tank and the effluent end of the distribution box. The samples were collected from the soil horizons underlying the base of the septic tank and the distribution box. One sample was collected from 6.6 ft bgs at the influent end of the septic tank. The other sample was collected from 6.8 ft bgs at the effluent end of the septic tank. A sample was collected from 4.5 ft bgs at the effluent end of the distribution box.

A.5.2.2 Inspection and Sampling of Collection System Components

The dual-chamber septic tank is located at approximately 2.8 ft bgs and has two manholes measuring 5.6 ft apart, manhole center to manhole center. The influent chamber of the septic tank and the distribution box were found to be filled in with sandy gravel as part of the previous Area 3 septic tank abandonment program. The distribution box is approximately 2 ft in diameter. The transite pipe from the distribution box to the outer distribution pipe was determined to be an asbestos-containing material (ACM). The collection system pipe leading to the influent end of the septic tank also appeared to be ACM; therefore, video surveying was not completed. Sediment was not observed in this pipe at a break made during the investigation.

Two sludge samples (one duplicate) and two liquid samples (one duplicate) were collected from the effluent chamber of the septic tank. In addition, two QC sludge and liquid duplicates were collected and analyzed. Two sludge and liquid samples were analyzed for MS/MSD. Sewage odor was detected during sample collection. Before sample collection, the top of the manhole opening to the top of the septic tank contents was 3.2 ft. After sample collection, 1 ft of liquid and 1 ft of sludge remained in the 4.3-ft wide chamber (Note: The sludge and liquid thicknesses were determined to be greater during closure activities as described in Appendix C. The differences are primarily due to the

hardness of the sludge at the bottom of the chamber that precluded an accurate determination until removal). The chamber was 2-ft long and 4-ft deep. Both liquid samples and one sludge sample from the septic tank were analyzed for fecal coliform.

A.5.2.3 Leachfield Sampling

Backhoe excavations were conducted to access sampling horizons and collect samples at the biased locations presented in the CAIP. Excavations provided a visual verification of leachfield configuration (Figure A.5-1). Fourteen soil samples were collected from beneath the distribution pipes as specified in the CAIP. All samples collected at the leachrock/native soil interface were submitted for laboratory analyses. Select samples collected at 2.5 ft or more below the interface were submitted for laboratory analyses. The interface was found to range from 5- to 6-ft bgs. In addition, one QC soil duplicate was collected and analyzed. One MS/MSD was performed on one sample.

A geotechnical/hydrological soil sample was collected from native soils beneath the east central portion of the leachfield from 6 to 7 ft bgs; however, it was not analyzed because contamination above PALs was not identified in soil characterization samples.

Two separate spills resulting from ruptured backhoe lines occurred on the ground surface toward the eastern, proximal end of the leachfield. It was estimated that one pint of hydraulic fluid leaked onto the ground surface just east of the leachfield and one quart of antifreeze leaked onto the ground surface between the center and east distribution pipes. Each incident was immediately noticed and remediated quickly by removing the contaminated surface soil. Actions, notifications, and waste were managed in accordance with applicable procedures.

A.5.2.4 Field-Screening Results

Soil samples were field screened for VOCs, TPH, and alpha and beta/gamma radiation. The field-screening results were compared to field-screening levels to guide sampling decisions. A sample (SS7LFS34) collected from the east proximal end of the leachfield from 8.5 to 9.5 ft exceeded the TPH field-screening level at 342.45 ppm. This prompted the collection of an additional sample (SS7LFS35) from the same location that was collected from 12 to 13 ft and had a TPH field-screening result of nondetect.

A.5.2.5 Sample Analyses

Select investigation samples were analyzed for the CAIP-specified COPCs which included total VOCs, total SVOCs, total RCRA metals, TPH (DRO and GRO), TCLP VOCs, TCLP SVOCs, TCLP RCRA metals, PCBs (not required by the CAIP), isotopic uranium, gross alpha/beta, tritium, and gamma-emitting radionuclides. Septic tank content samples were analyzed for fecal coliform bacteria. A bulk sample of the transite pipe was collected and analyzed for asbestos.

The analytical parameters and laboratory analytical methods used to analyze the investigation samples are listed in Table A.2-1. Table A.5-1 lists the sample-specific analytical parameters.

A.5.2.6 Analytes Detected Above Minimum Reporting Limits

The analytical results detected at concentrations exceeding the correlated MRLs (DOE/NV, 1998; DOE/NV, 2001) at SWS 7 are summarized in the following sections. A portion of the SWS 7 analytical results were rejected; however, these rejected data did not impact closure decisions as discussed in the Completeness Section B.1.1.3 of Appendix B.

A.5.2.6.1 Total Volatile Organic Compound Analytical Results for Soil Samples

No total VOCs analytical results for soil samples exceeded the MRLs or PALs established in the Leachfield Work Plan and CAIP.

A.5.2.6.2 Total Semivolatile Organic Compound Analytical Results for Soil Samples

No total SVOCs analytical results for soil exceeded the MRLs or PALs established in the Leachfield Work Plan and CAIP.

A.5.2.6.3 Total Petroleum Hydrocarbon Analytical Results for Soil Samples

No TPH (DRO and GRO) analytical results for soil exceeded the MRLs or PAL established in the Leachfield Work Plan. Analytical results were not reported for a portion of the samples requested for TPH as motor oil. This discrepancy is discussed in the Completeness Section (B.1.1.3) of Appendix B.

A.5.2.6.4 Total RCRA Metals Results for Soil Samples

The total RCRA metals detected in soil samples at concentrations exceeding MRLs are listed in Table A.5-2 and discussed below. Only arsenic exceeded the PALs for RCRA metals established in the Leachfield Work Plan and CAIP.

Table A.5-2
Soil Sample Results for Total RCRA Metals Detected Above Minimum Reporting Limits for Septic Waste System 7

Sample Identification Number	Depth (ft bgs)	Contaminants of Potential Concern (mg/kg)			
		Arsenic	Barium	Chromium	Lead
Preliminary Action Levels[a]		**2.7**	**100,000**	**450**	**750**
SS7DBS23	4.4 - 5.4	11.8	63.4 (J)[b]	3.8 (J)[c]	5.6 (J)[d]
SS7LFS28	4.4 - 5.4	7.9	116	3.2	8.2*
SS7LFS29	7.4 - 8.4	7.9	135	3.3	10.0*
SS7LFS30	7.4 - 8.4	11.4	112	3.6	6.8*
SS7LFS31	10 - 11	9.5	221	3.8	7.0*
SS7LFS32	5 - 6	20.1	108	3.7	8.3*
SS7LFS34	7.4 - 8.4	8.0	94.1	2.9	6.5
SS7LFS35	12 - 13	9.4	117	2.3	7.3
SS7LFS36	5.4 - 6.4	9.3	85.8	2.9	5.7
SS7LFS37	6.5 - 7.5	6.7	79.2	2.8	6.3
SS7LFS38	9 - 10	6.5	116	2.7	6.5
SS7LFS39	9 - 10	5.9	79.5	2.0	4.8
SS7LFS40	6.5 - 7.5	5.7	122	3.8	7.3
SS7LFS41	9 - 10	4.8	79.1	2.5	4.9
SS7STS21	6.6 - 7	17.5	139 (J)[b]	3.8 (J)[c]	5.1 (J)[e]
SS7STS24	4 - 5	12.2	139 (J)[b]	5.1 (J)[c]	6.3 (J)[e]

[a]Based on U.S. Environmental Protection Agency, *Region 9 Preliminary Remediation Goals (PRGs)* (EPA, 2000)
[b]Qualifier added to laboratory data; record accepted. Spike recovery was outside control limits.
[c]Qualifier added to laboratory data; record accepted. Inductively coupled plasma serial dilution recovery was not met.
[d]Qualifier added to laboratory data; record accepted. Inductively coupled plasma serial dilution recovery was not met. Duplicate precision analyses were outside control limits.
[e]Qualifier added to laboratory data; record accepted. Duplicate precision analyses were outside control limits.

mg/kg = Milligrams per kilogram
ft = Feet
bgs = Below ground surface
* = Duplicate analysis not within control limits.
J = Estimated value

Arsenic was detected above the PAL of 2.7 mg/kg in all soil samples analyzed. Arsenic concentrations ranged from 4.8 to 20.1 mg/kg. The PAL for arsenic is lower than the 7 to 8 mg/kg mean concentration of arsenic in silt from the Nellis Air Force Range (NBMG, 1998; Moore, 1999) and lower than the concentrations ranging from 6 to 43 mg/kg in soils from locations near the TTR (SNL, 1999). Data from previous sampling efforts at Area 3 also demonstrate arsenic concentrations consistently greater than the PAL and as high as 24.1 mg/kg at an undisturbed location (DOE/NV, 1998). Arsenic concentrations presented in Table A.5-2 exceed the PAL, but are considered representative of ambient conditions at the site.

A.5.2.6.5 Polychlorinated Biphenyl Results for Soil Samples

No PCB analytical results for soil exceeded the MRLs or PALs established in the Leachfield Work Plan.

A.5.2.6.6 Gamma Spectrometry Results for Soil Samples

Gamma spectrometry was used to analyze select soil samples in support of waste management determinations only. The results did not indicate the presence of man-made radionuclides at concentrations exceeding established background concentrations (US Ecology and Atlan-Tech, 1992; McArthur and Miller, 1989).

A.5.2.6.7 Septic Tank Sludge and Liquid Results

Results were compared to regulatory levels based on disposal options. If the waste has no hazardous component, the regulatory level is based on NTS disposal options at landfills and lagoons (BN, 1995; CFR, 2000a and b; NDEP, 1997a, b, and c). If the waste is hazardous, the release criteria is based on interpretation of the guidelines presented in the POC (BN, 1995; Alderson, 1999). For waste destined for off-site disposal, the POC radiological levels must be met to certify that the waste has no added radioactivity.

The sludge samples (SS7STL14 and SS7STL15) collected were analyzed for total VOCs, total SVOCs, TPH (DRO and GRO), total RCRA metals, TCLP VOCs, TCLP SVOCs, TCLP RCRA metals, PCBs, gamma spectrometry, isotopic uranium (reported as samples SS7STX14 and SS75TX15), and fecal coliform bacteria.

The liquid samples (SS7STL12 and SS7STL13) collected were analyzed for total VOCs, total SVOCs, TPH (DRO and GRO), total RCRA metals, PCBs, gamma spectrometry, gross alpha/beta, tritium, isotopic uranium, and fecal coliform bacteria.

Several COPCs were detected in the sludge and water samples (Table A.5-3). Total petroleum hydrocarbons was the only contaminant that exceeded regulatory level or action level for waste management purposes. The TPH as motor oil results were between 130 and 180 mg/kg, which exceeds the NDEP action level for TPH (NAC, 1996a) of 100 mg/kg. Fecal coliform results were negative. It meets the disposal criteria for the NTS disposal site for hydrocarbon burdened solid waste, provided it does not have free liquid remaining (NDEP, 1997b).

A.5.2.6.8 Asbestos Results

One transite pipe sample was collected and analyzed for asbestos. The results (i.e., percent of asbestos fibers) are listed in Table A.5-4. These results only impact health and safety and waste management decisions.

A.5.2.7 Contaminants of Concern

Based on the aforementioned analytical results, no COCs are present in the soil surrounding the septic tank and distribution box, or under the leachfield. Sludge located in the septic tank effluent chamber contains TPH exceeding the regulatory disposal action level of 100 mg/kg.

A.5.3 Nature and Extent of Contamination

The septic tank effluent chamber sludge contains TPH exceeding the regulatory disposal level of 100 mg/kg.

A.5.4 Revised Conceptual Model

No variations to the conceptual model were identified.

Table A.5-3
Septic Tank Sludge and Liquid Sample Results Detected Above Minimum Reporting Limits for Septic Waste System 7
(Page 1 of 2)

Sample Identification Number	Sample Matrix	Parameter	Result	Unit	Regulatory Limit*	Regulatory Reference
Radionuclides						
SS7STL12	Liquid	Uranium-234	6.32 ± 0.97	pCi/L	100 pCi/g	NDEP, 1997b
SS7STL12	Liquid	Uranium-235	0.338 ± 0.084 (J)[a]	pCi/L	100 pCi/g	NDEP, 1997b
SS7STL12	Liquid	Uranium-238	3.5 ± 0.55	pCi/L	100 pCi/g	NDEP, 1997b
SS7STL12	Liquid	Gross Alpha	20.3 ± 5.5	pCi/L	100 pCi/g	NDEP, 1997b
SS7STL12	Liquid	Gross Beta	31.1 ± 6.8	pCi/L	100 pCi/g	NDEP, 1997b
SS7STL13	Liquid	Gross Alpha	22.5 ± 6.0	pCi/L	100 pCi/g	NDEP, 1997b
SS7STL13	Liquid	Gross Beta	33 ± 6.7	pCi/L	100 pCi/g	NDEP, 1997b
SS7STL13	Liquid	Uranium-234	5.68 ± 0.88	pCi/L	100 pCi/g	NDEP, 1997b
SS7STL13	Liquid	Uranium-235	0.285 ± 0.076 (J)[a]	pCi/L	100 pCi/g	NDEP, 1997b
SS7STL13	Liquid	Uranium-238	3.15 ± 0.51	pCi/L	100 pCi/g	NDEP, 1997b
SS7STX14	Sludge	Uranium-234	2.04 ± 0.31	pCi/g	100 pCi/g	NDEP, 1997b
SS7STX14	Sludge	Uranium-235	0.104 ± 0.041	pCi/g	100 pCi/g	NDEP, 1997b
SS7STX14	Sludge	Uranium-238	1.86 ± 0.29	pCi/g	100 pCi/g	NDEP, 1997b
SS7STX15	Sludge	Uranium-234	2.08 ± 0.32	pCi/g	100 pCi/g	NDEP, 1997b
SS7STX15	Sludge	Uranium-235	0.112 ± 0.044	pCi/g	100 pCi/g	NDEP, 1997b
SS7STX15	Sludge	Uranium-238	1.81 ± 0.29	pCi/g	100 pCi/g	NDEP, 1997b
Organics						
SS7STL12RER	Liquid	TPH as Motor Oil	1.1 (J)[b]	mg/L	100	NDEP, 1997b
SS7STL13RER	Liquid	TPH as Motor Oil	1.3 (J)[b]	mg/L	100	NDEP, 1997b
SS7STL14RER	Sludge	TPH as Motor Oil	130 (J)[b]	mg/kg	100	NDEP, 1997b
SS7STL15RER	Sludge	TPH as Motor Oil	180 (J)[b]	mg/kg	100	NDEP, 1997b
Inorganics						
SS7STL12	Liquid	Arsenic	59.8	µg/L	5,000	CFR, 2000a
SS7STL12	Liquid	Barium	250	µg/L	100,000	CFR, 2000a
SS7STL12	Liquid	Lead	10.4	µg/L	5,000	CFR, 2000a
SS7STL13	Liquid	Arsenic	60.7	µg/L	5,000	CFR, 2000a
SS7STL13	Liquid	Lead	8.3	µg/L	5,000	CFR, 2000a
SS7STL14	Sludge	TCLP Lead	306	µg/L	5,000	CFR, 2000a
SS7STL14	Sludge	Arsenic	7.9	mg/kg	NA	CFR, 2000a
SS7STL14	Sludge	Barium	82.9 (J)[c]	mg/kg	NA	CFR, 2000a
SS7STL14	Sludge	Chromium	3.9 (J)[d]	mg/kg	NA	CFR, 2000a
SS7STL14	Sludge	Lead	5.0 (J)[e]	mg/kg	NA	CFR, 2000a

Table A.5-3
Septic Tank Sludge and Liquid Sample Results Detected Above Minimum Reporting Limits for Septic Waste System 7
(Page 2 of 2)

Sample Identification Number	Sample Matrix	Parameter	Result	Unit	Regulatory Limit*	Regulatory Reference
SS7STL15	Sludge	Arsenic	12.4	mg/kg	NA	CFR, 2000a
SS7STL15	Sludge	Barium	119 (J)[c]	mg/kg	NA	CFR, 2000a
SS7STL15	Sludge	Chromium	3.4 (J)[d]	mg/kg	NA	CFR, 2000a
SS7STL15	Sludge	Lead	7.0 (J)[e]	mg/kg	NA	CFR, 2000a

[a]Qualifier added to laboratory data; record accepted. Peak tailing of uranium-234 counts into uranium-235 region of interest.
[b]Qualifier added to laboratory data; record accepted. Exceeded holding time. No associated laboratory control sample.
[c]Qualifier added to laboratory data; record accepted. Spike recovery was outside control limits.
[d]Qualifier added to laboratory data; record accepted. Spike recovery was outside control limits. Duplicate precision analyses was outside control limits.
[e]Qualifier added to laboratory data; record accepted. Poor matrix spike recovery/<30 percent recovery. Duplicate precision analyses was outside control limits.

*Regulatory limits are based on liquid and sludge solidified to pass paint filter test prior to landfill disposal.

pCi/L = Picocuries per liter
µg/L = Micrograms per liter
pCi/g = Picocuries per gram
J = Estimated value
mg/kg = Milligrams per kilogram
NA = Not applicable

Table A.5-4
Transite Pipe Sample Results for Asbestos

Sample Identification Number	% Chrysotile	% Amosite	% Crocidolite	% Actinolite/ Tramolite	% Anthophyllite
Limits of Detection	**<1**	**<1**	**<1**	**<1**	**<1**
SS7PIPE1	5 - <10	ND	1 - <3	ND	ND

ND = Not detected above limits of detection

A.6.0 Waste Management

A.6.1 Waste Minimization

Corrective Action Unit 405 integrated waste minimization in the field activities. Investigation-derived waste was segregated to the greatest extent possible. Controls were in place to minimize the use of hazardous materials and unnecessary generation of hazardous and/or mixed waste. Decontamination activities were planned and executed to minimize the volume of rinsate generated.

A.6.1.1 Characterization

Analytical results for each drum of waste or associated samples were reviewed to federal regulations, state regulations, DOE directives/policies, guidance, waste disposal criteria, and IT Corporation, Las Vegas Office (ITLV) Standard Quality Practices. Analytical data was reviewed through Tier I, II, and III validation (DOE/NV, 1996b).

The IDW generated by site characterization activities at CAU 405 is a newly generated solid waste according to 40 *Code of Federal Regulations* (CFR) 261.2 (CFR, 2000a). Federal regulations, 40 CFR 261.3(a)(2)(iv), 261.4, and 261.6(a)(3) (CFR, 2000a), were reviewed to determine if the waste was excluded from regulations as a solid waste or hazardous waste. The waste is not excluded from regulations as a solid or hazardous waste.

Analytical results and knowledge of the waste were used to determine if the waste met criteria as a hazardous waste in Subpart C, "Characteristics of Hazardous Waste." RCRA-regulated constituents identified, as per 40 CFR 261.24 (CFR, 2000a), were compared to the regulations as potential "characteristic" not "listed."

A.6.1.2 Waste Streams

Newly generated IDW was segregated into the following waste streams:

- Personal protective equipment (PPE) and disposable sampling equipment
- Debris including, but not limited to, plastic sheeting, glass/plastic sample jars, PPE, soil, wood, sampling scoops, aluminum foil, bowls, etc.

- Decontamination rinsate
- TPH field-screening material
- Hydrocarbon and anti-freeze spill cleanup soil
- ACM debris

A.6.1.3 Waste Sampling

Waste determinations were made utilizing process knowledge and media sample association. Direct sampling of waste was performed on the liquid generated from TPH field screening to confirm the regulatory status of the waste stream.

A.6.2 Storage

Three 90-day HWAAs and four SAAs were established and managed at the investigation areas. Potentially hazardous waste generated during the investigation was packaged in 55-gallon U.S. Department of Transportation (DOT) specification steel drums, labeled as "Hazardous Waste - Pending Analysis." The amount, type, and source of waste placed into each drum is recorded in waste management logbooks at each location. All waste is traceable to associated media samples. Waste accumulation areas were inspected regularly as required by federal regulation and internal procedures (CFR, 2000a).

A.6.3 Waste Disposal

A total of 18 drums of waste were generated during the investigation:

- Three drums were characterized as hydrocarbon waste exceeding regulatory threshold established by State of Nevada regulations (NAC, 1996a). These drums were disposed of at the permitted NTS Hydrocarbon Landfill (NDEP, 1997b) with BN remediation waste on February 4, 2002. Hydrocarbon waste was generated at CAS 03-05-002-SW07 and 03-05-002-SWS04.

- An SAA was established at SWS 7 to manage the suspect ACM. Management as an SAA was not required, but continued to ensure traceability of the one drum of ACM. A certified asbestos inspector determined that the asbestos piping samples were nonfriable. Laboratory analysis results indicated asbestos fibers were present at greater than one percent. The ACM

drummed at this CAU was transferred to an appropriately permitted landfill as unregulated ACM with BN remediation waste on February 4, 2002.

- An SAA was established at each CAS to manage hazardous waste (D001 Ignitable) associated with the TPH field screening. This was the first CAU that used the gas chromatograph for field screening of TPH. The isopropyl alcohol liquid generated from the TPH field screening was sent to the laboratory for flash point analysis; all the liquid from CAU 405 was consumed in the flash point analysis. The result indicates that when isopropyl alcohol is used in the same process in the future, the waste will be accumulated, managed, and disposed of as characteristic (D001) ignitable waste.

- Eleven drums were characterized as sanitary waste. These drums consist of six drums of PPE (solid) waste and five drums of rinsate (liquid) waste. Sanitary solid waste was disposed of in a Class II solid waste landfill at TTR. Rinsate was disposed of according to discharge criteria of the waste water system at TTR.

A.7.0 Quality Assurance

This section contains a summary of the QA/QC process implemented during the CAU 405 corrective action investigation. Laboratory analyses were conducted for samples used in the decision-making process to provide a quantitative measurement of any COPCs present. The QA/QC process was implemented for all laboratory samples including documentation, data verification and validation of analytical results, and affirmation of DQI requirements related to laboratory analyses. Detailed information regarding the QA program is contained in the Industrial Sites QAPP (DOE/NV, 1996b). A discussion of the DQIs, including the datasets, is provided in Appendix B.

A.7.1 Data Validation

Data validation was performed in accordance with the Industrial Sites QAPP (DOE/NV, 1996b) and approved procedures. All laboratory data from samples collected and analyzed for CAU 405 were evaluated for data quality according to the *EPA Functional Guidelines* (EPA, 1994b and 1999). These guidelines are implemented in a tiered process and are presented in Sections A.7.1.1 through A.7.1.3. Data were reviewed to ensure that samples were appropriately processed and analyzed, and the results passed data validation criteria. Documentation of the data qualifications resulting from these reviews is retained in project files as a hard copy and electronic media.

One hundred percent of the data analyzed as part of this investigation were subjected to Tier I and Tier II evaluations. A Tier III evaluation was performed on eleven percent of the samples.

A.7.1.1 Tier I Evaluation

Tier I evaluation for both chemical and radiological analysis examines (but was not limited to):

- Sample count/type consistent with chain of custody
- Analysis count/type consistent with chain of custody
- Correct sample matrix
- Significant problems stated in cover letter or case narrative
- Completeness of certificates of analysis
- Completeness of Contract Laboratory Program (CLP) or CLP-like packages

- Completeness of signatures, dates, and times on chain of custody
- Condition-upon-receipt variance form included
- Requested analyses performed on all samples
- Date received/analyzed given for each sample
- Correct concentration units indicated
- Electronic data transfer supplied
- Results reported for field and laboratory QC samples
- Whether or not the deliverable met the overall objectives of the project
- Proper field documentation accompanies project packages

A.7.1.2 Tier II Evaluation

Tier II evaluation for both chemical and radiological analysis examines (but is not limited to):

Chemical:

- Correct detection limits achieved
- Sample date, preparation date, and analysis date for each sample
- Holding time criteria met
- QC batch association for each sample
- Cooler temperature upon receipt
- Sample pH for aqueous samples, as required
- Detection limits properly adjusted for dilution, as required
- Blank contamination evaluated and applied to sample results/qualifiers
- Matrix spike/matrix spike duplicate, percent recovery (%R), and relative percent difference (RPDs) evaluated and applied to laboratory results/qualifiers
- Field duplicate RPDs evaluated using professional judgement and applied to laboratory results/qualifiers
- Laboratory duplicate RPDs evaluated and applied to laboratory results/qualifiers
- Surrogate %Rs evaluated and applied to laboratory results/qualifiers

- Laboratory control sample %R evaluated and applied to laboratory results/qualifiers
- Initial and continuing calibration evaluated and applied to laboratory results/qualifiers
- Internal standard evaluated and applied to laboratory results/qualifiers
- Mass spectrometer tuning criteria
- Organic compound quantitation
- Inductively coupled plasma (ICP) interference check sample evaluation
- Graphite furnace atomic absorption quality control
- ICP serial dilution effects
- Recalculation of 10 percent of laboratory results from raw data

Radioanalytical:

- Correct detection limits achieved
- Blank contamination evaluated and applied to sample results/qualifiers
- Certificate of analysis consistent with data package documentation
- Quality control sample results (duplicates, laboratory control samples, laboratory blanks) evaluated and applied to laboratory result qualifiers
- Sample results, error, and minimum detectable activity evaluated and applied to laboratory result qualifiers
- Detector system calibrated to National Institute for Standards and Technology (NIST)-traceable sources
- Calibration sources preparation was documented, demonstrating proper preparation and appropriateness for sample matrix, emission energies, and concentrations
- Detector system response to daily, weekly, and monthly background and calibration checks, which may include peak energy, peak centroid, peak full-width half-maximum, and peak efficiency, depending on the detection system
- Tracers NIST-traceable, appropriate for the analysis performed, and recoveries that met QC requirements
- Documentation of all QC sample preparation complete and properly performed

- QC sample results (e.g., calibration source concentration, %R, and RPD) verified
- Spectra lines, emissions, particle energies, peak areas, and background peak areas support the identified radionuclide and its concentration
- Recalculation of 10 percent of laboratory results from raw data

A.7.1.3 Tier III Review

Tier III evaluations examine a limited portion of data reviewed during Tier II validation. The Tier III review includes the evaluations discussed in the following paragraphs.

