Nevada
Environmental
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Project

DOE/NV--745

Streamlined Approach for Environmental Restoration Plan for Corrective Action Unit 330: Areas 6, 22, and 23 Tanks and Spill Sites, Nevada Test Site, Nevada

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US Department of Energy National Nuclear Security Administration
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STREAMLINED APPROACH FOR ENVIRONMENTAL RESTORATION PLAN FOR CORRECTIVE ACTION UNIT 330: AREAS 6, 22, AND 23 TANKS AND SPILL SITES, NEVADA TEST SITE, NEVADA

Prepared for:
National Nuclear Security Administration
Nevada Operations Office
Under Contract No. DE-AC08-96-NV11718

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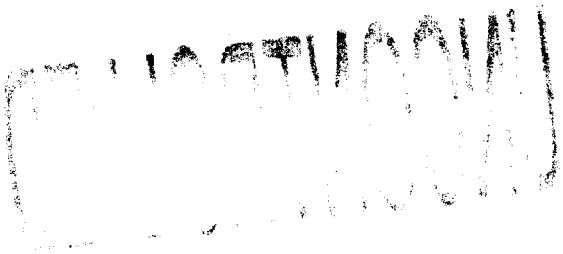

STREAMLINED APPROACH FOR ENVIRONMENTAL RESTORATION PLAN FOR CORRECTIVE ACTION UNIT 330: AREAS 6, 22, AND 23 TANKS AND SPILL SITES, NEVADA TEST SITE, NEVADA

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

Date: 8-6-01

Approved by: Runore Wycoff
Runore C. Wycoff, Director
Nevada Environmental Restoration Project

Date: 8-6-01

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ACRONYMS AND ABBREVIATIONS

AIP	Animal Investigation Program
AST	aboveground storage tank
BN	Bechtel Nevada
CAS	Corrective Action Site
CAU	Corrective Action Unit
cm	centimeter
COC	Constituent of Concern
CR	Closure Report
DOE/NV	U.S. Department of Energy, Nevada Operations Office
DQO	Data Quality Objective
ECIF	Environmental Compliance Inventory Form
EPA	U.S. Environmental Protection Agency
FFACO	Federal Facility Agreement and Consent Order
ft	feet
gal	gallon
in	inch
ITLV	International Technologies Corporation Las Vegas Office
ITPA	International Technologies Preliminary Assessment
L	liter
LLW	Low-Level Radioactive Waste
m	meter

ACRONYMS AND ABBREVIATIONS (continued)

mg/kg	milligram per kilogram
mg/L	milligram per liter
mL	milliliter
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NNSA/NV	National Nuclear Security Administration Nevada Operations Office
NTS	Nevada Test Site
pCi/g	picocurie per gram
RCRA	Resource Conservation and Recovery Act
REECo	Reynolds Electric and Engineering Co., Inc.
PPE	personal protective equipment
ppm	parts per million
PRG	Preliminary Remediation Goal
RWMS	Radioactive Waste Management Site
SAFER	Streamlined Approach for Environmental Restoration
SPCC	Spill Prevention Control and Countermeasure
SVOC	Semivolatile Organic Compound
TCLP	Toxicity Characteristic Leaching Proceedure
TPH	Total Petroleum Hydrocarbons
ug/kg	microgram per kilogram
VOC	Volatile Organic Compound

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EXECUTIVE SUMMARY

This plan addresses closure of Corrective Action Unit (CAU) 330 identified in Appendix III of the Federal Facility Agreement and Consent Order. This CAU is located at the Nevada Test Site (NTS) in Nevada. CAU 330 consists of the following Corrective Action Sites (CASs):

- CAS 06-02-04 - An underground tank and piping, this area was part of the Animal Investigation Program, conducted under the U.S. Public Health Service. Its purpose was to study and perform tests on the animals in and around the NTS that were exposed to radionuclides.

- CAS 22-99-06 - A fuel spill that is believed to be a result of a waste oil release that occurred when Camp Desert Rock was an active facility.

- CAS 23-01-02 - Contains a large aboveground storage tank farm that was used for the bulk storage of gasoline and diesel.

- CAS 23-25-05 - Consists of an asphalt oil spill/tar release that contains a wash covered with asphalt oil/tar material, a half buried 208-liter (L)(55-gallon [gal]) drum, rebar and concrete located in the vicinity.

Closure for CAU 330 will be completed by the following:

- CAS 06-02-04 - Fluids within the tank will be removed, sampled for waste disposal, solidified, and disposed of accordingly. Once liquids have been removed, the tank will be excavated and removed for disposal. Soil removed during the excavation will be stockpiled on plastic sheets. This soil will be characterized for disposal. If however the soil is found to be clean, it will be used to backfill the excavation. Inlet and outlet piping (if present) will be removed for disposal if constituents of concern (COC) are found in the tank. If COCs are not found in the tank the piping will be grouted-closed and left in place. Soil in the vicintiy of both ends of the tank will be sampled for COCs. If COCs are found these soils will be removed for waste disposal. Verification sampling will be used to determine if the site has been clean closed.

- CAS 22-99-06 - Excavate surface petroleum hydrocarbon-impacted soils. Verify that clean-up levels have been met. Dispose of excavated soil in the Area 6 Hydrocarbon Landfill. Backfill excavated areas with clean fill.

- CAS 23-01-02 - Dismantlement/demolition of two large fuel tanks, associated piping and fill stand. Once tanks have been removed, identify and remove diesel-impacted soils from a possible leak from the diesel tank, if it is found to exist.

- CAS 23-25-05 - The length of the tar spill is approximately 190 meters (m) (652 feet [ft]),

average width is approximately 20 m (65 ft), and the depth ranges from 5 to 10 centimeters (2 to 4 inches). Visible tar will be excavated and hauled away. The 208-L (55-gal) drum within the dirt pile will be removed from the site pending characterization for waste disposal. In addition, the concrete slabs and rebar will be removed from this site.

1.0 INTRODUCTION

This Streamlined Approach for Environmental restoration (SAFER) plan addresses the action necessary for the closure of Corrective Action Unit (CAU) 330, Areas 6, 22, and 23 Tanks and Spill Sites. The CAUs are currently listed in Appendix III of the Federal Facility Agreement and Consent Order (FFACO). This CAU is located at the Nevada Test Site (NTS) (Figure 1). CAU 330 consists of the following Corrective Action Sites (CASs):

- CAS 06-02-04 - Consists of an underground tank and piping. This CAS is close to an area that was part of the Animal Investigation Program (AIP), conducted under the U.S. Public Health Service. Its purpose was to study and perform tests on the cattle and wild animals in and around the NTS that were exposed to radionuclides. It is unknown if this tank was part of these operations.

- CAS 22-99-06 - Is a fuel spill that is believed to be a waste oil release which occurred when Camp Desert Rock was an active facility. This CAS was originally identified as being a small depression where liquids were poured onto the ground, located on the west side of Building T-1001. This building has been identified as housing a fire station, radio station, and radio net remote and telephone switchboard.

- CAS 23-01-02 - Is a large aboveground storage tank (AST) farm that was constructed to provide gasoline and diesel storage in Area 23. The site consists of two ASTs, a concrete foundation, a surrounding earthen berm, associated piping, and unloading stations.

- CAS 23-25-05 - Consists of an asphalt oil spill/tar release that contains a wash covered with asphalt oil/tar material, a half buried 208-liter (L) (55-gallon [gal]) drum, rebar, and concrete located in the vicinity.

1.1 SAFER PROCESS

The SAFER process combines elements of the Data Quality Objectives (DQO) process and the observational approach to help plan and conduct corrective actions. DQOs are used to identify the problem and define the type and quality of data needed to complete the investigation phase of the process. The observational approach provides a framework for managing uncertainty and planning decision making. The purpose of the investigation in the SAFER process is to verify the adequacy of existing information to implement the corrective action.

Use of the SAFER concept allows for technical decisions to be made based on incomplete, but sufficient information and the experience of the decision maker. Any uncertainties are addressed by documented assumptions that are verified by sampling and analyses, data evaluation, on-site observations as planned activities progress, and by contingency plans as necessary. The

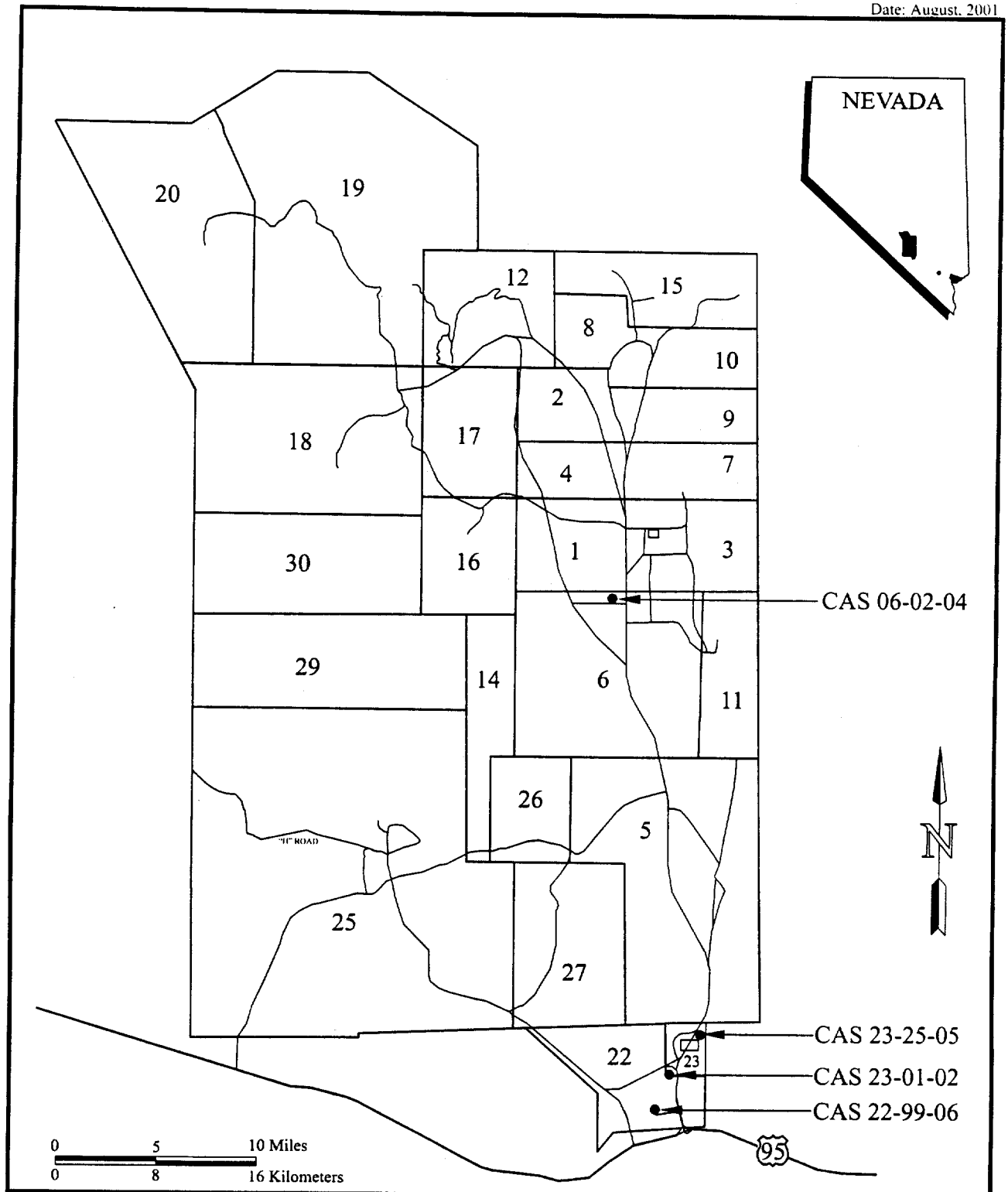

FIGURE 1
CAU 330 LOCATION MAP

remediation and closure may proceed simultaneously with site characterization as sufficient data are gathered to confirm or disprove the assumptions made in selecting the closure method. If at any time during the site closure, new information is developed that indicates that the closure method should be revised, the closure activities will be redirected to more appropriately protect human health and the environment.

Closure of CAU 330 will consist primarily of excavation, sampling, and removal activities to accomplish clean closure with one exception. The piping associated with CAS 06-02-04 will be closed in place if COCs are not identified in the tank. Sufficient process knowledge of the Constituents of Concern (COC) exist such that closure can be completed using the SAFER process. Additionally, CAU 330 has already been promoted into Appendix III of the FFACO as a SAFER closure.

1.2 SUMMARY OF PROPOSED CORRECTIVE ACTION

Closure for CAU 330 will be completed by the following:

- CAS 06-02-04 - Fluids within the tank will be removed, sampled for waste disposal, solidified, and disposed of accordingly. Once liquids have been removed, the tank will be excavated and removed for disposal. Soil removed during the excavation will be stockpiled on plastic sheets. This soil will be characterized for disposal. If, however, the soil is found to be clean, it will be used to backfill the excavation. Inlet and outlet piping (if present) will be removed for disposal if COCs are found in the tank. If COCs are not found in the tank the piping will be grouted-closed and left in place. Soil in the vicinity of both ends of the tank will be sampled for COCs. If found, these impacted soils will be removed for waste disposal. Verification sampling will be used to determine if the site has been clean closed.

- CAS 22-99-06 - Excavate surface hydrocarbon-impacted soils. Verify that clean-up levels have been met. Dispose of excavated soils in the Area 6 hydrocarbon landfill. Backfill excavated areas with clean fill.

- CAS 23-01-02 - Dismantlement/demolition of two large fuel tanks, associated piping and fill stand. Once tanks have been removed, identify and remove diesel-impacted soils from a possible leak from the diesel tank, if it is found to exist.

- CAS 23-25-05 - The length of the tar spill is approximately 190 meters (m) (652 feet [ft]), average width is approximately 20 m (65 ft), and the depth ranges from 5 centimeters (cm) to 10 cm (2 inches [in] to 4 in). Visible tar will be excavated and hauled away. The 208-L (55-gal) drum within the dirt pile will be removed from the site pending characterization for waste disposal. In addition, the concrete slabs and rebar will be removed from this site.

1.3 HOLD/DECISION POINTS

During closure activities, certain conditions affecting the project schedule and budget may require decisions to be made prior to continuing work. Work stoppage conditions may include:

- Generating 100 percent greater volume of waste than expected.
- Finding Cesium-137 activity greater than 7 picocuries per gram (pCi/g) during verification sampling at CAS 06-02-04.
- Finding any unsafe condition or work practice that poses a threat to personnel, equipment, or the environment that was not originally documented in the Site-Specific Health and Safety Plan.

If any of these conditions occur, work will stop and the U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office (NNSA/NV) and/or the Nevada Division of Environmental Protection (NDEP) will be notified. Work will continue when a resolution has been agreed upon and a record of technical change has been submitted.

1.4 SAFER WORK PLAN CONTENTS

This SAFER Work Plan has been developed to support the proposed characterization and closure of CAU 330. The format of the plan is:

- Introduction (Section 1.0)
- Unit Description (Section 2.0)
- Field Activities and Closure Objectives (Section 3.0)
- Reports and Records Availability (Section 4.0)
- Investigation/Remediation Waste Management (Section 5.0)
- Quality Assurance/Quality Control (Section 6.0)
- References (Section 7.0)

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

Nevada Environmental Restoration Project, Project Management Plan, Revision 0, U.S. Department of Energy (DOE), 1994.

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

Occupational Safety and Health Administration, 2001, Title 29 Code of Federal Regulations 1910.120, Hazardous Waste Operations and Emergency Response, Washington, D.C.

U.S. Department of Energy, Nevada Operations Office. 1996. Industrial Sites Quality Assurance Project Plan, Nevada Test Site, Nevada, DOE/NV–372. Las Vegas, NV.

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2.0 UNIT DESCRIPTION

CAU 330 is located on the NTS. CAS 06-02-04 is located approximately 140 ft north of Building 600 in the Area 6 Well 3 Yard (Figure 2). CAS 22-99-06 is located approximately 150 ft north-northwest of the barricade on Camp Desert Rock Road, on the west side of the Building T-1001 concrete foundation in Area 22 (Figure 3). CAS 23-01-02 is located in Area 23, west of the intersection of the Mercury Bypass and Jackass Flats Roads on the south side of Jackass Flats Road (Figure 4). CAS 23-25-05 is located north of Building 160 in Area 23 (Figure 5).

2.1 HISTORY

2.1.1 CAS 06-02-04, Underground Tank and Piping

There is very little documentation detailing the use of the tank. CAS 06-02-04 and Building 660 (also identified as Building WY6-42) are located in an area which was used for animal testing. This area of the Well 3 Yard was part of the AIP, conducted under the U.S. Public Health Service. The program started in July 1957 and ended in 1981. The purpose of the AIP was to study and perform tests on the animals in and around the NTS that were exposed to radionuclides (U.S. Environmental Protection Agency [EPA], 1984).

The purpose of Building 660 was to house cows that were a part of the program. It was stated the lesser-contaminated animals may have been kept in this building, also known as the "Cow Barn." Interviewees also referred to Building 660 as a slaughterhouse (project files). Known activities conducted in this building include feeding and milking the animals. Animals used in this program were studied to determine tissue concentrations of various radionuclides from fallout (EPA, 1984). However, it is unknown if the cows were actually slaughtered in the building. Documentation also indicates that Building 660 was used after the program was discontinued. The building was used by Raytheon Services Nevada for office space and storage. It is not known if the tank is connected to or associated with Building 660, or the activities which took place there.

2.1.2 CAS 22-99-06, Fuel Spill

The spill site was originally identified in the Reynolds Electrical Engineering Co., Inc. (REECo, 1990) Nevada Test Site Inventory of Inactive and Abandoned Facilities and Waste Sites, Volume 5 as being a small depression where liquids were poured onto the ground, located on the west side of the Building T-1004 concrete foundation. The Environmental Compliance Inventory Form (ECIF) (Appendix A-3) compiled by REECo indicates that the spill is on the west side of building T-1004. However, the picture in the report shows the area west of building T-1001. Two vertical water pipes are in the photo. Building T-1004 does not have water pipes while