Chemical:

- Recalculation of laboratory results from raw data

Radioanalytical:

- Radionuclides and their concentration appropriate considering their decay schemes and half-lives
- Each identified line in spectra verified against emission libraries and calibration results
- Independent identification of spectra lines, area under the peaks, and quantification of radionuclide concentration in a random number of sample results
- Recalculation of laboratory results from raw data

A Tier III review of approximately eleven percent of the samples was conducted by TechLaw, Inc. in Lakewood, Colorado. Tier II and Tier III results were compared and where differences were noted, data were reviewed, and changes made accordingly.

A.7.2 Quality Control Samples

There were 15 trip blanks, 3 field blanks, 4 source blanks, 2 equipment rinsate blanks, 5 MS/MSD, and 5 field duplicates collected and submitted for laboratory analysis as shown in Table A.2-1. The quality control samples were assigned individual sample numbers and sent to the laboratory "blind." Additional samples were selected by the laboratory to be analyzed as laboratory duplicates.

A.7.2.1 Field Quality Control Samples

Review of the field-blank analytical data for the CAU 405 soil sampling indicates that cross-contamination from field methods did not occur during sample collection. Field, equipment rinsate, and source blanks were analyzed for the parameters listed in Table A.2-1 and trip blanks were analyzed for VOCs only. Several different contaminants were detected in some of the samples, but they were below or slightly above the contract required detection limits.

During the sampling events, five field duplicate soil samples were sent as blind samples to the laboratory to be analyzed for the investigation parameters listed in Table A.2-1. For these samples, the duplicate results precision (i.e., RPDs between the environmental sample results and their corresponding field duplicate sample results) were evaluated to the guidelines set forth in *EPA Functional Guidelines* (EPA, 1994b). Arsenic and lead were greater than the allowable RPD in four samples and selenium was greater than the allowable RPD in two samples.

A.7.2.2 Laboratory Quality Control Samples

Analysis of method QC blanks were performed on each SDG for inorganics. Analysis for surrogate spikes and preparation blanks (PBs) were performed on each SDG for organics only. Initial and continuing calibration and laboratory control samples (LCS) were performed for each SDG by Severn Trent Laboratory. The results of these analyses were used to qualify associated environmental sample results according to *EPA Functional Guidelines* (EPA, 1994b and 1999). Documentation of data qualifications resulting from the application of these guidelines is retained in project files as both hard copy and electronic media.

A.7.3 Field Nonconformances

Two field nonconformances were identified for the corrective action investigation. One nonconformance was due to inconsistencies with sample collection documentation and the second nonconformance resulted from sample preparation inconsistencies for on-site field-screening analysis. Nonconformances have been accounted for during the data qualification process.

A.7.4 Laboratory Nonconformances

Laboratory nonconformances are due to inconsistencies in analytical instrumentation operation, sample preparations, extractions, missed holding times, and fluctuations in internal standard and calibration results. Nonconformances were issued by the laboratory that resulted in qualifying data and have been accounted for during the data qualification process.

A.8.0 Summary

Analytes detected in soil samples during the corrective action investigation were evaluated against PALs to determine the nature and extent of contaminants of concern for CAU 405. Assessment of the data generated from corrective action investigation activities indicates the PALs were not exceeded in any CAU 405 soil samples for COPCs specified in the CAIP, except for arsenic. Arsenic concentrations exceeded the PAL for the majority of samples collected from CAU 405; however, the concentrations of arsenic are considered ambient at this site (NMBG, 1998; Moore, 1999).

Analytes detected in the septic tank and distribution box content samples were evaluated against regulatory levels based on disposal options. The following summarizes the results for each CAS.

The distribution box at SWS 3 was found to contain sludge that contained concentrations of TPH as diesel and motor oil above the 100 mg/kg regulatory level (NAC, 1996a) and arsenic above its PAL; however, only TPH exceeded an action level for disposal purposes. The septic tank effluent pipe was found to contain sediment with a concentration of TPH as motor oil above the 100 mg/kg regulatory level (NAC, 1996a). The remaining sediment (approximately 1 gallon) was removed during investigation activities and managed as hydrocarbon waste with the IDW. The septic tank was determined to have been backfilled during previous closure activities.

The septic tank at SWS 4 was found to contain sludge that may have concentrations of TPH exceeding the 100 mg/kg regulatory level (NAC, 1996a).

The septic tank at SWS 7 was found to contain sludge in the effluent chamber at concentrations of TPH as motor oil above the 100 mg/kg regulatory level (NAC, 1996a). The influent chamber of the septic tank and distribution box were determined to have been backfilled during previous closure activities. Transite pipe containing nonfriable asbestos was found to be used in the distribution pipe headers and the septic tank influent pipe.

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Appendix B

Data Assessment for CAU 405:
Area 3 Septic Systems,
Tonopah Test Range, Nevada

B.1.0 Data Assessment

This appendix provides a summary of the assessment of CAU 405 data validation results for each DQI. In addition, a reconciliation of the data with the general conceptual site model established for this project is provided.

B.1.1 Statement of Acceptability and Usability

This section provides an evaluation of the DQIs in determining the degree of acceptability and usability of the reported data in the decision-making process.

Data were evaluated against specific criteria to verify the achievement of DQI goals established to meet the project DQOs as provided in the Industrial Sites QAPP (DOE/NV, 1996) and the CAU 405 CAIP (DOE/NV, 2001). The DQIs for this project include precision, accuracy, completeness representativeness, and comparability.

B.1.1.1 Precision

Precision is a measure of agreement among a replicate set of measurements of the same property under similar conditions. This agreement is expressed as the relative percent difference (RPD) between duplicate measurements (EPA, 1996). The RPD is determined by dividing the difference between the replicate measurement values by the average measurement value and multiplying the result by 100, or:

$$RPD = \{|a_1 - a_2|/[(a_1 + a_2)/ 2]\} \times 100, \text{ where}$$

a_1 = the sample value, and
a_2 = the duplicate sample value.

Determinations of precision can be made for field duplicates, laboratory duplicates, or both. For field duplicates, samples are collected simultaneously with a sample from the same source under similar conditions in separate containers. The duplicate sample is treated independently of the original sample in order to assess field impacts and laboratory performance on precision through a

comparison of results. Laboratory precision is evaluated as part of the required laboratory internal QC program to assess performance of analytical procedures. The laboratory sample duplicates are generated in a laboratory and are an aliquot or subset of the same field sample. Typically, other laboratory duplicate QC samples include matrix spike duplicate and laboratory control sample duplicate (LCSD) samples for organic and inorganic analytes.

The variability in results from analyses of field duplicates is generally greater than the variability in the results of laboratory duplicates. This higher variability for field duplicates results from the increased potential to introduce factors influencing the analytical results during sampling, sample preparation, containerization, handling, packaging, preservation, and environmental conditions before the samples reach the laboratory. Laboratory QC samples assess only the variability of results introduced by sample handling and preparation in the laboratory and by the analytical procedure, which also impacts field duplicates. In addition, the variability in duplicate results is expected to be greater for soil samples than water samples, primarily due to the inherent nonhomogeneous nature of soil samples, despite sample preparation methods that include mixing to improve sample homogeneity.

B.1.1.1.1 Precision for Chemical Analysis

The RPD criteria used for assessment of laboratory sample duplicate precision associated with VOCs, TCLP VOCs, SVOCs, TCLP SVOCs, EPA 6010 and EPA 6020 metals, EPA 7470A/7471A (mercury), TCLP metals, and TCLP mercury analytical results of samples collected at CAU 405 are established in the Leachfield Work Plan (DOE/NV, 1998) and/or the *EPA Contract Laboratory Functional Guidelines for Inorganic Data Review* (EPA, 1994). The RPD criteria for TPH-DRO, TPH-GRO, and PCBs are established by the laboratory to evaluate precision for MS/MSD and LCS/LCSD analyses. The control limits are evaluated by the laboratory on a quarterly basis by monitoring the historical data and performance for each method. No review criteria for field duplicate RPD comparability have been established; therefore, the laboratory sample duplicate criteria were applied as guidelines to the review of field duplicates.

Precision values for organic and inorganic analyses that are within the established control criteria indicate that analytical results for associated samples are valid. The RPD values that are outside the criteria for organic analyses do not necessarily result in the qualification of analytical data. It is only

one factor to be considered in making an overall judgement about the quality of the reported analytical results. Inorganic laboratory sample duplicate RPD values outside the established control criteria do result in the qualification of associated analytical results as estimated. Out of control RPD values do not necessarily indicate that the data is not useful for the purpose intended; however, it is an indication that data precision should be considered for the overall assessment of the data quality and potential impact on data application in meeting the data quality objectives.

Precision for the measurement of target compounds or analytes collected at CAU 405 was determined for VOCs, TCLP VOCs, SVOCs, TCLP SVOCs, TPH-DRO, TPH-GRO, PCBs, EPA 6010 and EPA 6020 metals (combined), EPA 7470A/7471A (mercury), TCLP metals, and TCLP mercury. For the purpose of determining data precision of sample analyses for CAU 405, all water and soil samples including field QC samples (e.g., trip blanks, equipment rinsate samples, field blanks) were evaluated and incorporated into the precision calculation. Due to a laboratory oversight, matrix spikes and laboratory control samples (LCSs) were not spiked with motor oil; therefore, matrix spike duplicates and LCSDs precision could not be assessed for TPH (Table B.1-1). Tables B.1-1 and B.1-2 present the total number of measurements analyzed, the number of measurements within the specified criteria, and the percentage of measurements that met the precision criteria. Percent of acceptable precision measurements was determined by taking the number of measurements within criteria, dividing by the total number of measurements analyzed, and multiplying by 100.

Out of control RPD values do not necessarily indicate that the data is not useful for the purpose intended. It does indicate that precision should be considered in the overall assessment of the data quality and impact to the application of associated data to meeting the DQOs.

B.1.1.1.2 Precision for Radiological Analysis

The RPD control limit for radiological measurements has been set at 35 percent for soil and 20 percent for water. If the RPD is exceeded, samples are qualified. Field duplicates are evaluated, but samples are not qualified based on their results. The MSD results outside the control limit may not result in qualification of the data. An assessment of the entire analytical process including the sample matrix is conducted to determine if qualification is warranted.

Table B.1-1
Chemical Precision Measurements for CAU 405

	Organics						Inorganics	
	VOCs	SVOCs	TPH-Diesel	TPH-Motor Oil	TPH-GRO	PCBs	Metals[a]	Mercury
Matrix Spike Duplicate (MSD) Precision								
Total Number of MSD Measurements	95	110	13	0	13	16	0	11
Total Number of RPDs Within Criteria	95	107	12	NA	11	13	0	11
% Acceptable MSD Measurements	100	97.3	92.3	NA	84.6	81.3	NA	100
Laboratory Control Sample Duplicate (LCSD) Precision								
Total Number of LCSD Measurements	18	55	8	0	6	8	57	7
Total Number of RPDs Within Criteria	18	53	0	NA	6	8	56	6
% Acceptable LCSD Measurements	100	96.4	0	NA	100	100	98.2	85.71
Field Duplicate (FD) Precision								
Total Number of FD Measurements	175	320	6	5	5	14	35	5
Total Number of RPDs Within Criteria	170	320	6	4	5	14	26	5
% Acceptable FD Measurements	97.1	100	100	80.0	100	100	74.3	100
Laboratory Sample Duplicate (Laboratory-Duplicate) Precision								
Total Number of Lab-Dup Measurements	NA	NA	NA	NA	NA	NA	70	11
Total Number of RPDs Within Criteria	NA	NA	NA	NA	NA	NA	64	11
% Acceptable Laboratory - Duplicate Measurements	NA	NA	NA	NA	NA	NA	91.4	100

[a]Arsenic, barium, cadmium, chromium, lead, selenium, and silver

NA = Not applicable

Table B.1-2
TCLP Chemical Precision Measurements for CAU 405

	Organics		Inorganics	
	TCLP VOCs	TCLP SVOCs	TCLP Metals[a]	TCLP Mercury
TCLP Matrix Spike Duplicate (MSD) Precision				
Total Number of MSD Measurements	30	24	7	5
Total Number of RPDs Within Criteria	26	24	7	4
% Acceptable MSD Measurements	86.67	100	100	80
TCLP Laboratory Control Sample Duplicate (LCSD) Precision				
Total Number of LCSD Measurements	0	12	28	5
Total Number of RPDs Within Criteria	0	12	28	5
% Acceptable LCSD Measurements	NA	100	100	100
TCLP Field Duplicate (FD) Precision				
Total Number of FD Measurements	10	12	7	1
Total Number of RPDs Within Criteria	10	12	6	1
% Acceptable FD Measurements	100	100	85.71	100
TCLP Laboratory Sample Duplicate (Lab-Dup) Precision				
Total Number of Laboratory - Duplicate Measurements	NA	NA	14	4
Total Number of RPDs Within Criteria	NA	NA	14	4
% Acceptable Laboratory - Duplicate Measurements	NA	NA	100	100

[a]Arsenic, barium, cadmium, chromium, lead, selenium, and silver

NA = Not applicable

The evaluation of precision based on duplicate RPD requires that both the sample and its duplicate have concentrations of the target radionuclide exceeding five times their minimum detectable concentration. This excludes many measurements because the samples contain nondetectable or low levels of the target radionuclide. However, there is another method used for evaluating duplicate data based on the measurement uncertainty, which is associated with every radiological result. This

precision test, which is utilized when the RPD is not applicable, is the normalized difference. It is expressed by:

$$\text{Normalized Difference} = \frac{S - D}{\sqrt{(TPU_S)^2 + (TPU_D)^2}}$$

Where:

S	=	Sample Results
D	=	Duplicate Result
TPU	=	Total Propagated Uncertainty
TPUs	=	2σ TPU of the sample
TPU_D	=	2σ TPU of the duplicate
σ	=	Standard deviation

The control limit for the normalized difference is -1.96 to 1.96, which represents a confidence level of 95 percent.

Samples are qualified based on these duplicate tests for laboratory prepared duplicates, but not field duplicates. Depending on the sample concentration, only one duplicate evaluation needs to be performed.

A duplicate comparison that is outside control limits does not necessarily indicate that the data is not useful for the purpose intended; however, it is an indication that data precision should be considered for the overall assessment of the data quality and potential impact on data application in meeting project site characterization objectives.

For the purpose of determining data precision of sample analysis for CAU 405, all water and soil samples, including field duplicates, were evaluated and incorporated into Tables B.1-3 through B.1-12.

The gamma spectrometry analysis provides results for 40 radionuclides. Only two or three of these radionuclides are usually present in sufficient concentrations to allow the determination of their RPDs (Table B.1-3). The duplicate data for the remaining radionuclides is compared using the normalized

Table B.1-3
Laboratory Gamma Spectrometry Precision

	Number Within Criteria	Number Performed	% of Acceptable Precision Measurements
Laboratory Sample RPDs	18	18	100
Matrix Spike RPDs	NA	NA	NA
Normalized Difference	542	542	100

NA = Not applicable

Table B.1-4
Laboratory Tritium Precision

	Number Within Criteria	Number Performed	% of Acceptable Precision Measurements
Laboratory Sample RPDs	NA	NA	NA
Matrix Spike RPDs	1	1	100
Normalized Difference	4	4	100

NA = Not applicable

Table B.1-5
Laboratory Gross Alpha Precision

	Number Within Criteria	Number Performed	% of Acceptable Precision Measurements
Laboratory Sample RPDs	NA	NA	NA
Matrix Spike RPDs	1	1	100
Normalized Difference	3	3	100

NA = Not applicable

Table B.1-6
Laboratory Gross Beta Precision

	Number Within Criteria	Number Performed	% of Acceptable Precision Measurements
Laboratory Sample RPDs	NA	NA	NA
Matrix Spike RPDs	1	1	100
Normalized Difference	3	3	100

NA = Not applicable

Table B.1-7
Laboratory Isotopic Uranium Precision

	Number Within Criteria	Number Performed	% of Acceptable Precision Measurements
Laboratory Sample RPDs	15	15	100
Matrix Spike RPDs	5	6	83
Normalized Difference	19	19	100

Table B.1-8
Field Gamma Spectrometry Precision

	Number Within Criteria	Number Performed	% of Acceptable Precision Measurements
Field Sample RPDs	7	7	100
Normalized Difference	193	193	100

Table B.1-9
Field Isotopic Uranium Precision

	Number Within Criteria	Number Performed	% of Acceptable Precision Measurements
Field Sample RPDs	7	7	100
Normalized Difference	2	2	100

Table B.1-10
Field Tritium Precision

	Number Within Criteria	Number Performed	% of Acceptable Precision Measurements
Field Sample RPDs	NA	NA	NA
Normalized Difference	1	1	100

NA = Not applicable

Table B.1-11
Field Gross Alpha Precision

	Number Within Criteria	Number Performed	% of Acceptable Precision Measurements
Field Sample RPDs	NA	NA	NA
Normalized Difference	1	1	100

NA = Not applicable

Table B.1-12
Field Gross Beta Precision

	Number Within Criteria	Number Performed	% of Acceptable Precision Measurements
Field Sample RPDs	NA	NA	NA
Normalized Difference	1	1	100

NA = Not applicable

difference. The MSD samples were not analyzed by the laboratory because of the difficulty in preparing homogeneous spiked duplicates and the radioactive waste produced.

The isotopic uranium analysis includes the measurement of three radionuclides, two of which often occur in concentrations sufficient for RPD evaluation. As shown by the uranium precision results in Tables B.1-7, 94 percent of the laboratory tests were within limits.

The tritium and the gross alpha and gross beta measurements all provide one result. Tables B.1-4, B.1-5, and B.1-6 show that 100 percent of laboratory precision measurements were within limits.

The results of the duplicate comparison of the field duplicates is provided in Tables B.1-8 through B.1-12. All five field duplicates were measured for gamma radionuclides, three were measured for isotopic uranium, and one for gross alpha/beta and tritium. One hundred percent of the precision measurements for field duplicates were within limits.

B.1.1.1.3 Precision Summary

Overall, the precision for CAU 405 measurements was high. Of the 498 laboratory precision tests performed for chemical parameters, 471 (94.6 percent) were acceptable. Of the 613 laboratory precision tests performed for radiological parameters, 612 (99.8 percent) were acceptable. Of the 565 field precision tests performed for chemical parameters, 550 (97.3 percent) were acceptable, while all 212 (100 percent) of the field precision tests performed for radiological parameters were acceptable. Therefore, the measurements for CAU 405 are considered valid in regard to precision.

B.1.1.2 Accuracy

Accuracy is a measure of the closeness of an individual measurement or the average of a number of measurements to the true value. Accuracy includes a combination of random error (precision) and systematic error (bias) components that result from sampling and analytical operations.

The accuracy of the LCS determination is expressed as a percent recovery by the following:

$$\%\ Recovery\ (\%R) = \frac{Amount\ of\ Analyte\ Measured}{Amount\ of\ Analyte\ Added} \times 100$$

The accuracy of the matrix spike determination is expressed as a percent recovery by the following:

$$\%\ Recovery\ (\%R) = \frac{MS\ Result - Sample\ Result}{Amount\ of\ Analyte\ Added} \times 100$$

If LCS results are outside acceptable control limits, qualifiers will be added to the field samples analyzed with the LCS. However, matrix spike results outside acceptable control limits may not

result in qualification of the data. An assessment of the entire analytical process including the sample matrix is performed to determine if qualification is necessary.

B.1.1.2.1 Accuracy for Chemical Analysis

Accuracy for chemical analysis is determined by analyzing a reference material of known pollutant concentration or by reanalyzing a sample to which a material of known concentration or amount of pollutant has been added (spiked). Accuracy is expressed as percent recovery (% R) for the purposes of evaluating the quality of data reported for CAU 405. For organic analyses, laboratory control limits are used to evaluate the accuracy of all analyses. The control limits are evaluated quarterly at the laboratory by monitoring the historical data and performance for each method. The acceptable limits for inorganic analyses are established in the *EPA Contract Laboratory Functional Guidelines for Inorganic Data Review* (EPA,1994). Sample results within established control ranges for organic and inorganic analyses show when the analytical method is accurate and associated data are valid.

Matrix spike samples are prepared by adding a known concentration of a target analyte to a specified amount of matrix sample for which an independent estimate of the target analyte concentration is available. Spiked samples are one component used to determine the laboratory's accuracy by comparing the percent recovered to the known true value. Matrix spike recoveries within the specified criteria for organic and inorganic analyses indicate the laboratory is capable of performance within established controls and potential matrix affects producing valid, quality results. Matrix spike results outside the control limits for organic analyses may or may not result in qualification of the data. An assessment of the entire analytical process is performed to determine the quality of the data and whether qualification is necessary.

Laboratory control samples are generated to provide accuracy of analytical methods and laboratory performance. They are prepared, extracted (as required by method), analyzed, and reported once per SDG, per matrix.

Surrogates (System Monitoring Compounds) are used to assess the method performance for each sample analyzed by organic analyses. Control limits established by the laboratory are also used to evaluate the accuracy of the surrogate recoveries. Factors beyond the laboratory's control, such as sample matrix effects, can cause the measured values to be outside of the established criteria. When

this occurs, the entire sampling and analytical process must be evaluated when determining the quality of the analytical data provided.

Tables B.1-13 and B.1-14 identify the number of matrix spike, laboratory control, and surrogate measurements performed for CAU 405. The tables present the total number of measurements analyzed, the number of measurements within the specified criteria, and the percentage of measurements that met the accuracy criteria. The percentage of acceptable measurements was determined by taking the number of measurements within criteria, dividing that by the total number of measurements analyzed, and multiplying by 100. In organic analyses, each sample had surrogates analyzed; therefore, the number of surrogates is significantly greater than the number of matrix spike and laboratory control samples.

Matrix spike accuracy results for organic analyses in Tables B.1-13 and B.1-14 include the total number of matrix spike measurements per analysis and the number of matrix spike measurements within criteria. All samples for organic analyses within the associated sample delivery group (SDG) are not qualified, only the native sample in which the spike was added. Although, several matrix spikes had recoveries above the control limits in TPH and PCB analyses, all associated sample results were nondetect, so no samples were estimated due to high TPH and PCB matrix spike recoveries. In the GRO analysis, the results for four samples were qualified as estimated due to low matrix spike recoveries. Inorganic matrix spike results outside of the established control criteria do result in data qualified as estimated for all the samples in that batch; however, only the analyte(s) outside of control requires qualification. The matrix spike recovery for silver exceeded criteria; therefore, silver results for samples listed in Table A.3-3 were qualified as estimated. Cadmium results for four samples (SS7STL15, SS3STS09, SS3STS07, and SS3STS10) were rejected in this CAU due to a matrix spike recovery less than 30 percent. Due to a laboratory oversight, matrix spikes were not spiked with motor oil; therefore, matrix spike data cannot be assessed for TPH-motor oil (Table B.1-13).

Tables B.1-13 and B.1-14 include the total number of LCS measurements per analysis and the number of LCS measurements within criteria. Laboratory control samples within the specified criteria for organic and inorganic analyses indicate the laboratory's method performance provides accurate results. Laboratory control samples outside of the established criteria result in the qualification of inorganic data and may result in the qualification of organic data. With organic

Table B.1-13
Laboratory Chemical Accuracy Measurements for CAU 405

	Organics						Inorganics	
	VOCs	**SVOCs**	**TPH-Diesel**	**TPH-Motor Oil**	**TPH-GRO**	**PCBs**	**Metals[a]**	**Mercury**
Matrix Spike (MS) Accuracy								
Total Number of MS Measurements	190	220	26	0	26	32	70	22
Total Number of MS Measurements Within Criteria	190	220	25	NA	17	30	60	16
% Acceptable MS Measurements	**100**	**100**	**96.2**	**NA**	**65.4**	**93.7**	**85.7**	**72.7**
Laboratory Control Sample (LCS) Accuracy								
Total Number of LCS Measurements	120	209	26	0	26	24	121	14
Total Number of LCS Measurements Within Criteria	120	205	26	NA	23	24	120	14
% Acceptable LCS Measurements	**100**	**98.1**	**100**	**NA**	**88.5**	**100**	**99.2**	**100**
Surrogate Accuracy								
Total Number of Measurements Analyzed	3448	5383	174	82	96	175	NA	NA
Total Number of Measurements Not Affected by Out-of-Control Surrogates	3440	5375	173	80	83	175	NA	NA
% Acceptable Surrogate Measurements	**99.8**	**99.9**	**99.4**	**97.6**	**86.5**	**100**	**NA**	**NA**

[a]Arsenic, barium, cadmium, chromium, lead, selenium, and silver

NA = Not applicable

Table B.1-14
Laboratory TCLP Chemical Accuracy Measurements for CAU 405

	Organics		Inorganics	
	TCLP VOCs	**TCLP SVOCs**	**TCLP Metals[a]**	**TCLP Mercury**
TCLP Matrix Spike (MS) Accuracy				
Total Number of MS Measurements	60	48	28	10
Total Number of MS Measurements Within Criteria	57	48	24	9
% Acceptable MS Measurements	**95.00**	**100**	**85.71**	**90**
TCLP Laboratory Control Sample (LCS) Accuracy				
Total Number of LCS Measurements	30	60	56	10
Total Number of LCS Measurements Within Criteria	30	39	56	10
% Acceptable LCS Measurements	**100**	**65.00**	**100**	**100**
TCLP Surrogate Accuracy				
Total Number of Measurements Analyzed	40	60	NA	NA
Total Number of Measurements Not Affected by Out-of-Control Surrogates	40	60	NA	NA
% Acceptable Surrogate Measurements	**100**	**100**	**NA**	**NA**

[a]Arsenic, barium, cadmium, chromium, lead, selenium, and silver

NA = Not applicable

analyses, an evaluation of the overall analytical process is performed to determine if data qualification is necessary. Inorganic LCS recoveries outside of established controls require data to be qualified for the individual analyte out of control. If the LCS criteria are not met, the laboratory performance and method accuracy are in question. In SVOC analyses, out-of-control LCSs were below control limits (indicating low bias) for 4-nitrophenol and 2,4-dinitrotoluene. Because 4-nitrophenol and 2,4-dinitrotoluene had extremely low LCS recoveries, the associated sample results for the compounds were rejected for sample SS4LFL80. In TPH-GRO analyses, the out-of-control

LCS was below control limits (indicating low bias). The associated samples SS7STL12 and SS7STL13 were qualified estimated due to the low LCS spike recovery. Due to a laboratory oversight, LCSs were not spiked with motor oil; therefore, TPH-Motor Oil LCS data cannot be assessed.