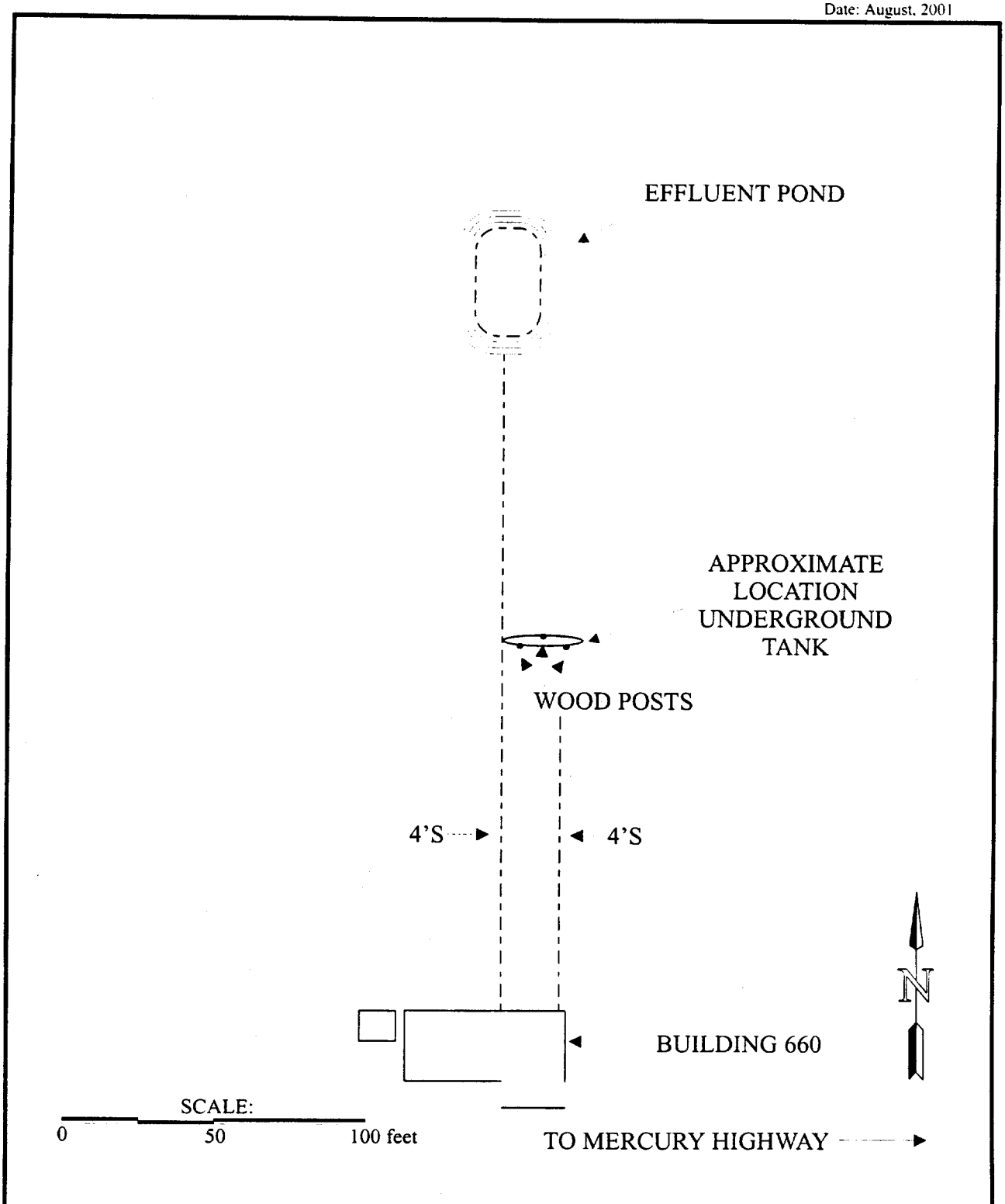

FIGURE 2
SITE VICINITY MAP FOR CAS 06-02-04

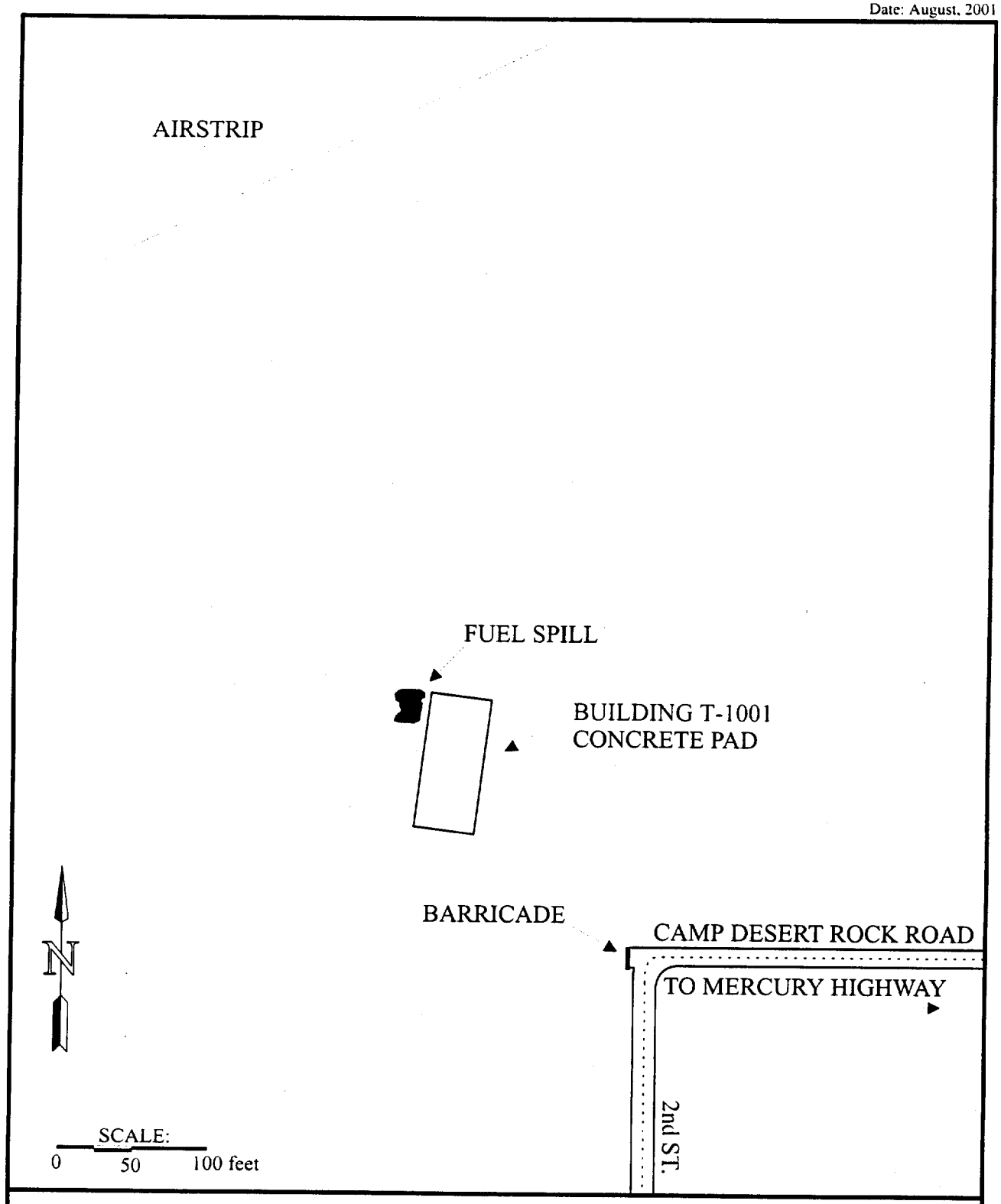

FIGURE 3
SITE VICINITY MAP FOR CAS 22-99-06

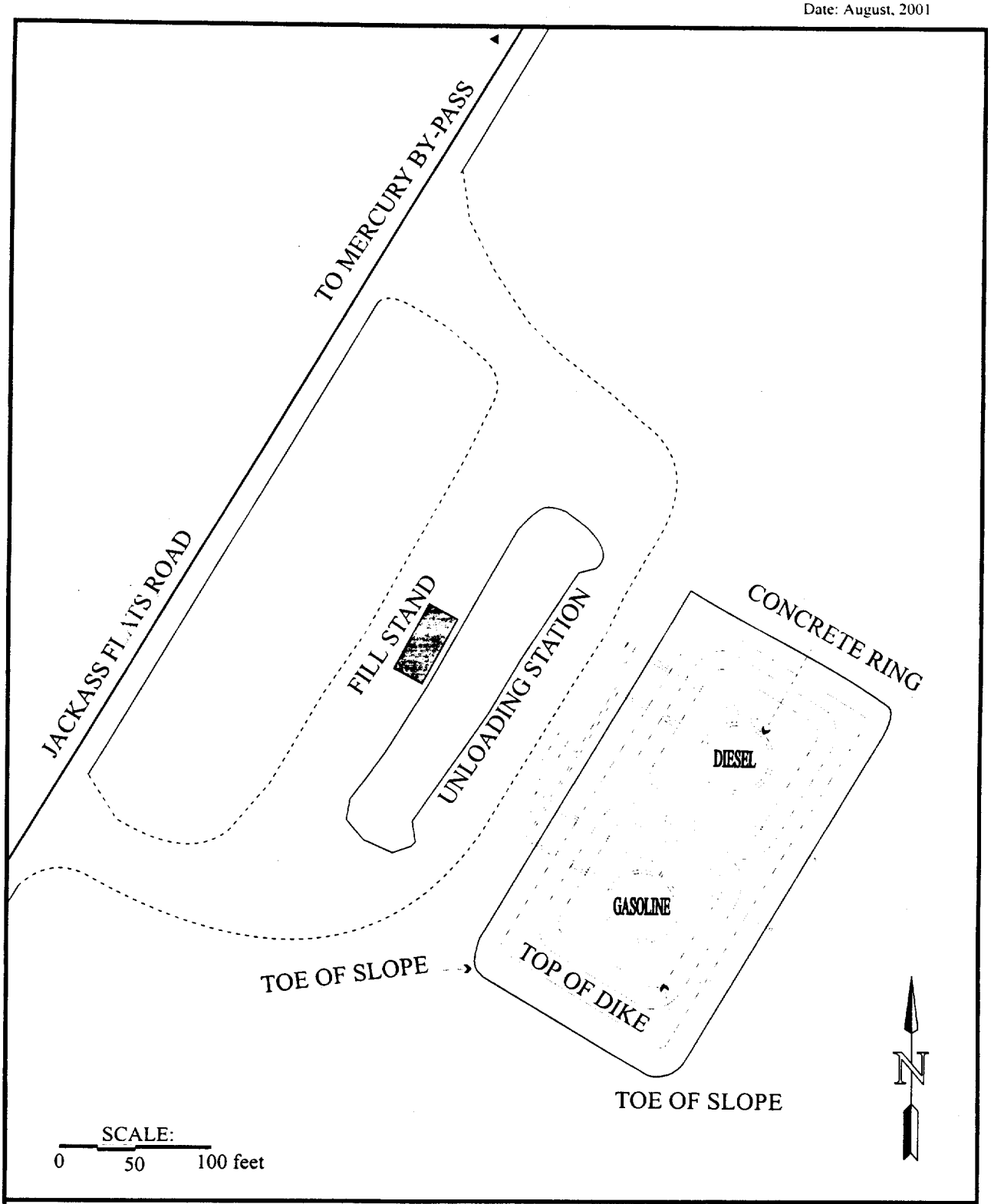

FIGURE 4
SITE VICINITY MAP FOR CAS 23-01-02

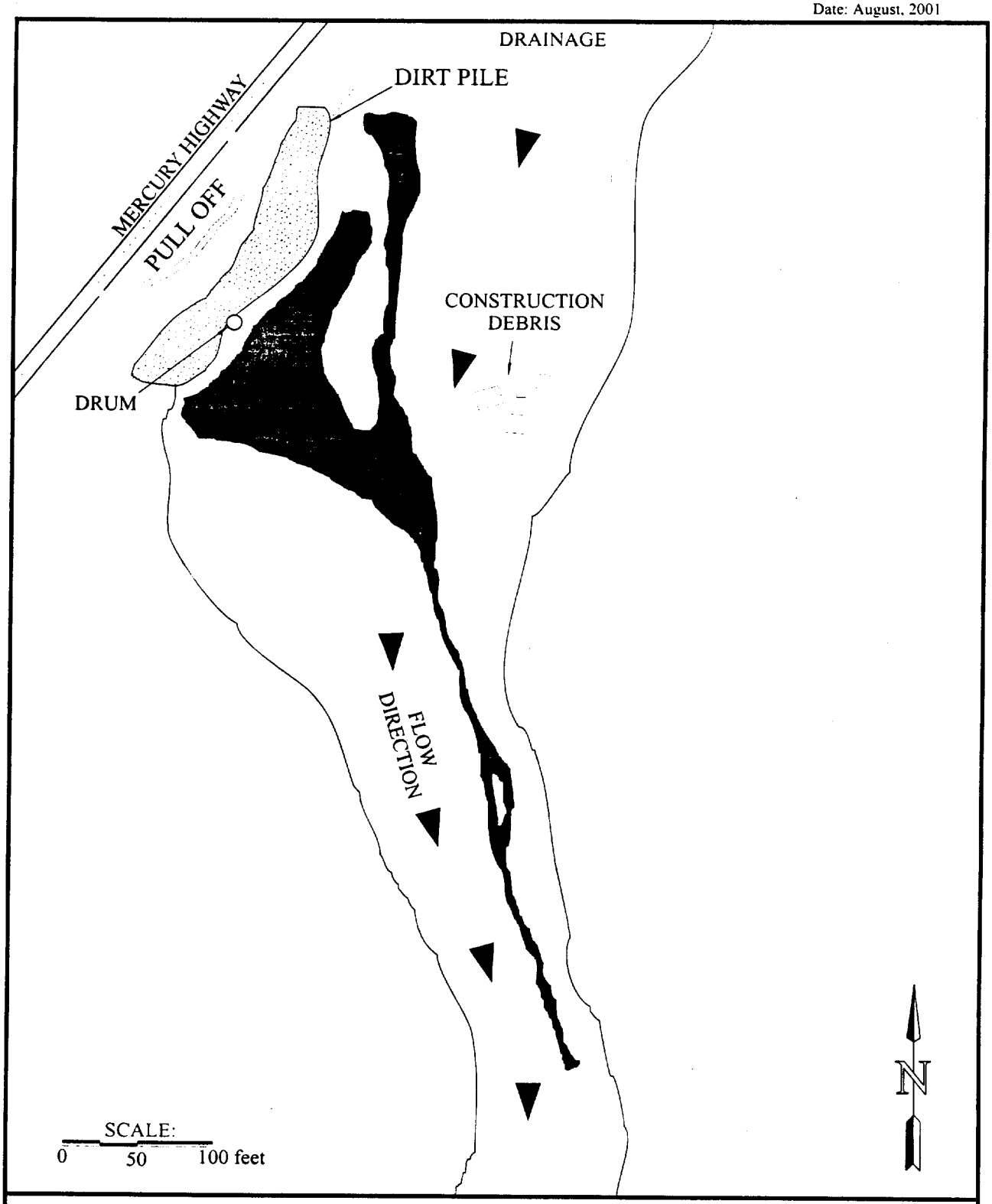

FIGURE 5
SITE VICINITY MAP FOR CAS 23-25-05

building T-1001 does. The ECIF mentions the presence of a fuel pump in the depression. This fuel pump is at building T-1001. The photo from the ECIF and a more recent photo of the area next building T-1001 have been included into Appendix A-3 for comparison. Additionally the International Technologies Preliminary Assessment (ITPA) team reviewed aerial photographs and engineering drawings, and determined that the spill is located west of the Building T-1001 concrete foundation. According to engineering drawings, Building T-1001 has been identified as housing a fire station (ITLV project files). According to documentation, the spill is believed to be the result of a waste oil release that occurred when Camp Desert Rock was an active facility. The Spill Notification Reports Log/Checklist mentions the date of the spill as 1950s/1960s(REECo, 1992).

2.1.3 CAS 23-01-02, Large AST Farm

The Area 23 Tank Farm, also known as the Mercury Bulk Fuel Station, was constructed in 1982 to provide a gasoline and diesel fuel storage location for Area 23 facilities. The Area 23 Tank Farm was in operation from approximately 1982 to 1998 when the diesel AST was emptied. A Spill Prevention Control and Countermeasure (SPCC) Plan (Dickson, 1991) indicated that improvements were required to meet SPCC guidelines (Appendix A-3). These improvements included containment in the unloading area, repair or replacement of the diesel AST to correct a minor leak, fencing of storage areas, and purchase and installation of high-liquid alarms and pump cutoff devices.

The gasoline AST was never refueled after it became empty. The exact date when the tank was no longer used is unavailable. However, it is known that the diesel AST was drained in 1998. An interview indicated that the ASTs are inactive and there are no plans to use the ASTs in the future (Lasandro, 1998).

Residual quantities of liquid may still remain in the two ASTs and piping. In 1987, a small leak was identified at the diesel AST which was reportedly being monitored by REECo (Dickson, 1991). Standing fluid was never identified from the leak in the diesel AST. There has never been a measurable loss of fluid, but the diesel AST was leaking vapors or very small amounts of fluid. The surrounding soils inside the berm and under the AST may have been impacted as a result of the leak. A site visit made by International Technologies Corporation (IT), Las Vegas personnel on June 30, 1999, documented that residual oily product/fluids had collected in several catchment pans, but there were no associated hydrocarbon stains or odor noted for the ground outside of the pan.

2.1.4 CAS 23-25-05, Asphalt Oil Spill/Tar Release

This site was described as an area where an asphalt plant might have been in operation or asphalt oil may have been stored in tanks. The exact source of the release is unknown. Tar-like material in the bottom of a wash was considered potentially mobile by the ITPA team. This raised

concerns due to the location of the site with respect to a desert tortoise habitat. The time frame of the spill is unknown. The asphalt oil spill/tar release may have been caused by an asphalt plant and by asphalt oil that may have been stored in tanks at the site (Dodge, 1994).

2.2 SITE LOCATION AND DESCRIPTION

2.2.1 CAS 06-02-04, Underground Tank and Piping

This CAS is located approximately 140 ft north of Building 660 in the Area 6 Well 3 Yard of the NTS. The site consists of an buried tank, also referred to as a holding tank, and associated piping. This site can be identified in the field by a black, 6 in diameter pipe protruding 2 in out of the ground. The 6-in diameter pipe has a hinged cap with an attached angled 2 in. diameter pipe. The angled pipe, which acts like a handle to lift the cap, has a sticker with the words "Awaiting Analysis" on it. Three 4x4 wood posts, approximately 5 ft in height, surround the site. The NTS Grid Coordinate is R28.

2.2.2 CAS 22-99-06, Fuel Spill

This CAS is located approximately 150 ft north-northwest of the barricade on Camp Desert Rock Road, on the west side of the Building T-1001 concrete foundation in the former motor pool area in Area 22. A fuel pump and brake shoe were observed in the spill site. The spill site, trending north/south, measured 2.1 to 3.3 m (7 by11 ft) and was less than 0.3 m (1 ft) deep. The debris in the area consists of nails, broken glass, wire, wood, a brake pad, and a carburetor. There was also some charred wood observed in the original spill site area. The NTS Grid Coordinate is T06.

2.2.3 CAS 23-01-02, Large AST Farm

This CAS is located west of the intersection of the Mercury Bypass and Jackass Flats Roads. It is on the south side of Jackass Flats Road in Area 23 of the NTS. This site is also known as the Area 23 Tank Farm or Mercury Bulk Fuel Station. The ASTs are each 55 ft in diameter, 24 ft tall and 1,590 cubic meters (420,000 gal) capacity for each. The ASTs sit on a concrete foundation and are surrounded by an earthen berm with dimensions of 43 by 80 m (140 by 264 ft). The total amount of associated piping is approximately 365 m (1,200 ft), consisting of four different diameters of pipe; 15.2, 10.2, 5.1, and 2.5 cm (6, 4, 2, and 1 in). Three pipes extend from each of the ASTs to unloading stations that are connected to a delivery pump station. The NTS Grid Coordinates is U08-07.

2.2.4 CAS 23-25-05, Asphalt Oil Spill/Tar Release

This CAS consists of a wash containing an asphalt oil spill/tar release located north of Building 160 in Area 23 of the NTS. The site also consists of a half-buried 208-L (55-gal) drum, rebar, and concrete located in the vicinity. Estimates of the spill dimensions are 190 m (652 ft) long, average width is approximately 20 m (65 ft). The NTS Grid Coordinates is V09.

2.3 PROCESS KNOWLEDGE

This information was generated by the ITPA team and was built from interviews of personnel, review of historical records, and logs of field activities. This information can be obtained from ITLV (IT Project Files).

2.3.1 CAS 06-02-04, Underground Tank and Piping

Based on information obtained from site investigations, personal interviews, and historical documentation, Building 660 was part of the AIP. It is uncertain how the tank is related to Building 660 since it is not conclusive on engineering drawings or historical documentation. Specific information about the tank such as tank dimensions and construction material remains unknown. Sampling and dye tests were conducted by REECo in 1995; however, the dye test results were inconclusive (Laub, 2000). The failure of the dye test to make it into the tank was attributed to pipes being broken. A long-term deficiency report (Appendix A-3) identified the tank as part of an unpermitted wastewater system in 1995, even though no conclusion had been made to establish if the tank is connected to Building 660. It is unknown what type of effluent flowed through the tank, but it is speculated that due to the animal testing in Building 660, this tank could contain radionuclides, animal sewage waste, as well as cleaning chemicals. However, the sample results mentioned by Laub (Laub, 2000) indicate that no hazardous or radioactive COCs were present in the liquids sampled from the tank (Appendix A-3). The Sampling was done on October 3, 1994, to analyze total petroleum hydrocarbons (TPH), volatile organic compounds (VOC), semivolatile organic compounds (SVOC), Resource Conservation and Recovery Act (RCRA) metals, pH, chlorine, gamma, plutonium, and tritium (Appendix A-3).

During the 25-year existence of the AIP, periodic sampling of various herds of cattle and other indigenous animals was conducted to measure tissue concentrations of radionuclides as a result of nuclear testing fallout. The results of this study indicate that no significant amounts of biologically available radionuclides have been contributed to near off-site areas by the nuclear testing activities at the NTS. Therefore, the concentrations of radionuclides present at Building 660 and the tank associated with the AIP would be negligible. Further evidence that the AIP program had little impact is due to the fact that Building 660 was used after the conclusion of the AIP for offices and storage.

2.3.2 CAS 22-99-06, Fuel Spill

According to historical documentation (Fiore, 1992), it appears that hydrocarbons such as waste oil was disposed of at the spill sites as early as the 1950s and 1960s. The total period of disposal and total volume disposed is not known. The source of the waste is also not known. Sampling identified benzo(a)pyrene, arsenic, lead, and waste oil as constituents of potential concern. A site visit in May 2000, by ITPA, found no evidence of petroleum hydrocarbons based on surface observations; however, the dark gray/black discoloration on the lava rock identified as an additional site which contained burnt nails and appeared to be a burn area (ITLV project file).

A letter (Fiore, 1991) indicates REECo conducted a preliminary investigation of the spill area which included sampling. The letter stated that based on sampling and laboratory results, the spill can be handled as "nonhazardous waste." The letter also stated that, rather than characterize the area further, the site should be cleaned up by removing all stained soils and then sampling to confirm that the regulatory requirement for TPH has been achieved.

Samples were taken in 1997. Sample number ERS00019 was taken from the south end of the depressed area and sample number ERS00020 was extracted from around the"T" pipe. The samples were analyzed for VOCs, SVOCs, polychlorinated biphenyls, RCRA metals, TPH, and radionuclides. Based on analytical results (Appendix A-3) from the laboratory, benzo(a)pyrene, arsenic, lead, and waste oil were identified as COCs. Analytical results are discussed in Section 3.1.

2.3.3 CAS 23-01-02, Large AST Farm

According to historical documentation, residual quantities of liquid may still remain in the two ASTs and piping. In 1987, a small leak was identified at the diesel AST which was reportedly being monitored by REECo. Standing fluid was never identified from the leak in the diesel AST. There has never been a measurable loss of fluid, but the diesel AST was leaking vapors or a very small amount of fluid. The surrounding soils inside the berm and under the AST may have been impacted as a result of the leak. A site visit made on June 30, 1999, documented that residual oily product/fluids had collected in several catchment pans, but there were no associated hydrocarbon stains or odor noted for the ground outside of the pan.

Documentation has not been identified regarding clean-up activities of the leak from the diesel AST. The contaminants of potential concern for this site are gasoline and diesel. One AST contained gasoline and the other contained diesel fuel. Labels on the tanks indicate that the gasoline AST is to the west and the diesel AST is to the east. Information obtained during this investigation indicates that the surrounding soils inside the berm and under the concrete foundation might have been impacted as a result of the leak from the diesel AST.

2.3.4 CAS 23-25-05, Asphalt Oil Spill/Tar Release

Based on information gathered (Dodge, 1994), the asphalt oil spill/tar release may have been caused during operation of and asphalt plant and by asphalt oil that may have been stored in tanks at the site. Soil samples were collected during a field visit on August 14, 1997. The sample locations were at the base of the soil piles beneath the asphalt oil spill/tar release and were identified with wooden stakes. Analytical results are discussed in Section 3.1.

2.4 CLOSURE STANDARDS

The clean closure standards for the purposes of closure verification for this SAFER Plan are:

- EPA Region 9 risk-based Preliminary Remediation Goals (PRG) for industrial soils (EPA, 1996a).
- Petroleum hydrocarbon concentrations above the TPH limit of 100 milligrams per kilogram (mg/kg) per the Nevada Administrative Code (NAC) 445A.2272 (NAC, 2000).
- The established background levels for radionuclides on the NTS (McArther and Miller, 1989).

3.0 FIELD ACTIVITIES AND CLOSURE OBJECTIVES

This section provides the framework and rationale for characterization, neutralization, removal, closure verification, site restoration, and waste disposal. The SAFER process is discussed in detail in the following subsections.

Before field activities begin, the following activities will have been completed:

- Endangered species investigation.
- Preparation of National Environmental Policy Act documentation.
- Preparation of a Health & Safety Plan.
- Cultural Resource Survey. Because of the potential to harm cultural resources, off-road driving in areas surrounding the sites is not allowed.

3.1 CONSTITUENTS OF POTENTIAL CONCERN

3.1.1 CAS 06-02-04, Underground Tank and Piping

The primary source of these COCs would be from the AIP if the tank is associated with this study. Consequently, this CAS may contain the following: cesium-137, strontium-90, plutonium-90, tritium, iodine-131, iodine-129 (radionuclides), and chemicals associated with cleaning activities. However, a sample was collected from the tank on October 3, 1994 as part of the preliminary assessment activities. The analysis was for TPH, VOC, SVOC, RCRA metals, pH, chlorine, gamma, plutonium, and tritium. The results indicated that no radiological or hazardous COCs were found above detection limits. It is unlikely, however, that the listed radionuclides associated with the AIP would be present at this CAS. The study dealt with natural exposure to nuclear test fallout. Concentrations of radionuclides within the animals was shown to be low and not a health risk (EPA, 1984).

3.1.2 CAS, 22-99-06 Fuel Spill

This CAS was sampled on August 19, 1997. Results (Appendix A-3) are listed in Table 1. The COC identifiable from this list include TPH only.

TABLE 1 - ANALYTICAL RESULTS FROM SAMPLES COLLECTED FROM THE CAMP DESERT ROCK FUEL SPILL

Sample ID	[A]VOCs [B]ug/kg	[C]SVOCs ug/kg	[D]TPH [E]mg/kg	[F]RCRA Metals mg/kg
ERS00019	Benzo(a) Pyrene.....61	[G]ND	Motor Oil.....190	Arsenic....3.9 Lead....499.0
ERS00020	ND	ND	ND	Arsenic....3.9 Lead....256

A - Volatile Organic Compounds
B - micrograms per kilogram
C - Semi-volatile Organic Compounds
D - Total Petroleum Hydrocarbons
E - milligrams per kilogram
F - Resource Conservation and Recovery Act
G - Less than detection limit

Additional sampling was done on May 3, 2001, to better understand the extent of the petroleum hydrocarbons (Appendix A-3). Figure 6 shows the locations of the samples and results.

3.1.3 CAS 23-01-02, Large AST Farm

The COC is petroleum hydrocarbon (diesel gasoline). However, no analytical data on the release is available.

3.1.4 CAS 23-25-05, Asphalt Oil Spill/Tar Release

Samples collected in 1997 indicated the presence of TPH, VOCs, SVOCs, RCRA metals, and radionuclides present above laboratory detection limits. Radionuclides were comparable to background levels (Appendix A-3). Analytical results were all below the EPA Region 9 PRGs for residential soils excluding arsenic. However, the concentration of arsenic is consistent with naturally occuring levels at the NTS. The soil beneath the tar/asphalt spill is not considered impacted with any COCs. Sample results are found in Table 2. The drum will be sampled (if there is media within the drum to sample) as well a the soils around the drum for TPH, VOCs, SVOCs, RCRA metals, and radionuclides during the remedial activities. If COCs are identified the drum and soils will be disposed of accordingly.

3.2 REMEDIATION

Remedial activities associated with this project will be completed differently for each CAS.

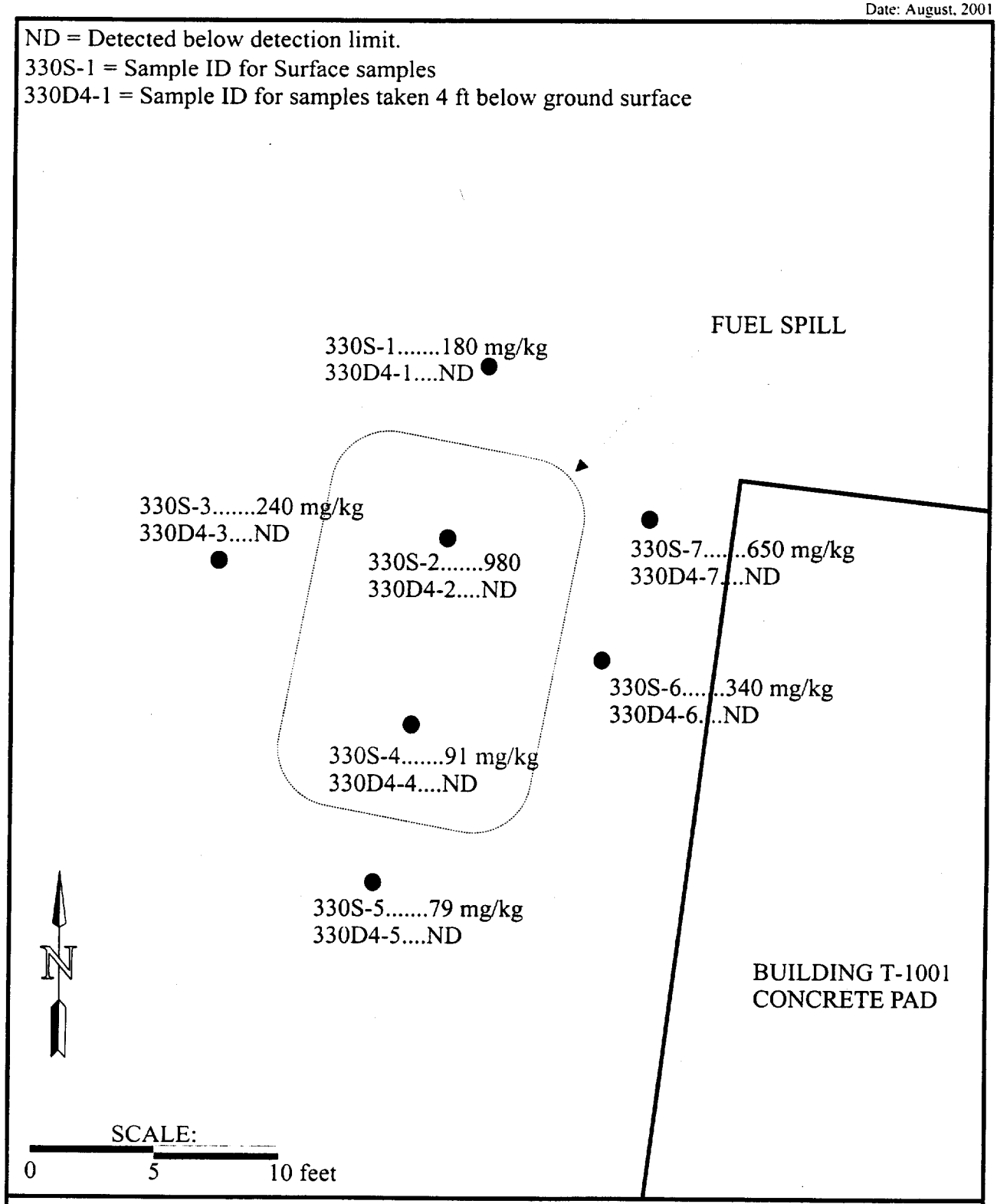

FIGURE 6
TPH SAMPLING RESULTS AT CAS 22-99-06

TABLE 2 - ANALYTICAL RESULTS FROM SAMPLES COLLECTED FROM TAR/ASPHALT SPILL

Sample ID	[A]VOCs [B]ug/kg	[C]SVOCs ug/kg	[D]TPH [E]mg/kg	[F]RCRA Metals mg/kg
ERS00007	Toluene.....5	bis(2-Ethylhexyl)Phthalate..380 ButylBenzylPhthalate.....450	Waste Oil.....37	Arsenic....2.6 Barium....61.5 Chromium....4.0 Lead....5.0
ERS00008	Toluene.....5	bis(2-Ethylhexyl)Phthalate..390	[G]ND	Arsenic....4.3 Barium....91.2 Chromium....7.3 Lead....10.1

A - Volatile Organic Compounds
B - micrograms per kilogram
C - Semi-volatile Organic Compounds
D - Total Petroleum Hydrocarbons
E - milligrams per kilogram
F - Resource Conservation and Recovery Act
G - Less than detection limit

3.2.1 CAS 06-02-04, Underground Tank and Piping

Fluids in the tank will be sampled for waste disposal, removed, solidified (if necessary), and disposed of accordingly. The sampling strategy of the liquids in the tank for waste disposal is described in Section 3.4. Prior to sampling, the liquids will be agitated in order to homogenize the contents of the tank. If the contents can not be homogenized, then samples will also be collected from the sludge (Section 3.4). Once liquids have been removed, the tank will be excavated and removed for disposal. Soil removed during the excavation will be stockpiled on plastic sheets. This soil will be characterized for disposal. If however the soil is found to be below the closure standard, it will be used to backfill the excavation. Inlet and outlet piping (if present) will be removed for disposal if COCs are found in the tank. If COCs are not found in the tank the piping will be grouted-closed and left in place. Although previous sampling has shown the contents of the tank to be nonhazardous and nonradioactive, soil in the vicinity of both ends of the tank will be sampled for TPH, VOC, SVOC, RCRA metals, and gamma. If COCs are present above established cleanup levels (Section 3.3) the waste will be removed by excavating the impacted soil. The excavated areas will be resampled to verify that clean closure has been reached. Once verification samples indicate that COCs have been removed to below the established level (Section 3.3), the inlet and outlet lines (if they exist) will be grouted closed. The excavation will be backfilled with clean fill. Impacted soil will be removed for disposal.

3.2.2 CAS 22-99-06, Fuel Spill

The petroleum hydrocarbon- impacted soil will be removed and disposed of accordingly. Once

removed, verification sampling will be done. If samples indicate that petroleum hydrocarbon remains above the established closure standard, additional soil will be excavated. Once verification samples indicate that petroleum hydrocarbons have been removed below the established closure standard (Section 3.3), the excavation will be filled with clean fill material.

3.2.3 CAS 23-01-02, Large AST Farm

Initial phases of the remedial action for this CAS will include the dismantlement/demolition of two large fuel tanks, associated piping, and fill stand. Where possible, metal scrap will be salvaged. Once the tanks and piping have been removed. soil in the vicinity of the diesel tank will be sampled. If sampling analytical data indicate that petroleum hydrocarbon for diesel is present, this soil will be removed. Additional sampling will be done to verify that diesel has been removed below the established remediation level (Section 3.3). Once verification samples indicate that a clean closure has been completed, the excavation will be filled with clean fill material.

3.2.4 CAS 23-25-05, Asphalt Oil Spill/Tar Release

Visible tar will be removed from the site along with the concrete slabs and rebar. The 208-L (55-gal) barrel within the dirt pile will be removed from the site pending characterization for waste disposal. Verification sampling will be required for COC identified within the drum for the soils in the vicinity of the drum. Waste will be disposed of at the appropriate landfill.

3.3 VERIFICATION

In order to assess the completeness of the remediation activities, biased samples will be collected to confirm that all impacted materials exceeding the established clean-up criteria have been removed. Additional samples may be required if the first set of verification samples indicate that COCs are still present. The number, location, and chemical analysis method used for the verification samples is provided in Section 3.4. Additional samples may be required if the first set of verification samples indicate that COCs are still present. For CAS 23-25-05, verification of closure will consist of a physical inspection to determine that all visible tar, concrete, and rebar have been removed. If, however, the 208-L (55-gal) drum within the dirt pile or the soils around it are impacted with COCs, they will be removed from the site pending characterization for waste disposal.

3.4 DATA QUALITY OBJECTIVES

The goal of the DQO process is to ensure that a sufficient amount of technically and legally valid data are collected to characterize a site, prepare a defensible corrective action, and cleaned to the

required objectives. The EPA DQO guidance outline (EPA, 1994) should be followed. The DQO is to be integrated into the project life cycle of each project. Quality Assurance/Quality Control must be incorporated into the scope, budget, schedule, pre-field activities, field work, sampling, and post field-activities, including the review of analytical data. This will begin in the planning stages/phases of a project. Steps used in this process build on the background research and previously acquired data which support the development of a SAFER Plan. Quality indicators are defined in the Industrial Sites Quality Assurance Project Plan (DOE/NV, 1996) and discussed in Section 6.2.

The problem requiring resolution for CAU 330 is whether COCs and/or radioactive isotopes present at CAU 330 could be a threat to personel and the environment. The decision will be based on the determination of the extent of COCs at or above the action level(s) before and after remediation. A discussion of the COCs prior to remediation is located in Section 3.1. A determination of the extent of COCs at or above the closure standard will be made through biased verification sampling which will be collected as described in Table 3 and 4. The proposed laboratory/quality data indicators are discussed in more detail in Section 6.2.

3.5 CLOSURE

The completed activities for closure are different for each site. Hold points and conditions that are outside of the assumptions of this report may have an impact on the requirements for closure. The proposed activities for closure of CAU 330 are provided below.

3.5.1 CAS 06-02-04, Underground Tank and Piping

- Tank (piping will be removed if COCs are found in the tank) will be removed from site.
- Piping associated with tank will be grouted closed if COCs are not identified within the tank.
- Impacted soil, if found, will be excavated and removed from the site.

3.5.2 CAS 22-99-06, Fuel Spill

- All soil impacted with petroleum hydrocarbons above the closure standard will be removed.
- Excavations will be filled with clean soil.

TABLE 3 - VERIFICATION SOIL SAMPLING REQUIREMENTS FOR CAU 330

PARAMETER	SAMPLE NUMBER	METHOD	METHOD DETECTION LIMIT	NUMBER OF QC [D] SAMPLES	CLOSURE STANDARD	CONTAINER TYPE
CAS 06-02-04 Underground Tank and Piping						
Volatile Organic Compounds	4	8260B [A] Ext. 1311	0.050 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRG's (EPA, 1996)	2 - 120 ml glass, zero head space
Semi-volatile Organic Compounds	4	8270C [A] Ext. 1311	0.50 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRG's (EPA, 1996)	500 ml glass
Total Petroleum Hydrocarbons	4	8015 B\Mod [A]	0.5 mg/kg	None Required	100 mg/kg	120 ml glass, zero head space.
Metals - RCRA 8	4	6010B [A]	Metal Dependent	1 Field Duplicate	Region 9 PRG's (EPA, 1996)	250 ml glass
Gamma-Spec (20 min)	4	901.1[B]	1 pCi/g	None Required	7 pCi/g [C]	500 ml plastic
CAS 22-99-06 Fuel Spill						
Total Petroleum Hydrocarbons	16	8015 B\Mod [A]	0.5 mg/kg	2 Field Duplicate	100 mg/kg	120 ml glass, zero head space
CAS 23-01-02 Large AST Farm						
Total Petroleum Hydrocarbons	10	8015 B\Mod [A]	0.5 mg/kg	1 Field Duplicate	100 mg/kg	120 ml glass, zero head space

TABLE 3 - VERIFICATION SOIL SAMPLING REQUIREMENTS FOR CAU 330 (CONTINUED).

GROUP	SAMPLE NUMBER	METHOD	METHOD DETECTION LIMIT	NUMBER OF QC SAMPLES	CLOSURE STANDARD	CONTAINER TYPE
CAS 23-25-05 Asphalt Oil Spill/Tar Release						
Verification sampling will be required if COCs are found in the drum (to be determined after drum has been has been characterized). Any additional sampling not described in this report will be described in detail within the CAU SAFER Closure Report.						

mg/L - milligrams per liter
mL - mililiter
ppm - parts per million
pCi/g - picocuries per gram
mg/kg - milligrams per kilogram
RCRA - Resource Conservation and Recovery Act
TCLP - Toxicity Characteristic Leaching Procedure

A- Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, 3rd Edition, Parts 1-4, SW-846 (EPA, 1996b)
B - EPA Method 901.1 (EPA, 1996b)
C - Closure standard based on the high end of NTS background for Cesium-137 (McArthur and Miller, 1989)
D - Quality Control

TABLE 4 - WASTE DISPOSAL SAMPLING FOR LIQUID AND SLUDGE

GROUP	SAMPLE NUMBER	METHOD	METHOD DETECTION LIMIT	NUMBER OF QC SAMPLES	CLOSURE STANDARD	CONTAINER TYPE
CAS 06-02-04 Underground Tank and Piping						
Volatiles (Sludge)	2	8260B [A] Ext. 1311	0.050 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRGs (EPA, 1996a)	2 - 120 ml glass, zero head space
Volatiles (Liquid)	2	8260B Ext. 1311	0.050 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRGs (EPA, 1996a)	2 - 120 ml glass, zero head space
Semi-volatiles (Sludge)	2	8270C [A] Ext. 1311	0.50 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRGs (EPA, 1996a)	500 ml glass
Semi-volatiles (Liquid)	2	8270C Ext. 1311	0.50 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRGs (EPA, 1996a)	500 ml glass
Total Petroleum Hydrocarbons (Sludge)	2	8015 B\Mod [A]	0.5 mg/kg	None Required	100 ppm	120 ml glass, zero head space
Total Petroleum Hydrocarbons (Liquid)	2	8015 B\Mod	0.5 mg/kg	None Required	100 ppm	120 ml glass, zero head space
Metals - RCRA 8 (Sludge)	2	6010B/1311 [A]	Variable	None Required	Region 9 PRGs (EPA, 1996a)	250 ml glass

TABLE 4 - WASTE DISPOSAL SAMPLING FOR LIQUID AND SLUDGE (CONTINUED)

GROUP	SAMPLE NUMBER	METHOD	METHOD DETECTION LIMIT	NUMBER OF QC SAMPLES	CLOSURE STANDARD	CONTAINER TYPE
Metals - RCRA 8 (Liquid)	2	6010B/1311	Variable	None Required	Region 9 PRGs (EPA, 1996a)	250 ml glass
Gamma-Spec (20 min) (Sludge)	2	901.1[B]	1 pCi/g	None Required	7 pCi/g [C]	500 ml plastic
Gamma-Spec (20 min) (Liquid)	2	901.1	1 pCi/g	None Required	7 pCi/g	500 ml plastic

mg/L - milligrams per liter
ml - mililiter
ppm - parts per million
pCi/g - picocuries per gram
mg/kg - milligrams per kilogram
RCRA - Resource Conservation and Recovery Act
TCLP - Toxicity Characteristic Leaching Procedure

A- Environmental Protection Agency (EPA, 1996b) Test Methods for Evaluating Solid Waste, 3rd Edition, Parts 1-4, SW-846
B - EPA Method 901.1
C - Closure standard based on the high end of NTS background for Cesium-137 (McArthur and Miller, 1989)

3.5.3 CAS 23-01-02, Large AST Farm

- The ASTs and associated piping will be removed from the site.
- The diesel spill will be excavated and removed. All remaining soil will be below the closure standard.
- Verification samples will verify the clean closure.

3.5.4 CAS 23-25-05, Asphalt Oil Spill/Tar Release

This site will be considered closed once:

- All of the visible tar spill is removed from the site.
- Drum (and impacted soils in the vicinity of the drum if found), concrete and rebar debris is removed from the site.

3.6 DURATION

Figure 7 provides the schedule for CAU 330. The schedule will require modifications if conditions exist that are outside the assumptions on which the schedule was developed. Flexibility has been placed in the project schedule to account for minor difficulties (weather, equipment breakdowns, personnel availability, etc.) NNSA/NV will keep the NDEP informed of any condition that may impact the project schedule.

ACTIVITY DESCRIPTION	Completion Date
CAU 330 Areas 6, 22, and 23 Tanks and Spill Sites	
Preparation of SAFER Plan	6/28/2001
Field Preparation	10/15/2001
Closure Activities in the Field	
CAS 06-02-04	11/12/2001
CAS 22-99-06	12/03/2001
CAS 23-01-02	1/07/2002
CAS 06-02-04	2/14/2002
Preparation of SAFER Closure Report	8/01/2002

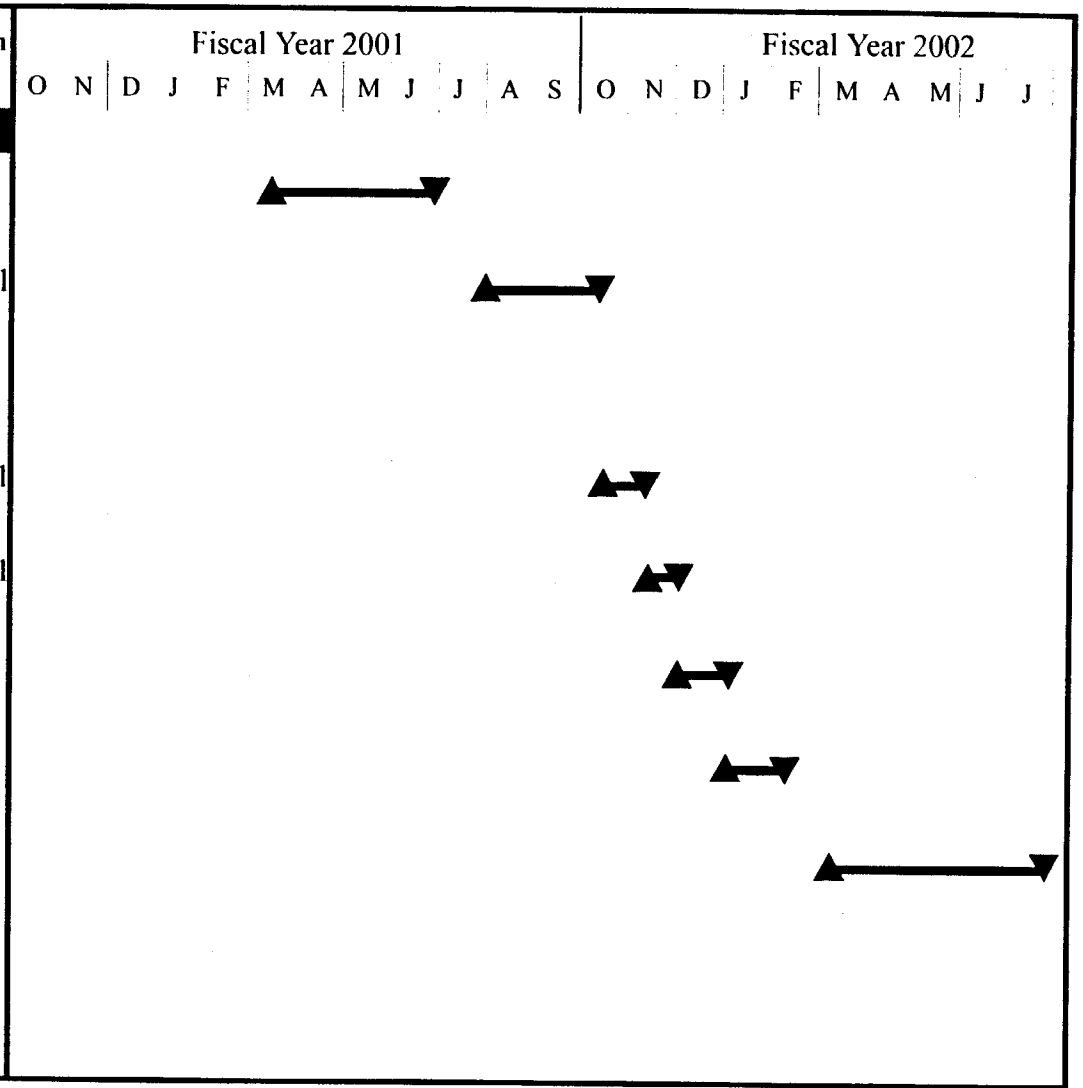

FIGURE 7
CAU 330 PROPOSED CLOSURE SCHEDULE

4.0 REPORTS AND RECORDS AVAILABILITY

Once field activities have started, a daily report wil be prepared. The report summarizes the daily activities and any problems that have been experienced. The report will be provided to the NNSA/NV Task Manager for submittal to the NDEP.