Surrogates reported within established control criteria indicate laboratory method performance and is not affected by matrix influences on the samples, resulting in quality, valid data. Tables B.1-10 and B.1-11 include the total number of sample measurements performed for each method and the total number of sample measurements qualified for surrogate recoveries exceeding criteria.

Accuracy for the measurement of target analytes collected at CAU 405 was determined for VOCs, TCLP VOCs, SVOCs, TCLP SVOCs, TPH-DRO, TPH-GRO, and PCBs, EPA 6010 and EPA 6020 metals (combined), TCLP metals, EPA 7470A/7471A (mercury), and TCLP mercury.

For the purpose of determining data accuracy of sample analysis for CAU 405, all water and soil samples including field QC samples (i.e., trip blanks, equipment rinsate samples, field blanks) were evaluated and incorporated into the accuracy calculation.

B.1.1.2.2 Accuracy for Radiological Analysis

Laboratory control samples and matrix spike samples are used to determine the accuracy of radiological measurements. The LCS is prepared by adding a known concentration of the radionuclide being measured to a sample that does not contain radioactivity (i.e., distilled water). This sample is analyzed with the field samples using the same sample preparation, reagents, and analytical methods employed for the samples. One LCS is prepared with each batch of samples for analysis by a specific measurement.

The matrix spike samples are prepared by adding a known concentration of a target analyte to a specified field sample with a measured concentration. The MS samples are analyzed to determine if the measurement accuracy is affected by the sample matrix. The matrix spike samples are analyzed with sample batches, when requested.

Table B.1-15 identifies the number of matrix spikes and laboratory control samples, including both soil and water matrices, measured for each radiological measurement for CAU 405. The percent

Table B.1-15
Laboratory Radiological Accuracy Measurements for CAU 405

	Gamma	Tritium	Gross Alpha	Gross Beta	Isotopic Uranium
Laboratory Control Sample (LCS) Accuracy					
Total Number	45	3	3	3	20
Total Number Within Criteria	45	3	3	3	20
% Acceptable LCS Measurements	**100**	**100**	**100**	**100**	**100**
Matrix Spike (MS) Accuracy					
Total Number	NA	2	2	2	5
Total Number Within Criteria	NA	2	2	2	5
% Acceptable MS Measurements	**NA**	**100**	**100**	**100**	**100**

NA = Not applicable

accuracy for the procedure is determined as the number of matrix spike or LCS samples analyzed within the control limits divided by the total number analyzed, and multiplied by 100.

Each isotopic gamma LCS sample contains four or five radionuclides, each of which has a percent recovery determined. Matrix spike measurements are usually not performed with gamma measurements because of the difficulty in preparing homogeneous samples and the radioactive waste generated by the process.

Three uranium radionuclides are added to the isotopic uranium LCS and matrix spike samples, but the U-235 concentration is usually too low to allow evaluation. The uranium-235 results are considered to be within accuracy control when the other uranium isotopes are within established control limits.

Laboratory control samples within the specified criteria for radiological analyses indicate the laboratory is producing valid data. If the LCS criteria are not met, the laboratory performance and method accuracy are in question. Radiological LCS recoveries outside of established controls require data to be qualified for the individual analyte out of control. Since LCS recoveries were 100 percent for all analyses, no data was qualified based on LCS performance.

Because all LCS and matrix spike recoveries were 100 percent for all radiological measurements, the laboratory accuracy for the CAU 405 analyses can be considered exceptional.

B.1.1.2.3 Accuracy Summary

Overall, the accuracy for CAU 405 measurements was high. The percent of the accuracy measurements for the TPH-GRO matrix spike that are within standard acceptable limits is 65.4 percent. This reduced accuracy for the matrix spike might be attributable to the matrix effects since the LCS accuracy for TPH-GRO is within acceptable limits.

The percent of the accuracy measurements for the TCLP SVOC laboratory control samples is 65 percent. Failed laboratory control samples indicates poor laboratory performance and the associated samples were appropriately qualified.

B.1.1.3 Completeness

Completeness is defined as sufficient data of the appropriate quality to satisfy DQO decision data requirements. A measure of completeness is the amount of data obtained that are judged to be valid. Percent completeness for sample analyses was determined by dividing the total number of samples analyzed (per method) by the total number of samples sent to the laboratory (per method) and multiplied by 100. Percent completeness for measurement usability (not rejected) was determined by dividing the total number of nonrejected measurements by the total number of measurements (per method), multiplied by 100. All measurements for completeness include all sample reanalyses. Tables B.1-16, B.1-17, and B.1-18 contain results of completeness per analytical method.

The specified sampling locations were used as planned and all samples were collected as specified in the CAIP (DOE/NV, 2001). No analyses were compromised as a result of sample containers not reaching the laboratory intact. For several samples, the results were qualified estimated (U/UJ, accordingly) because their temperature was not maintained.

As can be seen in Table B.1-18, all samples submitted to the laboratory were successfully analyzed for the requested radionuclides. Each gamma measurement provides results for 40 radionuclides while the uranium analysis measures three uranium isotopes. All the results provided by Paragon Analytics Inc. (PAI) were acceptable for use except three of the 2000 gamma results. Completeness

Table B.1-16
Chemical Completeness Measurements for CAU 405

Completeness Parameters	Organics						Inorganics	
	VOCs	SVOCs	TPH-Diesel	TPH-Motor Oil	TPH-GRO	PCBs[b]	Metals[a]	Mercury
Sample Analysis Completeness								
Total Samples Sent to Lab	97	83	92	82	82	25	83	82
Total Number of Samples Analyzed	97	83	92	82	82	25	83	82
Percent Completeness	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Measurement Usability Completeness								
Total Measurements[b]	3448	5383	174	82	96	175	575	82
Total Measurements Rejected - Field	0	0	0	0	0	0	0	0
Total Measurements Rejected - Lab/Matrix	30	89	82	74	8	0	4	0
Percent Completeness	**99.13**	**98.35**	**52.87**	**9.76**	**91.67**	**100**	**99.30**	**100**

[a]Arsenic, barium, cadmium, chromium, lead, selenium, and silver
[b]Total measurements include reanalysis

values for TPH as diesel and motor oil listed in Table B.1-16 are explained below along with rejected data for other parameters.

B.1.1.3.1 Total Petroleum Hydrocarbon Completeness

The original analysis request for TPH-DRO included the carbon range C_{10}-C_{38}. The laboratory only reported the diesel carbon range (typically C_{10}-C_{24}). However, the chromatograms provided the carbon range of C_{10}-C_{38}. A review of these chromatograms indicated that 69 of the 82 samples collected at CAU 405 showed no response for the carbon range of C_{10}-C_{38}. Therefore, professional judgement was used to determine that these 69 samples did not contain the motor oil carbon range C_{24}-C_{38}. The chromatograms for the remaining 13 samples exhibited activity in the carbon range

Table B.1-17
TCLP Chemical Completeness Measurements for CAU 405

Completeness Parameters	Organics		Inorganics	
	VOCs	SVOCs	Metals[a]	Mercury
Sample Analysis Completeness				
Total Samples Sent to Laboratory	4	4	6	7
Total Number of Samples Analyzed	4	4	6	7
Percent Completeness	**100**	**100**	**100**	**100**
Measurement Usability Completeness				
Total Measurements[b]	40	60	42	7
Total Measurements Rejected - Field	0	0	0	0
Total Measurements Rejected - Laboratory/Matrix	0	16	0	2
Percent Completeness	**100**	**73.3**	**100**	**71.4**

[a]Arsenic, barium, cadmium, chromium, lead, selenium, and silver
[b]Total measurements include reanalysis

Table B.1-18
Radiological Completeness Measurements for CAU 405

Completeness Parameters	Tritium	Gamma Spectrometry	Gross Alpha/Beta	Isotopic Uranium
Sample Analysis Completeness				
Total Samples Sent to Laboratory	5	50	5	42
Total Number of Samples Analyzed	5	50	5	42
Percent Completeness	**100**	**100**	**100**	**100**
Measurement Usability Completeness				
Total Number of Results[a]	5	2000	10	126
Total Measurements Rejected - Field	0	0	0	0
Total Measurements Rejected - Laboratory/ Matrix	0	3	0	0
Percent Completeness	**100**	**99.85**	**100**	**100**

[a]Total results include reanalysis

C_{24}-C_{38} that was not covered by the laboratory's calibration. Therefore, professional judgement could not determine if these 13 samples contained the motor oil carbon range C_{24}-C_{38}.

Reanalysis was requested for all 82 samples for the carbon range C_{10}-C_{38}. The laboratory reported TPH as diesel (C_{10}-C_{24}) and TPH as motor oil (C_{24}-C_{38}) separately. All nondetect TPH as diesel results from the reanalysis were rejected because the holding times were grossly exceeded. All nondetect TPH as motor oil results from the reanalysis were rejected because the holding times were grossly exceeded and an LCS was not spiked. Quantifiable results from the reanalysis were reported by the laboratory that resulted in usable data for TPH as motor oil in seven of the 13 samples (SS3DBS43, SS3STS09, SS4BLK, SS7STL12, SS7STL13, SS7STL14, and SS7STL15) that were previously indeterminate. The remaining six samples (SS3STS07, SS3STS10, SS4RST, SS4STS17, SS4STS95, and SS4STX69) were reported as nondetect; therefore, they are rejected and unusable. It is not possible, based on these factors, to make a professional determination regarding the validity of these six data points. A list of rejected data points for these six samples is provided in Table B.1-19. The rejected data points from the reanalysis of the other 69 samples are not included in Table B.1-19 because these results are not required to support closure decisions as the original analysis chromatograms showed no response for the carbon range of C_{10} - C_{38}.

In conclusion, the combination of the original reported results, review of the original chromatograms, and the usable data from the reanalysis provides valid data that can be used to satisfy closure decisions with the exception of six samples. Additional information is provided for these six samples in the following site-specific sections.

B.1.1.3.2 Septic Waste System 3 Rejected Data

Sample SS3STS07 was collected from soil below the base of the effluent end of the septic tank as an integrity sample. Sample SS3STS10 was collected below the septic tank effluent pipe, near the septic tank as an integrity sample for the pipe. Total petroleum hydrocarbon as diesel and motor oil analytical results were rejected for the reanalysis (indicated by the "RER" sample number suffix) of these samples. The original analytical result for TPH as diesel was nondetect in both samples and the chromatogram review for TPH as motor oil was indeterminate for both samples. The TPH field-screening results for these samples were also nondetect. Visual observations did not indicate soil staining in the vicinity of either sample. There was no evidence that the structural integrity of the

Table B.1-19
CAU 405 Rejected Data[a]
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Sample No.	Laboratory Method	Parameter	Sample Matrix
Septic Waste System 3			
SS3DBS43	SW8270C	1,2,4-Trichlorobenzene	Sludge
SS3DBS43	SW8270C	1,2-Dichlorobenzene	Sludge
SS3DBS43	SW8270C	1,3-Dichlorobenzene	Sludge
SS3DBS43	SW8270C	1,4-Dichlorobenzene	Sludge
SS3DBS43	SW8270C	2,2'-oxybis(1-Chloropropane)	Sludge
SS3DBS43	SW8270C	2,4,5-Trichlorophenol	Sludge
SS3DBS43	SW8270C	2,4,6-Trichlorophenol	Sludge
SS3DBS43	SW8270C	2,4-Dichlorophenol	Sludge
SS3DBS43	SW8270C	2,4-Dimethylphenol	Sludge
SS3DBS43	SW8270C	2,4-Dinitrophenol	Sludge
SS3DBS43	SW8270C	2,4-Dinitrotoluene	Sludge
SS3DBS43	SW8270C	2,6-Dinitrotoluene	Sludge
SS3DBS43	SW8270C	2-Chloronaphthalene	Sludge
SS3DBS43	SW8270C	2-Chlorophenol	Sludge
SS3DBS43	SW8270C	2-Methylnaphthalene	Sludge
SS3DBS43	SW8270C	2-Methylphenol	Sludge
SS3DBS43	SW8270C	2-Nitroaniline	Sludge
SS3DBS43	SW8270C	2-Nitrophenol	Sludge
SS3DBS43	SW8270C	3,3'-Dichlorobenzidine	Sludge
SS3DBS43	SW8270C	3-Nitroaniline	Sludge
SS3DBS43	SW8270C	4,6-Dinitro-2-methylphenol	Sludge
SS3DBS43	SW8270C	4-Bromophenyl phenyl ether	Sludge
SS3DBS43	SW8270C	4-Chloro-3-methylphenol	Sludge
SS3DBS43	SW8270C	4-Chloroaniline	Sludge
SS3DBS43	SW8270C	4-Chlorophenyl phenyl ether	Sludge
SS3DBS43	SW8270C	4-Methylphenol	Sludge
SS3DBS43	SW8270C	4-Nitroaniline	Sludge
SS3DBS43	SW8270C	4-Nitrophenol	Sludge
SS3DBS43	SW8270C	Acenaphthene	Sludge
SS3DBS43	SW8270C	Acenaphthylene	Sludge
SS3DBS43	SW8270C	Anthracene	Sludge

Table B.1-19
CAU 405 Rejected Data[a]
(Page 2 of 5)

Sample No.	Laboratory Method	Parameter	Sample Matrix
SS3DBS43	SW8270C	Benzo(a)anthracene	Sludge
SS3DBS43	SW8270C	Benzo(a)pyrene	Sludge
SS3DBS43	SW8270C	Benzo(b)fluoranthene	Sludge
SS3DBS43	SW8270C	Benzo(g,h,i)perylene	Sludge
SS3DBS43	SW8270C	Benzo(k)fluoranthene	Sludge
SS3DBS43	SW8270C	Carbazole	Sludge
SS3DBS43	SW8270C	Chrysene	Sludge
SS3DBS43	SW8270C	Di-n-butyl phthalate	Sludge
SS3DBS43	SW8270C	Di-n-octyl phthalate	Sludge
SS3DBS43	SW8270C	Dibenzo(a,h)anthracene	Sludge
SS3DBS43	SW8270C	Dibenzofuran	Sludge
SS3DBS43	SW8270C	Diethyl phthalate	Sludge
SS3DBS43	SW8270C	Dimethyl phthalate	Sludge
SS3DBS43	SW8270C	Fluoranthene	Sludge
SS3DBS43	SW8270C	Fluorene	Sludge
SS3DBS43	SW8270C	Hexachlorobenzene	Sludge
SS3DBS43	SW8270C	Hexachlorobutadiene	Sludge
SS3DBS43	SW8270C	Hexachlorocyclopentadiene	Sludge
SS3DBS43	SW8270C	Hexachloroethane	Sludge
SS3DBS43	SW8270C	Indeno(1,2,3-cd)pyrene	Sludge
SS3DBS43	SW8270C	Isophorone	Sludge
SS3DBS43	SW8270C	N-Nitrosodi-n-propylamine	Sludge
SS3DBS43	SW8270C	N-Nitrosodiphenylamine	Sludge
SS3DBS43	SW8270C	Naphthalene	Sludge
SS3DBS43	SW8270C	Nitrobenzene	Sludge
SS3DBS43	SW8270C	Pentachlorophenol	Sludge
SS3DBS43	SW8270C	Phenanthrene	Sludge
SS3DBS43	SW8270C	Phenol	Sludge
SS3DBS43	SW8270C	Pyrene	Sludge
SS3DBS43	SW8270C	bis(2-Chloroethoxy) methane	Sludge
SS3DBS43	SW8270C	bis(2-Chloroethyl) ether	Sludge
SS3DBS43	SW7470 - TCLP	Mercury	Sludge

Table B.1-19
CAU 405 Rejected Data[a]
(Page 3 of 5)

Sample No.	Laboratory Method	Parameter	Sample Matrix
SS3DBS43RE	SW8260B	1,1,2,2-Tetrachloroethane	Sludge
SS3DBS43RE	SW8260B	1,1,2-Trichloroethane	Sludge
SS3DBS43RE	SW8260B	2-Hexanone	Sludge
SS3DBS43RE	SW8260B	Acetone	Sludge
SS3DBS43RE	SW8260B	Bromoform	Sludge
SS3DBS43RE	SW8260B	Chlorobenzene	Sludge
SS3DBS43RE	SW8260B	Dibromochloromethane	Sludge
SS3DBS43RE	SW8260B	Ethylbenzene	Sludge
SS3DBS43RE	SW8260B	Styrene	Sludge
SS3DBS43RE	SW8260B	Tetrachloroethene	Sludge
SS3DBS43RE	SW8260B	Xylenes (total)	Sludge
SS3DBS43RE	SW8260B	m-Xylene & p-Xylene	Sludge
SS3DBS43RE	SW8260B	o-Xylene	Sludge
SS3DBS43RE	SW8260B	trans-1,3-Dichloropropene	Sludge
SS3DBS43RE	SW8015B	Volatile Petroleum Hydrocarbons[b]	Sludge
SS3LFS45	SW8270C	2,4-Dinitrophenol	Soil
SS3LFS46	SW8270C	2,4-Dinitrophenol	Soil
SS3LFS48	SW8260B	Acetone	Soil
SS3LFS51	SW8260B	Acetone	Soil
SS3LFS52	SW8260B	Acetone	Soil
SS3LFS57	SW8260B	Acetone	Soil
SS3LFS58	SW8260B	Acetone	Soil
SS3LFS58	PAI713R6	Cadmium-109	Soil
SS3LFS59	SW8260B	Acetone	Soil
SS3LFS60	SW8260B	Acetone	Soil
SS3LFS65	SW8260B	Acetone	Soil
SS3STS06	SW8260B	Acetone	Soil
SS3STS06	SW8270C	2,4-Dinitrophenol	Soil
SS3STS07	SW6010B	Cadmium	Soil
SS3STS07RER	SW8015B	TPH (as Diesel)	Soil
SS3STS07RER	SW8015B	TPH (as Motor Oil)	Soil
SS3STS09	SW6010B	Cadmium	Soil

Table B.1-19
CAU 405 Rejected Data[a]
(Page 4 of 5)

Sample No.	Laboratory Method	Parameter	Sample Matrix
SS3STS09	SW7470 - TCLP	Mercury	Soil
SS3STS10	SW6010B	Cadmium	Soil
SS3STS10RER	SW8015B	TPH (as Motor Oil)	Soil
SS3STS10RER	SW8015B	TPH (as Diesel)	Soil
Septic Waste System 4			
SS4LFS81	PAI713R6	Cadmium-109	Soil
SS4RSTRER	SW8015B	TPH (as Diesel)	Soil
SS4RSTRER	SW8015B	TPH (as Motor Oil)	Soil
SS4STS17	SW8270C	2,4-Dinitrophenol	Soil
SS4STS17RER	SW8015B	TPH (as Diesel)	Soil
SS4STS17RER	SW8015B	TPH (as Motor Oil)	Soil
SS4STS70	SW8015B	Volatile Petroleum Hydrocarbons[b]	Soil
SS4STS70RE	SW8015B	Volatile Petroleum Hydrocarbons[b]	Solid
SS4STS95RER	SW8015B	TPH (as Diesel)	Soil
SS4STS95RER	SW8015B	TPH (as Motor Oil)	Soil
SS4STX16	SW8270C	2,4-Dinitrophenol	Sludge
SS4STX69	SW8260B	Acetone	Sludge
SS4STX69	PAI713R6	Cadmium-109	Sludge
SS4STX69	SW8270 - TCLP	2,4,5-Trichlorophenol	Sludge
SS4STX69	SW8270 - TCLP	2,4,6-Trichlorophenol	Sludge
SS4STX69	SW8270 - TCLP	2,4-Dinitrotoluene	Sludge
SS4STX69	SW8270 - TCLP	Hexachlorobenzene	Sludge
SS4STX69	SW8270 - TCLP	Nitrobenzene	Sludge
SS4STX69	SW8270 - TCLP	Pentachlorophenol	Sludge
SS4STX69	SW8270 - TCLP	Pyridine	Sludge
SS4STX69RE	SW8270 - TCLP	1,4-Dichlorobenzene	Sludge
SS4STX69RE	SW8270 - TCLP	2,4,5-Trichlorophenol	Sludge
SS4STX69RE	SW8270 - TCLP	2,4,6-Trichlorophenol	Sludge
SS4STX69RE	SW8270 - TCLP	2,4-Dinitrotoluene	Sludge
SS4STX69RE	SW8270 - TCLP	Hexachlorobenzene	Sludge
SS4STX69RE	SW8270 - TCLP	Nitrobenzene	Sludge
SS4STX69RE	SW8270 - TCLP	Pyridine	Sludge

Table B.1-19
CAU 405 Rejected Data[a]
(Page 5 of 5)

Sample No.	Laboratory Method	Parameter	Sample Matrix
SS4STX69RER	SW8015B	TPH (as Diesel)	Sludge
SS4STX69RER	SW8015B	TPH (as Motor Oil)	Sludge
Septic Waste System 7			
SS7DBS23	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS28	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS29	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS30	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS31	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS32	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS34	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS35	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS36	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS37	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS38	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS40	SW8270C	2,4-Dinitrophenol	Soil
SS7LFS41	SW8270C	2,4-Dinitrophenol	Soil
SS7STL12	SW8015B	Volatile Petroleum Hydrocarbons[b]	Liquid
SS7STL13	SW8015B	Volatile Petroleum Hydrocarbons[b]	Liquid
SS7STL14	SW8270 - TCLP	2,4-Dinitrotoluene	Sludge
SS7STL14	SW8015B	Volatile Petroleum Hydrocarbons[b]	Sludge
SS7STL14RE	SW8015B	Volatile Petroleum Hydrocarbons[b]	Sludge
SS7STL15	SW8015B	Volatile Petroleum Hydrocarbons[b]	Sludge
SS7STL15	SW6010B	Cadmium	Sludge
SS7STL15	SW8270 - TCLP	2,4-Dinitrotoluene	Sludge
SS7STS21	SW8270C	2,4-Dinitrophenol	Soil
SS7STS24	SW8270C	2,4-Dinitrophenol	Soil

[a]Rejected parameters for TPH reanalysis are not included. Refer to Section B.1.1.3.1 for additional information.
[b]Volatile Petroleum Hydrocarbons = TPH-gasoline range organics

RER and RE = Reanalysis

septic tank had been compromised. The pipe contained a dark, organic rich sediment that was sampled (SS3STS09). The analytical results for sample SS3STS09 indicated the presence of TPH as diesel and motor oil, polyaromatic hydrocarbons, 4-Chloroaniline, and bis(2-Ethylhexyl) phthalate. Polyaromatic hydrocarbons, 4-Chloroaniline, and bis(2-Ethylhexyl) phthalate were not detected in samples SS3STS07 and SS3STS10. Because polyaromatic hydrocarbons, 4-Chloroaniline, and bis(2-Ethylhexyl) phthalate were not detected in these samples, TPH as motor oil is assumed not to be present in these two samples above the TPH PAL of 100 mg/kg. Therefore, the criteria for closure decisions were met.

Sample SS3DBS43 was collected from the distribution box contents. The sample was reanalyzed (indicated by the "RER" and "RE" sample number suffixes) for VOCs and TPH as gasoline. The original results for each of the associated rejected parameters listed in Table B.1-19 were not rejected. In addition, the sample was diluted and reanalyzed for SVOCs after all but two of the original SVOC results were rejected as indicated in Table B.1-19. The SVOC analytical results from the reanalysis were not rejected. Furthermore, the analytical result for TCLP mercury was rejected in this sample; however, sample SS3003 was collected from the distribution box contents to supplement this data gap. The analytical result for TCLP mercury for sample SS3003 was not rejected. Therefore, the criteria for closure decisions were met.

Acetone was rejected for nine and 2,4-Dinitrophenol was rejected for three SWS 3 soil samples as indicated in Table B.1-19. All of these samples were collected from the leachrock/native soil interface or 2.5 ft below the interface except SS3STS06, which was collected from below the base of the septic tank influent end. The other acetone and 2,4-Dinitrophenol results for soil samples were not rejected and reported as nondetect. Acetone and 2,4-Dinitrophenol were not detected in the pipe or distribution box content samples (SS3STS09 and SS3DBS43, respectively). These content samples were collected from media indicative of system use and represent the worst-case scenario. Therefore, the criteria for closure decisions were met.