Upon completion of closure activities, a SAFER Closure Report will be prepared and will include the following:

- Introduction (Purpose and Scope)
- Characterization and Closure Activities (Description of field activities)
- Waste Disposition
- Conclusions

The final SAFER closure report will be submitted to NNSA/NV and NDEP for review and approval. This SAFER work plan and the subsequent closure report will be available in the NNSA/NV Public Reading Facilities located in Las Vegas and Carson City, Nevada, or by contacting the NNSA/NV Project Manager. The NDEP maintains the official administrative record for all activities conducted under the auspices of the FFACO (NDEP et al., 1996).

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5.0 INVESTIGATION/REMEDIATION WASTE MANAGEMENT

Wastes from CAU 330 will be managed in accordance with all state and federal regulations, U.S. Department of Energy (DOE) orders, Bechtel Nevada (BN) procedures, and the RCRA Operational Permit. Known waste types will include nonhazardous (sanitary/construction debris) waste, and hydrocarbon-impacted soil. Additional waste streams may include low-level radioactive, hazardous, and mixed waste.

5.1 WASTE MINIMIZATION

Waste generation will be minimized by limiting the number of personel in the work area. In addition, work will be planned in advance to limit the number of times personnel will be required to dress out. For the duration of the project, site workers will adhere to the principles of the BN Waste Minimization and Pollution Prevention Program. Care will be taken to segregate waste from nonwaste materials, if at all possible, and avoid cross contamination.

5.2 POTENTIAL WASTE STREAMS

Table 5 shows the waste streams by CAS. Table 6 shows the types of waste and management requirements.

TABLE 5 - POTENTIAL WASTE STEAM BY CAS AT CAU 330

CAS	Sanitary	Housekeeping Debris	Hydrocarbon impacted soil	Hazardous Waste	Radioactive Waste
06-02-04	X	X	Potential	Potential	Potential
22-99-06	X		X	Potential	
23-01-02	X	X	X		
23-25-05	X	X		Potential	

5.2.1 Nonhazardous Waste

Nonhazardous waste generation (sanitary and housekeeping debris) is expected at all CASs. Nonhazardous waste will consist primarily of used PPE, housekeeping debris, such as paper,

TABLE 6 - MANAGEMENT OF VARIOUS WASTE TYPES GENERATED DURING CAU 330 CLOSURE

MEDIA	WASTE TYPE	DECISION
Liquids	Low-Level Radioactive Waste	LLW will be managed in accordance with BN Organization Procedure OP-2151.304, "Radioactive Waste Tracking, Handling, and Management at the NTS" (BN, 1999). Waste will be solidified using Aqua-Set® or an equivalent approved solidification agent, placed into containers, labeled, and placed in the designated waste management area. If necessary, absorbent will be added. Appropriate paperwork (Package Inventory, Waste Traveler, Packaging Certification, Radioactive Material Shipping Exception Record or Radioactive Material Shipping Record, Waste Shipment Checklist, and Certification Statement) will be completed prior to shipment for disposal.
	Levels Less Than Regulated Limits	Waste will be allowed to evaporate or solidified, if necessary, and subsequently transported to a landfill for disposal.
Soil	Low-Level Radioactive Waste	Low-level waste will be managed in accordance with BN Procedure Organization OP-2151.304, "Radioactive Waste Tracking, Handling, and Management at the NTS" (BN, 1999). Waste will be placed into containers, labeled, and placed in the designated waste management area. If necessary, absorbent will be added. Appropriate paperwork (Package Inventory, Waste Traveler, Packaging Certification, Radioactive Material Shipping Exception Record or Radioactive Material Shipping Record, Waste Shipment Checklist, and Certification Statement) will be completed prior to shipment for disposal.
	Levels Less Than Regulated Limits	The soil will be returned to excavation and used as backfill material.
Decontamination Rinsate and Liner	Low-Level Radioactive Waste	Waste will be managed in accordance with BN Organization Procedure OP-2151.304, "Radioactive Waste Tracking, Handling, and Management at the NTS" (BN, 1999). Waste will be solidified using Aqua-Set® or an equivalent approved solidification agent, placed into containers, labeled, and placed in the designated waste management area. Appropriate paperwork (Package Inventory, Waste Traveler, Packaging Certification, Radioactive Material Shipping Exception Record or Radioactive Material Shipping Record, Waste Shipment Checklist, and Certification Statement) will be completed prior to shipment for disposal.
	Levels Less Than Regulated Limits	Waste will be allowed to evaporate or solidified, if necessary, and subsequently transported to a landfill.

TABLE 6 - MANAGEMENT OF VARIOUS WASTE TYPES GENERATED DURING CAU 330 CLOSURE (Continued)

MEDIA	WASTE TYPE	DECISION
PPE and Sampling Equipment	Low-Level Radioactive Waste (Based on Field-Screening Background Levels)	Waste will be managed in accordance with the BN OP-2151.304, "Radioactive Waste Tracking, Handling, and Management at the NTS" (BN, 1999). PPE generated in association with a hotline will also be managed in accordance with BN Local Implementation Document L-A14.107.H, "General Radiological Control Technician Field Instructions" (BN, 1998). PPE will be placed in the containers of soil to occupy any void space in the container.
	Levels Less Than Field-Screening Background Levels	Waste will be managed as sanitary waste and transported to a landfill for disposal.
Liquids	RCRA Hazardous Waste	Waste will be managed in accordance with DOE Standard Operating Procedure ERD-05-211, "Management and Minimization of Hazardous Waste at the Nevada Test Site for the Nevada Environmental Restoration Project." Waste will be containerized, labeled, and placed in the designated waste management area where it will be inspected weekly until the time of disposal.
	Levels Less than the EPA Region 9 PRGs	Waste will be managed as sanitary waste and transported to a landfill for disposal.
Soil	RCRA Hazardous Waste	Waste will be managed in accordance with DOE Standard Operating Procedure ERD-05-211, "Management and Minimization of Hazardous Waste at the Nevada Test Site for the Nevada Environmental Restoration Project." Waste will be containerized, labeled, and placed in the designated waste management area where it will be inspected weekly until the time of disposal.
	Levels Less than the EPA Region 9 PRGs	Used as back fill if possible otherwise waste will be managed as sanitary waste and transported to the Area 9, U10C landfill or the Area 23 sanitary landfill for disposal.
Decontamination Rinsate and Liner	RCRA Hazardous Waste	Waste will be managed in accordance with DOE Standard Operating Procedure ERD-05-211, "Management and Minimization of Hazardous Waste at the Nevada Test Site for the Nevada Environmental Restoration Project." Waste will be containerized, labeled, and placed in the designated waste management area where it will be inspected weekly until the time of disposal.
	Levels Less than the EPA Region 9 PRGs	Waste will be managed as sanitary waste and transported to a landfill for disposal.

TABLE 6 - MANAGEMENT OF VARIOUS WASTE TYPES GENERATED DURING CAU 330 CLOSURE (Continued)

MEDIA	WASTE TYPE	DECISION
PPE and Sampling Equipment	RCRA Hazardous Waste	Waste will be managed in accordance with DOE Standard Operating Procedure ERD-05-211, "Management and Minimization of Hazardous Waste at the Nevada Test Site for the Nevada Environmental Restoration Project." Waste will be containerized, labeled, and placed in the designated waste management area where it will be inspected weekly until the time of disposal.
	Levels Less than the EPA Region 9 PRGs	Used as backfill if possible; otherwise, waste will be managed as sanitary waste and transported to a landfill for disposal.
Soil	Total Petroleum Hydrocarbons above the NAC 100 ppm Limit.	The soil will be transported to the Area 6 hydrocarbon landfill for disposal.
	Levels Less than the NAC 100 ppm Limit.	The soil will be returned to excavation and used as backfill material.

plastic, concrete chunks, rebar, metal piping, and metal from the tank and ASTs. Where possible this type of debris will be recycled. Non-recyclable materials will be disposed of in a sanitary landfill.

5.2.2 Hydrocarbon-Impacted Soil

Hydrocarbon-impacted soil is known to exist at CAS 22-99-06 and 23-01-02. These soils will be disposed of at the Area 6 hydrocarbon landfill. Hydrocarbon impacted soil could be present at CAS 06-02-04 because the use of this tank remains unknown. If the tank has leaked in the past and hydrocarbons were put through the system, it is possible that they are in the soil. If found they will be disposed of accordingly.

5.2.3 Hazardous Waste

CAS 06-02-04, CAS 22-99-06, and CAS 23-25-05 are the sites with the potential for hazardous waste. The tank at CAS 06-02-04 has been previously sampled and results indicate that no hazardous waste is present within the tank. However, the liquids present in the tank now may not be representative of the past history. Therefore, the soil, tank sludge (if present), and tank liquids will be sampled for hazardous waste (Section 3.4) and, if found, will be disposed of accordingly. Lead concentrations within the petroleum impacted soils at CAS 22-99-06 may also be considered hazardous waste. Because the contents of the drum at CAS 23-25-05 are unknown the potential does exist for hazardous waste to be present at this CAS.

5.2.4 Low-Level Radioactive Waste

CAS 06-02-04 is the only site considered to have the potential for LLW. The tank has been previously sampled and results indicate that no LLW is present in the tank. However, the liquids present in the tank now may not be representative of the past history. Therefore, the soil, tank sludge (if present), and tank liquids will be sampled for LLW (Section 3.4) and, if found, will be disposed of accordingly.

5.3 CONTAINER MANAGEMENT

All containers will be handled following BN Organization Procedure OP-2151.304 (BN, 1999) which covers the use and management of containers. All containers must be in good condition. If the container begins to leak, the contents must be transferred to a container that is in good condition without dents or significant rust. The containers must always be closed while stored unless waste is being added or removed. They must be handled in such a manner that will not jeopardize the integrity of the container.

Some combination of B-25 boxes, and/or 208-L (55-gal) drums will be used during this project. Containers will not be filled above their specified weight capacity. Compactable waste will be placed in 208-L (55-gal) drums. After a container has been filled, it will be locked. If a container is not completely filled to capacity at the end of a work day, it will be locked and tamper-resistant tape will be placed over the container's hinge. Additional precautions include not filling 208-L (55-gal) drums more than 7/8 full and not mixing waste types (such as personnel protective equipment [PPE] and decontamination water).

A secondary containment system will only be required if the containers hold free liquid or are unprotected from contact with accumulated liquid. Because the majority of the waste produced during this project is anticipated to be soil and debris, secondary containment will not be required. If, however, free liquids are placed in containers, such as decontamination water or liquids for the tank at CAS 06-02-04, the containers will be placed on spill containment pallets or within a plastic lined-bermed area.

Appropriate labels and relevant information will be marked on each container with an indelible marker and must be legible and clearly visible for inspections. Pertinent data may be written on duct tape or a blank adhesive label that is applied to the side of the container. The following information will be included:

- Waste-Tracking Label.
- Type of waste in the container (i.e., it must be marked "Hazardous Waste").
- Location where waste was derived from.
- Date accumulation begins/ends.
- If sampling is required, "Awaiting Analysis" sticker after sampling has been completed.

6.0 QUALITY ASSURANCE/QUALITY CONTROL

6.1 PROPOSED FIELD SAMPLE COLLECTION ACTIVITES

The proposed field sampling activities for CAU 330 consist of verification samples and have been previously described in Section 3.4.

6.2 PROPOSED LABORATORY/ANALYTICAL DATA QUALITY INDICATORS

The following characteristics are used in setting DQOs:

Accuracy - Closeness of a measurement or the mean of a set of results to the true value. Accuracy is a measure of the bias of the measurement system. Indicators for measurement are based on the percent recoveries associated with the laboratory analytical control spikes, surrogate spikes, or matrix spikes.

Comparability - A qualitative judgement which expresses the confidence with which one set can be compared to another. Items used to determine comparability include the analytical method and reporting units.

Completeness - Indicators for this measurement are the amount of valid data obtained from a measurement system compared to the amount that was expected and needed to be obtained to meet the project data goals.

Precision - A measurement which represents the repeatability of the analytical system. Indicators for measurement are based on the relative percent difference (RPD) between field duplicates, laboratory splits, or laboratory replicate analysis. It is usually expressed as the RPD or standard deviation.

Representativeness - A qualitative judgement which refers to a sample or group of samples that reflect the characteristics of the media at the sampling point. It also includes how well the sampling point represents the actual parameter variations which are under study.

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7.0 REFERENCES

Bechtel Nevada. 1998. General Radiological Control Technician Field Instructions. L-A14.107.H, Las Vegas, NV.

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BN see Bechtel Nevada.

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APPENDIX A-1
DATA QUALITY OBJECTIVES

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DATA QUALITY OBJECTIVES (DQOs)

DQO Overview

The goal of the DQO process is to ensure that a sufficient amount of technically and legally valid data is collected to characterize a site, prepare a defensible corrective action, and executed according to the objectives. The U.S. Environmental Protection Agency (EPA) DQO guidance outline (EPA, 1994) should be followed. The DQO is to be integrated into the project life cycle of each project. Quality Assurance/Quality Control (QA/QC) must be incorporated into the scope, budget, schedule, pre-field activities, field work, sampling, and post field-activities, including the review of analytical data. This will begin in the planning stages/phases of a project. Steps used in this process build on the background research and previously acquired data which support the development of a Streamlined Approach for Environmental Restoration (SAFER) Plan.

The following characteristics are used in establishing DQOs:

Accuracy - Closeness of a measurement or the mean of a set of results to the true value. Accuracy is a measure of the bias of the measurement system. Indicators for measurement are based on the percent recoveries associated with the laboratory analytical control spikes, surrogate spikes, or matrix spikes.

Comparability - A qualitative judgement which expresses the confidence with which one set can be compared to another. Items used to determine comparability include the analytical method and reporting units.

Completeness - Indicators for this measurement are the amount of valid data obtained from a measurement system compared to the amount that was expected and needed to be obtained to meet the project data goals.

Precision - A measurement which represents the repeatability of the analytical system. Indicators for measurement are based on the relative percent difference (RPD) between field duplicates, laboratory splits, or laboratory replicate analysis. It is usually expressed as the RPD or standard deviation.

Representativeness - A qualitative judgement which refers to a sample or group of samples that reflect the characteristics of the media at the sampling point. It also includes how well the sampling point represents the actual parameter variations which are under study.

Step 1: State the Problem

Constituents of Concern (COCs) could be present at Corrective Action Unit (CAU) 330 and be a threat to workers and the environment.

Planning Team Members

1. National Nuclear Security Administration Nevada, Las Vegas (NNSA/NV)
   Janet Appenzeller-Wing
   Kevin Cabble

   Bechtel Nevada
   Thomas Fitzmaurice
   Marcus Dixon

   Nevada Division of Environmental Protection (NDEP)
   Mike McKinnon

2. Core Decision Team
   Janet Appenzeller-Wing
   Kevin Cabble
   Mike McKinnon
   Thomas Fitzmaurice

3. Primary Decision Maker
   Janet Appenzeller- Wing

Field Sampling Strategy

The field sampling strategy is to use biased sampling only. Verification samples will be taken directly from excavations where soils have been removed.

Constituents of Concern

CAS 06-02-04 Underground Tank and Piping

The primary source of these COCs would be from the Animal Investigation Program (AIP) if the tank is associated with this study. Consequently, this CAS may contain the following COCs: cesium-137, strontium-90, plutonium-90, tritium, iodine-131, iodine-129 (radionuclides), and chemicals associated with cleaning activities. However, a sample was collected from the tank on October 3, 1998, as part of the preliminary assessment activities. The analysis consisted of total petroleum hydrocarbons (TPH), volatile organic compounds (VOC), semivolatile organic compounds (SVOC), Resource Conservation and Recovery Act (RCRA) metals, pH, chlorine, gamma, plutonium, and tritium. The results indicated that no radiological or hazardous COCs were detected above detection limits. It is unlikely, however, that the listed radionuclides associated with the AIP would be present at this Corrective Action Site (CAS). The study dealt with natural exposure to nuclear test fallout. Concentrations of radionuclides within the animals was shown to be low and not a health risk.

CAS 22-99-06 Fuel Spill

The Performance Assessment (PA) group sampled this CAS on August 19, 1998. The only COC identifiable from this list is petroleum hydrocarbon.

CAS 23-01-02 Large AST Farm

There are no COCs found at this site. However, a diesel spill has been documented in historical records.

CAS 23-25-05 Asphalt Oil Spill/Tar Release

Samples collected in 1997 indicated the presence of TPH, VOCs, SVOCs, RCRA metals, and radionuclides present above laboratory detection limits. Radionuclides were comparable to background levels. All analytical results were below the EPA region 9 Preliminary Remediaiton Goals (PRGs). The soil beneath the tar/asphalt spill is not considered impacted with any COCs.

Step 2: Identify the Decision

Determine the extent of COCs at or above the action level(s) before and after remediation.

Prior to developing this SAFER plan, the PA group compiled the available historical data and collected samples from the CASs. This information was used to develop the DQOs for closure activities. As a result of this planning phase, it was determined that only a limited number of samples were required to develop a closure strategy. All field sampling will be biased. Data verification/validation will be accomplished by the following:

Accuracy - Closeness of a measurement or the mean of a set of results to the true value. Accuracy is a measure of the bias of the measurement system. Indicators for measurement are based on the percent recoveries associated with the laboratory analytical control spikes, surrogate spikes, or matrix spikes.

Comparability - A qualitative judgement which expresses the confidence with which one set can be compared to another. Items used to determine comparability include the analytical method and reporting units.

Completeness - Indicators for this measurement are the amount of valid data obtained from a measurement system compared to the amount that was expected and needed to be obtained to meet the project data goals.

Precision - A measurement which represents the repeatability of the analytical system. Indicators for measurement are based on the relative percent difference (RPD) amoung field duplicates, laboratory splits, or laboratory replicate analysis. It is usually expressed as the RPD or standard deviation.

Representativeness - A qualitative judgement which refers to a sample or group of samples that reflect the characteristics of the media at the sampling point. It also includes how well the sampling point represents the actual parameter variations which are under study.

Laboratory Control Samples

One matrix spike and one matric spike duplicate will be required for each batch of VOCs, SVOCs analysis and TPH run. One replicate and one lab blank will be run per batch of samples.

Field Control Samples

Field duplicates will be taken for not less than 10 percent of the samples. One trip blank will accompany every batch of VOC samples. One rinse blank will be completed per day. Field blanks will be provided for not less than 5 percent of the samples.

All of the sample analytical data will be provided in a SAFER Closure Report at the end of the project.

Step 2A: Alternative Actions to the Decision

Further assessment of the site would be required if the action levels are exceeded after cleanup or if the completeness criteria is missed.

Step 3: Identify the Inputs to the Decision

Professional judgement, process knowledge, and historical knowledge have been used to determine the possible COCs present at CAU 330. In this case, because sufficient information exists, biased sampling will be performed where contamination is likely to be present.

Environmental variables or characteristics that may be important in biased sampling:

1. Records of COC releases. Known or suspected location(s) of the release(s).
2. Configuration of CAS. This includes building, concrete pad, or other items that could direct the flow or been the source of releases.
3. Configuration of tanks, piping, or other utilities.
4. Observation of the surface features, or sub-surface features if a trench, hole, or ditch is present.
5. Field-screening results.
6. Previous sampling/characterization.

The suspected COCs and detection methods are shown in the following tables.