Cadmium was rejected for three SWS 3 samples as indicated in Table B.1-19. Sample SS3STS07 was collected from soil below the base of the effluent end of the septic tank as an integrity sample. Sample SS3STS10 was collected below the septic tank effluent pipe, near the septic tank, as an integrity sample for the pipe. Sample SS3STS09 was collected from the pipe contents. Visual

observations did not indicate soil staining in the vicinity of either sample. There was no evidence that the structural integrity of the septic tank had been compromised. The cadmium concentration reported in sample SS3DBS43 was 5.6 mg/kg. This sample was collected from the distribution box contents, which are considered indicative of system use and represent the worst-case scenario. The pipe contents were removed and managed as waste with the IDW. Therefore, cadmium is assumed not to be present in samples SS3STS07 and SS3STS10 above the cadmium PAL of 810 mg/kg, and the criteria for closure decisions were met.

Cadmium-109 was rejected in sample SS3LFS58; however, this parameter is not a COPC and was not detected in other SWS 3 soil samples. Therefore, the criteria for closure decisions were met.

The analytical result for TCLP mercury was rejected for sample SS3STS09; however, the total mercury result was adequate for the necessary waste determination purposes. Therefore, the criteria for closure decisions were met.

B.1.1.3.3 Septic Waste System 4 Rejected Data

Sample SS4RST was collected from soil adjacent to the buried debris that is not associated with SWS 4; therefore, rejected results from reanalysis presented in Table B.1-19 for this sample are not relevant to closure decisions.

Sample SS4STS70 was collected below the base of the effluent end of the septic tank as an integrity sample. Total petroleum hydrocarbon as gasoline analytical results were rejected for the original and reanalysis (indicated by the "RE" sample number suffix) of this sample. The TPH field-screening result for this sample was nondetect. The other TPH as gasoline results for SWS 4 samples were not rejected and reported as nondetect. Visual observations did not indicate soil staining in the vicinity of the sample. There was no evidence that the structural integrity of the septic tank had been compromised. Therefore, the criteria for closure decisions were met.

Sample SS4STS17 was collected below the base of the influent end of the septic tank as an integrity sample. Total petroleum hydrocarbon as diesel and motor oil analytical results were rejected for the reanalysis (indicated by the "RER" sample number suffix) of this sample. The original analytical result for TPH as diesel was nondetect and the chromatogram review for TPH as motor oil was

indeterminate. The TPH field-screening result for this sample was 93 ppm. Visual observations did not indicate soil staining in the vicinity of the sample. There was no evidence that the structural integrity of the septic tank had been compromised. Sample SS4LFS90 was collected below and slightly north of SS4STS17. The analytical result and chromatogram for sample SS4LFS90 did not indicate the presence of TPH as diesel or motor oil, respectively. Sample SS4001 was collected during closure activities from the vicinity of SS4STS17 and analyzed to supplement the SS4STS17 TPH as motor oil data. Samples SS4003 and SS4004 were collected during closure activities from the east and west ends, respectively, below the septic tank after it, and some soil below it, was removed. The analytical results for these samples indicated that TPH as diesel and motor oil were not present above MRLs. Therefore, the criteria for closure decisions were met.

The 2,4-Dinitrophenol was rejected for two SWS 4 samples as indicated in Table B.1-19. Sample SS4STS17 was collected from below the base of the septic tank influent end. Sample SS4STX16 was collected from the contents of the influent end of the septic tank. The other 2,4-Dinitrophenol results for SWS 4 samples were not rejected and reported as nondetect. Process knowledge does not indicate that 2,4-Dinitrophenol should be expected in this system. Therefore, the criteria for closure decisions were met.

Sample SS4STS95 was collected from a stepout location for the septic tank influent integrity sample discussed above. Total petroleum hydrocarbon as diesel and motor oil analytical results were rejected for the reanalysis (indicated by the “RER” sample number suffix) of these samples. The original analytical result for TPH as diesel was nondetect and the chromatogram review for TPH as motor oil was indeterminate. The TPH field-screening result for this sample was also nondetect. Sample SS4STS96 was collected below this sample. The analytical result and chromatogram for sample SS4STS96 did not indicate the presence of TPH as diesel or motor oil, respectively. The TPH field-screening result for sample SS4STS96 was also nondetect. The conclusions drawn above for sample SS4STS17 did not indicate that TPH as motor oil should be a concern for that location. Therefore, TPH as motor oil should not be a concern at this related stepout location, and the criteria for closure decisions were met.

Sample SS4STX69 was collected from the contents of the effluent end of the septic tank. Total petroleum hydrocarbon as diesel and motor oil analytical results were rejected for the reanalysis

(indicated by the "RER" sample number suffix) of this sample. The original analytical result for TPH as diesel was nondetect at an elevated detection limit of 400 mg/kg and the chromatogram review for TPH as motor oil was indeterminate. The contents were removed during closure activities and managed as hydrocarbon burdened solid waste. Acetone was rejected in this sample. A portion of the original and re-analyzed analytical results rejected for TCLP SVOCs in this sample are listed in Table B.1-19. The total SVOC results for each rejected parameter were reported as nondetect except for pyridine which was not on the total SVOC target analyte list. The pyridine result for sample SS4STX16, collected from the influent end of the septic tank, was reported as nondetect. Cadmium-109 was also rejected in this sample. Process knowledge does not indicate that pyridine or cadmium-109 should be expected in this system. These data gaps did not preclude the necessary waste determination purposes; therefore, these data gaps are acceptable as they do not affect closure decisions.

Cadmium-109 was rejected in sample SS4LFS81; however, this parameter is not a COPC and was not detected in any other SWS 4 soil samples. Therefore, the criteria for closure decisions were met.

B.1.1.3.4 Septic Waste System 7 Rejected Data

Analytical results for 2,4-Dinitrophenol were rejected for all but one of the SWS 7 soil samples as indicated in Table B.1-19. The one 2,4-Dinitrophenol soil sample result was not rejected and reported as nondetect. 2,4-Dinitrophenol was not detected in the septic tank content liquid and sludge samples (SS7STL12, SS7STL13, SS7STL14, and SS7STL15). These content samples were collected from media indicative of system use and represent the worst-case scenario. Process knowledge does not indicate that 2,4-Dinitrophenol should be expected in this system. Therefore, the criteria for closure decisions were met.

The analytical results for TCLP 2,4-Dinitrotoluene in samples SS7STL14 and SS7STL15 were rejected; however, the total analysis results were not rejected and reported as nondetect. The total cadmium result was rejected for sample SS7STL15; however, the TCLP cadmium result was not rejected. These data gaps did not preclude the necessary waste determination purposes. Therefore, the criteria for closure decisions were met.

The analytical results for TPH (GRO) were rejected for samples (SS7STL12, SS7STL13, SS7STL14, and SS7STL15) collected from the effluent chamber of the septic tank. The analytical results for TPH as motor oil in samples SS7STL14 and SS7STL15 exceeded the regulatory level of 100 mg/kg (NAC, 1996). The TPH (GRO) results would not change the regulatory status of the media regardless of the actual concentrations that may be present. Therefore, the criteria for closure decisions were met.

B.1.1.3.5 Completeness Summary

Overall project completeness, as can be seen from the percent completeness presented in Tables B.1-16, B.1-17, and B.1-18, meets project requirements. Individual data points which were identified as incomplete or rejected were determined to not create decisional gaps in the project data. Therefore, the measurements performed for CAU 405 are considered valid in regard to completeness.

B.1.1.4 Representativeness

A seven-step DQO process was utilized to identify CAU 405 requirements. During the process, locations were selected which enabled the samples collected to be representative of the media being evaluated. Samples were collected as planned. Quality control blanks are used as a way of measuring outside factors that could impact sample results. No data was qualified due to QC blanks. Therefore, the analytical data acquired during the CAU 405 corrective action investigation are representative of site characteristics.

B.1.1.5 Comparability

Field sampling activities were performed and documented in accordance with approved procedures that are comparable to standard industry practices. Approved standardized analytical methods and procedures were used to analyze, report, and validate the data. Select samples were analyzed using EPA method SW-846 6020 instead of EPA method SW-846 6010B as specified in the Leachfield Work Plan (DOE/NV, 1998); however, method SW-846 6020 meets or exceeds the criteria established for SW-846 6010B. Therefore, datasets within this project are comparable to all other datasets generated using standardized quality procedures.

B.1.2 Reconciliation of DQOs and Conceptual Model(s)

This section provides a reconciliation of the data collected and analyzed during this investigation, with the preliminary conceptual site models established in the DQO process.

B.1.2.1 Initial Conceptual Model

A general conceptual model was developed for CAU 405 as presented in the CAIP (DOE/NV, 2001) based on historical information, previous septic tank sample analyses, and process knowledge. This data assessment reconciles the investigation results with the conceptual model.

The general conceptual model was applied at CAU 405. This model assumed that any contamination would be located in the subsurface. The extent of underlying soil impact was expected to be dependent upon the nature of COPCs and other factors.

B.1.2.2 Investigation Design and Contaminant Identification

The conceptual site model was used as the basis for identifying appropriate sampling strategies and data collection methods.

To address the conceptual model, subsurface samples were collected for analyses designed to define the extent of the COPCs identified in the CAIP. A biased strategy was developed to focus the investigation on areas of potential contamination. The models assumed that the contamination would be limited to the boundaries of the site due to the minimal potential for migration based on the geological and historical information for the site.

Implementation of the investigation design has shown that contamination did not extend beyond the septic system components; therefore, it did not extend beyond the boundaries of the CAS as presented in Appendix A. This is reasonable because the models predict that the extent of impact of any contaminated effluent released to soil is limited (DOE/NV, 2001).

B.1.2.3 Contaminant Nature and Extent

The presence of contamination was identified in septic system components by sample results showing COPC concentrations exceeding regulatory thresholds for future disposal of affected media, thereby

defining COCs at the CASs. Soil sample results demonstrated that COCs were not identified in soil within the physical boundaries of the general subsurface model defined in the CAIP (DOE/NV, 2001). The CAS-specific investigation findings, analytical results, and descriptions of site conditions are presented in Appendix A.

B.1.3 Conclusions

The DQIs (precision, accuracy, completeness, representativeness, and comparability) were all evaluated for quality and impact to the data. All of the data, except data qualified as rejected, can be used in project decisions.

B.2.0 References

NAC, see *Nevada Administrative Code*.

Nevada Administrative Code. 1996. NAC 445A.2272, "Contamination of soil: Establishment of action levels." Carson City, NV.

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U.S. Department of Energy, Nevada Operations Office. 2001. *Corrective Action Investigation Plan for Corrective Action Unit 405: Area 3 Septic Systems, Tonopah Test Range, Nevada,* DOE/NV--721. Las Vegas, NV.

U.S. Environmental Protection Agency. 1994. *Contracts Laboratory Program National Functional Guidelines for Inorganic Data Review,* EPA 540-R-94/013. Washington, DC.

U.S. Environmental Protection Agency. 1996. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846 CD ROM PB97-501928GEI, which contains updates for 1986, 1992, 1994, and 1996. Washington, DC.

Appendix C

Closure Activity Summary for CAU 405: Area 3 Septic Systems, Tonopah Test Range, Nevada

C.1.0 Introduction

Corrective Action Unit 405 consists of three CASs located in and near Area 3 of the Tonopah Test Range: CAS 03-05-002-SW03 (SWS 3), CAS 03-05-002-SW04 (SWS 4), and CAS 03-05-002-SW07 (SWS 7) (Figure C.1-1). Each CAS consists of a septic system and an associated collection system that was used for wastewater disposal until a consolidated sewer system was installed in 1990, at that time the septic systems were abandoned. Closure activities at CAU 405 were conducted to properly close two septic tanks and a distribution box so that closure of the site could be accomplished through a CADD/CR. Transite pipe was removed as a best management practice. The requirements for closing the sites were based on characterization data obtained during the corrective action investigation for these sites.

Site closure was completed by obtaining a *National Environmental Policy Act* (NEPA) determination and conducting the following activities:

Septic Waste System 3

- Conducted utility clearance.
- Excavated and removed the distribution box along with its contents.
- Grouted the influent and effluent pipes.
- Collected one soil cleanup verification sample.
- Backfilled and regraded to a natural slope.
- Transported and disposed of petroleum hydrocarbon waste at the NTS Area 6 Hydrocarbon Landfill.

Septic Waste System 4

- Conducted utility clearance.
- Excavated and removed the septic tank along with its contents.
- Collected two soil samples, one from under the influent pipe at the base of the septic tank and one from under the effluent pipe at the base of the septic tank.

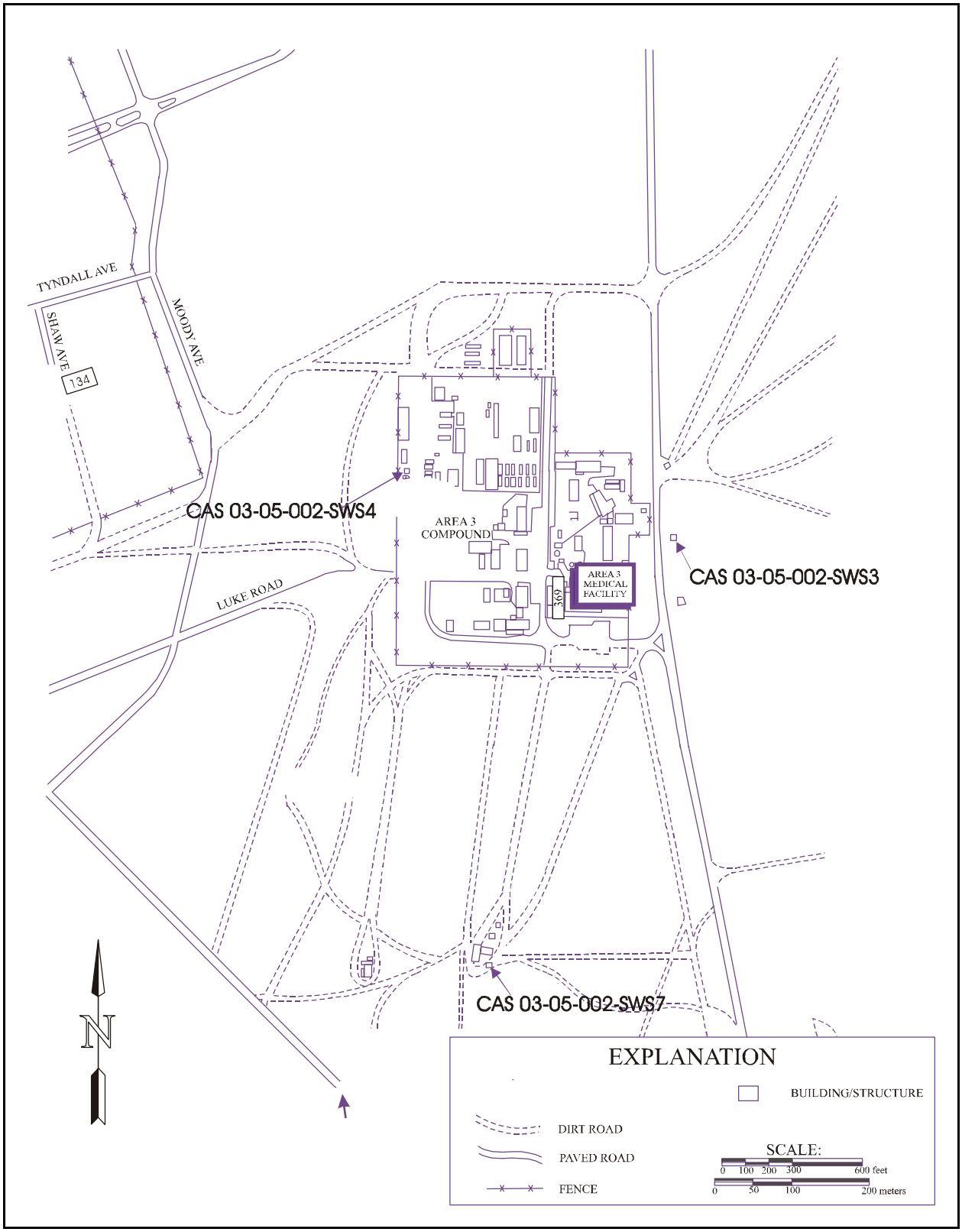


Figure C.1-1
Site Map for CAU 405, Area 3 Septic Systems

- Collected two soil cleanup verification samples.
- Grouted the influent pipe formerly connected to the septic tank.
- Backfilled the excavation and regraded to a natural slope.
- Transported and disposed of petroleum hydrocarbon waste at the NTS Area 6 Hydrocarbon Landfill.

Septic Waste System 7

- Conducted utility clearance.
- Excavated and removed septic tank contents from the effluent side.
- Pressure-washed septic tank.
- Solidified the septic tank contents and associated rinsate.
- Collected verification samples from the septic tank rinsate.
- Collected three soil cleanup verification samples.
- Grouted the influent pipe coming into the effluent chamber.
- Backfilled and grouted the top of septic tank.
- Excavated and removed approximately 20 ft of transite pipe.
- Backfilled and regraded the excavations to a natural slope.
- Transported and disposed of asbestos transite pipe and petroleum hydrocarbon waste at the NTS Area 6 Hydrocarbon Landfill.

C.2.0 Closure Activities

Closure activities at CAU 405 were conducted to properly close the SWS 4 and SWS 7 septic tanks and the SWS 3 distribution box, and to remove transite pipe as a best management practice so that closure of the site could be accomplished through a CADD/CR. Mobilization and site staging occurred on January 14, 2002.

C.2.1 Septic Waste System 3

Septic Waste System 3 consisted of a septic tank, a distribution box, and associated piping. The distribution box was excavated on January 14, 2002. The distribution box was removed from the ground with its contents and transported to the staging area at SWS 4 on January 16, 2002, and placed into a 15.29-cubic meter (m^3) (20-cubic yard [yd^3]) rolloff container on January 29, 2002.

While the distribution box was being removed, it tipped and spilled approximately 0.0044 m^3 (0.16 cubic feet [ft^3]) of dry sludge onto the surrounding soil. The dry sludge exceeds the action level for TPH and the PAL for arsenic in soil. Approximately two yards of soil was over-excavated to remove the spilled material and any soil it may have impacted. Verification sample SS3001A was collected to verify that all potentially impacted soil had been removed. The sample was analyzed for TPH (DRO), arsenic, and total SVOCs (analytical methods are provided in Appendix A). The grab sample was collected using a decontaminated sampling scoop and placed into laboratory sampling bottles.

After analytical results confirmed that all impacted soil at or above preliminary action levels (established in the Leachfield Work Plan and CAIP) had been removed, the one influent pipe going into the distribution box's excavation and the six effluent pipes going out of the excavation were grouted closed. This excavation and the previously excavated area near the septic tank were backfilled and regraded to a natural slope on January 29, 2002.

The rolloff container was transported to the NTS on January 31, 2002. The contents were disposed of in the Area 6 Hydrocarbon Landfill on February 4, 2002.

C.2.2 Septic Waste System 4

Septic Waste System 4 consisted of one septic tank and associated piping. The septic tank contained approximately 1.74 m^3 (2.28 yd^3) of dry sludge. It was determined that the addition of water to pump and rinse the septic tank would generate more waste than removing the entire septic tank. Therefore, the entire septic tank and its contents were removed and disposed of as petroleum hydrocarbon waste. Soil from above and around the septic tank was excavated on January 14, 2002. The septic tank was removed from the ground and placed into a rolloff container on January 18, 2002.

The integrity of the (fiberglass) septic tank had been previously compromised during investigation activities. As a result, the septic tank broke into several pieces while it was being removed and some of the septic tank contents were released. Soil potentially impacted by the contents of the septic tank was over-excavated and disposed of along with the septic tank into a rolloff container.

Two soil samples were collected before the septic tank was pulled, and two were collected after the septic tank had been pulled and potentially impacted soil removed. Of the samples collected before pulling the septic tank, one sample (SS4001) was collected from under the influent pipe going into the septic tank at the base of the septic tank, and one (SS4002) was taken from under the effluent pipe going out of the septic tank at the base of the septic tank. Two verification samples (SS4003 and SS4004) were collected from the bottom of the excavation after the septic tank was pulled to verify that all potentially impacted soil was removed. Samples were analyzed for TPH (DRO). All samples were collected as grab samples from the center of the excavator's bucket using a decontaminated sampling scoop and placed into laboratory sampling bottles.

After analytical results confirmed that potentially impacted soil had been removed, the excavation was backfilled to the influent pipe. On January 29, 2002, the influent pipe was grouted closed and the rest of the excavation was backfilled and regraded to a natural slope.

The rolloff container was transported to the NTS on January 31, 2002. The contents were disposed of in the Area 6 Hydrocarbon Landfill on February 4, 2002.

C.2.3 Septic Waste System 7

Septic Waste System 7 consisted of a septic tank and associated piping, which included the transite pipe used as a header for the leachfield. The septic tank contained approximately 0.46 m (1.5 ft) of liquid and approximately 0.91 m (3 ft) of sludge. The volume of waste was greater than anticipated. The septic tank was exposed on January 14, 2002. The contents of the septic tank were removed by hand and placed into, and solidified within, a rolloff container on January 17, 2002. The septic tank was triple rinsed with water and the septic tank contents and rinse water was solidified and disposed of in the rolloff container.

After the septic tank was triple-rinsed, two rinse water verification samples were collected. Sample number SS7001 was analyzed for MS/MSD. Sample number SS7002 was a duplicate of SS7001. All samples were collected using a decontaminated, long-handled sampling scoop and placed into laboratory sampling bottles. Samples were analyzed for TPH (DRO).

While containerizing the rinsate from the septic tank, approximately 3 gallons of liquid leaked from the container onto the surrounding soil. The spill was contained and additional solidification materials were added to the rolloff container. The damp soil in the spill area was excavated to a depth of approximately 0.10 m to 0.15 m (4 to 6 in.) below ground surface. On January 28, 2002, two soil verification samples (SWS071-V1 and SWS071-V2) and one duplicate (SWS071-V3 duplicate of SWS071-V2) were collected from the bottom of the excavated area and analyzed for TPH (DRO and GRO). Analytical results showed all TPH concentrations to be less than the NAC regulatory action level of 100 mg/kg.

Approximately 6.10 m (20 ft) of transite pipe, the header for the leachfield distribution pipes, was excavated and placed into a rolloff container.

After analytical results confirmed that impacted sludge had been removed from the septic tank, it was backfilled to the influent pipe coming into the effluent chamber. On January 29, 2002, the influent pipe was grouted closed and the rest of the excavation was backfilled and regraded with inert material and regraded to a natural slope.

The rolloff container was transported to the NTS on January 30, 2002. The contents were disposed of in the Area 6 Hydrocarbon Landfill on February 4, 2002.

C.3.0 Waste Management

A total of approximately 15.3 m^3 (20 yd^3) of impacted material was generated from the three sites. This includes an estimated 2,044 liters (540 gallons) of solidified sludge waste from the septic tank at SWS 7 and four drums of IDW from investigation activities. The waste was placed into two rolloff containers, transported to the NTS, and disposed in the Area 6 Hydrocarbon Landfill. Copies of the waste disposal records are provided in Attachment 1.

Waste disposal activities were completed on February 4, 2002.

C.4.0 Verification Sample Analyses

A total of two rinsate and eight soil samples were collected. Sample locations are shown in Figure C.4-1.

- One soil verification sample was collected from SWS 3. The sample was collected in the middle of the east side of the excavation.
- Four verification samples were collected at SWS 4. One sample was taken from under the influent pipe going into the septic tank and one from under the effluent pipe going out of the septic tank. The other two samples were taken from under the removed septic tank, one from the influent side and one from the effluent side.
- Two rinsate verification samples were collected from the septic tank at CAS 03-05-002-SWS07.
- Three soil verification samples were collected from the CAS 03-05-002-SWS07 spill site. One soil sample was collected from under the rolloff container and two samples (one duplicate) were collected next to the rolloff container at the spill source location.

For excavations up to 1.2 m (4 ft) below ground surface, samples were collected by hand using a decontaminated stainless steel or an appropriate scoop. For excavations exceeding 1.2 m (4 ft) in depth, the samples were collected as grab samples from the soil in the center of the decontaminated bucket of the excavation equipment. Rinsate samples were collected from the septic tanks using a decontaminated long-handled scoop. All samples were placed in the appropriate, certified clean, sample containers.

The three soil samples from SWS 7 were labeled with a unique sample number, placed on ice in coolers, and transported under chain-of-custody to NEL Laboratories in Las Vegas, Nevada. Samples from SWS 7 were numbered using the following nomenclature:

SWS071-V1

Where:

- SWS07 is the site location in Area 3.
- 1-V1 is the sample number.