Verification Soil Sampling Requirements for CAU 330

GROUP	SAMPLE NUMBER	METHOD	METHOD DETECTION LIMIT	NUMBER OF QC SAMPLES	CLOSURE STANDARD	CONTAINER TYPE
CAS 06-02-04 Underground Tank and Piping						
VOCs	4	8260B [A] Ext. 1311	0.050 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRGs (EPA, 1996)	2 - 120 ml glass, zero head space
SVOCs	4	8270C [A] Ext. 1311	0.50 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRGs (EPA, 1996)	500 ml glass
TPH	4	8015 B\Mod [A]	0.5 mg/kg	None Required	100 ppm	120 ml glass, zero head space
Metals - RCRA 8	4	6010B [A]	Metal Dependent	1 Field Duplicate	Region 9 PRGs (EPA, 1996)	250 ml glass
Gamma-Spec (20 min)	4	901.1 [B]	1 pCi/g	None Required	7 pCi/g [C]	500 ml plastic
CAS 22-99-06 Fuel Spill						
TPH	16	8015 B\Mod [A]	0.5 mg/kg	2 Field Duplicate	100 ppm	120 ml glass, zero head space
CAS 23-01-02 Large AST Farm						
TPH	10	8015 B\Mod [A]	0.5 mg/kg	1 Field Duplicate	100 ppm	120 ml glass, zero head space

Verification Soil Sampling Requirements for CAU 330 (Continued)

Verification Soil Sampling Requirements for CAU 330 (Continued)

GROUP	SAMPLE NUMBER	METHOD	METHOD DETECTION LIMIT	NUMBER OF QC SAMPLES	CLOSURE STANDARD	CONTAINER TYPE
CAS 23-25-05 Asphalt Oil Spill/Tar Release						
Verification Sampling Dependent on Drum Characterization						

mg/L - milligrams per liter
ml - mililiter
ppm - parts per million
pCi/g - picocuries per gram
mg/kg - milligrams per kilogram
RCRA - Resource Conservation and Recovery Act
TCLP - Toxicity Characteristic Leaching Procedure

A- Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, 3rd Edition, Parts 1-4, SW-846
B - EPA Method 901.1
C - Closure standard based on the high end of NTS background for Cesium-137 (McArthur and Miller, 1989)

Waste Disposal Sampling for Liquid and Sludge.

GROUP	SAMPLE NUMBER	METHOD	METHOD DETECTION LIMIT	NUMBER OF QC SAMPLES	CLOSURE STANDARD	CONTAINER TYPE
CAS 06-02-04 Underground Tank and Piping						
Volatiles (Sludge)	2	8260B [A] Ext. 1311	0.050 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRGs (EPA, 1996)	2 - 120 ml glass, zero head space.
Volatiles (Liquid)	2	8260B Ext. 1311	0.050 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRGs (EPA, 1996)	2 - 120 ml glass, zero head space.
Semi-volatiles (Sludge)	2	8270C [A] Ext. 1311	0.50 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRGs (EPA, 1996)	500 ml glass
Semi-volatiles (Liquid)	2	8270C Ext. 1311	0.50 mg/L	1 Trip Blank 1 Matrix Spike, 1 Matrix Spike Duplicate	Region 9 PRGs (EPA, 1996)	500 ml glass
Total Petroleum Hydrocarbons (Sludge)	2	8015 B\Mod [A]	0.5 mg/kg	None Required	100 ppm	120 ml glass, zero head space.
Total Petroleum Hydrocarbons (Liquid)	2	8015 B\Mod	0.5 mg/kg	None Required	100 ppm	120 ml glass, zero head space.
Metals - RCRA 8 (Sludge)	2	6010B/1311 [A]	variable	None Required	Region 9 PRGs (EPA, 1996)	250 ml glass

Waste Disposal Sampling for Liquid and Sludge (Continued).

GROUP	SAMPLE NUMBER	METHOD	METHOD DETECTION LIMIT	NUMBER OF QC SAMPLES	CLOSURE STANDARD	CONTAINER TYPE
Metals - RCRA 8 (Liquid)	2	6010B/1311	variable	None Required	Region 9 PRG's (EPA, 2000)	250 ml glass
Gamma-Spec (20 min) (Sludge)	2	901.1 [B]	1 pCi/g	None Required	7 pCi/g [C]	500 ml plastic
Gamma-Spec (20 min) (Liquid)	2	901.1	1 pCi/g	None Required	7 pCi/g	500 ml plastic

mg/L - milligrams per liter
ml - mililiter
ppm - parts per million
pCi/g - picocuries per gram
mg/kg - milligrams per kilogram
RCRA - Resource Conservation and Recovery Act
TCLP - Toxicity Characteristic Leaching Procedure

A- Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, 3rd Edition, Parts 1-4, SW-846
B - EPA Method 901.1
C - Closure standard based on the high end of NTS background for Cesium-137 (McArthur and Miller, 1989)

Further Basis for Closure Standards

- EPA Region 9 risk-based Preliminary Remediation Goals for industrial soils (EPA, 2000)
- TPH concentrations above the TPH limit of 100 ppm per the *Nevada Administrative Code* (NAC) 445A.2272 (NAC, 1999a)

Step 4: Define the Boundaries

The target populations are different for each CAS

- CAS 06-02-04 consists of an underground tank and piping. The population of interest includes the liquids and sludge within the tank and the soils in the vicinity of the tank.

- CAS 22-99-06 consists of an area that involves a fuel spill that was believed to be a result of a waste oil release that occurred when Camp Desert Rock was an active facility. The population of interest is the soil impacted by the fuel spill, but not to exceed 10 feet beyond the depression used to dump waste oil.

- CAS 23-01-02 consists of a large AST farm that was constructed to provide a gasoline and diesel storage location. All tank farm structures will be removed. The population of interest for remediation consists of diesel-impacted soil beneath the AST.

- CAS 23-25-05 consists of a wash covered with asphalt oil/tar material, a half buried 55-gallon drum, rebar, and concrete located in the vicinity. All of these elements are included in the population. However, remediation of these site can be determined by visual inspection because no COCs are present.

Because each CAS is geographically independent, the domain of the field remediation activities is restricted to the four different CAS-themselves. The decision constraints will be confined to the physical location and descriptions of the four separate CASs independently. Temporal boundaries for the remediation activities include those constraints set up by weather conditions, availability of resources, and project schedules set in the baseline. Weather conditions at the Nevada Test Site may impact scheduled activities in the baseline. Unforseen resource conflicts could also cause delays. The current deadline for submitting the SAFER Plan is September 28, 2001. The field remediation will not occur until fiscal year 2002.

Step 5: Develop a Decision Rule

If the observed concentrations exceed the closure standards in the populations as described in Step 4, then further remediation will be required, followed by a new set of verification sampling. If the observed concentrations do not exceed the closure standards for the above population, then remediation activities will cease and a SAFER Closure Report will be developed.

Analytical results from a contract laboratory will be compared to the Closure Standards, as previously defined, to determine if the site has been sufficiently cleaned. If any COC exceeds its limits described in Step 4, additional material will be excavated and additional samples collected for analysis. This process will continue until the site has been cleaned of COCs to concentrations

less than its respective action level.

In addition analytical results will have at least an 80 percent completeness. That is, the number of samples which have acceptable data divided by the total number of samples taken times 100 will be at least 80 percent. Factors affecting QA/QC are discussed in Section 6. Legal factors affecting sample acceptability include a proper chain of custody and a custody tape seal on the sample. If this completeness criteria is not met, then sampling will be made as close as possible to the samples which failed and analysis performed until the 80 percent criteria is met.

Measurement methods, action levels, sample quantities and volumes have been defined in Step 3. In all cases the measurement method detection limit is less than the closure standard.

Step 6: Specify Acceptable Limits on Decision Error

Since the CAU has been identified in the Federal Facilities and Consent Order as being a site with potential contamination, the null hypothesis is that COCs are above action levels. The alternative statement is therefore that COCs are not above action levels.

The false rejection (alpha error) is to reject the null hypothesis in error. This means COCs would incorrectly be determined to be below action levels. This is also known as a false negative. This is the more serious error as contamination would be left in place without knowing about it. This possibility is minimized in biased sampling, as the most likely sites for contamination have been chosen for analysis. (This possibility is minimized in unbiased sampling by requiring analytical results to be at the 95^{th} percentile for the upper confidence limit that the action level is not exceeded.) Because biased sampling is being used. a statistical analysis in not appropriate.

The false acceptance (beta error) is to accept the null hypothesis in error. This means COCs would incorrectly be determined to be above action levels. This is also known as a false positive. This is the less serious error as an extra amount of uncontaminated material would be removed and disposed of as contaminated. QA/QC sample results and checking of raw results when a hit above the action level occurs can help reduce this type of error. Scrupulous adherence to using clean sampling equipment and good sample collection techniques also help eliminate contamination of samples.

Step 7: Optimize Sampling and Analysis Design

CAS 06-02-04 Underground Tank and Piping

Fluids within the tank will be removed, sampled for waste disposal, solidified (if necessary), and disposed of accordingly. Prior to sampling, the liquids will be agitated in order to homogenize the contents of the tank. If the contents can not be homogenized, then samples will also be collected from the sludge. Once liquids have been removed, the tank will be excavated and removed for disposal. Soil removed during the excavation will be stockpiled on plastic sheets. This soil will be characterized for disposal. If, however, the soil is found to be clean, it will be

used to back fill the excavation. Inlet and outlet piping (if found to exist) will be grouted closed and left in place if COCs are not identified in the tank, otherwise they will be removed for disposal. Although previous sampling has shown the contents of the tank to be nonhazardous and nonradioactive, soils in the vicinity of both ends of the tank will be sampled for TPH, VOC, SVOC, RCRA metals, and gamma. If COCs are present above established clean-up levels (Section 3.3 Verification) these constituents will be removed by excavating more soil. The excavated areas will be resampled to verify that no COCs remain. Once verification samples indicate that COCs have been removed to below the established level, the inlet and outlet lines (if present) will be grouted closed or removed as the case may be. The excavation will be back filled with clean fill. Impacted soils will be removed for waste disposal.

CAS 22-99-06 Fuel Spill

The TPH-impacted soils will be removed and disposed of accordingly. Once TPH has been removed, verification sampling will be done on all sides of the excavation. Sixteen samples within an estimated 400-square-foot area will be collected. If samples indicate that TPH remains above the established remediation level, additional soils will be excavated for disposal. Once verification samples indicate that TPH has been removed below the established remediation level, the excavation will be filled with clean fill material.

CAS 23-01-02 Large AST Farm

Initial phases of the remedial action for this CAS will include the dismantlement/demolition of two large fuel tanks, associated piping, and fill stand. Where possible metal scrap will be salvaged. Once the tanks and piping have been removed, the soils in the vicinity of the diesel tank will be sampled for TPH impacts. If sampling analytical data indicate that TPH for diesel is present, these soils will be removed for disposal. Additional sampling will be done to verify that diesel has been removed below the established remediation level. Once verification samples indicate that TPH has been removed below the established remediation level, the excavation will be filled with clean fill material.

CAS 23-25-05 Asphalt Oil Spill/Tar Release

Visible tar will be excavated and hauled away. In addition, the drum, concrete slabs and rebar will be removed from this site. Verification sampling will not be required unless COCs are identified in the drum. If COCs are identified within the drum.samples will be collected to verify that the soils have not been impacted by the drum contents.

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APPENDIX A-2
PROJECT ORGANIZATION

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PROJECT ORGANIZATION

The U.S. Department of Energy, National Nuclear Security Administration (NNSA/NV) Project Manager or Task Manager will serve as the primary point of contact for all activities conducted for this project. The NNSA/NV Project Manager is responsible for seeing that all activities conducted during the project fulfill the obligations of NNSA/NV, as described in the Federal Facility and Consent Order (FFACO) and the NDEP approved work plan. The NNSA/NV Project Manager will plan, authorize and control project work so that activities are completed in accordance with the work plan on schedule and within budget. The NNSA/NV Project Manager will be the primary point of contact with the NDEP. The NNSA/NV points of contact for this project are as follows:

Project Manager: Janet Appenzeller-Wing
Telephone Number: (702) 295-0461

Task Manager: Kevin Cabble
Telephone Number: (702) 295-5000

The identification of the project Health and Safety Officer and the Quality Assurance officer can be found in both the Field Management Plan and the Site-Specific Health and Safety Plan. However, personnel are subject to change and it is suggested that the Project Manager be contacted for further information. The Task Manager will be identified in the FFACO Biweekly Activity Report prior to the start of field activities.

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APPENDIX A-3

ANIMAL INVESTIGATION PROGRAM REPORT

SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN

ANALYTICAL RESULTS FROM 1994 SAMPLING OF CAS 06-02-04

LONG TERM DEFICIENCY REPORT

ANALYTICAL RESULTS FROM 1997 SAMPLING OF CAS 22-99-06

ANALYTICAL RESULTS FROM 2001 SAMPLING OF CAS 22-99-06

PHOTOS OF CAS 22-99-06 AT BUILDING T-1001

ANALYTICAL RESULTS FROM 1997 SAMPLING OF CAS 23-25-05

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ANIMAL INVESTIGATION PROGRAM REPORT

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APPENDIX A-3

ANIMAL INVESTIGATION PROGRAM REPORT

SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN

ANALYTICAL RESULTS FROM 1994 SAMPLING OF CAS 06-02-04

LONG TERM DEFICIENCY REPORT

ANALYTICAL RESULTS FROM 1997 SAMPLING OF CAS 22-99-06

ANALYTICAL RESULTS FROM 2001 SAMPLING OF CAS 22-99-06

PHOTOS OF CAS 22-99-06 AT BUILDING T-1001

ANALYTICAL RESULTS FROM 1997 SAMPLING OF CAS 23-25-05

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United States
Environmental Protection
Agency

Environmental Monitoring
Systems Laboratory
P.O Box 15027
Las Vegas NV 89114-5027

DOE/DP/0539-050
EPA 600/6-84-020
January 1984

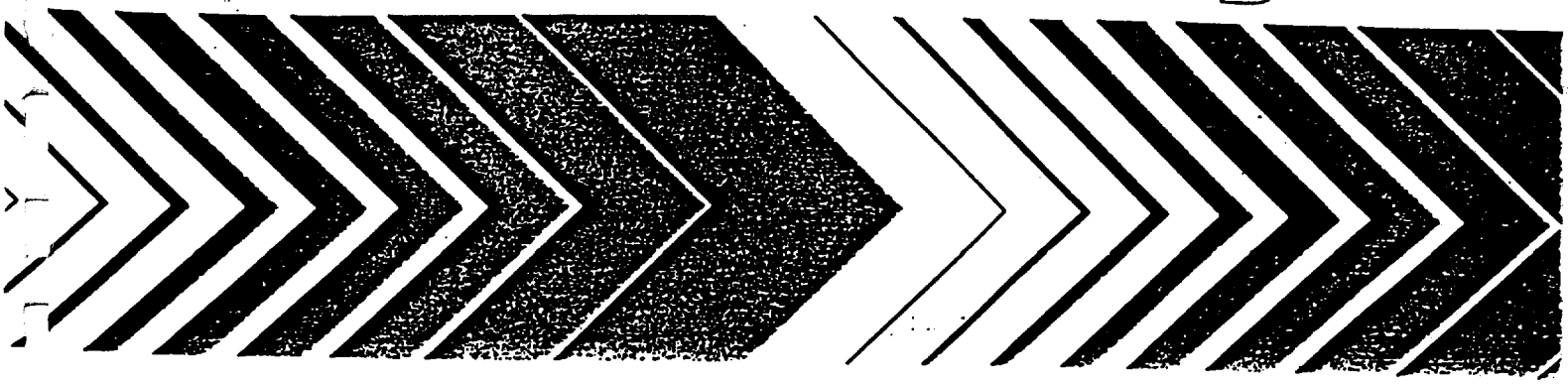
Research and Development

EPA

Animal Investigation Program for the Nevada Test Site:

1957-1981

prepared for the
U.S. Department of Energy
under Interagency Agreement
Number DE-A108-76DP00539



INTRODUCTION

In November 1955, the U.S. Atomic Energy Commission (AEC) established a program to investigate claims of injury to domestic animals alleged to be caused by nuclear weapons tests at the Nevada Proving Grounds. The Nevada Proving Grounds was renamed the Nevada Test Site (NTS) and the program that was established developed into the Animal Investigation Program (AIP).

The AIP, as finally conceived, began in 1957 with the purchase of a herd of beef cattle which were allowed to graze on the NTS. This herd was maintained on the NTS until 1981. After roundup and sampling of this herd in the fall of 1981, it was transferred to the University of Nevada at Reno, Nevada. This terminated a 25-year study of a single herd which had lived in an area contaminated by nuclear testing activities. The animal-sampling portion of the AIP is continuing, on a more restricted scale, through periodic sampling from a commercial beef herd and annual collections of samples from bighorn sheep.

This report describes the objectives of the AIP, outlines the history of the Program, and summarizes the results of claims investigations. Also summarized are the results of radionuclide analyses from both the continuing program and associated special studies to measure body burdens of radionuclides in wild and domestic animals.

cattle and ingesting the same diet would increase his skeletal burden by 7 pCi in 10 years. This highly improbable scenario would result in a 2.2 mrem exposure in 10 years which would be equivalent to only 1.3% of the ICRP guideline.

Beef thyroids were found to be a rapid and sensitive indicator of environmental radioiodine. Concentrations reported could usually be related to a specific nuclear explosive test. Little variation in thyroid radioiodine concentration versus age was noted in animals aged between 9 months and maturity. Radioiodine originating from worldwide fallout was higher in areas of greater precipitation.

The cattle thyroid measurements were used to estimate the iodine-131 concentration in human thyroids. Certain factors and assumptions (stated in the dose estimate section) were used to make these estimates. The total hypothetical dose to a two-gram human thyroid for the periods that data were available (approximately 21 years for NTS and 11 for Knoll Creek (KC) and Delamar Valley (DV)) were: NTS, 3160 mrem; Delamar Valley, 2510 mrem; and Knoll Creek, 310 mrem. Based on the guideline, set by the FRC, of 500 mrem/yr to a suitable sample of the general population, none of the hypothetical doses approached the guideline.

Iodine-129 levels in over 100 thyroids collected from animals throughout Nevada, Utah, Wyoming, and Colorado were determined by neutron activation. The iodine-129/iodine-127 atom ratio was several orders of magnitude lower in those thyroids than was reported in thyroids collected near nuclear fuel reprocessing facilities (Magno et al. 1972). Therefore, the NTS was not a significant source of iodine-129 exposure to animal thyroids.

The AIP, in addition to routine surveillance of beef cattle and wildlife, conducted numerous special and ad hoc studies. These included collection of baseline data outside DOE nuclear sites (Central Nevada Test Site, Rulison, Gasbuggy, Rocky Flats, etc.), investigations of suspicious animal deaths and sicknesses, documentation of radionuclide burdens in offsite areas following releases of radioactivity from the NTS, e.g. Baneberry, Cabriolet, Palanquin, etc., and special studies supporting the NTS beef cattle and wildlife investigations, e.g. spring surveys, range surveys, fresh water algae surveys, etc.

The AIP also maintained the NTS beef herd. The calving rate of this herd exceeded 85% each year, and the 180-day weaning weight usually exceeded 400 lbs; both considered above average. No unusual health problems were encountered. Routine necropsy and histopathological examination revealed no consistent pathology that could be attributed to ionizing radiation. Ocular squamous cell carcinomas ("cancer eye") were a consistent finding; however, this condition is prevalent in Hereford cattle exposed to high levels of sunlight.

The studies reported herein suggest that since 1957 no significant amounts of biologically available radionuclides have been contributed to near offsite areas by the nuclear testing activities at the NTS. Further, not only were no harmful health effects detected in cattle maintained for a lifetime within the NTS, but also this herd had above average calving percentages and weaning weights for comparable local herds (Smith 1970).

SUMMARY

During the 25-year existence of the Animal Investigation Program, periodic sampling of various herds of cattle and other indigenous animals was conducted to measure tissue concentrations of radionuclides. The cattle herds sampled included one on the Nevada Test Site (NTS), one at Knoll Creek (KC) in northeastern Nevada and one in the Delamar Valley (DV) in eastern Nevada. Other animals consistently sampled included deer on the NTS and deer and bighorn sheep off the NTS.

The age of sampled animals had no significant effect on tissue cesium-137 concentration. The effective half-life of cesium-137 in beef muscle, following cessation of atmospheric testing, was approximately 1 year. Cesium-137 levels were usually highest in the Knoll Creek herd in northern Nevada, probably the result of higher world-wide fallout associated with the higher precipitation that occurs in that area. These results plus those from Nevada deer herds, both on and off the NTS, indicate that, except for periods immediately following deposition of close-in fallout, tissue concentrations of cesium-137 reflected the deposition of worldwide fallout. The calculated dose commitment from cesium-137 due to the daily ingestion of tissues from the Knoll Creek and/or NTS herd for the 25-year period was 68 mrem [1.6% of the Federal Radiation Council's (FRC) permissible guide for the same period].

Strontium-90 concentration in bone ash from all three Nevada beef herds and from NTS deer generally followed the same pattern. The levels were considered to be a reflection of world-wide fallout as evidenced by higher levels in the Knoll Creek herd. The controlling factor in bone concentration was the exposure which occurred during the period of maximum bone growth, up to 1 year of age. The effective half-life for strontium-90 in adult desert bighorn sheep was calculated to be 4.8 years. The hypothetical dose commitment from strontium-90 produced by activities at the NTS was considered to be negligible for the local offsite population.

Tritium concentrations in the blood and tissues of NTS cattle and wildlife were generally within the ranges present in the general environment. Exceptions were animals which were exposed to specific sources of tritium, e.g., the Sedan Crater and drainage waters from testing areas of Rainier Mesa. The 50-year hypothetical dose commitment from tritium based on the daily consumption of 0.5 kg of meat from the NTS beef herd was only 0.15 mrem.

The skeletal burden of plutonium-239 in NTS beef animals was determined to be more related to the animal's age (length of exposure) than to any changes in the biological availability of the deposited plutonium associated with weathering. It was calculated that an individual living in the same area as the

HISTORY AND OBJECTIVES

Prior to 1955, investigations of animal injuries alleged to be related to the nuclear testing program at the Nevada Test Site (NTS) were handled by various investigators on a fee or consultant basis. The investigators included veterinarians assigned to the U.S. Army (USA), U.S. Public Health Service (USPHS), U.S. and state Departments of Agriculture, and private practitioners. This arrangement was unsatisfactory as there was usually a significant time delay between the alleged incident and the investigation. Furthermore, the investigators were handicapped by a lack of baseline data on the radiation exposure of the species being investigated. The offsite radiological safety report (Sanders et al. 1955) for the Teapot Series recommended that, because of recurring livestock injury reports, it would be desirable to have continuously available the services of a veterinarian with radiological training to supervise a sound investigative program.