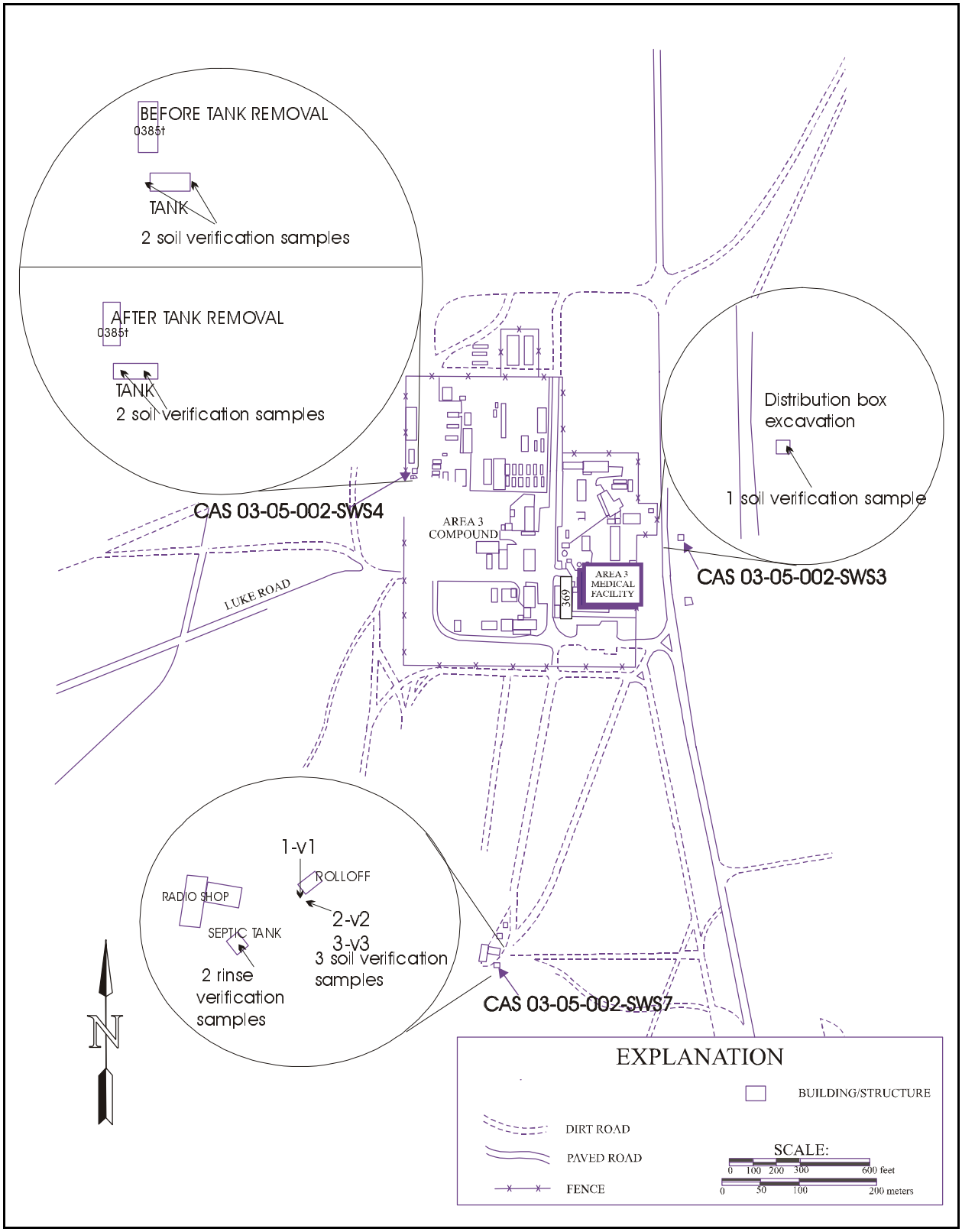


Figure C.4-1
Verification Sample Locations

All other samples followed approved procedures as described in Appendix A. Analytical results showed TPH (DRO and GRO) concentrations to be nondetectable (less than 20 mg/kg) for all samples collected from the spill site at SWS 7. Analytical results are provided in Attachment 2 and are summarized in Table C.4-1. Analytical results for rinsate samples collected at SWS 7 and soil samples collected at SWSs 3 and 4 did not exceed the MRLs or PALs established in the Leachfield Work Plan and CAIP except for arsenic in sample SS3001A. The arsenic result did not exceed the typical range for background as discussed in Appendix A. Analytical results for samples SS4001 and SS4002 are presented in Appendix A, Section A.4.0.

Table C.4-1
Soil Verification Samples for SWS07

Sample Identification	Total Petroleum Hydrocarbons mg/kg
Closure Standard	100 mg/kg
SWS071-V1	ND
SWS072-V2	ND
SWS073-V3	ND
SS7001	ND
SS7002	ND
SS4003	ND
SS4004	ND
SS3001A	ND

ND = Nondetect
mg/kg = Milligrams per kilogram

C.5.0 Summary

Closure activities were completed at CAU 405 by removing all TPH-impacted waste and disposing of the solid waste at the NTS Area 6 Hydrocarbon Landfill. This includes the septic tank from SWS 4, the distribution box from SWS 3, the septic tank contents from SWS 7, and approximately 6.10-m (20-ft) of transite pipe from SWS 7.

Verification samples of the final rinse water from the septic tank and the soil verification samples were collected and met the established closure criteria.

All pipes leading to the septic tanks and distribution box were cut and the ends sealed with grout. The SWS 7 septic tank effluent chamber was backfilled and capped with grout. All excavations were backfilled and regraded to a natural slope.

It is anticipated, based on the work completed, that the site can be closed without further corrective action requirements.

Attachment 1
Waste Disposal

11709

Bechtel Nevada

NTS Landfill Load Verification

(Waste definitions are available on page 2)

SWO USE (Circle One Area) AREA 23 6 9 LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GENERATOR INFORMATION
(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Allison Urbon Cpc 405 Phone Number: 5-7520

Location / Origin: TTR Area 3 Septic Waste System 03, 04, & 07

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescible	☐ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☒ FFACO-offsite 695 2/5/02	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	
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 disposed 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 separators
☐ Light ballasts (contact SWO)	☐ Drained fuel filters (gas & diesel)	☐ Deconned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWC)		

Additional waste accepted at the Area 6 Hydrocarbon Landfill:

☐ Septic sludge ☐ Rags	☐ Drained fuel filters (gas & diesel)	☐ Crushed non-terne plated oil filters
☐ Plants	☐ 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 the site. I have verified this through the waste characterization method identifi prohibited and allowable waste items.

Print Name: Craig Lyons

Signature: Craig Lyons Date: 1-28-02

Note: Food waste, office trash, and/or animal carcasses are considered not to co require a radiological clearance.

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: Craig Lyons **DATE:** 1-28-02

BN-0646 (09/99)

SWO USE ONLY

Load Weight (net from scale or estimate): 29,240 Signature of Certifier: Keith Kayong

BN-0615 (09/99)

01/28/2002 08:20 17022957582

FF

11704

Bechtel Nevada NTS Landfill Load Verification

(Waste definitions are available on page 2)

SWO USE (Circle One Area) AREA 23 6 9 LANDFILL

For waste characterization, approval, and/or assistance, contact Solid Waste Operation (SWO) at 5-7898.

REQUIRED: WASTE GENERATOR INFORMATION

(This form is for rolloffs, dump trucks, and other onsite disposal of materials.)

Waste Generator: Allison Urban CAU 405 Phone Number: 5-7520

Location / Origin: TTR Area 3 Septic Waste System 03, 04, & 07

Waste Category: (check one)		☐ Commercial	☒ Industrial	
Waste Type: (check one)	☐ NTS	☐ Putrescible	☐ FFACO-onsite	☐ WAC Exception
	☐ Non-Putrescible	☐ Asbestos Containing Material	☒ FFACO-offsite 375 2/5/02	☐ Historic DOE/NV
Pollution Prevention Category: (check one)		☒ Environmental management	☐ Defense Projects	
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 disposed 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 separators
☐ Light ballasts (contact SWO)	☐ Drained fuel filters (gas & diesel)	☐ Decanned Underground and Above Ground Tanks
☐ Hydrocarbons (contact SWO)		

Additional waste accepted at the Area 6 Hydrocarbon Landfill:

☐ Septic sludge	☐ Rags	☐ Drained fuel filters (gas & diesel)	☐ Crushed non-terne plated oil filters
☐ Plants		☐ 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 site. I have verified this through the waste characterization method identified prohibited and allowable waste items.

Print Name: Craig Lyons

Signature: Craig Lyons Date: 1-28-02

Note: Food waste, office trash and/or animal carcasses are considered not to contain require a radiological clearance.

Radiation Survey Release for Waste Disposal

RCT Initials

☐ This container/load is free of external radioactive contamination.

CL ☒ 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: Craig Lyons DATE: 1-28-02

BN-0648 (09/99)

SWO USE ONLY

Load Weight (net from scale or estimate): 29,120 Signature of Certifier: Keith Kazay

BN-0618 (09/99)

Bechtel Nevada

LANDFILL DAILY ACCESS REGISTER

CGS 2/5/02

DATE: 2-4-02 (check one) ☐ Area 9 - U10c ☑ Area 6 Hydrocarbon ☐ Area 23 Landfill

WASTE GENERATOR Name, Phone #	WASTE ORIGIN Area, Building	WASTE CODE*	TICKET NUMBER	NET WEIGHT (lbs)	TIME IN	TIME OUT	DRIVER Last Name, Initials
Allen Urban	T.T.R Area 3 CAU 405	H	11704	29,520	08:05	08:20	Kaczay K
" "	" " CAU 405	H	11709	29,240	10:55	11:10	Kaczay K
	CGS 2/5/02						

*Waste Codes: ASB - Asbestos; C - Construction; H - Hydrocarbon; P - Putrescible; NP - Non-Putrescible; S - Sewage Sludge; F - FFACO

INSPECTION INFORMATION

Site Conditions:

Do berms/walls need repair? ☑ No ☐ Yes
Does cover need repair / evidence of settling? ☑ No ☐ Yes
Does fence need repair? ☑ No ☐ Yes
Does road(s) need repair? ☑ No ☐ Yes
Has litter accumulated? ☑ No ☐ Yes
Has water accumulated? ☑ No ☐ Yes

Corrective Actions Needed:

Corrective Actions Taken: (description, name, date):

INSPECTED BY (date/time): [signature] 8:00 2-4-02

Random Load Inspection: **Ticket Number:** 11704

☑ **No** prohibited waste was found
☐ **Yes**, the prohibited waste(s) identified below were found.
- ☐ Putrescible waste (prohibited in U10c and Area 6 Landfills).
- ☐ Hazardous waste per NAC 444.580
- ☐ PCB waste regulated by TSCA
- ☐ Waste containing free liquids
- ☐ TSCA-regulated
- ☐ Waste failing the "no added radioactivity" per the POC requirement.
- ☐ Friable asbestos (prohibited in U1Oc and Area 6 Landfills)
- ☐ Hydrocarbon soil at >100 ppm TPH (prohibited in 23, allowed in U10c provided less than 50 cubic yards/week are disposed)

Corrective Actions Taken: (description, name, date, who notified):

INSPECTED BY (date/time): [signature] 2-4-02 8:30

Waste Management System - [Sanitation Module]

Action Edit Block Field Record Query Window Help

SOLID WASTE TRACKING SYSTEM

Landfill ID	Date Of Receipt	Waste Category	Type Of Waste	EM or DP	Routine or Clean-up	Weight Pounds	Origin Of Waste: Area No.	Origin Of Waste: Building No.	
AREA 6	04-FEB-2002	I	FFACO-OFFSITE	EM	CLEAN-UP	29520	03	TTR	Comments
AREA 6	04-FEB-2002	I	FFACO-OFFSITE	EM	CLEAN-UP	29240	03	TTR	Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments
									Comments

If you Save data, a report on records that have been changed today will be printed to your default printer when you Exit.

Bechtel Nevada | << | < | > | >> | Query | Save | Exit | Bechtel Nevada

Count: *2

Attachment 2
Analytical Results

NEL LABORATORIES
Reno • Las Vegas
Phoenix • Boise

Las Vegas Division
4208 Arcata Way, Suite A • Las Vegas, Nevada 89030
702-657-1010 • Fax: 702-657-1577
1-888-368-3282

CLIENT: Bechtel Nevada
P.O. Box 98521, M/S NTS273
Las Vegas, NV 89193-8521
ATTN: Ted Redding

PROJECT NAME: V1413
PROJECT NUMBER: 30033

NEL ORDER ID: L0201256

Attached are the analytical results for samples in support of the above referenced project.

Samples submitted for this project were not sampled by NEL Laboratories. Samples were received by NEL in good condition, under chain of custody on 1/28/02.

Should you have any questions or comments, please feel free to contact our Client Services department at (702) 657-1010.

Method Blank surrogate originally failed low. Samples were re-extracted and re-analyzed.

Some QA results have been flagged as follows:

R5 - RPD exceeded the laboratory control limit. Recovery met acceptance criteria.

Stan Van Wagenen
Laboratory Manager

2/1/02
Date

CERTIFICATIONS:

	Reno	Las Vegas	S. California
Arizona	AZ0520	AZ0518	AZ0605
California	1707	2002	2264
US Army Corps of Engineers	Certified	Certified	

	Reno	Las Vegas	S. California
Idaho	Certified	Certified	
Montana	Certified	Certified	
Nevada	NV033	NV052	CA084
L.A.C.S.D.			10228

NEL LABORATORIES

CLIENT:	Bechtel Nevada	CLIENT ID:	**SWS071-V1 Re-extract**
PROJECT ID:	V1413	DATE SAMPLED:	1/28/02
PROJECT #:	30033	NEL SAMPLE ID:	L0201256-04

TEST: **Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992**

METHOD:	EPA 8015M	ANALYST:	PXC - Las Vegas Division
MATRIX:	Solid	EXTRACTED:	1/30/02
DILUTION:	1	ANALYZED:	1/31/02

PARAMETER	Result	Reporting Limit
Gasoline Range (C8-C12)	ND	10. mg/kg
Diesel Range (C12-C22)	ND	10. mg/kg
Oil Range (C22-C34)	ND	50. mg/kg
Total	ND	10. mg/kg

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	60	54 - 130

ND - Not Detected

NEL LABORATORIES

CLIENT:	Bechtel Nevada	CLIENT ID:	**SWS072-V2 Re-extract**
PROJECT ID:	V1413	DATE SAMPLED:	1/28/02
PROJECT #:	30033	NEL SAMPLE ID:	L0201256-05
TEST:	**Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992**		
METHOD:	EPA 8015M	ANALYST:	PXC - Las Vegas Division
MATRIX:	Solid	EXTRACTED:	1/30/02
DILUTION:	1	ANALYZED:	1/31/02

PARAMETER	Result	Reporting Limit
Gasoline Range (C8-C12)	ND	10. mg/kg
Diesel Range (C12-C22)	ND	10. mg/kg
Oil Range (C22-C34)	ND	50. mg/kg
Total	ND	10. mg/kg

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	70	54 - 130

ND - Not Detected

NEL LABORATORIES

CLIENT:	Bechtel Nevada	CLIENT ID:	**SWS-73-V3 Re-extract**
PROJECT ID:	V1413	DATE SAMPLED:	1/28/02
PROJECT #:	30033	NEL SAMPLE ID:	L0201256-06
TEST:	**Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992**		
METHOD:	EPA 8015M	ANALYST:	PXC - Las Vegas Division
MATRIX:	Solid	EXTRACTED:	1/30/02
DILUTION:	1	ANALYZED:	1/31/02

PARAMETER	Result	Reporting Limit
Gasoline Range (C8-C12)	ND	10. mg/kg
Diesel Range (C12-C22)	ND	10. mg/kg
Oil Range (C22-C34)	ND	50. mg/kg
Total	ND	10. mg/kg

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	58	54 - 130

ND - Not Detected

NEL LABORATORIES

CLIENT:	Bechtel Nevada	CLIENT ID:	**Method Blank**
PROJECT ID:	V1413	DATE SAMPLED:	NA
PROJECT #:	30033	NEL SAMPLE ID:	020130TPHS-FP-BLK
TEST:	**Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992**		
METHOD:	EPA 8015M	ANALYST:	PXC - Las Vegas Division
MATRIX:	Solid	EXTRACTED:	1/30/02
		ANALYZED:	1/31/02

PARAMETER	Result	Reporting Limit
Gasoline Range (C8-C12)	ND	10. mg/kg
Diesel Range (C12-C22)	ND	10. mg/kg
Oil Range (C22-C34)	ND	50. mg/kg
Total	ND	10. mg/kg

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	80	54 - 130

ND - Not Detected

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT ID: V1413
PROJECT #: 30033

TEST: Total Extractable Petroleum Hydrocarbons by EPA Method 8015M, December 1996
METHOD: EPA 8015M
ORDER ID: L0201256
MATRIX: Solid

ANALYST: PXC - Las Vegas Division

CLIENT SAMPLE ID	SAMPLE DATE	NEL SAMPLE ID	RESULT mg/kg	C.R.	Reporting Limit	Surrogate Recovery*	EXTRACTED	ANALYZED
SWS071-V1	1/28/02	L0201256-01	ND	ND	20. mg/kg	73 %	1/28/02	1/29/02
SWS072-V2	1/28/02	L0201256-02	ND	ND	20. mg/kg	59 %	1/28/02	1/29/02
SWS-73-V3	1/28/02	L0201256-03	ND	ND	20. mg/kg	56 %	1/28/02	1/29/02

C.R.: Carbon Range

QUALITY CONTROL DATA (Total for Diesel Range):

Sample ID	Result	Acceptable Range	Surrogate Recovery*	Sample Number
Blank, 020128TP -BLK	ND	< 20 mg/kg	53 %	NA
LCS, 020128TPHS-LCS	68 %	54 - 91 %	75 %	NA
LCSD, 020128TPHS-LCSD	59 %	54 - 93 %	68 %	NA

*** Surrogate used was Octacosane, acceptance limits 55-130%.**

ND - Not Detected

1/30

U0201256

Bechtel Nevada

ANALYTICAL SERVICES LABORATORY
SERVICES REQUEST & CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT/ CLIENT INFORMATION

Project: CAU 405 | BN Org#: 2156
Charge No: 5B04CB52 | ASL Prog.:
Project Manager: Wayne Johnson
Phone: 295-0573 | Fax: 295-7761 | M/S: NTS 306

REPORT INFORMATION

Send Report to: Allison Urbon
Phone: 295-7520 | Fax: 295-7761 | M/S: NTS 306
Turnaround: ( ) Standard - 30 days Non-rad, 60 Days Rad, Other: ____ (X) Rush Preliminary by: 2 Days Final by: ____
Final report format: (X) Standard ( ) NTS-WAC ( ) Other: ____

SAMPLE INFORMATION

Sampling Site: CAS 07 Area 3
The samples submitted contain (check):
( ) Hazardous ( ) Radioactive (X) Unknown contamination. If known, attach a brief narrative summary identifying contaminants. This information will ensure compliance with applicable regulations and allow for the safe handling of the sample materials.

LAB USE ONLY

Rad SGD: | Non-Rad SDG:
Rad Packet: | Non-Rad Packet:
Client Services Representative:

Will these analyses be performed under a signed SOW? ( ) YES ( ) NO
If so, do analyses entered here agree with the SOW? ( ) YES ( ) NO ( ) N/A
If not, identify the variation ____
CSR initials indicating review and approval: ____ Date: ____

ANALYSES & METHOD

ITEM	ID / DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	TPH 8015M	
01	0	SWS071-V1	1/29/02	1.20	Soil	✓
02	1	SWS072-V2	↓	↓	↓	✓
03	2	SWS073-V3	↓	↓	↓	✓
	3					
	4					
	5					
	6					
	7					
	8					
	9					

Custody Seal Intact? Y N None Temp 6°C
Condition when received good

SAMPLE RECEIPT INFORMATION

Are all sample containers received intact ( ) Yes ( ) No
Comments: ____

Do the labels agree with this form? ( ) Yes ( ) No
Comments: ____

Was a Material Clearance Tag submitted? ( ) Yes ( ) No
Comments: ____

COMMENTS
(Preservative, size/volume, MS/MSD, special analysis, rad matrix code, count time, etc.)

Samples are free of rad. collected from a non rad. area.

Transfer of samples submitted for analyses

Sampled/Relinquished (Signature/Organization)	DATE / TIME	Received by (Signature/Organization)
B. Zyl	1745/1/29/02	

Complete for samples shipped to an OFF-SITE Subcontract Laboratory

Relinquished (BN Representative Signature)	DATE / TIME	Received (Courier & Tracking Info.)
Relinquished (Courier & Tracking Info.)	DATE / TIME	Received (1st tier Subcontractor Rep)
Relinquished (1st tier Subcontractor Rep)	DATE / TIME	Received (2nd tier Subcontractor Rep)

Distribution: Original - To be retained by laboratory performing final analysis
Copy 1 - To be retained by laboratory performing intermediate analysis
Copy 2 - To be retained by Analytical Services Laboratory
Copy 3 - To be retained by sampler

BN 0732 (02/98)

P.8/8

Appendix D

Hazardous Waste Accumulation Area and Satellite Accumulation Area Inspection Checklists for CAU 405: Area 3 Septic Systems, Tonopah Test Range, Nevada

D.1.0 Waste Inspection Forms

This appendix contains the Hazardous Waste and Satellite Accumulation Areas Inspection Checklists generated during the management of Corrective Action Unit 405 investigation-derived waste. The checklists are separated in the following pages by site-specific hazardous waste accumulation area checklists and then by satellite accumulation area. Hazardous waste accumulation areas are inspected weekly while analytical data is pending for characterization of waste. Satellite accumulation areas are inspected monthly until waste is removed. Table D.1-1 presents an overview of required inspections and the dates they were performed by waste management area.

Table D.1-1
CAU 405 Waste Inspection

Required Inspection Due Date	Storage Area						
	SWS-3	SWS-4	SWS-7	SAA-3-01	SAA-4-01	SAA-7-01	SAA-7-02
	Inspection Date						
07/21/2001	07/17/2001	07/17/2001	07/17/2001	NA	NA	NA	NA
07/28/2001	07/26/2001	07/26/2001	07/26/2001	NA	NA	NA	NA
08/04/2001	08/02/2001	08/02/2001	08/02/2001	08/02/2001	08/02/2001	08/02/2001	08/02/2001
08/11/2001	08/08/2001	08/08/2001	08/08/2001	NA	NA	NA	NA
08/18/2001	08/15/2001	08/15/2001	08/15/2001	NA	NA	NA	NA
08/25/2001	08/20/2001	08/20/2001	08/20/2001	08/20/2001	08/20/2001	08/20/2001	NA
09/01/2001	08/28/2001	08/28/2001	08/28/2001	NA	NA	NA	NA
09/08/2001	09/07/2001	09/07/2001	09/07/2001	NA	NA	NA	NA
09/15/2001	09/15/2001	09/15/2001	09/15/2001	NA	NA	NA	NA
09/22/2001	09/20/2001	09/20/2001	09/20/2001	09/20/2001	09/20/2001	09/20/2001	09/20/2001
09/29/2001	09/26/2001	09/26/2001	09/26/2001	NA	NA	NA	NA
10/06/2001	10/04/2001	10/04/2001	10/04/2001	10/04/2001	10/04/2001	10/04/2001	10/04/2001
November	NA	NA	NA	NA	NA	11/06/2001	NA
December	NA	NA	NA	NA	NA	12/22/2001	NA
January	NA	NA	NA	NA	NA	01/07/2002	NA

NA = Not Applicable

Septic Waste System 3
Hazardous Waste Accumulation Area
Inspection Checklists

(Included as provided by ITLV - 23 Pages)

(Note: These records were copied as generated and may carry headers and footers not related to the format of this document.)

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): Waston & Whiteman
2. Date/Time: 7/17/01 0915
3. Project: CAU 405
4. Location: SWS 3

5. Item:	Yes	No	N/A	CA*
a. No evidence of any container leakage.	✓			
b. No large stains present or evidence of large spills.	✓			
c. Incompatible waste streams properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
i. Secondary containment present for liquid wastes.	✓			
j. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
k. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis X

8. Comments: All in order

9. Inspector(s) Signature: [signature] Date: 7/17/01

Database entry completed: ☑ DV 7/24/01

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc).

13. **Location:** Indicate the location of the HWAA (i.e., Area 3, TTR Landfills).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Comments:** Note any comments that do not necessarily require corrective action.

17. **Inspectors Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston
2. Date/Time: 7/26/01 1230
3. Project: TS
4. CAU/Location: 405/SWS-3

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 2

8. Comments: All in order

9. Inspector(s) Signature: D. D. Weston Date: 7/26/01

Database entry completed: ☑ 11/30/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): B. Quinn
2. Date/Time: 7:00 AM 8/2/01
3. Project: 199417
4. CAU/Location: 409 TTR CAS 03-05-02-SW03

5. Item:	Yes	No	N/A	CA*	
a. Containers free of structural defects.	✓				
b. HWAA is free of stains and/or spills.	✓				
c. Incompatible containerized waste is properly segregated.	✓				
d. Security fence intact.	✓				
e. Adequate aisle space between containers.	✓				
f. Signs around the perimeter of the HWAA readable and intact.	✓				
g. Label(s) present and legible.					
- The words "hazardous waste" present.	✓				
- Unique container number present.	✓				
- Description of contents present.	✓				
- Emergency contact and phone number present.	✓				
- The start accumulation date present.	✓				
h. Container lids closed and secured.	✓				
i. All containers of waste on pallets.	✓				
j. Secondary containment present for liquid wastes.	✓				
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓				
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓				

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3

8. Comments: Checked TIDs w/log book, all in order

9. Inspector(s) Signature: Barbara Quinn Date: 8/2/01

Database entry completed: ☑ 8/2/01

* Corrective Action

RB 8-3-01

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

13. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Count containers:** Record the number of waste units at the HWAA.

17. **Comments:** Note any comments that do not necessarily require corrective action.

18. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston & Beasley
2. Date/Time: 8/8/01 1045
3. Project: TS EAU 405
4. Location: SBWS 3

5. Item:	Yes	No	N/A	CA*
a. No evidence of any container leakage.	✓			
b. No large stains present or evidence of large spills.	✓			
c. Incompatible waste streams properly segregated.			✓	
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
i. Secondary containment present for liquid wastes.	✓			
j. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
k. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3 *

8. Comments: All in order (* counted SAA MISTAKE CORRECTED)

9. Inspector(s) Signature: [signature] Date: 8/8/01

Database entry completed: ☑ 10/30/01

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc).

13. **Location:** Indicate the location of the HWAA (i.e., Area 3, TTR Landfills).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Comments:** Note any comments that do not necessarily require corrective action.