The Off-Site Rad-Safe Livestock Studies for the Nevada Operations Office (NVO) of the Atomic Energy Commission (AEC)* began in November of 1955 with the assignment of Ed Johnson, Lt., U.S. Army. The Off-Site Animal Investigation Project was initiated in July of 1957 and continued to be directed by Army veterinary officers until operation was transferred to the USPHS† on June 1, 1964. Other Army officers assigned to this program were Major Garland Farmer, June 1958 to July 1960; Captain Ed Fountain, July 1960 to August 1963; and Captain Scott Reynolds, August 1963 to June 1964.

Raymond Brechbill was the USPHS project officer for the renamed Animal Investigation Program (AIP) until 1969. Veterinary support for the AIP was supplied by Drs. Ronald Engle, Bruce Hull, Stanley Cohen, and Donald Smith. Dr. Smith served as project officer for the AIP from 1969 through 1981 when the program was terminated.

As stated in the first annual report (Johnson 1958), "The primary aims of the Program were: (1) to enhance the Nevada Test Site - Offsite rancher relationships through an active investigative program in their interests, and (2) to provide further information as to the status of the offsite animals in their environment with special emphasis on the radioactivity from

* In January 1975, the NVO was transferred to the U.S. Energy Research and Development Administration (ERDA) which in turn became the Department of Energy (DOE) in October of 1977.

† The Las Vegas USPHS facilities were transferred to the Environmental Protection Agency (EPA) in December of 1970.

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SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN

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(Prior to completing Part I, refer to regulations and instructions page 5.)

SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN

PART I
GENERAL INFORMATION

1. Name of facility Area 23 Bulk Fuel Storage Facility

2. Type of facility Storage of gasoline and diesel fuel

3. Location of facility One mile southwest of the Post Office, Mercury, Nevada

4. Name and address of owner or operator:

   Name U.S. Department of Energy/Nevada Field Office

   Address P.O. Box 98518

   Las Vegas, NV 89193-8518

5. Designated person accountable for oil spill prevention at facility:

   Name and title

6. Facility experienced a reportable oil spill event during the twelve months prior to Jan. 10, 1974 (effective date of 40 CFR. Part 112). (If YES, complete Attachment =1.)

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature

Name

Title

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR. Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

Printed Name of Registered Professional Engineer

(Seal)

Signature of Registered Professional Engineer

Date

Registration No. State

PART I
GENERAL INFORMATION

7. Potential Spills — Prediction & Control:

Source	Major Type of Failure	Total Quantity (bbls)	Rate (bbls/hr)	Direction of Flow*	Secondary Containment
Gasoline	leakage or rupture	10,000	unknown	southwesterly	earthen berm**
Diesel	leakage or rupture	10,000	unknown	southwesterly	earthen berm**

PRELIMINARY

Discussion:

** Both tanks require impervious secondary containment. If funding is available, this project can be completed in 1992.

* Attach map if appropriate.

Name of facility Area 23 Bulk Fuel Storage Facility

Operator Reynolds Electrical and Engineering Company

PART I
GENERAL INFORMATION

[Response to statements should be: YES, NO, or NA (Not Applicable).]

8. Containment or diversionary structures or equipment to prevent oil from reaching navigable waters are practicable. (If NO, complete Attachment #2.) Yes

9. **Inspections and Records**
   A. The required inspections follow written procedures. Pending
   B. The written procedures and a record of inspections, signed by the appropriate supervisor or inspector, are attached. Pending
   Discussion: These procedures will be written and implemented in 1992.

10. **Personnel Training and Spill Prevention Procedures**
   A. Personnel are properly instructed in the following:
   (1) operation and maintenance of equipment to prevent oil discharges, and Yes
   (2) applicable pollution control laws, rules, and regulations. Pending
   Describe procedures employed for instruction: Training as required by 40 CFR 112 will be written and implemented in 1992. Personnel are currently instructed in the operation and maintenance of existing equipment.

   B. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. Pending
   Describe briefing program: Upon finalization of this plan, operating personnel will be briefed on all aspects of the SPCC program.

Name of facility Area 23 Bulk Fuel Storage Facility

Operator Reynolds Electrical and Engineering Company

(Prior to completing Part II, Alternate A, refer to regulations and instructions pages 6-7.)

PART II, ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

A. Facility Drainage

1. Drainage from diked storage areas is controlled as follows (include operating description of valves, pumps, ejectors, etc. *(Note: Flapper-type valves should not be used)*:
Both storage tanks are provided with secondary containment dikes capable of holding approximately 110% of the tank volume. An outlet pipe fitted with a manually operated valve is available for the drainage of spilled liquids.

2. Drainage from undiked areas is controlled as follows (include description of ponds, lagoons, or catchment basins and methods of retaining and returning oil to facility):
Drainage from the facility would flow in a southwesterly direction, following a natural drainage course.

3. The procedure for supervising the drainage of rain water from secondary containment into a storm drain or an open watercourse is as follows (include description of (a) inspection for pollutants, and (b) method of valving security). (A record of inspection and drainage events is to be maintained on a form similar to Attachment #3):
Rain water in the secondary containment dikes evaporates or seeps into the ground. The NTS receives less than 5 inches of rain per year, and no rain water has been observed to accumulate in the contained area. Impervious secondary containment will be installed if funding is available. Following storms, rain water may be discharged to the natural drainage course, after inspection for pollutants.

Name of facility Area 23 Bulk Fuel Storage Facility

Operator Reynolds Electrical and Engineering Company

PART II. ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

[Response to statements should be: YES, NO, or NA (Not Applicable).]

B. Bulk Storage Tanks

1. Describe tank design, materials of construction, fail-safe engineering features, and if needed, corrosion protection: Tanks are cylindrical in shape, constructed of steel, and painted for corrosion protection. Both tanks are aboveground, seated on concrete platforms.

2. Describe secondary containment design, construction materials, and volume: Secondary containment is composed of earthen materials which have compacted. Impervious materials will be added upon availability of funding

3. Describe tank inspection methods, procedures and record keeping: The preventive maintenance program at the NTS covers the pumps, valves, pipes and associated equipment. A comprehensive inspection program will be instituted in 1992.

4. Internal heating coil leakage is controlled by one or more of the following control factors:
   (a) Monitoring the steam return or exhaust lines for oil. NA
   Describe monitoring procedure:
   (b) Passing the steam return or exhaust lines through a settling tank, skimmer, or other separation system. NA
   (c) Installing external heating systems. NA

5. Disposal facilities for plant effluents discharged into navigable waters are observed frequently for indication of possible upsets which may cause an oil spill event. NA
   Describe method and frequency of observations: There are no navigable waterways which are impacted by this operation.

Name of facility Area 23 Bulk Fuel Storage Facility

Operator Reynolds Electrical and Engineering Company

PART II. ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

[Response to statements should be: YES, NO, or NA (Not Applicable).]

C. Facility Transfer Operations, Pumping, and In-plant Process

1. Corrosion protection for buried pipelines:
   (a) Pipelines are wrapped and coated to reduce corrosion. Yes
   (b) Cathodic protection is provided for pipelines if determined necessary by electrolytic testing. No
   (c) When a pipeline section is exposed, it is examined and corrective action taken as necessary. Yes

2. Pipeline terminal connections are capped or blank-flanged and marked if the pipeline is not in service or on standby service for extended periods. NA
   Describe criteria for determining when to cap or blank-flange: _____

3. Pipe supports are designed to minimize abrasion and corrosion and allow for expansion and contraction. Yes
   Describe pipe support design: Aboveground piping is supported on steel pipe supports which are painted for corrosion and abrasion protection. Short straight runs of pipe allow for expansion and contraction.

4. Describe procedures for regularly examining all above-ground valves and pipelines (including flange joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces): This equipment is not on the preventive maintenance schedule at this time. All will be added to the schedule in 1992.

5. Describe procedures for warning vehicles entering the facility to avoid damaging above-ground piping: Steel pillars are placed to protect pumps and valves. Steel uprights have also been placed to protect pipes and dispensing equipment. Warning signs have been placed as an additional safety measure.

Name of facility Area 23 Bulk Fuel Storage Facility

Operator Reynolds Electrical and Engineering Company

PART II. ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

[Response to statements should be: YES, NO, or NA (Not Applicable).]

E. Security

1. Plants handling, processing, or storing oil are fenced. No

2. Entrance gates are locked and/or guarded when the plant is unattended or not in production. NA

3. Any valves which permit direct outward flow of a tank's contents are locked closed when in non-operating or standby status. Yes

4. Starter controls on all oil pumps in non-operating or standby status are:
   (a) locked in the off position; Yes
   (b) located at site accessible only to authorized personnel. Yes

5. Discussion of items 1 through 4 as appropriate: The entire NTS is a controlled area which is restricted for the general public. This facility will be fenced if funding is available.

6. Discussion of the lighting around the facility: Adequate lighting is provided for this facility.

Name of facility Area 23 Bulk Fuel Storage Facility

Operator Reynolds Electrical and Engineering Company

PART II. ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

[Response to statements should be: YES, NO, or NA (Not Applicable).]

D. Facility Tank Car & Tank Truck Loading/Unloading Rack

Tank car and tank truck loading/unloading occurs at the facility. (If YES, complete 1 through 5 below.) Yes

1. Loading/unloading procedures meet the minimum requirements and regulations of the Department of Transportation (refer to *49 CFR Parts 171, 173, 174, 177, and 179*). Yes

2. The unloading area has a quick drainage system. NA

3. The containment system will hold the maximum capacity of any single compartment of a tank truck loaded/unloaded in the plant. NA
   Describe containment system design, construction materials, and volume: No containment system is provided for the loading/unloading area. If fundin is available, a containment system will be constructed in 1992.

4. An interlocked warning light, a physical barrier system, or warning signs are provided in loading/unloading areas to prevent vehicular departure before disconnect of transfer lines. No
   Describe methods, procedures, and/or equipment used to prevent premature vehicular departure: Operating procedures require that transfer lines are disconnected prior to departure. More active warning systems will be provided if funding is available.

5. Drains and outlets on tank trucks and tank cars are checked for leakage before loading/unloading or departure. Yes

Name of facility Area 23 Bulk Fuel Storage Facility

Operator Reynolds Electrical and Engineering Facility

530-03-365

AUG 29 1991

John D. Stewart, Director
Nevada Test Site Office
U. S. Department of Energy
Post Office Box 435
Mercury, NV 89023-0435

REQUIRED ACTION FOR TIGER TEAM FINDING PT.4-3
SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

As requested in your July 30, 1991 letter, REECo has prepared Spill Prevention Control and Countermeasure (SPCC) Plans for the Nevada Test Site (NTS). REECo used the industry standard American Petroleum Institute (API) Bulletin D16 (Suggested Procedure for Development of Spill Prevention Control and Countermeasure Plans). After reviewing the regulations and the API guidance, REECo identified the two largest bulk fuel storage facilities; Area 6 Bulk Fuel Storage and Petroleum, Oil, Lubrication (P.O.L.) Facility, and Area 23 Bulk Fuel Storage Facility, which are candidates for SPCC Plans. There are other smaller facilities at the NTS where bulk fuel is stored which probably qualify for SPCC plans also. REECo is submitting plans for the two largest facilities at this time and will continue identifying other facilities and preparing plans. Each facility requires a separate plan, as tank descriptions, piping, secondary containment, and drainage are different for each facility.

In a previous survey (U.S. DOE Environmental Survey of 1987), DOE had determined that 40 CFR 112 did not apply to the NTS, but as a best management practice, the bermed areas surrounding the bulk fuel tanks should consist of impervious materials. Funding was requested, but has not been available for this project. Toxic and Chemical Materials Best Management Practice Finding TCM/BMPF-1 of the Tiger Team report also states that 40 CFR 112 does not apply to the NTS. Identified in this finding were ten aboveground bulk fuel storage tanks for which impermeable secondary containment was recommended.

To achieve full compliance with 40 CFR 112, major modifications are required at fuel storage facilities. The initial effort should be focused on the two largest fuel storage facilities. In addition to installation of impervious bermed areas, the other modifications which are required for full compliance for the Area 6 and Area 23 bulk fuel storage facilities are:

1. Containment in the unloading area. This is a major compliance problem, as the loading/unloading areas are not paved. At a minimum, the loading/unloading areas will require impervious secondary containment

(paving, berms, grading, etc.) and product removal devices (pumps, piping).

2. Repair or replacement of the diesel tank in Area 23 to correct a very minor leak. Although standing product has never been seen and there has been no measurable loss of product, the tank is leaking vapors or very small quantities of fluid. This problem was noted in the U.S. DOE Environmental Survey of 1987, and REECo has been monitoring the leak for the past three years and has not observed a change in the leak.

3. Fencing of storage areas. The regulations call for storage facilities to be fully fenced with locked gates. This provision is to prevent unauthorized personnel from gaining access to the tanks. While the NTS has excellent security, the Area 23 Facility is vulnerable enough to intruders and other non-authorized people such that a separate fence and locked gate are necessary. The Area 6 Facility is more isolated and probably does not require additional security beyond existing NTS security.

4. Purchase and installation of high liquid alarms, high liquid pump cutoff devices, and other equipment.

The following changes in operating procedures are also necessary for full compliance:

5. Procedures must be written and implemented to cover inspections of the tanks, piping, alarm and gauging systems, and all associated equipment. Currently, preventive maintenance only covers portions of the systems.

6. Training sessions to familiarize personnel with the requirements of 40 CFR 112 must be established.

If compliance with these regulations is mandatory, it is required that a proposed time schedule for projects which bring the facility into compliance be submitted to the Regional Administrator of the U.S. Environmental Protection Agency. This schedule can only be established when funding is dedicated to these projects. The enclosed SPCC Plans present a proposed time schedule for mandatory compliance projects which is highly dependent upon the availability of funding.

These plans were prepared and reviewed with the assistance of a Registered Professional Engineer. REECo recognizes that past practices with engineering

plans have resulted in a government engineer reviewing and signing documents. Therefore, a government engineer should certify that the SPCC Plan has been prepared in accordance with good engineering practices.

Original Signed By

Howard W. Dickson, Manager
Environment, Safety, and Health Division

HWD:PMR:M9136:md

Enclosures
As stated

cy: R. E. Friedrichs, DOE/NV, w/encls., M/S 505
J. K. Magruder, DOE/NV, w/o encls., M/S 505
R. V. Nutley, DOE/NV, w/o encls., M/S 505

bc: Central Files, w/encls., M/S 530
THRU Executive Office, M/S 555
M. M. Azhikakath, w/o encls., M/S 625
W. G. Flangas, w/o encls., M/S 615
O. L. Gorby, w/o encls., M/S 680
O. L. Haworth, w/encls., M/S 711
J. J. Minster, w/encls., M/S 679
V. K. Sahni, w/encls., M/S 625

PRELIMINARY

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ANALYTICAL RESULTS FROM 1994 SAMPLING OF CAS 06-02-04

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0600204e9

Reynolds Electrical & Engineering Co., Inc.

MEMORANDUM

To C. C. Neagle

From J. L. Cowley JLC

Date November 3, 1994

Subject SAMPLE ANALYTICAL RESULTS

Enclosed are Analytical Services Department's results, requested by J. P. Bielawski, for the TCLP volatile organics, TCLP semivolatile organics, total petroleum hydrocarbons (gasoline/diesel/oil), TCLP metals, pH and Clor-d-tect analyses of one liquid sample, and the volatile organics analysis of a trip blank, collected on October 3, 1994 at Building WY-42 in Area 6. Results for radiochemistry analysis will be submitted at a later date.

Please direct any questions you may have to your Client Service Representative, Jerry Dugas, at 295-7220.

PRELIMINARY

JLC:32:bv

Enclosures
As Stated

cy w/o encls.
Central Files, M/S 530
E. W. Kendall, M/S 738
A. R. Latham, M/S 612
ACS Packet No. 94-10-008

cy w/encls.
J. P. Bielawski, M/S 738

111

TITLE Area 6 Project No. 94-10-008

Book No.

From Page No. 59 Monday, October

A request was received from Julian Bielowski, WOD, to sample from an UST ~ 100 ft north of Bldg. W4-42. Liquid had been observed through a pipe opening. I was able to obtain the sample using a 12" HDPE scoop. It was clear. There appeared to be no solids on the bottom but some silt was roused by sloshing the scoop around. Mark from Eng. Dennis Tyree, Bob Anderson + myself went out in the morning just to see if I could reach the liquid, and to enter the bldg + pour (4) 5 gal jugs of water down the sink drain with a fluorescent dye. It was hoped the dye would show up in the UST. It did not. No water + dye was used; still no sign of the dye in the UST. Just outside the building there was a metal cover ~ 30" x 30". When this was lifted it exposed a cut away in a pipe. Again water + dye was put down the drain + we observed it flowing out of the bldg through the cut off pipe, + continuing out of site (only the top of clay pipe was missing. The bottom was intact). We spent ~ 45 min continually checking the UST. It was agreed to move up the sampling day from the scheduled 8:30 Am Tues, to 2:00 pm Monday. I returned to the site, approx 4 hrs after the dye had been used and sampled from the UST. Sample 94JLH100302 was collected at 1405 as follows: TPH, TCLP VOA, BNA, TCLP metals, Chlor-D-Tect 4000, gamma (100 min. count), + bitumen. The liquid was still very clear, only slight amt of silt, and no strong smelling odor. Notified Eng + WOD the sample had been obtained. Samples were immediately put on ice. The trip blank, prepared in the ACS Lab at 1305 (~ 40 ml of reagent water) which was identified as sample no. 94JLH100303-1.

To Page No. 59

Witnessed & Understood by me,	Date	Invented by	Date
		Recorded by Janet H Harvey	10/3/94

TODAY'S DATE: 10/3/94

SMS

ASD/Sample Management Section

REYNOLDS ELECTRICAL AND ENGINEERING CO., INC.
LABORATORY SERVICES REQUEST
AND CHAIN OF CUSTODY

REV 6/6/94

INSTRUCTIONS ON BACK

PAGE / OF /

PROJECT INFORMATION	REPORT INFORMATION	LAB USE ONLY
WORK ORDER: 9901-269-017	DATE DUE: 10/27/94	SDG #:
PROJECT MANAGER: L Bielawski	PRELIMINARY REPORT: Y	QC REQUIREMENTS:
PHONE: 5-5397 MAIL STOP: 738	COPY TO:	Packet #: 94-10-008
LOCATION: A6 Bldg. WY-42	PROJECT MANAGER: JERRY DUGAS M/S 713.	REMARKS:
		PROJ NO: W001 EVENT: 220 SAMPLER INITIALS:

FIELD SAMPLE ID	VOA	BNA	METALS	TPH	TCLP	VOA	BNA	METALS	PH	CHLOR (400?)	FLASH POINT	PCB	OTHER	RAD MS/A (100?)	GROSS	BETA	ALPHA	H3	PU	GFP	OTHER TRITIUM	MATRIX	DATE/TIME COLLECTED	REMARKS (PRESERVATIVE, SAMPLE SIZE, SPECIAL ANALYSIS, COUNT TIME, ETC.)
94JLH1003-1	X																					water	10/3/94 1305	w/HCL trip blank
94JLH1003-2				X	X	X	X	X	X					X					X	X		liquid	10/3/94 1405	
LAST ITEM																								

SAMPLED/RELINQUISHED BY:	RAD ONLY	DATE/TIME:	RECEIVED BY:	RAD ONLY
Janet H. Harvey		10/3/94 1535	Marion W. Thew	
Janet H. Harvey		10/3/94 1611	HAK-Garcia (NR)	
Da R Garcia		10/3/94	IOA (9), TPH, BNA (B4), Metals, Chlor, P	

REECO ASD/ACS

REECO
DENNIS TRUMP
WOD M/S 738

Attn: J. BIELOWSKI

Purchase Order: 9901-269-017
Invoice Number:

REPORT TO J. BIELOWSKI, WOD.