17. **Inspectors Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): Beasley ; Curiale
2. Date/Time: 8-15-01 1050
3. Project: CAU 405 SWS AREA 3 SWS 3
4. CAU/Location: 405

5. Item:	Yes	No	N/A	CA*	
a. Containers free of structural defects.	✓				
b. HWAA is free of stains and/or spills.	✓				
c. Incompatible containerized waste is properly segregated.			✓		
d. Security fence intact.	✓				
e. Adequate aisle space between containers.	✓				
f. Signs around the perimeter of the HWAA readable and intact.	✓				
g. Label(s) present and legible.					
- The words "hazardous waste" present.	✓				
- Unique container number present.	✓				
- Description of contents present.	✓				
- Emergency contact and phone number present.	✓				
- The start accumulation date present.	✓				
h. Container lids closed and secured.	✓				
i. All containers of waste on pallets.	✓				
j. Secondary containment present for liquid wastes.	✓				
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓				
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓				

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3

8. Comments: TID# 0208597 # 0208599 # 0208598 ; ALL SAT

9. Inspector(s) Signature: R E Beasley Date: 8-15-01

Database entry completed: 8/17/01

* Corrective Action

8-17-01

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston + Beasley
2. Date/Time: 8/20/01
3. Project: IS
4. CAU/Location: 405 SWSS

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			✓
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.				
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   - Item #: d. Description: Repair fence Date completed: 8/20/01
   - Item #: _____ Description: _____ Date completed: _____
   - Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3 4 mo 1/9/02

8. Comments: Repaired fence. (counted ~~FSE~~ SAA; Mistake corrected 1/9/02)

9. Inspector(s) Signature: D. J. Weston Date: 8/20/01

Database entry completed: ☑ PW 11/26/01

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): Curiale Quinn
2. Date/Time: 8/28/01 1130
3. Project: 43 SWS
4. CAU/Location: CAU ~~405~~ 5 TTR 405 ~~8/29/01~~ SWS-3

5. Item:	Yes	No	N/A	CA*	
a. Containers free of structural defects.	✓				
b. HWAA is free of stains and/or spills.	✓				
c. Incompatible containerized waste is properly segregated.	X				
d. Security fence intact.	X				
e. Adequate aisle space between containers.	X				
f. Signs around the perimeter of the HWAA readable and intact.	X				
g. Label(s) present and legible.					
- The words "hazardous waste" present.	X				
- Unique container number present.	X				
- Description of contents present.	X				
- Emergency contact and phone number present.	X				
- The start accumulation date present.	X				
h. Container lids closed and secured.	X				
i. All containers of waste on pallets.	X				
j. Secondary containment present for liquid wastes.					
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	X				
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	X				

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3

8. Comments: 1 0208597 0208599 in WM Logbook
   2 0208599 0208597 in WM Logbook
   3 0208598

9. Inspector(s) Signature: Barbara Quinn Date: 8/28/01

Database entry completed: 8/29/01

* Corrective Action

8-29-01

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

13. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Count containers:** Record the number of waste units at the HWAA.

17. **Comments:** Note any comments that do not necessarily require corrective action.

18. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston + Beasley
2. Date/Time: 9/7/01 0950
3. Project: Industrial Sites
4. CAU/Location: CAU405 / SWSS

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.			✓	
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3

8. Comments: Changed POC to Barbara Quinn

9. Inspector(s) Signature: [signature] Date: 9/7/01

Database entry completed: ☑ 11/2/05

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): BEASLEY WESTON
2. Date/Time: ~~9/20/01 1115~~ 9/15/01 1000
3. Project: 15
4. CAU/Location: 405 SW53

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3

8. Comments: (1 SAA)

9. Inspector(s) Signature: JM E Beasley Date: 9-15-01

Database entry completed: ☑ DW 12/21/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston + Beasley
2. Date/Time: 9/20/01 1045
3. Project: IS
4. CAU/Location: 405 / SWSS

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3 (1-SAA)

8. Comments: All in order.

9. Inspector(s) Signature: [signature] Date: 9/20/01

Database entry completed: ☑ 11/29/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY
2. Date/Time: 9-26-01 1015
3. Project: CAU 405 SWS3
4. CAU/Location: TTR EAST "O" SANDIA

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis ~~4~~ 3 MB 1/9/02

8. Comments: (~~4~~ 2 PPE, 1 RINSATE, 1 SAA) (counted SAA, mistake corrected 1/9/02)

9. Inspector(s) Signature: M E Beasley Date: 9-26-01

Database entry completed: ☑ MB 1/9/02

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY, GALLO
2. Date/Time: 10-4-01 14:30
3. Project: CAU 405 SW53
4. CAU/Location: E of SANDIA CMPD

* HWAA DEPOSTED AFTER INSPECTION *

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis ~~4~~ 3 MB 1/9/02

8. Comments: (* 1 RINSATE, 2 PPE, 1 SAA) (counted SAA, mistake corrected 1/9/02)

9. Inspector(s) Signature: M E Beasley Date: 10-4-01

Database entry completed: ☑ DW 11/26/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

Septic Waste System 4
Hazardous Waste Accumulation Area
Inspection Checklists

(Included as provided by ITLV - 23 Pages)

(Note: These records were copied as generated and may carry headers and footers not related to the format of this document.)

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston
2. Date/Time: 7/17/01 1115
3. Project: EA 1405
4. Location: SWS 94

5. Item:	Yes	No	N/A	CA*
a. No evidence of any container leakage.	✓			
b. No large stains present or evidence of large spills.	✓			
c. Incompatible waste streams properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
i. Secondary containment present for liquid wastes.	✓			
j. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
k. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   - Item #: _____ Description: _____ Date completed: _____
   - Item #: _____ Description: _____ Date completed: _____
   - Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 1

8. Comments: All in order

9. Inspector(s) Signature: [signature] Date: 7/17/01

Database entry completed: ☐ 7/18/01

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc).

13. **Location:** Indicate the location of the HWAA (i.e., Area 3, TTR Landfills).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Comments:** Note any comments that do not necessarily require corrective action.

17. **Inspectors Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston
2. Date/Time: 7/26/01 1300
3. Project: IS
4. CAU/Location: 405 SWS-4

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 1

8. Comments: All good.

9. Inspector(s) Signature: [signature] Date: 7/26/01

Database entry completed: ☑ DW 11/30/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): B. Quinn
2. Date/Time: 8/2/01 725A
3. Project: 79417
4. CAU/Location: 405 TTR CAS 03-05-02-SW04

5. Item:	Yes	No	N/A	CA*	
a. Containers free of structural defects.	✓				
b. HWAA is free of stains and/or spills.	✓				
c. Incompatible containerized waste is properly segregated.	✓				
d. Security fence intact.	✓				
e. Adequate aisle space between containers.	✓				
f. Signs around the perimeter of the HWAA readable and intact.	✓				
g. Label(s) present and legible.					
- The words "hazardous waste" present.	✓				
- Unique container number present.	✓				
- Description of contents present.	✓				
- Emergency contact and phone number present.	✓				
- The start accumulation date present.	✓				
h. Container lids closed and secured.		✓		✓	
i. All containers of waste on pallets.	✓				
j. Secondary containment present for liquid wastes.					
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓				
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓				

6. Corrective Action Required:
   Item #: h Description: removed ring, put on correctly Date completed: 8-2-01
   Follow-up → Item #: h Description: place TID Date completed: 8/8/01
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3

8. Comments: Drum ring lifted on side opposite the bolt on drum 405-4-01. Removed TID; repositioned ring tightened bolt. Put back plastic lock strip in the security hole

9. Inspector(s) Signature: Barbara Quinn Date: 8-2-01

Database entry completed: ☑ 8-3-01

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

13. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Count containers:** Record the number of waste units at the HWAA.

17. **Comments:** Note any comments that do not necessarily require corrective action.

18. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): WESTON
2. Date/Time: 8/8/01 1057
3. Project: IS CAU 405
4. Location: SWS 4

5. Item:	Yes	No	N/A	CA*
a. No evidence of any container leakage.	✓			
b. No large stains present or evidence of large spills.	✓			
c. Incompatible waste streams properly segregated.			✓	
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			✓
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
i. Secondary containment present for liquid wastes.	✓			
j. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
k. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: 1 Description: Replaced TID Date completed: 8/8/01
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 5

8. Comments: Replaced TID 211324 on drum 405-4-01

9. Inspector(s) Signature: [signature] Date: 8/8/01

Database entry completed: ☑

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc).

13. **Location:** Indicate the location of the HWAA (i.e., Area 3, TTR Landfills).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Comments:** Note any comments that do not necessarily require corrective action.

17. **Inspectors Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): Beasley ; Curiale
2. Date/Time: 8-15-01 1140
3. Project: 405 SWS 4
4. CAU/Location: 405

5. Item:	Yes	No	N/A	CA*	
a. Containers free of structural defects.	✓				
b. HWAA is free of stains and/or spills.	✓				
c. Incompatible containerized waste is properly segregated.			✓		
d. Security fence intact.	✓				
e. Adequate aisle space between containers.	✓				
f. Signs around the perimeter of the HWAA readable and intact.	✓				
g. Label(s) present and legible.					
- The words "hazardous waste" present.	✓				
- Unique container number present.	✓				
- Description of contents present.	✓				
- Emergency contact and phone number present.	✓				
- The start accumulation date present.	✓				
h. Container lids closed and secured.	✓				
i. All containers of waste on pallets.	✓				
j. Secondary containment present for liquid wastes.	✓				
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓				
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓				

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3
   1 NON ~~RAD~~ RB 8-15-01 HAZ RAD FS (FIELD SAMPLES)
8. Comments: TID# 0208502 # 0211324 # 0208583
   ALL ELSE SAT.
   RAD FS TID# 0208999
9. Inspector(s) Signature: M E Beasley Date: 8-15-01

Database entry completed: ☑ TW 8/16/01

* Corrective Action

8-17-01

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston - Beasley
2. Date/Time: 8/20/01
3. Project: IS
4. CAU/Location: 403 / SWS 4

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.				
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:

Item #: _____	Description: _____	Date completed: _____
Item #: _____	Description: _____	Date completed: _____
Item #: _____	Description: _____	Date completed: _____

7. Number of waste units present: HAZ _____ SAN X* MB 1/9/02 Pending Analysis 3 (1-SAA)*

8. Comments: All in order FSL Background sample drum moved to HWAA.
(* SAA not to be counted in this inspection ; FSL drum isn't waste ; not counted)

9. Inspector(s) Signature: [signature] Date: 8/20/01

Database entry completed: ☑ 1/2 1/31

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

405-4

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): Curiale/Quinn
2. Date/Time: 1055 8/28/01
3. Project: 7994170104023O A3 SWS
4. CAU/Location: CAU 405 TTR SWS-4

5. Item:	Yes	No	N/A	CA*	
a. Containers free of structural defects.	X				
b. HWAA is free of stains and/or spills.	X				
c. Incompatible containerized waste is properly segregated.	X				
d. Security fence intact.	X				
e. Adequate aisle space between containers.	X				
f. Signs around the perimeter of the HWAA readable and intact.	X				
g. Label(s) present and legible.					
- The words "hazardous waste" present.	X				
- Unique container number present.	X				
- Description of contents present.	X				
- Emergency contact and phone number present.	X				
- The start accumulation date present.	X				
h. Container lids closed and secured.	X				
i. All containers of waste on pallets.	X				
j. Secondary containment present for liquid wastes.					
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	X				
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	X				

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3

8. Comments: #1 TDS 021324 ✓
   #2 020850 ✓
   #3 020858 ✓

9. Inspector(s) Signature: Barbara Quinn Date: 8/28/01

Database entry completed: 12/20/01

* Corrective Action

PA 8-29-01

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

13. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Count containers:** Record the number of waste units at the HWAA.

17. **Comments:** Note any comments that do not necessarily require corrective action.

18. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

-//

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston & Brosley
2. Date/Time: 9/07/01 0930
3. Project: Industrial Sites
4. CAU/Location: 140405 / SWS 4

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3

8. Comments: Changed POC to Barbara Quinn.

9. Inspector(s) Signature: [signature] Date: 9/7/01

Database entry completed: ☑ 11/25/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY / WESTON
2. Date/Time: 9-15-01 1030
3. Project: IS
4. CAU/Location: 405 SWS4

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.				✓
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   - Item #: f Description: Sign on west side Date completed: 10/4/01
   - Item #: _____ Description: _____ Date completed: _____
   - Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3

8. Comments: (1 FSL / 1 SAA)

9. Inspector(s) Signature: [signature] Date: 9-15-01

Database entry completed: ✓ 12/21/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston & Beasley
2. Date/Time: 9/20/01 1000
3. Project: Industrial Sites
4. CAU/Location: 405 / Area 3 SWSS 4

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓	—	—	—
b. HWAA is free of stains and/or spills.	✓	—	—	—
c. Incompatible containerized waste is properly segregated.	✓	—	—	—
d. Security fence intact.	✓	—	—	—
e. Adequate aisle space between containers.	✓	—	—	—
f. Signs around the perimeter of the HWAA readable and intact.	—	—	—	✓
g. Label(s) present and legible.				
- The words "hazardous waste" present.	✓	—	—	—
- Unique container number present.	✓	—	—	—
- Description of contents present.	✓	—	—	—
- Emergency contact and phone number present.	✓	—	—	—
- The start accumulation date present.	✓	—	—	—
h. Container lids closed and secured.	✓	—	—	—
i. All containers of waste on pallets.	✓	—	—	—
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓	—	—	—
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓	—	—	—

6. Corrective Action Required:
   - Item #: f Description: sign of westside replace Date completed: 10/4/01 PW
   - Item #: _____ Description: _____ Date completed: _____
   - Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3

8. Comments: IFSL ISAA

9. Inspector(s) Signature: P E Beasley Date: 9-20-01

Database entry completed: ☑ PW 11/26/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): BEASLEY
2. Date/Time: 9-26-01 0730
3. Project: CAU 405 SWS 4
4. CAU/Location: TR SANDIA Compound

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓		✓*	
d. Security fence intact.	✓			
e. Adequate aisle space between containers.				
f. Signs around the perimeter of the HWAA readable and intact.	✓			✓*
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   - Item #: 1 Description: WEST POSTING DAMAGED Date completed: 10-4-01 DW 11/26/01
   - Item #: _____ Description: _____ Date completed: _____
   - Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis ~~4~~ 3* AD 1/8/02

8. Comments: *5 total, 1 FSL (1 SAA, 2 PPE, 1 RINSATE)
*NO incompatible waste is present.
* WEST POSTING DAMAGED (*SAA incorrectly counted 1/8/02)

9. Inspector(s) Signature: Jon E Beasley Date: 9-26-01

Database entry completed: ☑ DW 11/26/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY, GALLO
2. Date/Time: 10-4-01 1445
3. Project: CAU 405 SWS 4
4. CAU/Location: TTR SANDIA CAMPS

* HWAA deposted @ end of inspection *

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			(✓)
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   - Item #: f Description: DAMAGE SIGN REPLACED Date completed: 10-4-01
   - Item #: _____ Description: _____ Date completed: _____
   - Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 3 * MB 1/8/02

8. Comments: (* including 1 ADDITIONAL FSL) 2 PPE, 1 RINSATE, 1 SAA
(* SAA counted incorrectly 1/8/02)

9. Inspector(s) Signature: [signature] Date: 10-4-01

Database entry completed: ☑ 11/26/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

Septic Waste System 7
Hazardous Waste Accumulation Area
Inspection Checklists

(Included as provided by ITLV - 23 Pages)

(Note: These records were copied as generated and may carry headers and footers not related to the format of this document.)

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston
2. Date/Time: 7/17/01 0950
3. Project: CAU405 IS
4. Location: SWS 07

5. Item:	Yes	No	N/A	CA*
a. No evidence of any container leakage.	✓			
b. No large stains present or evidence of large spills.	✓			
c. Incompatible waste streams properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
i. Secondary containment present for liquid wastes.	✓			
j. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
k. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ SAA/1 NB 1/9/02 SAN _____ Pending Analysis 5

8. Comments: All in order. Needs more absorbant (4 in SAA) 1/9/02

9. Inspector(s) Signature: [signature] Date: 7/17/01

Database entry completed: ☑ 1/29/02

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc).

13. **Location:** Indicate the location of the HWAA (i.e., Area 3, TTR Landfills).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Comments:** Note any comments that do not necessarily require corrective action.

17. **Inspectors Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston
2. Date/Time: 7/26/01 1245
3. Project: IS
4. CAU/Location: 415 / SWS 07

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 6

8. Comments: All in order.

9. Inspector(s) Signature: [signature] Date: 7/26/01

Database entry completed: ☑ PD 10/30/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): B. Quinn
2. Date/Time: 8/2/01 800A
3. Project: 799417
4. CAU/Location: 405 TTR CAS 03-05-02 SW07

5. Item:	Yes	No	N/A	CA*	
a. Containers free of structural defects.	✓				
b. HWAA is free of stains and/or spills.	✓				
c. Incompatible containerized waste is properly segregated.	✓				
d. Security fence intact.	✓				
e. Adequate aisle space between containers.	✓				
f. Signs around the perimeter of the HWAA readable and intact.	✓				
g. Label(s) present and legible.					
- The words "hazardous waste" present.	✓				
- Unique container number present.	✓				
- Description of contents present.	✓				
- Emergency contact and phone number present.	✓				
- The start accumulation date present.	✓				
h. Container lids closed and secured.	✓				
i. All containers of waste on pallets.	✓				
j. Secondary containment present for liquid wastes.					
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓				
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓				

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 6

8. Comments: _____

9. Inspector(s) Signature: Barbara Quinn Date: 8/2/01

Database entry completed: ✓ D PN 8/2/01

* Corrective Action

PD 8-3-01

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

13. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Count containers:** Record the number of waste units at the HWAA.

17. **Comments:** Note any comments that do not necessarily require corrective action.

18. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston + Beasley
2. Date/Time: 8/8/01 1105
3. Project: IS CA1405
4. Location: SA/S#7

5. Item:	Yes	No	N/A	CA*
a. No evidence of any container leakage.	✓			
b. No large stains present or evidence of large spills.	✓			
c. Incompatible waste streams properly segregated.			✓	
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
i. Secondary containment present for liquid wastes.	✓			
j. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
k. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   - Item #: _____ Description: _____ Date completed: _____
   - Item #: _____ Description: _____ Date completed: _____
   - Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 7

8. Comments: All in order

9. Inspector(s) Signature: [signature] Date: 8/8/01

Database entry completed: ☑ DW 11/28/01

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc).

13. **Location:** Indicate the location of the HWAA (i.e., Area 3, TTR Landfills).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Comments:** Note any comments that do not necessarily require corrective action.

17. **Inspectors Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): Beasley; Curiale
2. Date/Time: 8-15-01 1120
3. Project: CAU 405 SWS Area 3 SWS 7
4. CAU/Location: 405

5. Item:	Yes	No	N/A	CA*	
a. Containers free of structural defects.	✓				
b. HWAA is free of stains and/or spills.	✓				
c. Incompatible containerized waste is properly segregated.			✓		
d. Security fence intact.	✓				
e. Adequate aisle space between containers.	✓				
f. Signs around the perimeter of the HWAA readable and intact.	✓				
g. Label(s) present and legible.					
- The words "hazardous waste" present.	✓				
- Unique container number present.	✓				
- Description of contents present.	✓				
- Emergency contact and phone number present.	✓				
- The start accumulation date present.	✓				
h. Container lids closed and secured.	✓				
i. All containers of waste on pallets.	✓				
j. Secondary containment present for liquid wastes.	✓				
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓				
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓				

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN 1 mb 1/9/02 Pending Analysis 7 mb 1/9/02 Hydro Carbon 1 mb 1/9/02

8. Comments: TID# 0208568 # 0208531 (HC) # 0208580 # 0208594 # 0208547 # 0208549 # 0208522; ALL SAT (* 1 ACM 1 HydroCarbon both pending) 1/9/02

9. Inspector(s) Signature: M E Beasley Date: 8-15-01

Database entry completed: ☑ PW 11/26/01

* Corrective Action

8-17-01

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston + Beasley
2. Date/Time: 8/29/01 1140
3. Project: IS
4. CAU/Location: 405 SWS 7

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.				
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN ~~4~~ 4 MB 1/9/02 Pending Analysis 7

8. Comments: All in order (* ~~SAA~~ SMB FSL's 1/9/02 COUNTED, MISTAKE CORRECTED 1/9/02)

9. Inspector(s) Signature: [signature] Date: 8/20/01

Database entry completed: ☑ [initials] 11/26/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): Curiale / Dunn
2. Date/Time: 11:11 8/28/01
3. Project: 199417.01040230
4. CAU/Location: CAU 405 TTR SWS-7
5. **Item:** A3 SWS

	Yes	No	N/A	CA*	
a. Containers free of structural defects.	✓				
b. HWAA is free of stains and/or spills.	✓				
c. Incompatible containerized waste is properly segregated.	✓				
d. Security fence intact.	✓				
e. Adequate aisle space between containers.	✓				
f. Signs around the perimeter of the HWAA readable and intact.	✓				
g. Label(s) present and legible.					
- The words "hazardous waste" present.	✓				
- Unique container number present.	✓				
- Description of contents present.	✓				
- Emergency contact and phone number present.	✓				
- The start accumulation date present.	✓				
h. Container lids closed and secured.	✓				
i. All containers of waste on pallets.	✓				
j. Secondary containment present for liquid wastes.					
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓				
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓				

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 7

8. Comments: TIDs on reverse side

9. Inspector(s) Signature: Barbara Dunn Date: 8/28/01

Database entry completed: SW 8/29/01

* Corrective Action

QA 8-29-01

ATTACHMENT D

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

10. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

11. **Date and Time:** Indicate the date the HWAA inspection was performed.

12. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

13. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

14. **Item:** Check appropriate responses to questions specific to the HWAA.

15. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

16. **Count containers:** Record the number of waste units at the HWAA.

17. **Comments:** Note any comments that do not necessarily require corrective action.

18. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

TTD

1 0208568 ✓
2 0208547 ✓
3 0208531 ✓
4 0208580 ✓
5 0208522 ✓
6 0208594 ✓
7 0208549 ✓

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston & Beasley
2. Date/Time: 9/07/01 0940
3. Project: Industrial Sites
4. CAU/Location: CAU 405 / SWS 7

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓	—	—	—
b. HWAA is free of stains and/or spills.	✓	—	—	—
c. Incompatible containerized waste is properly segregated.	✓	—	—	—
d. Security fence intact.	✓	—	—	—
e. Adequate aisle space between containers.	✓	—	—	—
f. Signs around the perimeter of the HWAA readable and intact.	✓	—	—	—
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓	—	—	—
- Unique container number present.	✓	—	—	—
- Description of contents present.	✓	—	—	—
- Emergency contact and phone number present.	✓	—	—	—
- The start accumulation date present.	✓	—	—	—
h. Container lids closed and secured.	✓	—	—	—
i. All containers of waste on pallets.	✓	—	—	—
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓	—	—	—
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓	—	—	—

6. Corrective Action Required:

Item #:	Description:	Date completed:
Item #:	Description:	Date completed:
Item #:	Description:	Date completed:

7. Number of waste units present: HAZ ____ SAN 1 mm 1/9/02 Pending Analysis 8 mm 1/9/02 Hydrocarbon 1 mm 1/9/02

8. Comments: Charged POC to Barbara Quinn.
(1 ACM 1 Hydrocarbon both pending 1/9/02)

9. Inspector(s) Signature: [signature] Date: 9/7/01

Database entry completed: ☑ DW 10/25/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed. ,

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY Weston
2. Date/Time: 9-15-01 1045
3. Project: 15
4. CAU/Location: 405 SWS 3rd 7

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 7* RB 1/9/02

8. Comments: * 3RINSATE (1 SAN), 2 SAA, 4 PPE (1 SAN)
(SAA's counted, mistake corrected 1/9/02)

9. Inspector(s) Signature: JM E Beasley Date: 9-15-01

Database entry completed: ☑ 12/21/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Wriston & Beasley
2. Date/Time: 9/29/01 1055
3. Project: Industrial Sites
4. CAU/Location: 405 Areas 3 & 5 BCLs >

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:

Item #: _____	Description: _____	Date completed: _____
Item #: _____	Description: _____	Date completed: _____
Item #: _____	Description: _____	Date completed: _____

7. Number of waste units present: HAZ _____ SAN 4 mm 1/9/02 Pending Analysis 5 mm 1/9/02 2 SAAs mm 1/9/02

8. Comments: All in order (4 ACM 1 Hydrocarbon, both pending, SAA's counted mistake corrected 1/9/02)

9. Inspector(s) Signature: [signature] Date: 9/29/01

Database entry completed: ☑ 1/9/02

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY
2. Date/Time: 9-26-01 1000
3. Project: CAU ~~334~~ 405 SWS 7
4. CAU/Location: TR RADAR AREA
5. **Item:**

	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis ~~4~~ 7 1/9/02
8. Comments: ~~4~~ 3 RINSATE, 2 SAA, 4 PPE (HYDROCARBON)) Entry down due to wind. (SAA counted, mistake corrected 1/9/02)
9. Inspector(s) Signature: E Beasley Date: 9-26-01

Database entry completed: ☑ 9/26/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

HAZARDOUS WASTE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY, GALLO 2. Date/Time: 10-4-01 1515

3. Project: CAU 405 JW25 4. CAU/Location: TR RADAR TOWER

* HWAA POSTED AFTER INSPECTION. *

5. Item:	Yes	No	N/A	CA*
a. Containers free of structural defects.	✓			
b. HWAA is free of stains and/or spills.	✓			
c. Incompatible containerized waste is properly segregated.	✓			
d. Security fence intact.	✓			
e. Adequate aisle space between containers.	✓			
f. Signs around the perimeter of the HWAA readable and intact.	✓			
g. Label(s) present and legible.	✓			
- The words "hazardous waste" present.	✓			
- Unique container number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
- The start accumulation date present.	✓			
h. Container lids closed and secured.	✓			
i. All containers of waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. ERCAP, SSERCAP, list of authorized personnel signatures, and training for HWAA personnel available and readable.	✓			
l. Safety and spill response equipment required by ERCAP and SSERCAP available and readable.	✓			

6. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

7 MD 1/9/02

7. Number of waste units present: HAZ _____ SAN _____ Pending Analysis 9+

8. Comments: (* 2SAA, 3RINSATE, 4PPE) (SAA COUNTED, MISTAKE CORRECTED 1/9/02)

9. Inspector(s) Signature: M. E Beasley Date: 10-4-01

Database entry completed: ☑ DW 11/06/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the HWAA inspection.