Order #: 94-10-008
Date: 10/27/94 15:32
Work ID: TCLP(VOA,BNA,MTL),TPH,CHLR,PH
Date Received: 10/03/94
Date Completed:

Client Code: WOD

PRELIMINARY

SAMPLE IDENTIFICATION

Sample Number	Sample Description	
01	94JLH1003-1	TRIP BLANK
02	94JLH1003-2	
03	94JLH1003-2	
04	94JLH1003-2	
05	94JLH1003-2	
06	94JLH1003-2	
07	94JLH1003-2	
08	94JLH1003-2	DUPLICATE
09	94-10-008-QC1	BUFFERS
10	94-10-008-QC2	MS
11	94-10-008-QC3	MB
12	94-10-008-QC4	CAL VER
13	94-10-008-QC5	MS
14	94-10-008-QC6	MB
15	94-10-008-QC7	MS
16	94-10-008-QC8	MB
17	94-10-008-QC9	MS
18	94-10-008-QC10	MB
19	94-10-008-QC11	DETEC LIMIT
20	PACKET #	
21	PACKET #	
22	4 HOURS, 1.11 UNITS	
23	DISPOSAL CHARGE	

Certified By

Dodie William
10-27-94

Sample: 01A 94JLH1003-1 TRIP BLANK Collected: 10/03/94 Category: VOA_TB

Test Description	Result	Limit	Units	Analyzed	By
VOLATILE ORGANIC ANALYSIS	SEE DATA		PACKAGE	10/11/94	JRW

Sample: 02A 94JLH1003-2 Collected: 10/03/94 Category: TPH
Job: TPH PETROLEUM HYDROCARBONS

Test Description	Result	Limit	Units	Analyzed	By
EXTRACTION STEP CODE	10/12/94				EV
TPH - DIESEL	< 0.5		MG/L	10/18/94	ABC
TPH - GASOLINE	< 5.0		MG/L	10/18/94	ABC
TPH - GASOLINE MATRIX SPK	NA				
TPH - OIL	< 0.5		MG/L	10/18/94	ABC
TPH - TOTAL	< 6.0		MG/L		

Sample: 03A 94JLH1003-2 Collected: 10/03/94 Category: TCLP_VOA
Job: TCLP_V TCLP VOA JOB

Test Description	Result	Limit	Units	Analyzed	By
EXTRACTION STEP CODE	10/11/94				EV
VOLATILE ORGANIC ANALYSIS	SEE DATA		PACKAGE	10/14/94	JRW

Sample: 04A 94JLH1003-2 Collected: 10/03/94 Category: TCLP_BNA
Job: TCLP_B TCLP BNA JOB

Test Description	Result	Limit	Units	Analyzed	By
BNA ORGANICS (EPA 8270)	SEE DATA		PACKAGE		
EXTRACTION STEP CODE	10/10/94				EV

Sample: 06A 94JLH1003-2 Collected: 10/03/94 Category: PH

Test Description	Result	Limit	Units	Analyzed	By
pH	7.94		pH UNITS	10/05/94	TAP

Sample: 07A 94JLH1003-2 Collected: 10/03/94 Category: CHLOR

Test Description	Result	Limit	Units	Analyzed	By
CLOR-D-TECT Q4000	<200		ppm Chlorine	10/18/94	LDR

Sample: 08A 94JLH1003-2 DUPLICATE Collected: Category: CHLOR_QC

Test Description	Result	Limit	Units	Analyzed	By
CLOR-D-TECT Q4000	<200		ppm Chlorine	10/18/94	LDR

Sample: 09A 94-10-008-QC1 BUFFERS Collected: Category: PH_QC

Test Description	Result	Limit	Units	Analyzed	By
pH	101		% RECOVERY	10/05/94	TAP

REECO ASD/ACS
TEST RESULTS BY SAMPLE

Sample Description: 94JLH1003-2
Test Description: TCLP RCRA METALS
Collected: 10/03/94

Lab No: 05A
Method: ICP/COLD VAP Test Code: TCLP_X
Category: TCLP_METALS

PARAMETER		RESULT	INJECTED
FIELD ID #		94JLH1003-2	
ARSENIC (As)	1311/6010	ND	10/27/94
BARIUM (Ba)	1311/6010	0.16	10/27/94
CADMIUM (Cd)	1311/6010	ND	10/27/94
CHROMIUM (Cr)	1311/6010	ND	10/27/94
LEAD (Pb)	1311/6010	ND	10/27/94
MERCURY (Hg)	1311/7470-1	ND	10/27/94
SELENIUM (Se)	1311/6010	ND	10/27/94
SILVER (Ag)	1311/6010	ND	10/27/94

Notes and Definitions for this Report:

EXTRACTED 10/10/94
UNITS mg/L
PREP_TECH JWB

DATA PACKAGE REVIEW

ACS PACKET NUMBER: 94-10-008 CLIENT: WOD - J. BIELOWSKI

LABORATORY: REECO-ASD

DATE REVIEWED: 10-25-94 REVIEWED BY: Jerry J. Douglas

VOA/TCLP VOA:

MATRIX: SOLID/LIQUID ARE VOA DATA ACCEPTABLE: YES

	SAMPLE NO.	DATE/TIME	CRITERIA ACCEPTABLE
1. TUNE	BFB	10-6-94/0800	YES
	BFB	10-7-94/1055	YES
	BFB	10-11-94/0749	YES
	BFB	10-11-94/1700	YES
	BFB	10-14-94/0825	YES
2. CALIBRATION	INITIAL	10-06/07-94	YES
	VSTD050	10-11-94/1042	YES
	VSTD050	10-14-94/0859	YES
3. METHOD BLANK	94EV1011-VOA	10-14-94/1256	YES
	VBLK101	10-11-94/1112	YES
	VBLK105	10-14-94/0947	YES
4. TRIP BLANK	94JLH1003-1TB	10-11-94/1728	YES
5. SAMPLES	94JLH1003-	10-14-94/1228	YES

6. SURROGATE RECOVERY ACCEPTABLE: YES
7. MS/MSD RECOVERY ACCEPTABLE: YES
8. METHOD BLANK ACCEPTABLE: YES
9. HOLDING TIMES ACCEPTABLE: YES

		#DAYS	ACCEPTABLE
a. Date Sampled:	10-3-94	0	0
b. Date ACS Received:	10-3-94	0	YES
c. Date Contract Lab Received:	N/A	N/A	N/A
d. Date Extracted:	10-11-94	8	14
e. Date Analyzed	10-14-94	3	14

10. Correct Conc units used: YES
11. CALCULATIONS ACCEPTABLE: YES
12. IS AREAS ACCEPTABLE: YES
13. RRT IS ACCEPTABLE: YES
14. FORMS ACCEPTABLE: YES
15. Chain-of-Custody agrees: YES

COMMENTS:

EPA 624/8240: REECO ASD LAB Volatile Organics Test Results

ame Field: 94JLH1003-1
.sc Field: 9410008-01A TRP BLNK 5 ML PUR Blank:>JW658:PASS QaQc File: QVOLWM
nstrument: VOA2 Datafile: >JW662 Idfile: ID_VC2 Quantfile: ^JW662

njection time: 17:28 on 10-11-94 Quant Time: 09:35 on 10-12-94
ontinuing calibration time : 10:42 on 10-11-94 using the file: ^STW26::D4
ser dilfac:1 Quant dilfac: 1. Multi-calibration: 14:38 on 04-22-92

ompound Name	CAS Number	Result	Units	Detection Limit
loromethane	74-87-3	n.d.	UG/L	10.
omomethane	74-83-9	n.d.	UG/L	10.
nyl Chloride	75-01-4	n.d.	UG/L	10.
loroethane	75-00-3	n.d.	UG/L	10.
thylene Chloride	75-09-2	n.d.	UG/L	5.
etone	67-64-1	n.d.	UG/L	10.
rbon Disulfide	75-15-0	n.d.	UG/L	5.
1-Dichloroethene	75-35-4	n.d.	UG/L	5.
1-Dichloroethane	75-34-3	n.d.	UG/L	5.
2-Dichloroethene (total)	540-59-0	n.d.	UG/L	5.
loroform	67-66-3	n.d.	UG/L	5.
2-Dichloroethane	107-02-2	n.d.	UG/L	5.
-Butanone	78-93-3	n.d.	UG/L	5.
1,1-Trichloroethane	71-55-6	n.d.	UG/L	10.
rbon Tetrachloride	56-23-5	n.d.	UG/L	5.
omodichloromethane	75-27-4	n.d.	UG/L	5.
2-Dichloropropane	78-87-5	n.d.	UG/L	5.
s-1,3-Dichloropropene	10061-01-5	n.d.	UG/L	5.
ichloroethene	79-01-6	n.d.	UG/L	5.
bromochloromethane	124-48-1	n.d.	UG/L	5.
1,2-Trichloroethane	79-00-5	n.d.	UG/L	5.
nzene	71-43-2	n.d.	UG/L	5.
ans-1,3-Dichloropropene	10061-02-6	n.d.	UG/L	5.
omoform	75-25-2	n.d.	UG/L	5.
-Methyl-2-pentanone	108-10-1	n.d.	UG/L	5.
-Hexanone	591-78-6	n.d.	UG/L	10.
trachloroethene	127-18-4	n.d.	UG/L	10.
1,2,2-Tetrachloroethane	79-34-5	n.d.	UG/L	5.
luene	108-88-3	n.d.	UG/L	5.
lorobenzene	108-90-7	n.d.	UG/L	5.
hylbenzene	100-41-4	n.d.	UG/L	5.
yrene	100-42-5	n.d.	UG/L	5.
p-Xylene	133-02-7	n.d.	UG/L	5.
lene (total)	133-02-7	n.d.	UG/L	5.
3-Dichlorobenzene	541-73-1	n.d.	UG/L	5.
4-Dichlorobenzene	106-46-7	n.d.	UG/L	5.
2-Dichlorobenzene	95-50-1	n.d.	UG/L	5.

d. - not detected

proved by: _____

EPA 624/8240: REECo ASD LAB TCLP Volatile Organics Test Results

ıme Field: 94JLH1003-2 Blank:>JW678:PASS QaQc File: QVTCLP
isc Field: 94-10-008-03A 5ML PU TCLP XTR
nstrument: VOA2 Datafile: >JW681 Idfile: ID_VC2 Quantfile: ^JW681

..jection time: 12:28 on 10-14-94 Quant Time: 12:52 on 10-14-94
ontinuing calibration time : 08:59 on 10-14-94 using the file: ^STW29::D2
er dilfac:1 Quant dilfac: 1. Multi-calibration: 14:38 on 04-22-92

Compound Name	CAS Number	Result	Units	Detection Limit
inyl Chloride	75-01-4	n.d.	UG/L	10.
,1-Dichloroethene	75-35-4	n.d.	UG/L	5.
h oroform	67-66-3	n.d.	UG/L	5.
,.-Dichloroethane	107-02-2	n.d.	UG/L	5.
-Butanone	78-93-3	n.d.	UG/L	5.
a bon Tetrachloride	56-23-5	n.d.	UG/L	10.
r chloroethene	79-01-6	n.d.	UG/L	5.
enzene	71-43-2	n.d.	UG/L	5.
e rachloroethene	127-18-4	n.d.	UG/L	5.
ı orobenzene	108-90-7	n.d.	UG/L	5.

. - not detected

pproved by: _____

PRELIMINARY

DATA PACKAGE REVIEW

ACS PACKET NUMBER: 94-10-008 CLIENT: WOD - JULIAN BIELOWSKI

LABORATORY: REECO-ASD

DATE REVIEWED: 10-19-94 REVIEWED BY:

BNA:

MATRIX: AQUEOUS ARE BNA DATA ACCEPTABLE: YES

	SAMPLE NO.	DATE/TIME	CRITERIA ACCEPTABLE
1. TUNE	DFTPP	10-13-94/1630	YES
	DFTPP	10-14-94/0059	YES
2. CALIBRATION	INITIAL	10-13-94	YES
	SSTD050	10-14-94/0118	YES
3. METHOD BLANK	SBLK1010	10-14-94/0921	YES
4. SAMPLES	94JLH1003-2	10-14-94/0744	YES

		#DAYS	ACCEPTABLE
5. SURROGATE RECOVERY ACCEPTABLE:	YES		
6. MS/MSD RECOVERY ACCEPTABLE:	N/A		
7. METHOD BLANK ACCEPTABLE:	YES		
8. HOLDING TIMES ACCEPTABLE:	YES		
a. Date Sampled:	10-3-94	0	0
b. Date ACS Received:	10-8-94	0	YES
c. Date Cont Lab:	N/A	N/A	N/A
d. Date Extracted:	10-10-94	7	7
e. Date Analyzed:	10-14-94	4	40
9. Correct conc units used:	YES		
10. CALCULATIONS ACCEPTABLE:	YES		
11. IS AREAS ACCEPTABLE:	YES		
12. RRT IS ACCEPTABLE:	YES		
13. FORMS ACCEPTABLE:	YES		
14. Chain-of-Custody agrees:	YES		

COMMENTS:

EPA 625/8270 Semivolatile Organics Water Test Results

Name Field: 94JLH1003-2
Misc Field: 94-10-008-04A
Instrument: BNA1 Datafile: >SD031 Idfile: ID_B1X Quantfile: ^SD031
Blank:>SD033:PASS QaQc File: QS90WM

Injection time: 07:44 on 10-14-94
Continuing calibration time : 01:18 on 10-14-94
User dilfac:1 Quant dilfac: 1.
Quant Time: 12:25 on 10-17-94
using the file: ^SC460::D4
Multi-calibration: 11:18 on 10-17-94

Compound Name	CAS Number	Result	Units	Detection Limit
Phenol	108-95-2	n.d.	ug/l	10.
bis(2-Chloroethyl)ether	111-44-4	n.d.	ug/l	10.
2-Chlorophenol	95-57-8	n.d.	ug/l	10.
1,3-Dichlorobenzene	541-73-1	n.d.	ug/l	10.
1,4-Dichlorobenzene	106-46-7	n.d.	ug/l	10.
1,2-Dichlorobenzene	95-50-1	n.d.	ug/l	10.
2-Methylphenol	95-48-7	n.d.	ug/l	10.
2,2'-oxybis(1-Chloropropane)	108-60-1	n.d.	ug/l	10.
bis(2-Chloroisopropyl)ether	39638-32-9	n.d.	ug/l	10.
4-Methylphenol	106-44-5	n.d.	ug/l	10.
N-Nitroso-di-n-propylamine	621-64-7	n.d.	ug/l	10.
Hexachloroethane	67-72-1	n.d.	ug/l	10.
Nitrobenzene	98-95-3	n.d.	ug/l	10.
Isophorone	78-59-1	n.d.	ug/l	10.
2-Nitrophenol	88-75-5	n.d.	ug/l	10.
2,4-Dimethylphenol	105-67-9	n.d.	ug/l	10.
bis(2-Chloroethoxy)methane	111-91-1	n.d.	ug/l	10.
2,4-Dichlorophenol	120-83-2	n.d.	ug/l	10.
1,2,4-Trichlorobenzene	120-82-1	n.d.	ug/l	10.
Naphthalene	91-20-3	n.d.	ug/l	10.
4-Chloroaniline	106-47-8	n.d.	ug/l	10.
Hexachlorobutadiene	87-68-3	n.d.	ug/l	10.
4-Chloro-3-methylphenol	59-50-7	n.d.	ug/l	10.
2-Methylnaphthalene	91-57-6	n.d.	ug/l	10.
Hexachlorocyclopentadiene	77-47-4	n.d.	ug/l	10.
2,4,6-Trichlorophenol	88-06-2	n.d.	ug/l	10.
2,4,5-Trichlorophenol	95-95-4	n.d.	ug/l	10.
2-Chloronaphthalene	91-58-7	n.d.	ug/l	50.
2-Nitroaniline	88-74-4	n.d.	ug/l	10.
Dimethylphthalate	131-11-3	n.d.	ug/l	50.
Acenaphthylene	208-96-8	n.d.	ug/l	10.
2,6-Dinitrotoluene	606-20-2	n.d.	ug/l	10.
3-Nitroaniline	99-09-2	n.d.	ug/l	10.
Acenaphthene	83-32-9	n.d.	ug/l	50.
2,4-Dinitrophenol	51-28-5	n.d.	ug/l	10.
4-Nitrophenol	100-02-7	n.d.	ug/l	50.
Dibenzofuran	132-64-9	n.d.	ug/l	50.
2,4-Dinitrotoluene	121-14-2	n.d.	ug/l	10.
Diethylphthalate	84-66-2	n.d.	ug/l	10.
4-Chlorophenyl-phenylether	7005-72-3	n.d.	ug/l	10.
Fluorene	86-73-7	n.d.	ug/l	10.
4-Nitroaniline	100-01-6	n.d.	ug/l	10.
4,6-Dinitro-2-methylphenol	534-52-1	n.d.	ug/l	50.
N-Nitrosodiphenylamine	86-30-6	n.d.	ug/l	50.
		n.d.	ug/l	10.

PRELIMINARY

EPA 625/8270 Semivolatile Organics Water Test Results

Name Field: 94JLH1003-2 Blank:>SD033:PASS QaQc File: QS90WM
Misc Field: 94-10-008-04A
Instrument: BNA1 Datafile: >SD031 Idfile: ID_B1X Quantfile: ^SD031

Compound Name	CAS Number	Result	Units	Detection Limit
4-Bromophenyl-phenylether	101-55-3	n.d.	ug/l	10.
Hexachlorobenzene	118-74-1	n.d.	ug/l	10.
Pentachlorophenol	87-86-5	n.d.	ug/l	50.
Phenanthrene	85-01-8	n.d.	ug/l	10.
Anthracene	120-12-7	n.d.	ug/l	10.
Carbazole	86-74-8	n.d.	ug/l	10.
Di-n-butylphthalate	84-74-2	n.d.	ug/l	10.
Fluoranthene	206-44-0	n.d.	ug/l	10.
Pyrene	129-00-0	n.d.	ug/l	10.
Butylbenzylphthalate	85-68-7	n.d.	ug/l	10.
3,3'-Dichlorobenzidine	91-94-1	n.d.	ug/l	10.
Benzo(a)anthracene	56-55-3	n.d.	ug/l	20.
Chrysene	218-01-9	n.d.	ug/l	10.
bis(2-Ethylhexyl)phthalate	117-81-7	n.d.	ug/l	10.
Di-n-octylphthalate	117-84-0	n.d.	ug/l	10.
Benzo(b)fluoranthene	205-99-2	n.d.	ug/l	10.
Benzo(k)fluoranthene	207-08-9	n.d.	ug/l	10.
Benzo(a)pyrene	50-32-8	n.d.	ug/l	10.
Indeno(1,2,3-cd)pyrene	193-39-5	n.d.	ug/l	10.
Dibenzo(a,h)anthracene	53-70-3	n.d.	ug/l	10.
Benzo(g,h,i)perylene	191-24-2	n.d.	ug/l	10.

n.d. - not detected

Approved by: _____

PRELIMINARY

060204e9
attached

Reynolds Electrical & Engineering Co., Inc.

MEMORANDUM

To S. C. Okosisi

From A. R. Latham

Date December 7, 1995

Subject SAMPLE RADIOANALYTICAL RESULTS

Enclosed are Analytical Services' results, requested by J. P. Bielawski, for the gamma, tritium, and plutonium 238/239 analysis of one sample collected on October 3, 1994, at Building WY-42 in Area 6. The environmental analytical results for this data package were sent under separate cover on November 3, 1994.

Please direct any questions you may have to your Client Service Representative, Ted Redding, at 295-7220.

ARl:80:bv

Enclosures
As stated

cy w/o encls.
Central Files, M/S 530
J. E. Henderson, M/S 580
E. W. Kendall, M/S 738
L. S. Sygitowicz, M/S 612
ACS Packet No. 94-10-008

cy w/encls.
J. P. Bielawski, M/S 738

PRELIMINARY

ANALYTICAL SERVICES REPORT

RADIOANALYTICAL ANALYSIS RESULTS

Reported to: J. Bielowski/WOD

Report No.: FY95-220-01

RAD Packet No.: G0913

ASD Packet No.: 94-10-008

Date: 11/14/94

Program Code: 220

Sample Delivery Group: S665

Date of Collection: 10/03/94

SAMPLE ID	SAMPLE TYPE	LAB ID	SYSTEM DET ID	SAMPLE SIZE	ANALYSIS	SAMPLE VALUE	SAMPLE ERR 2σ	DETECTION LIMIT	UNITS	DATE OF ANALYSIS
94JLH1003-2	WATER	77752	05-01	500 mL	Gamma	No Nuclides Detected	N/A	N/A	N/A	11/08/94
94JLH1003-2	WATER	77752	25-01	5 mL	Tritium	2.15E-07	210%	4.6E-07	µCi/cc	10/13/94
94JLH1003-2	WATER	77752	03-01	1000 mL	PU-239 PU-238	4.03E-13 9.98E-13	1600% 310%	1.3E-11 1.1E-11	µCi/cc	10/31/94

Prepared by: [signature] Date: 11-15-94

Reviewed by: Elizabeth M. Rudin Date: 11/15/94

Approved by: Steven J. Babbitt Date: 11/15/94

LONG TERM DEFICIENCY REPORT

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0602-04 e 11

REECO
DATE - 05-01-95

LONG FORM DEFICIENCY

TKDE-001RW-07

TIME - 14:2

FORM NO. EFRE-9510

ASSESSMENT NUMBER :8424 DEFICIENCY NUMBER :LFD EC 94 3028

REVISION NUMBER :1
R CLASSIFICATION :I
DEFICIENCY DOCUMENT DATE :25-AUG-1994

EFICIENCY DUE DATE :28-MAY-1995
HORT NAME :ILLEGAL WASTEWATER DISCHARGE AT WY6-42
DEFICIENCY DESCRIPTION:
EC:ILLEGAL WASTEWATER DICHARGE AT BUILDING WY6-42

Requirment:

NAC 445.142 requires wastewater permits for water discahrges.

Deficiency:

Building WY6-42, Bin Number 998663, was once used by the Public Health Service as a cow barn before moving the operation to the EPA farm in Area-15. Based upon engineering drawings dated Feb 2, 1964 (the only drawings available to the ECO), this building is discharging wastewate into an unpermitted system (a possible leach pit).

Because there appears to be the possibility of an unapproved wastewater discharge, the ECO issued a Stop Work Order that is also part of this investigation (Investigation 8424).

RECOMMENDED CORRECTIVE ACTION:
The ECO recommends the Engineering Department coordinate the following through the Waste Operations Department's Subject Matter Experts:

1. Contact the Subject Matter Experts at the REECo Waste Operations Department to determine if the Department of Energy - Nevada Test Site Operations and the State of Nevada need to be notified of this possible unapproved wastewater discharge.

2. Immediately terminate the water service to building WY6-42.

3. Prevent any water from discharging down the sink drain. (If possible, disconnect the sink from the drain and temporarily seal the drain with plastic and tape.

4. Prevent water from draining through the floor drains inside building WY6-42 by taping plastic covers over the drains.

5. Using a removable seal, seal the floor drain located outside the of building WY6-42 to prevent water for discharging down this drain.

6. Sample the liquid inside the leach pit. Send these samples for analysis for regulated consitiuents. (Contact the Waste Operations

ASSESSMENT NUMBER :8424 DEFICIENCY NUMBER :LFD EC 94 3028

Continued

WY6-42 is released into the so called "leach pit" and to sample the existing effluent from that pit. The lab report on the effluent sample is expected to be available by 12-31-94.
Further action will be based on the results of the lab report.

MMB (12-01-94)
Recommended corrective actions 6 & 7 have been implemented with the following results:
1) "Dye Tests" conducted several times in October 1994 have failed to provide any evidence of a linkage between the sewer line of building WY6-42 and the existing leach field.
2) Samples from the existing leach field were collected in presence of Rad-Safe experts and forwarded to the laboratory. The samples appeared to be crystal clear without any indication of dye, visible contamininants or radiological impurities as indicated by hand held scanner.
3) Results of the chemical and radiological analysis performed by the laboratory have indicated absence of any hazardous materials or chemicals such as tritium, plutonium or gamma radiation in the samples.
Engineering has completed all corrective actions recommended by the ECO to close this deficiency.