2. **Date and Time:** Indicate the date the HWAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the HWAA (i.e., Industrial Sites, UGTA, etc.).

4. **Location:** Indicate the location of the HWAA (i.e., CAU 262, NTS A25).

5. **Item:** Check appropriate responses to questions specific to the HWAA.

6. **Corrective Actions Required:** Using item #'s in Section 5, identify items requiring corrective action.

7. **Count containers:** Record the number of waste units at the HWAA.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector's Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

Corrective Action Unit 405
Satellite Accumulation Area
Inspection Checklists

(Included as provided by ITLV - 33 Pages)

(Note: These records were copied as generated and may carry headers and footers not related to the format of this document.)

ATTACHMENT C

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): B. Quinn
2. Date/Time: 8/2/01 7:00
3. Project: 799417
4. CAU/Location: 405 TTR
5. SAA # or ITLV Drum #: SHA SW53-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓			
f. Signage/marking present identifying the SAA.	✓			
g. Label(s)/marking present and legible?				
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	~~NA~~ ✓	BJ 8/2/01		
j. Secondary containment present for liquid wastes.	N/A			
k. Container less than 7/8 full.	✓			

7. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____

8. Comments: TID # 0208564

9. Inspector(s) Signature: Barbara Quinn Date: 8/2/01

Database entry completed: ☑ DM 12/2/01

* Corrective Action

PM 8-3-01

ATTACHMENT C

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Wriston
2. Date/Time: 8/20/01 1100
3. Project: IS
4. CAU/Location: 405/SWS-3
5. SAA # or ITLV Drum #: SAA-SWS 3-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓			
f. Signage/marking present identifying the SAA.	✓			
g. Label(s)/marking present and legible?	✓			
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. Container less than 7/8 full.	✓			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

8. Comments: All in order

9. Inspector(s) Signature: P. D. Wriston Date: 8/20/01

Database entry completed: ☑ DW 11/30/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston
2. Date/Time: 9/20/01 1045
3. Project: ES CAU 405
4. CAU/Location: Area 3
5. SAA # or ITLV Drum #: SAA-SWS3-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓			
f. Signage/marking present identifying the SAA.	✓			
g. Label(s)/marking present and legible?				
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. Container less than 7/8 full.	✓			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

8. Comments: All in order

9. Inspector(s) Signature: [signature] Date: 9/20/01

Database entry completed: ☑ 11/26/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY, GALLO
2. Date/Time: 10-4-01 14/30
3. Project: CAU 405
4. CAU/Location: TTR E of SANDIA CMPD
5. SAA # or ITLV Drum #: SAA SWS 3-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓*			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓*			
f. Signage/marking present identifying the SAA.	✓*			
g. Label(s)/marking present and legible?	✓			
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. Container less than 7/8 full.	✓*			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

8. Comments: * SAA not currently in use, DRUM on seperate pallet and DRUM MARKED as "SAA". * DRUM < 7/8 full per Waste Log.

9. Inspector(s) Signature: RD E Beasley Date: 10-4-01

Database entry completed: ☑ DM 10/5/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT C

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): B. Quinn
2. Date/Time: 8/2/01 720hrs
3. Project: 799417
4. CAU/Location: 405 TTR
5. SAA # or ITLV Drum #: SAA SWS4-01

6. Item:	Yes	No	N/A	CA*	
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓				
b. SAA away from drains and open waterways.	✓				
c. SAA away from high-traffic areas and exits.	✓				
d. Container in good condition.	✓				
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓				
f. Signage/marking present identifying the SAA.	✓				
g. Label(s)/marking present and legible?					
- The words "hazardous waste" present.	✓				
- Unique container or SAA number present.	✓				
- Description of contents present.	✓				
- Emergency contact and phone number present.	✓				
h. Container lids closed and secured.	✓				
i. Waste on pallets.	✓				
j. Secondary containment present for liquid wastes.	NA				
k. Container less than 7/8 full.	✓				

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____
Item #: _____ Description: _____ Date completed: _____
Item #: _____ Description: _____ Date completed: _____

8. Comments: TID # 0208584

9. Inspector(s) Signature: Barbara Quinn Date: 8/2/01

Database entry completed: DW 8/2/01

* Corrective Action

QM 8-3-01

ATTACHMENT C

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 2 of 2)

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston
2. Date/Time: 8/20/01 1145
3. Project: IS
4. CAU/Location: 405 / SWS 4
5. SAA # or ITLV Drum #: SAA-SWS-4-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓			
f. Signage/marking present identifying the SAA.	✓			
g. Label(s)/marking present and legible?	✓			
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. Container less than 7/8 full.	✓			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

8. Comments: All in order

9. Inspector(s) Signature: [signature] Date: 8/20/01

Database entry completed: ☑ [signature] 8/30/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Beasley Weston
2. Date/Time: 9-20-01 1105
3. Project: I3
4. CAU/Location: 405/AREA 35W54
5. SAA # or ITLV Drum #: SAA 35W54-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓			
f. Signage/marking present identifying the SAA.	✓			
g. Label(s)/marking present and legible?				
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. Container less than 7/8 full.	✓*			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

8. Comments: (CONTAINS) 1/9/02 TPH SUPPLIES * per waste log

9. Inspector(s) Signature: W E Beasley Date: 9-20-01

Database entry completed: ☑ JW 11/28/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY, GALLO
2. Date/Time: 10-4-01 1445
3. Project: CAU 405
4. CAU/Location: TTR SANDIA Compound
5. SAA # or ITLV Drum #: SAA 3054-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓*			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓*			
f. Signage/marking present identifying the SAA.	✓*			
g. Label(s)/marking present and legible?	✓			
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.			✓	
k. Container less than 7/8 full.	✓			

7. Corrective Action Required:

Item #:	Description:	Date completed:
Item #:	Description:	Date completed:
Item #:	Description:	Date completed:

8. Comments: changed TID (0208989) inspected drom
* SAA Not currentlyin use, drum on SEPERATE pallet ? MARKED on Drum as "SAA"

9. Inspector(s) Signature: D E Beasley Date: 10-4-01

Database entry completed: ☑ PW 10/24/01

* Corrective Action

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT C

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): B. Quinn
2. Date/Time: 8/2/01 750
3. Project: 799417
4. CAU/Location: 405 TTR
5. SAA # or ITLV Drum #: SAA SWS7-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓			
f. Signage/marking present identifying the SAA.	✓			
g. Label(s)/marking present and legible?				
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	N/A			
k. Container less than 7/8 full.	✓			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____
Item #: _____ Description: _____ Date completed: _____
Item #: _____ Description: _____ Date completed: _____

8. Comments: ITD # 0208553

9. Inspector(s) Signature: Barbara Quinn Date: 8/2/01

Database entry completed: ☑ 8/2/01

* Corrective Action

RM 8-3-01

ATTACHMENT C

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

ATTACHMENT C

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

(Page 1 of 2)

1. Inspector(s): B. Quinn
2. Date/Time: 8/2/01 750
3. Project: ---
4. CAU/Location: 405 TTR
5. SAA # or ITLV Drum #: SAASNS7-02

6. Item:	Yes	No	N/A	CA*	
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓				
b. SAA away from drains and open waterways.	✓				
c. SAA away from high-traffic areas and exits.	✓				
d. Container in good condition.	✓				
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?					
f. Signage/marking present identifying the SAA.	✓				
g. Label(s)/marking present and legible?	✓				
- The words "hazardous waste" present.					
- Unique container or SAA number present.	✓				
- Description of contents present.	✓				
- Emergency contact and phone number present.	✓				
h. Container lids closed and secured.	✓				
i. Waste on pallets.	✓				
j. Secondary containment present for liquid wastes.	N/A				
k. Container less than 7/8 full.	✓				

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____
Item #: _____ Description: _____ Date completed: _____
Item #: _____ Description: _____ Date completed: _____

8. Comments: TID # 0208563

9. Inspector(s) Signature: Barbara Quinn Date: 8/2/01

Database entry completed: DJ 12/21/21

* Corrective Action

RM 8-3-01

ATTACHMENT C

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST
(Page 2 of 2)

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston
2. Date/Time: 8/30/01 1130
3. Project: IS
4. CAU/Location: 405 / SWS-7
5. SAA # or ITLV Drum #: SAA SWS-7-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓			
f. Signage/marking present identifying the SAA.	✓			
g. Label(s)/marking present and legible?	✓			
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. Container less than 7/8 full.	✓			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

8. Comments: All in order

9. Inspector(s) Signature: [signature] Date: 8/30/01

Database entry completed: ☑ 11/30/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston & Beasley
2. Date/Time: 9/20/01 1055
3. Project: Industrial Sites
4. CAU/Location: 405 Area 3 SWS 7
5. SAA # or ITLV Drum #: SAA-SWS702 & SAA-SWS7-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓			
f. Signage/marking present identifying the SAA.	✓			
g. Label(s)/marking present and legible?	✓			
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. Container less than 7/8 full.	✓			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

8. Comments: All in order

9. Inspector(s) Signature: Dan Patt Date: 9/20/01

Database entry completed: ☑ JW 11/28/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY, GALO
2. Date/Time: 10-4-01 1515
3. Project: CAU 405
4. CAU/Location: T/R RADAR TOWER 10/4/01
5. SAA # or ITLV Drum #: SAA SWS 7-01 AB02

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓*			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓*			
f. Signage/marking present identifying the SAA.	✓*			
g. Label(s)/marking present and legible?	✓			
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. Container less than 7/8 full.	✓*			

7. Corrective Action Required:

Item #:	Description:	Date completed:
Item #:	Description:	Date completed:
Item #:	Description:	Date completed:

8. Comments: * SAA not currently in use, SAA drum on separate pallet; marked with "SAA" & drum 7/8 full per waste log

9. Inspector(s) Signature: [signature] Date: 10-4-01

Database entry completed: ☑ 11/26/01

* Corrective Action

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): BEASLEY GALLO
2. Date/Time: 10-4-01 1515
3. Project: CAU 405
4. CAU/Location: TTR RADAR TOWER
5. SAA # or ITLV Drum #: SAA SWS 7-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	~~✓~~			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	~~✓~~			
f. Signage/marking present identifying the SAA.	~~✓~~			
g. Label(s)/marking present and legible?	✓			
- The words "hazardous waste" present.	✓			
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.	✓			
k. Container less than 7/8 full.	~~✓~~			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

8. Comments: asbestos * SAA not currently in use, SAA drum on seperate pallet + unmarked with "SAA" * drum < 7/8 FULL PER WASTE LOG

9. Inspector(s) Signature: [signature] Date: 10-4-01

Database entry completed: ☑ 11/28/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): R BEASLEY B QUINN
2. Date/Time: 11/6/01 1245
3. Project: LAU 4/05
4. CAU/Location: A3 TIR
5. SAA # or ITLV Drum #: SAA SWS 7-01 ASBESTOS WASTE

6. **Item:**	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓			
f. Signage/marking present identifying the SAA.	✓			
g. Label(s)/marking present and legible?	✓			
- The words "hazardous waste" present.			✓	
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.			✓	
k. Container less than 7/8 full.	✓*			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

8. Comments: * LOG BOOK VERIFIED

9. Inspector(s) Signature: R E Beasley Date: 11/6/01

Database entry completed: ☑ 11/8/01

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

* Corrective Action

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Weston + Fowler
2. Date/Time: 12/22/02 1300
3. Project: IS
4. CAU/Location: 405 / SWS-07
5. SAA # or ITLV Drum #: SAA-SWS7-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	✓			
b. SAA away from drains and open waterways.	✓			
c. SAA away from high-traffic areas and exits.	✓			
d. Container in good condition.	✓			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	✓			
f. Signage/marking present identifying the SAA.	✓			
g. Label(s)/marking present and legible?	✓			
- The words "hazardous waste" present.			✓	
- Unique container or SAA number present.	✓			
- Description of contents present.	✓			
- Emergency contact and phone number present.	✓			
h. Container lids closed and secured.	✓			
i. Waste on pallets.	✓			
j. Secondary containment present for liquid wastes.			✓	
k. Container less than 7/8 full.	✓			

7. Corrective Action Required:
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
   Item #: _____ Description: _____ Date completed: _____
8. Comments: Asbestos Containing Material NON HAZ.

9. Inspector(s) Signature: [signature] Date: 12/22/02

Database entry completed: ☑ PEB 1/10/02

JMZ 01/10/02

* Corrective Action

1. **Inspectors:** Print the name of the inspector(s) that performed the SAA inspection.

2. **Date and Time:** Indicate the date and time the SAA inspection was performed.

3. **Project:** Indicate the name of the project that has possession of the SAA (i.e., Industrial Sites, UGTA, etc).

4. **Location:** Indicate the location of the SAA (i.e., CAU 262, NTS A25).

5. **SAA #:** Indicate the SAA # or container number assigned to the SAA.

6. **Item:** Check appropriate responses to questions specific to the SAA.

7. **Corrective Actions Required:** Using item #'s in Section 6, identify items requiring corrective action.

8. **Comments:** Note any comments that do not necessarily require corrective action.

9. **Inspector(s) Signature:** This is the placeholder for the inspector(s) signature and date.

SATELLITE ACCUMULATION AREA INSPECTION CHECKLIST

1. Inspector(s): Quinn Beasley
2. Date/Time: 1-7-02 1020
3. Project: AB Septic Systems - TTR
4. CAU/Location: CAU405 SWS-7
5. SAA # or ITLV Drum #: SAA SWS7-01

6. Item:	Yes	No	N/A	CA*
a. SAA located as near to the point of generation as possible, consistent with fire and safety requirements.	X			
b. SAA away from drains and open waterways.	X			
c. SAA away from high-traffic areas and exits.	X			
d. Container in good condition.	X			
e. Is SAA area clearly delineated (e.g., fence, rope, marking)?	X			
f. Signage/marking present identifying the SAA.	X			
g. Label(s)/marking present and legible?	X			
- The words "hazardous waste" present.			X*	
- Unique container or SAA number present.	X			
- Description of contents present.	X			
- Emergency contact and phone number present.	X			
h. Container lids closed and secured.	X			
i. Waste on pallets.	X			
j. Secondary containment present for liquid wastes.			X	
k. Container less than 7/8 full.	X			

7. Corrective Action Required:

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

Item #: _____ Description: _____ Date completed: _____

8. Comments: *Asbestos Containing Material
OTHER INFO: 3 drums of hydrocarbon in good condition, awaiting pickup and disposal By BN SAN OPS.

9. Inspector(s) Signature: Barbara Quinn Date: 1-7-02

Database entry completed: ☑ PLB 1/9/02

SWZ
01/09/02

* Corrective Action

Appendix E

Geodetic Surveys for CAU 405: Area 3 Septic Systems, Tonopah Test Range, Nevada

E.1.0 Geodetic Surveys

Land survey coordinates were collected on July 31, 2001, using a Trimble Global Positioning System, Model TSC1.

E.1.1 Septic Waste System 3

Sample locations and pertinent points (locations) of interest at SWS 3 are shown in Figure E.1-1. The corresponding land survey coordinates for the SWS 3 GPS locations are listed in Table E.1-1. Two discrepancies were identified between actual locations and associated GPS coordinates. The discrepancies affect locations "ss3db" and "ss3db01." Figure E.1-1 shows the actual locations. The original GPS coordinates are noted in Table E.1-1 with a single asterisk next to the locations. The adjusted coordinates are noted in Table E.1-1 with two asterisks.

E.1.2 Septic Waste System 4

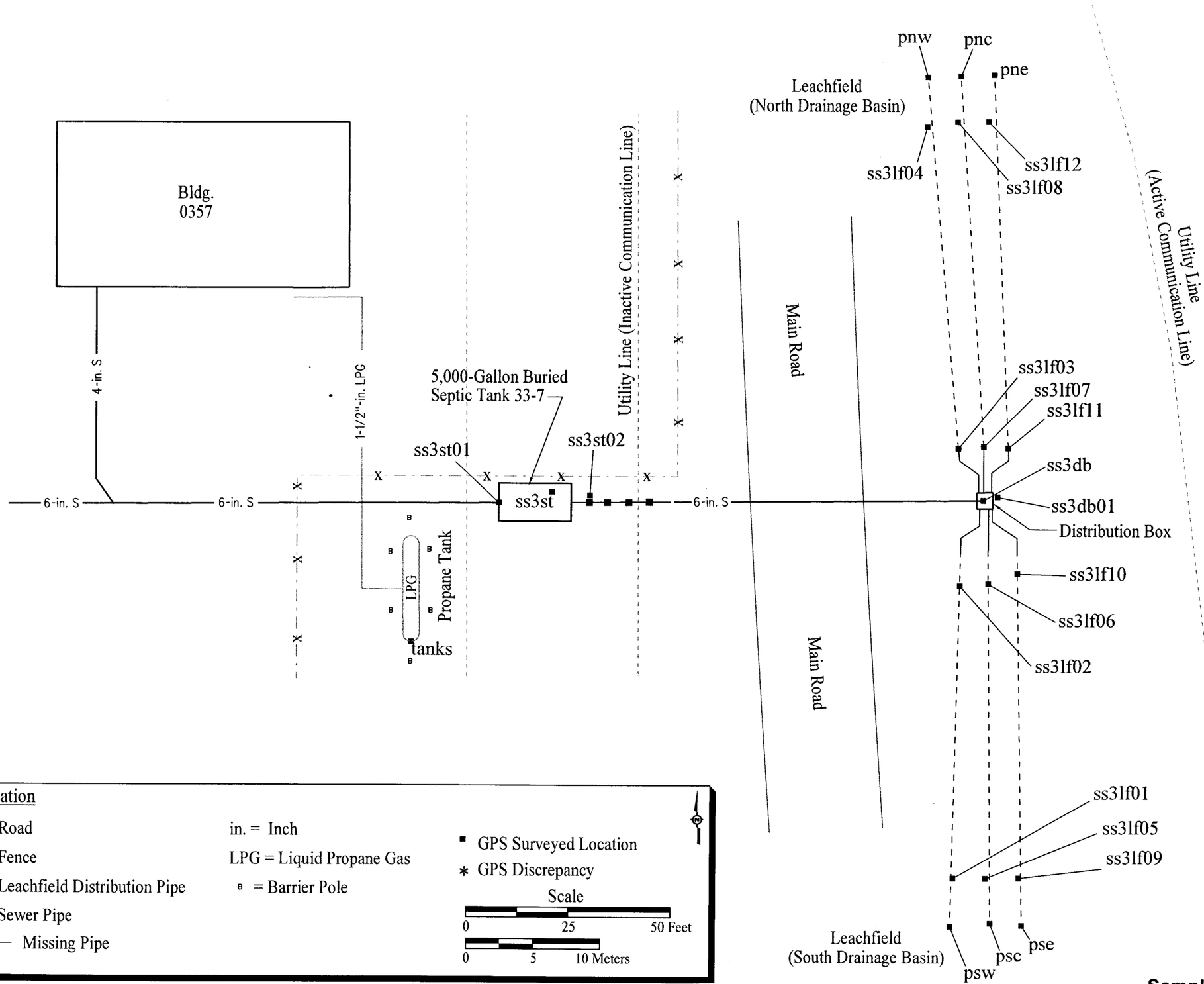
Sample locations and pertinent points of interest at SWS 4 are shown in Figure E.1-2. The corresponding land survey coordinates for the SWS 4 GPS locations are listed in Table E.1-2.

E.1.3 Septic Waste System 7

Sample locations and pertinent points of interest at SWS 7 are shown in Figure E.1-3. The corresponding land survey coordinates for the SWS 7 GPS locations are listed in Table E.1-3. One discrepancy was identified between an actual location and associated GPS coordinates. The discrepancy affects location "geo7." Figure E.1-3 shows the actual location. The original GPS coordinates are noted in Table E.1-3 with a single asterisk next to the locations. The adjusted coordinates are noted in Table E.1-3 with two asterisks.

E.1.4 Background Sample Locations

Twenty surface samples (less than 1 ft in depth) were collected in locations surrounding the CAU 405 site. These samples were used to establish radiological field-screening levels. The sample locations are marked on Figure E.1-4. The land survey coordinates are provided in Table E.1-4.



Source: Modified from DOE/NV, 2001; IT, 2001

Figure E.1-1
Septic Waste System 3
Sample Locations and Points of Interest

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17-APR-2002

Table E.1-1
GPS Coordinates for SWS 3 Sample Locations and Points of Interest
(Page 1 of 2)

Latitude	Longitude	Northing[a]	Easting[a]	HAE (meters)	ID	Location	Maximum PDOP	GPS Time	Unfiltered Position	Standard Deviation[b]	Horizontal Precision (meters)	Vertical Precision (meters)
37.7868568	-116.7542303	4181990.04	521640.78	1677.96	26	tanks	1.8	9:13:24	35	0.259546	0.297	0.418
37.7869507	-116.7541561	4182000.48	521647.28	1678.25	28	ss3st01	1.8	9:16:33	31	0.279106	0.301	0.426
37.7869579	-116.754111	4182001.29	521651.26	1678.1	29	ss3st	2	9:17:13	30	0.125557	0.32	0.447
37.7869555	-116.7540789	4182001.03	521654.09	1677.59	30	ss3st02	1.8	9:17:59	31	0.166061	0.286	0.405
37.7869316	-116.7537552	4181998.45	521682.59	1674.99	33	ss3db*	1.4	9:25:21	31	0.087681	0.246	0.312
37.786952	-116.753745	4182000.73	521683.44	--	--	ss3db**	--	--	--	--	--	--
37.7869339	-116.753743	4181998.71	521683.67	1675.05	34	ss3db01*	1.3	9:25:58	31	0.102019	0.214	0.282
37.786954	-116.753733	4182000.99	521684.51	--	--	ss3db01**	--	--	--	--	--	--
37.7868945	-116.753765	4181994.33	521681.74	1676.29	35	ss3lf02	1.7	9:27:49	33	0.11541	0.294	0.405
37.7868959	-116.753741	4181994.5	521683.85	1676.01	36	ss3lf06	1.7	9:28:28	30	0.151848	0.269	0.368
37.7869028	-116.7537162	4181995.27	521686.04	1675.39	37	ss3lf10	1.3	9:29:06	30	0.071388	0.229	0.297
37.7866974	-116.7537147	4181972.48	521686.23	1675.63	38	ss3lf09	1.3	9:29:58	30	0.062991	0.234	0.313
37.7866972	-116.7537432	4181972.45	521683.71	1675.75	39	ss3lf05	1.3	9:30:36	30	0.055248	0.225	0.301
37.7866973	-116.7537706	4181972.46	521681.31	1676.41	40	ss3lf01	1.8	9:31:15	30	0.096379	0.309	0.41
37.7866649	-116.7537729	4181968.87	521681.12	1676.29	41	psw	1.6	9:32:07	31	0.064642	0.273	0.375
37.7866668	-116.753739	4181969.08	521684.09	1676.01	42	psc	1.6	9:32:43	31	0.053009	0.289	0.397
37.7866653	-116.7537122	4181968.91	521686.45	1675.91	43	pse	1.6	9:33:20	30	0.072769	0.278	0.383
37.7869874	-116.7537241	4182004.66	521685.31	1675.18	44	ss3lf11	1.6	9:34:27	30	0.19954	0.238	0.32
37.7869885	-116.7537451	4182004.77	521683.46	1675.03	45	ss3lf07	1.3	9:35:04	30	0.194582	0.213	0.29
37.7869873	-116.7537664	4182004.63	521681.59	1675.18	46	ss3lf03	1.3	9:35:39	30	0.060517	0.225	0.307
37.7872037	-116.7537933	4182028.64	521679.16	1675.61	47	ss3lf04	1.3	9:36:31	30	0.043509	0.222	0.302

Table E.1-1
GPS Coordinates for SWS 3 Sample Locations and Points of Interest
(Page 2 of 2)

Latitude	Longitude	Northing[a]	Easting[a]	HAE (meters)	ID	Location	Maximum PDOP	GPS Time	Unfiltered Position	Standard Deviation[b]	Horizontal Precision (meters)	Vertical Precision (meters)
37.7872073	-116.7537673	4182029.04	521681.44	1675.44	48	ss3lf08	1.3	9:37:07	30	0.075969	0.214	0.291
37.7872075	-116.7537411	4182029.07	521683.75	1675.2	49	ss3lf12	1.3	9:37:47	34	0.103542	0.227	0.309
37.7872391	-116.7537363	4182032.58	521684.16	1675.34	50	pne	1.3	9:38:29	30	0.061033	0.221	0.301
37.7872382	-116.7537645	4182032.47	521681.68	1675.72	51	pnc	1.3	9:39:05	31	0.057355	0.213	0.29
37.7872373	-116.7537926	4182032.36	521679.21	1676.1	52	pnw	1.6	9:39:43	30	0.074792	0.274	0.373
37.7862741	-116.7535332	4181925.56	521702.34	1677.02	57	stamitchell 3	1.4	9:47:39	31	0.117521	0.236	0.333

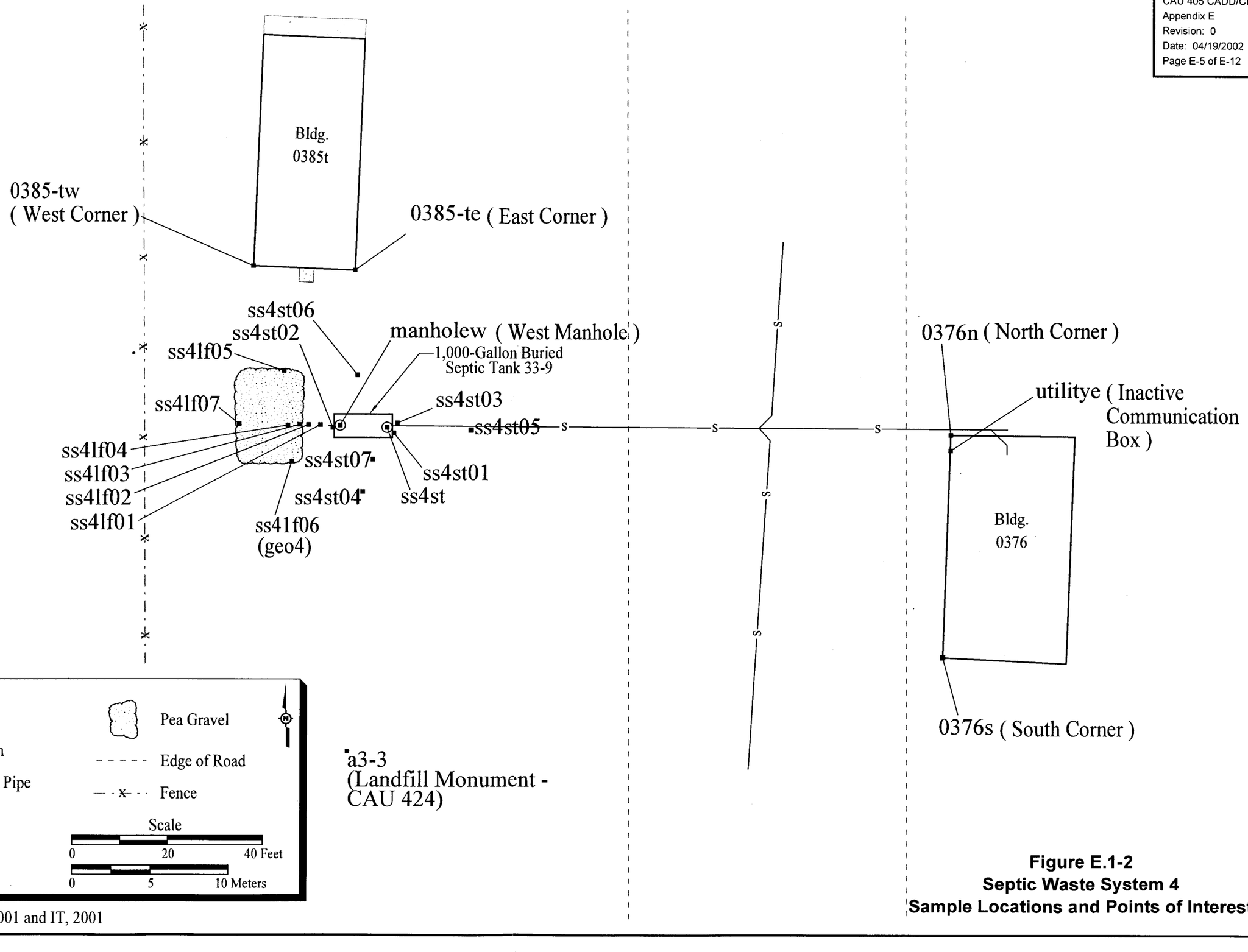
Feature Name: Point Generic
Correction Type: Realtime Corrected
Receiver Type: ProXRS

GPS Date: 7/31/01
Data File: SWS3.SSF

HAE = Height above ellipsoid
PDOP = Position dilution of precision

*Original GPS coordinates
**Adjusted coordinates

[a]UTM Zone 11, NAD 27
[b]± 1 sigma



Source: Modified from DOE/NV, 2001 and IT, 2001

Figure E.1-2
Septic Waste System 4
Sample Locations and Points of Interest

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17-APR-2002

Table E.1-2
GPS Coordinates for SWS 4 Sample Locations and Points of Interest
(Page 1 of 2)

Latitude	Longitude	Northing[a]	Easting[a]	HAE (meters)	ID	Location	Maximum PDOP	GPS Time	Unfiltered Position	Standard Deviation[b]	Horizontal Precision (meters)	Vertical Precision (meters)
37.7876363	-116.7571701	4182075.86	521381.7	1669.62	65	0376n	1.9	10:07:06	45	0.050989	0.27	0.502
37.7875076	-116.7571758	4182061.57	521381.23	1669.06	66	0376s	2.6	10:08:11	31	0.146051	0.308	0.646
37.7874539	-116.7576082	4182055.51	521343.17	1669.43	68	a3-3	1.9	10:10:11	30	0.041987	0.272	0.522
37.7877348	-116.7576759	4182086.66	521337.13	1669.45	69	0385-tw	2.7	10:13:45	30	0.133425	0.317	0.708
37.7877322	-116.7576023	4182086.39	521343.61	1669.64	70	0385-te	3.4	10:14:23	30	0.09693	0.325	0.644
37.7876395	-116.7575185	4182076.12	521351.02	1669.39	71	ss4st05	2	10:15:17	33	0.060822	0.252	0.503
37.7876379	-116.7575742	4182075.94	521346.11	1669.32	72	ss4st01	2	10:16:02	34	0.088023	0.27	0.538
37.7876437	-116.7575716	4182076.59	521346.34	1669.35	73	ss4st03	2	10:16:44	30	0.055129	0.262	0.524
37.7876412	-116.7575792	4182076.3	521345.68	1669.23	74	ss4st	2	10:17:26	30	0.046911	0.255	0.509
37.7876228	-116.7575895	4182074.26	521344.77	1669.45	75	ss4st07	2	10:18:05	30	0.040036	0.271	0.54
37.7876042	-116.757597	4182072.19	521344.12	1669.41	76	ss4st04	2	10:18:46	30	0.029422	0.263	0.524
37.7876715	-116.7576006	4182079.66	521343.78	1669.35	77	ss4st06	2	10:19:27	31	0.056395	0.256	0.51
37.7876424	-116.7576132	4182076.43	521342.68	1669.23	78	manholew	2	10:20:07	30	0.040232	0.272	0.542
37.7876412	-116.7576185	4182076.29	521342.21	1669.27	79	ss4st02	2	10:20:49	50	0.050939	0.264	0.526
37.7876427	-116.7576275	4182076.46	521341.42	1669.63	80	ss4lf01	2	10:21:49	30	0.056185	0.264	0.526
37.7876427	-116.7576362	4182076.46	521340.65	1669.71	81	ss4lf02	2	10:22:23	30	0.037415	0.254	0.506
37.7876428	-116.7576426	4182076.47	521340.09	1669.59	82	ss4lf03	2	10:22:59	30	0.036733	0.267	0.533
37.7876425	-116.757651	4182076.43	521339.36	1669.68	83	ss4lf04	2	10:23:34	35	0.067227	0.257	0.513
37.7876433	-116.7576862	4182076.51	521336.25	1669.85	84	ss4lf07	2	10:24:19	30	0.038399	0.252	0.502
37.787674	-116.7576539	4182079.93	521339.08	1669.41	85	ss4lf05	2	10:25:02	30	0.05217	0.268	0.535
37.7876217	-116.7576483	4182074.12	521339.59	1669.47	86	ss4lf06	2	10:25:41	32	0.070592	0.26	0.518

Table E.1-2
GPS Coordinates for SWS 4 Sample Locations and Points of Interest
(Page 2 of 2)

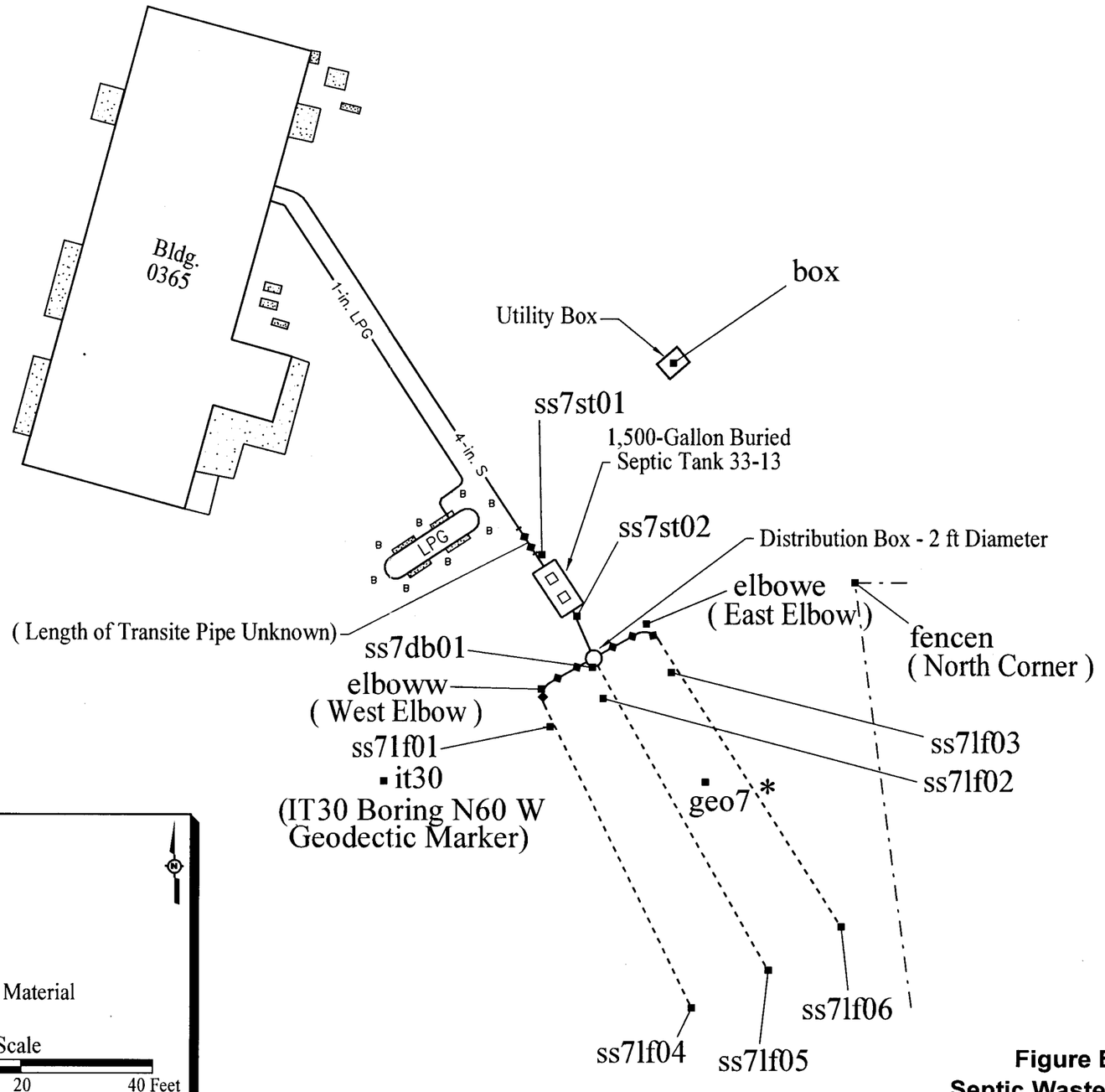
Latitude	Longitude	Northing[a]	Easting[a]	HAE (meters)	ID	Location	Maximum PDOP	GPS Time	Unfiltered Position	Standard Deviation[b]	Horizontal Precision (meters)	Vertical Precision (meters)
37.7876273	-116.7571702	4182074.85	521381.69	1669.54	88	utilitye	4.6	10:27:50	30	0.107301	0.308	0.761
37.7877499	-116.7584078	4182088.18	521272.68	1670.45	89	utilityw	1.4	12:06:45	26	0.064957	0.232	0.318
37.7876631	-116.7583002	4182078.57	521282.18	1670.29	90	sws4bkgd	1.6	12:07:46	30	0.17689	0.249	0.346

Feature Name: Point Generic
Correction Type: Realtime Corrected
Receiver Type: ProXRS

GPS Date: 7/31/01
Data File: SWS4.SSF

HAE = Height above ellipsoid
PDOP = Position dilution of precision

[a]UTM Zone 11, NAD 27
[b]± 1 sigma



Explanation

- Concrete Pad
- Fence
- Sewer Pipe
- Leachfield Distribution Pipe
- LPG — Liquid Propane Gas
- B — Barrier Pole
- * — GPS Discrepancy
- ▪ — GPS Surveyed Location
- ft = Foot
- in. = Inch
- Square Manhole
- Asbestos Containing Material (i.e., Transite Pipe)

Scale

0 20 40 Feet

0 5 10 Meters

Source: Modified from DOE/NV, 2001 and IT, 2001

Figure E.1-3
Septic Waste System 7
Sample Locations and Points of Interest

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17-APR-2002

Table E.1-3
GPS Coordinates for SWS 7 Sample Locations and Points of Interest

Latitude	Longitude	Northing[a]	Easting[a]	HAE (meters)	ID	Location	Maximum PDOP	GPS Time	Unfiltered Position	Standard Deviation[b]	Horizontal Precision (meters)	Vertical Precision (meters)
37.7819764	-116.7563297	4181448.1	521457.33	1684.07	2	it30	2.1	11:02:08	30	0.104399	0.289	0.528
37.7821506	-116.7561775	4181467.47	521470.68	1682.04	11	box	2.1	11:14:26	30	0.219227	0.287	0.403
37.7820589	-116.7560827	4181457.31	521479.06	1682.14	12	fencen	1.6	11:15:32	31	0.136495	0.274	0.402
37.7816609	-116.756013	4181413.17	521485.31	1682.86	13	fences	1.8	11:16:50	31	0.078054	0.279	0.436
37.7820238	-116.7562202	4181453.39	521466.96	1682.54	14	ss7db01	1.6	11:19:17	30	0.162282	0.269	0.393
37.781999	-116.7562423	4181450.63	521465.02	1682.75	15	ss7lf01	1.6	11:20:06	33	0.186184	0.264	0.385
37.7820108	-116.7562146	4181451.94	521467.46	1682.74	16	ss7lf02	1.8	11:20:45	30	0.271131	0.285	0.418
37.7820217	-116.7561786	4181453.17	521470.62	1683.11	17	ss7lf03	1.8	11:21:23	30	0.184625	0.281	0.413
37.7819684	-116.7561824	4181447.25	521470.3	1682.44	18	geo7*	1.6	11:22:05	30	0.063221	0.264	0.382
37.781976	-116.756161	4181448.06	521472.21	--	--	geo7**	--	--	--	--	--	--
37.7818816	-116.7561679	4181437.63	521471.61	1682.73	19	ss7lf04	1.3	11:22:49	30	0.121912	0.204	0.291
37.7818972	-116.756128	4181439.36	521475.12	1682.75	20	ss7lf05	1.3	11:23:27	30	0.192413	0.216	0.307
37.7819153	-116.75609	4181441.37	521478.46	1682.81	21	ss7lf06	1.4	11:24:04	31	0.162743	0.209	0.298
37.7820451	-116.7562284	4181455.75	521466.23	1683.64	22	ss7st02	1.6	11:25:07	30	0.098175	0.263	0.377
37.7820708	-116.7562468	4181458.6	521464.61	1683.62	23	ss7st01	1.7	11:26:04	30	0.092002	0.28	0.382
37.7820148	-116.756247	4181452.39	521464.6	1683.55	24	elboww	1.6	11:26:59	35	0.20233	0.217	0.31
37.7820419	-116.7561917	4181455.4	521469.46	1683.47	25	elbowe	1.4	11:27:45	32	0.197179	0.228	0.324

Feature Name: Point Generic
Correction Type: Realtime Corrected
Receiver Type: ProXRS

GPS Date: 7/31/01
Data File: SWS7.SSF

HAE = Height above ellipsoid
PDOP = Position dilution of precision

*Original GPS coordinates
**Adjusted coordinates

[a]UTM Zone 11, NAD 27
[b]± 1 sigma

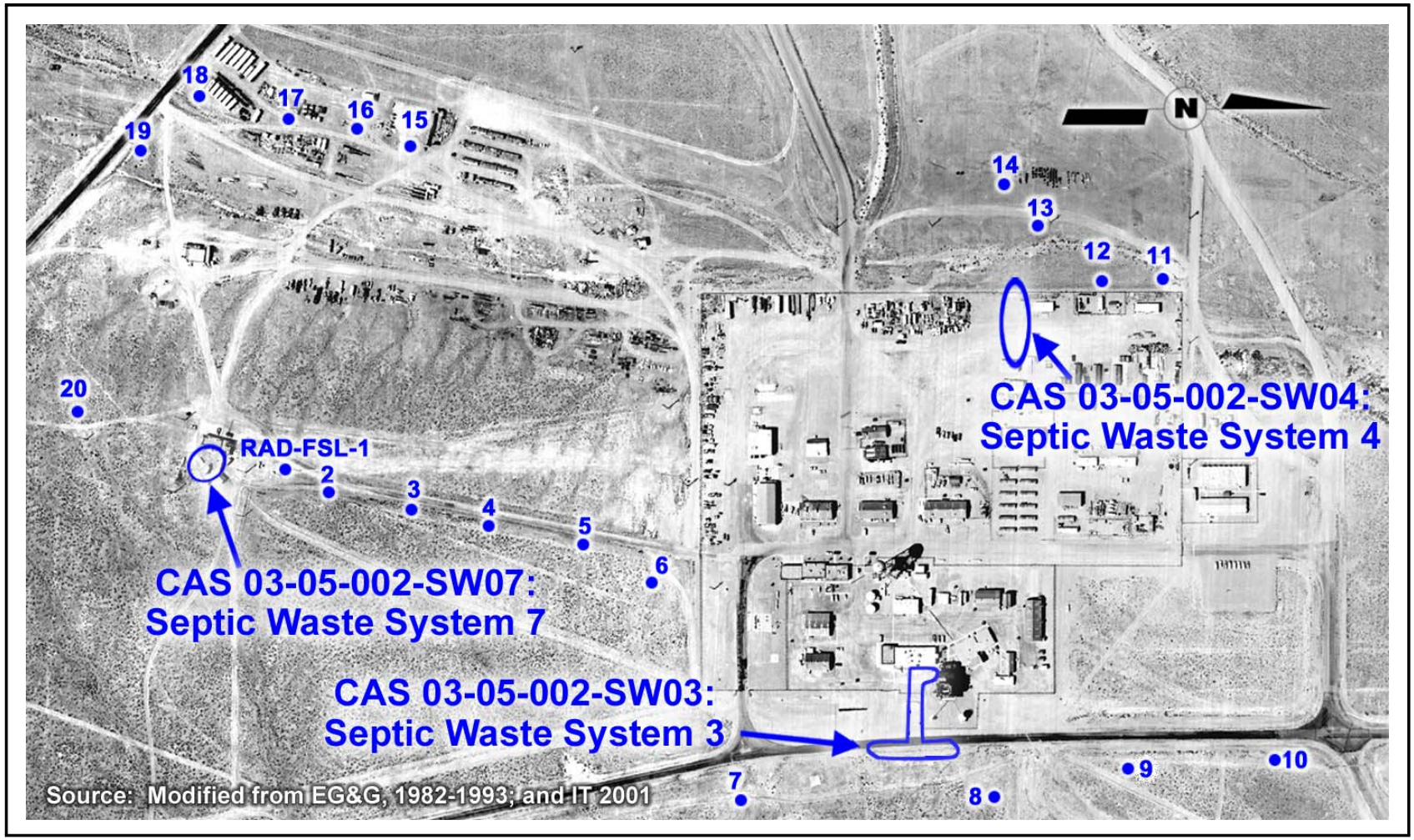

Figure E.1-4
CAU 405 Field Investigation Background Sample Locations for Radiological Field-Screening Levels

Table E.1-4
Radiological Background Levels for Twenty Surface Locations Surrounding the CAU 405 Sites

Latitude	Longitude	Northing[a]	Easting[a]	HAE (meters)	ID	Location	Maximum PDOP	GPS Time	Unfiltered Position	Standard Deviation[b]	Horizontal Precision (meters)	Vertical Precision (meters)
37.7825158	-116.7559605	4181508.03	521489.68	1683.52	91	fsl1	1.3	11:42:13	26	0.169973	0.232	0.329
37.7828165	-116.7559208	4181541.4	521493.1	1682.21	92	fsl2	1.4	11:43:04	28	0.179644	0.252	0.327
37.7832416	-116.7558086	4181588.59	521502.85	1680.9	93	fsl3	1.4	11:44:06	29	0.08733	0.253	0.328
37.7836368	-116.7557447	4181632.45	521508.37	1680.2	94	fsl4	1.4	11:45:06	30	0.130906	0.24	0.345
37.7840651	-116.7556266	4181680	521518.64	1680.95	95	fsl5	1.3	11:46:10	27	0.087722	0.222	0.312
37.7846153	-116.7554653	4181741.07	521532.69	1679.64	96	fsl6	1.3	11:47:57	35	0.139002	0.236	0.321
37.7859776	-116.7532832	4181892.72	521724.43	1674.93	97	fsl7	1.4	11:51:21	27	0.152272	0.223	0.32
37.7873568	-116.7532835	4182045.74	521724	1674.65	98	fsl8	1.8	11:54:16	31	0.254214	0.237	0.328
37.788593	-116.7536096	4182182.82	521694.93	1670.64	99	fsl9	1.3	11:56:39	32	0.205855	0.221	0.307
37.7893726	-116.7536138	4182269.3	521694.33	1667.9	100	fsl10	1.3	11:58:09	26	0.188637	0.231	0.322
37.7886793	-116.7583858	4182191.29	521274.36	1669.31	101	fsl11	1.3	12:01:56	30	0.25586	0.248	0.308
37.7882687	-116.7584539	4182145.72	521268.48	1669.77	102	fsl12	1.3	12:03:02	24	0.069787	0.25	0.31
37.7877903	-116.7582811	4182092.68	521283.83	1669.98	103	fsl13	1.4	12:04:08	28	0.162849	0.239	0.331
37.7871741	-116.7586112	4182024.24	521254.94	1671.23	104	fsl14	1.3	12:09:43	29	0.077724	0.23	0.312
37.7843198	-116.7594359	4181707.39	521183.14	1675.27	105	fsl15	1.4	12:15:36	30	0.16189	0.251	0.31
37.7837158	-116.7597738	4181640.3	521153.56	1675.91	106	fsl16	1.7	12:17:04	30	0.351551	0.289	0.4
37.7832629	-116.7598038	4181590.04	521151.04	1677.84	107	fsl17	1.7	12:18:22	30	0.298918	0.247	0.322
37.7801606	-116.756431	4181246.62	521448.94	1687.49	108	fsl20	1.7	12:23:14	27	0.179366	0.321	0.415
37.7810748	-116.7588738	4181347.49	521233.56	1679.27	109	fsl18	1.7	12:26:50	30	0.24185	0.312	0.4
37.7805214	-116.7581033	4181286.27	521301.57	1682.09	110	fsl19	1.7	12:28:28	32	0.135959	0.301	0.387

Feature Name: Point Generic
Correction Type: Realtime Corrected
Receiver Type: ProXRS

GPS Date: 7/31/01
Data File: FSL.SSF

HAE = Height above ellipsoid
PDOP = Position dilution of precision

[a]UTM Zone 11, NAD 27
[b]± 1 sigma

E.2.0 References

EG&G Energy Measurements. 1982-1993. Aerial photographs, No. Unknown. Nellis Air Force Base, NV: Remote Sensing Laboratory Photo Library.

IT Corporation. 2001. *Field Activity Daily Log for GPS Survey of CAU 405 Sample Locations and Points of Interest,* 31, July. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 2001. *Corrective Action Investigation Plan for CAU 405, Area 3 Septic Systems, TTR, NV,* DOE/NV--721. Las Vegas, NV.

Appendix F

Response to NDEP Comment

NEVADA ENVIRONMENTAL RESTORATION PROJECT
DOCUMENT REVIEW SHEET

1. Document Title/Number: Draft Corrective Action Decision Document/Closure Report for Corrective Action Unit 405: Area 3 Septic Systems, Tonopah Test Range, Nevada	2. Document Date: March 2002
3. Revision Number: 0	4. Originator/Organization: IT Corporation
5. Responsible DOE/NV ERP Project Mgr.: Janet Appenzeller-Wing	6. Date Comments Due: April 1, 2002
7. Review Criteria: Full	
8. Reviewer/Organization/Phone No.: Ted Zaferatos, NDEP, 486-2856	9. Reviewer's Signature:

10. Comment Number/ Location	11. Type[a]	12. Comment	13. Comment Response	14. Accept
1) Section 2.1, Investigation Activities, Page 6		Add a reference to, and discussion of, the conceptual model developed in the CAIP. This is required by the Standardized Outline for CADD/CRs.	Section 2.1.4, Conceptual Model, was added to reference and discuss the conceptual model developed in the CAIP.	Yes

[a] Comment Types: M = Mandatory, S = Suggested.

Return Document Review Sheets to DOE/NV Environmental Restoration Division, Attn: QAC, M/S 505.

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