12/08/94 (JTC) - A meeting representing the Engineering Department (M. M. Bukhari), the Support Services Division (C. L. Dailey), and the Environmental Compliance Office (R. H. Guymon, ECO Director, J. T. Carilli, and M. W. Laub) was conducted 12/08/94 in the ECO conference room. The following action items were agreed upon:

1. Extend the deficiency report due date to 02/28/95.

2. Append the recommended corrective actions to include action number 10 to read as follows:

10. If the building is not determined to be connected to the leach pit, then a determination as to where the waste water is going must be made. This location may need to be sampled and analyzed for radioactive and hazardous waste constituents.

3. Research to see if other REECo Departments may have responsibility for this waste water discharge.

4. If needed, raise this deficiency to higher levels of the Company. This may require the attention of the Executive Office and its Officers.

With the exception of number 3 and 4, these modifications were made on

ASSESSMENT NUMBER :8424 DEFICIENCY NUMBER :LFD EC 94 3028

ontinued

12/20/94 (JTC) - After careful review of Company Procedure 1.11.27, the ECO recognized that the Support Services Department Manager, S. D. Davis, is the Subject Matter Expert (SME) regarding this procedure. On December 20, 1994 the SME was contacted by phone to discuss this Deficiency Report (DR). The following were the important points of that conversation:

1. The SME defined the Utility/Service Facility Manager (Company Procedure 1.11.27, section 3.4.1) as the Site Maintenance Department (SMD) Manager, W. G. Jacobs. As a result of this definition a new DR will be issued to the SMD for remediation of the "leach pit."

2. S. D. Davis requested that any further actions and questions regarding this DR be referred directly to him. If Mr. Davis is unavailable, then these actions and questions may be referred to C. Dailey. As a result of this request, the responsible manager for this DR was changed to the Support Service Department Manager at cost cented 550.

3. The ECO agreed that the requirements of items 1 through 9 of the Recommended Corrective Actions were completed. However, item 10 is still open. For this reason, this DR cannot be closed. The ECO still suggests that the waste water SME, J. P. Bielawski, be contacted for assistance on item 10.

2/28/95 (mwl) An extension was requested due to lack of funding to further investigate this deficiency. Funding may be more readily available after the company completes consolidation. This request is granted until that time.

4/17/95 (rls) - This facility is to be turned over to the Environmental Restoration & Technology Development Department for remediation activities per Dale Fraser. It was inspected for closure on this date, with a copy of this deficiency attached to the Facility Inspection Sign-Off Sheet. T. Mendenhall of REECo Engineering provided a copy of these documents.

NITIATORS COMMENTS:

09/29/94 (JTC) - The corrective actions are acceptable. The Status Code is set at 3.

12/07/94 (JTC) - The ECO Director, R. H. Guymon, concluded that this DR is not ready for closure.

Point Number 7, "Determine if the leach pit is a discharge unit from building WY6-42" has not been satisfied. The SME, J. P. Bielawski, stated there is enough evidience in the area to indicate that the drain lines may be broken or blocked. A broken or blocked line would prevent a successful dye test.

ASSESSMENT NUMBER :8424 DEFICIENCY NUMBER :LFD EC 94 3028

Continued

.
If the SME is correct, and the drain lines are broken, then there is a possibility that the Engineering Department had an unpermitted waste water discharge going directly to the soil. The surrounding soil will need to be sampled and analyzed for radioactive and hazardous waste constituents.

.
Even if the building is not connected to the leach pit, it is the responsibility of the Engineering Department to determine where the drain lines and the wash sink actually terminate.
After this investigation is executed, the Engineering Department may need to sample this new area for radioactive and hazardous waste constituents.

.
This DR is returned to a status code 3. No extension to the due date has been made.

.
(4-17-95, rls)-
Building number 6-42, BIN number 998663, Cow Barn was inspected for closure per a request from D. T. Mendenhall. This facility is not active and all material previously housed inside has been removed for use at other locations. The sink drain has been removed, and the floor drains plugged.

.
Per a directive from D. L. Fraser, this facility is to be closed as-is with the environmental liabilities disclosed for remediation to take place by the ER&TDD. The Engineering Department has been provided a copy of the deficiency and the conditions under which it would be closed. QUICK MEMO #9910-042/627; From : D. T. Mendenhall, To: N. J. Maul; Subject: Facility Closure, Building WY6-042 Cow Barn, and the Facility Inspection Sign-Off Sheet relating to this facility are attached to a copy of this deficiency and on file at the ECO.

.
This deficiency, therefore, needs to be set to a "5" by the resposible individual for closure to commence, but with the provisions that the ECO will continue to keep abreast of the remediation activities for further evaluation.

.

ERIFIER SIGNATURE : DATE

CTUAL CLOSED DATE :

LOSURE SIGNATURE : DATE

EYWORDS: EN44 EN05 OM93

ASSESSMENT NUMBER :8424 DEFICIENCY NUMBER :LFD EC 94 3028

Continued

CAUSE NUMBER :1

SHORT NAME :ILLEGAL WASTE WATER DISCHARGE AT WY6-42

CAUSE DESCRIPTION:
As-built drawings available from the records library do not indicate whether the waste water from the floor and sink drains in Building WY6-42 is discharged into the existing sump located about 100 ft. north of the building.

12/05/94 (JTC) - The Engineering Department did not review its facility drawings to determine if its utilities were an environmental liability during their Managment Assesments and ECAPs for the facility. Cause Codes 708 and 102, "Management Oversight" and "Inattention to Detail" respectively, were added to this Deficiency Report by the ECO.

CAUSE CODES :601 102 708

IMPACT TO PROGRAM:

LESSONS LEARNED :

PRELIMINARY

CAUSE NUMBER: 1 - CORRECTIVE ACTION NUMBER: 1

COST CENTER :556 AZHIKAKATH, M. M.

SHORT NAME :ILLEGAL WASTE WATER DISCHARGE AT BUILDIN

CORRECTIVE ACTION PLAN :
The following recommended corrective actions have been completed.

1. Subject matter expert J. P. Bielawski has been contacted to notify the State of Nevada and DOE as appropriate.
2. Water supply to the building has been shut down.
3. The laboratory sink has been disconnected from the service line and coverd with a plastic sheet to render it unusuable.
4. Rubber plugs have been installed in the floor drains located inside the building to prevent waste water from entering the sewerage system.
5. Floor drains located outside the building have been plugged-off similarly.

Work is in progress on the following recommended corrective actions:

6. To determine if the waste water from building WY6-42 actually enters the existing "leach pit", a "dye test" is being scheduled.
7. Subject matter expert J. P Bielawski has been authorized to device a sampling plan. This plan will draw on the expertise of the Rad-safe staff, assuming the waste contains regulated constituents.

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ANALYTICAL RESULTS FROM 1997 SAMPLING OF CAS 22-99-06

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ER Sites Analytical Data

Sample Number	Sample Date	Sample Matrix	Parameter	Result	Units	Qualifier	Detection Limit
ERS00019	8/16/97	Soil	Arsenic	3.9	MG/KG	J	1.0
ERS00019	8/16/97	Soil	Barium	227	MG/KG		20.0
ERS00019	8/16/97	Soil	Cadmium	1.8	MG/KG	J	0.50
ERS00019	8/16/97	Soil	Chromium	15.2	MG/KG		1.0
ERS00019	8/16/97	Soil	Lead	499	MG/KG		0.30
ERS00019	8/16/97	Soil	Selenium	0.38	MG/KG		0.50
ERS00019	8/16/97	Soil	Silver	0.18	MG/KG	U	1.0
ERS00019	8/16/97	Soil	Mercury	0.050	MG/KG	U	0.10
ERS00019	8/16/97	Soil	Diesel	25	MG/KG	U	25
ERS00019	8/16/97	Soil	Motor Oil	190	MG/KG		25
ERS00019	8/16/97	Soil	Aroclor-1016	33	UG/KG	U	33
ERS00019	8/16/97	Soil	Aroclor-1221	33	UG/KG	U	33
ERS00019	8/16/97	Soil	Aroclor-1232	33	UG/KG	U	33
ERS00019	8/16/97	Soil	Aroclor-1242	33	UG/KG	U	33
ERS00019	8/16/97	Soil	Aroclor-1248	33	UG/KG	U	33
ERS00019	8/16/97	Soil	Aroclor-1254	33	UG/KG	U	33
ERS00019	8/16/97	Soil	Aroclor-1260	33	UG/KG	U	33
ERS00019	8/16/97	Soil	1,1,1-Trichloroethane	5	UG/KG	R	5
ERS00019	8/16/97	Soil	1,1,2,2-Tetrachloroethane	5	UG/KG	R	5
ERS00019	8/16/97	Soil	1,1,2-Trichloroethane	5	UG/KG	R	5
ERS00019	8/16/97	Soil	1,1-Dichloroethane	5	UG/KG	R	5
ERS00019	8/16/97	Soil	1,1-Dichloroethene	5	UG/KG	R	5
ERS00019	8/16/97	Soil	1,2-Dichloroethane	5	UG/KG	R	5
ERS00019	8/16/97	Soil	1,2-Dichloroethene (total)	5	UG/KG	R	5
ERS00019	8/16/97	Soil	1,2-Dichloropropane	5	UG/KG	R	5
ERS00019	8/16/97	Soil	2-BUTANONE	47	UG/KG	J	20
ERS00019	8/16/97	Soil	2-Hexanone	20	UG/KG	R	20
ERS00019	8/16/97	Soil	4-Methyl-2-Pentanone (MIBK)	20	UG/KG	R	20
ERS00019	8/16/97	Soil	Acetone	110	UG/KG	J	20
ERS00019	8/16/97	Soil	Benzene	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Bromodichloromethane	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Bromoform	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Bromomethane	10	UG/KG	R	10

ER Sites Analytical Data

Sample Number	Sample Date	Sample Matrix	Parameter	Result	Units	Qualifier	Detection Limit
ERS00019	8/16/97	Soil	Carbon Disulfide	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Carbon Tetrachloride	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Chlorobenzene	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Chloroethane	10	UG/KG	R	10
ERS00019	8/16/97	Soil	Chloroform	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Chloromethane	10	UG/KG	R	10
ERS00019	8/16/97	Soil	cis-1,3-Dichloropropene	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Dibromochloromethane	5	UG/KG	R	5
ERS00019	8/16/97	Soil	EthylBenzene	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Methylene Chloride	33	UG/KG	R	5
ERS00019	8/16/97	Soil	Styrene	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Tetrachloroethene	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Toluene	5	UG/KG	R	5
ERS00019	8/16/97	Soil	trans-1,3-Dichloropropene	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Trichloroethene	5	UG/KG	R	5
ERS00019	8/16/97	Soil	Vinyl Chloride	10	UG/KG	R	10
ERS00019	8/16/97	Soil	Xylene (total)	5	UG/KG	R	5
ERS00019	8/16/97	Soil	1,2,4-Trichlorobenzene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	1,2-Dichlorobenzene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	1,3-Dichlorobenzene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	1,4-Dichlorobenzene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2,2'-oxybis (1-Chloropropane)	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2,4,5-Trichlorophenol	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2,4,6-Trichlorophenol	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2,4-Dichlorophenol	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2,4-Dimethylphenol	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2,4-Dinitrophenol	1600	UG/KG	U	1600
ERS00019	8/16/97	Soil	2,4-Dinitrotoluene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2,6-Dinitrotoluene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2-Chloronaphthalene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2-Chlorophenol	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2-Methylnaphthalene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	2-Methylphenol	330	UG/KG	U	330

ER Sites Analytical Data

Sample Number	Sample Date	Sample Matrix	Parameter	Result	Units	Qualifier	Detection Limit
ERS00019	8/16/97	Soil	2-Nitroaniline	1600	UG/KG	U	1600
ERS00019	8/16/97	Soil	2-Nitrophenol	330	UG/KG	U	330
ERS00019	8/16/97	Soil	3,3'-Dichlorobenzidine	660	UG/KG	U	660
ERS00019	8/16/97	Soil	3-Nitroaniline	1600	UG/KG	U	1600
ERS00019	8/16/97	Soil	4,6-Dinitro-2-Methylphenol	1600	UG/KG	U	1600
ERS00019	8/16/97	Soil	4-Bromophenyl-Phenyl Ether	330	UG/KG	U	330
ERS00019	8/16/97	Soil	4-Chloro-3-Methylphenol	660	UG/KG	U	660
ERS00019	8/16/97	Soil	4-Chloroaniline	660	UG/KG	U	660
ERS00019	8/16/97	Soil	4-Chlorophenyl-PhenylEther	330	UG/KG	U	330
ERS00019	8/16/97	Soil	4-Methylphenol	330	UG/KG	U	330
ERS00019	8/16/97	Soil	4-Nitroaniline	1600	UG/KG	U	1600
ERS00019	8/16/97	Soil	4-Nitrophenol	1600	UG/KG	U	1600
ERS00019	8/16/97	Soil	Acenaphthene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Acenaphthylene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Anthracene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Benzo(a)Anthracene	71	UG/KG	J	330
ERS00019	8/16/97	Soil	Benzo(a)Pyrene	61	UG/KG	J	330
ERS00019	8/16/97	Soil	Benzo(b)Fluoranthene	190	UG/KG	J	330
ERS00019	8/16/97	Soil	Benzo(g,h,i)Perylene	90	UG/KG	J	330
ERS00019	8/16/97	Soil	Benzo(k)Fluoranthene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Benzoic Acid	1600	UG/KG	U	1600
ERS00019	8/16/97	Soil	Benzyl Alcohol	660	UG/KG	U	660
ERS00019	8/16/97	Soil	bis(2-Chloroethoxy)Methane	330	UG/KG	U	330
ERS00019	8/16/97	Soil	bis(2-Chloroethyl)Ether	330	UG/KG	U	330
ERS00019	8/16/97	Soil	bis(2-Ethylhexyl)Phthalate	330	UG/KG	U	330
ERS00019	8/16/97	Soil	ButylBenzylPhthalate	78	UG/KG	J	330
ERS00019	8/16/97	Soil	Chrysene	56	UG/KG	J	330
ERS00019	8/16/97	Soil	Dibenz(a,h)Anthracene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Dibenzofuran	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Diethylphthalate	330	UG/KG	U	330
ERS00019	8/16/97	Soil	DimethylPhthalate	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Di-N-Butylphthalate	330	UG/KG	U	330
ERS00019	8/16/97	Soil	di-N-OctylPhthalate	330	UG/KG	U	330

ER Sites Analytical Data

Sample Number	Sample Date	Sample Matrix	Parameter	Result	Units	Qualifier	Detection Limit
ERS00019	8/16/97	Soil	Fluoranthene	39	UG/KG	J	330
ERS00019	8/16/97	Soil	Fluorene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Hexachlorobenzene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Hexachlorobutadiene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Hexachlorocyclopentadiene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Hexachloroethane	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Indeno(1,2,3-CD)Pyrene	240	UG/KG	J	330
ERS00019	8/16/97	Soil	Isophorone	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Naphthalene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Nitrobenzene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	N-nitroso-di-n-propylamine	330	UG/KG	U	330
ERS00019	8/16/97	Soil	n-Nitrosodiphenylamine	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Pentachlorophenol	1600	UG/KG	U	1600
ERS00019	8/16/97	Soil	Phenanthrene	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Phenol	330	UG/KG	U	330
ERS00019	8/16/97	Soil	Pyrene	67	UG/KG	J	330
ERS00019	8/16/97	Soil	Gasoline	500	UG/KG	U	500
ERS00019	8/16/97	Soil	Cesium-137	0.96	PCI/G		0.22
ERS00019	8/16/97	Soil	Potassium-40	15.0	PCI/G		2.58
ERS00019	8/16/97	Soil	Radium-226	5.33	PCI/G	U	3.39
ERS00019	8/16/97	Soil	Thallium-208	0.25	PCI/G	U	0.18
ERS00019	8/16/97	Soil	Gross Alpha	12.7	PCI/G		3.64
ERS00019	8/16/97	Soil	Gross Beta	22.4	PCI/G		3.37
ERS00020	8/16/97	Soil	Arsenic	3.9	MG/KG	J	1.0
ERS00020	8/16/97	Soil	Barium	125	MG/KG		20.0
ERS00020	8/16/97	Soil	Cadmium	0.28	MG/KG	UJ	0.50
ERS00020	8/16/97	Soil	Chromium	6.2	MG/KG		1.0
ERS00020	8/16/97	Soil	Lead	256	MG/KG		0.30
ERS00020	8/16/97	Soil	Selenium	0.37	MG/KG	U	0.50
ERS00020	8/16/97	Soil	Silver	0.18	MG/KG	U	1.0
ERS00020	8/16/97	Soil	Mercury	0.050	MG/KG	U	0.10
ERS00020	8/16/97	Soil	Diesel	25	MG/KG	U	25
ERS00020	8/16/97	Soil	Motor Oil	25	MG/KG	U	25

ER Sites Analytical Data

Sample Number	Sample Date	Sample Matrix	Parameter	Result	Units	Qualifier	Detection Limit
ERS00020	8/16/97	Soil	Aroclor-1016	33	UG/KG	U	33
ERS00020	8/16/97	Soil	Aroclor-1221	33	UG/KG	U	33
ERS00020	8/16/97	Soil	Aroclor-1232	33	UG/KG	U	33
ERS00020	8/16/97	Soil	Aroclor-1242	33	UG/KG	U	33
ERS00020	8/16/97	Soil	Aroclor-1248	33	UG/KG	U	33
ERS00020	8/16/97	Soil	Aroclor-1254	33	UG/KG	U	33
ERS00020	8/16/97	Soil	Aroclor-1260	33	UG/KG	U	33
ERS00020	8/16/97	Soil	1,1,1-Trichloroethane	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	1,1,2,2-Tetrachloroethane	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	1,1,2-Trichloroethane	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	1,1-Dichloroethane	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	1,1-Dichloroethene	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	1,2-Dichloroethane	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	1,2-Dichloroethene (total)	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	1,2-Dichloropropane	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	2-BUTANONE	20	UG/KG	UJ	20
ERS00020	8/16/97	Soil	2-Hexanone	20	UG/KG	UJ	20
ERS00020	8/16/97	Soil	4-Methyl-2-Pentanone (MIBK)	20	UG/KG	UJ	20
ERS00020	8/16/97	Soil	Acetone	6	UG/KG	J	20
ERS00020	8/16/97	Soil	Benzene	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Bromodichloromethane	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Bromoform	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Bromomethane	10	UG/KG	UJ	10
ERS00020	8/16/97	Soil	Carbon Disulfide	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Carbon Tetrachloride	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Chlorobenzene	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Chloroethane	10	UG/KG	UJ	10
ERS00020	8/16/97	Soil	Chloroform	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Chloromethane	10	UG/KG	UJ	10
ERS00020	8/16/97	Soil	cis-1,3-Dichloropropene	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Dibromochloromethane	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	EthylBenzene	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Methylene Chloride	13	UG/KG	UJ	5

ER Sites Analytical Data

Sample Number	Sample Date	Sample Matrix	Parameter	Result	Units	Qualifier	Detection Limit
ERS00020	8/16/97	Soil	Styrene	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Tetrachloroethene	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Toluene	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	trans-1,3-Dichloropropene	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Trichloroethene	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	Vinyl Chloride	10	UG/KG	UJ	10
ERS00020	8/16/97	Soil	Xylene (total)	5	UG/KG	UJ	5
ERS00020	8/16/97	Soil	1,2,4-Trichlorobenzene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	1,2-Dichlorobenzene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	1,3-Dichlorobenzene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	1,4-Dichlorobenzene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2,2'-oxybis (1-Chloropropane)	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2,4,5-Trichlorophenol	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2,4,6-Trichlorophenol	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2,4-Dichlorophenol	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2,4-Dimethylphenol	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2,4-Dinitrophenol	1600	UG/KG	U	1600
ERS00020	8/16/97	Soil	2,4-Dinitrotoluene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2,6-Dinitrotoluene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2-Chloronaphthalene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2-Chlorophenol	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2-Methylnaphthalene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2-Methylphenol	330	UG/KG	U	330
ERS00020	8/16/97	Soil	2-Nitroaniline	1600	UG/KG	U	1600
ERS00020	8/16/97	Soil	2-Nitrophenol	330	UG/KG	U	330
ERS00020	8/16/97	Soil	3,3'-Dichlorobenzidine	660	UG/KG	U	660
ERS00020	8/16/97	Soil	3-Nitroaniline	1600	UG/KG	U	1600
ERS00020	8/16/97	Soil	4,6-Dinitro-2-Methylphenol	1600	UG/KG	U	1600
ERS00020	8/16/97	Soil	4-Bromophenyl-Phenyl Ether	330	UG/KG	U	330
ERS00020	8/16/97	Soil	4-Chloro-3-Methylphenol	660	UG/KG	U	660
ERS00020	8/16/97	Soil	4-Chloroaniline	660	UG/KG	U	660
ERS00020	8/16/97	Soil	4-Chlorophenyl-PhenylEther	330	UG/KG	U	330
ERS00020	8/16/97	Soil	4-Methylphenol	330	UG/KG	U	330

ER Sites Analytical Data

Sample Number	Sample Date	Sample Matrix	Parameter	Result	Units	Qualifier	Detection Limit
ERS00020	8/16/97	Soil	4-Nitroaniline	1600	UG/KG	U	1600
ERS00020	8/16/97	Soil	4-Nitrophenol	1600	UG/KG	U	1600
ERS00020	8/16/97	Soil	Acenaphthene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Acenaphthylene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Anthracene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Benzo(a)Anthracene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Benzo(a)Pyrene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Benzo(b)Fluoranthene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Benzo(g,h,i)Perylene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Benzo(k)Fluoranthene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Benzoic Acid	1600	UG/KG	U	1600
ERS00020	8/16/97	Soil	Benzyl Alcohol	660	UG/KG	U	660
ERS00020	8/16/97	Soil	bis(2-Chloroethoxy)Methane	330	UG/KG	U	330
ERS00020	8/16/97	Soil	bis(2-Chloroethyl)Ether	330	UG/KG	U	330
ERS00020	8/16/97	Soil	bis(2-Ethylhexyl)Phthalate	330	UG/KG	U	330
ERS00020	8/16/97	Soil	ButylBenzylPhthalate	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Chrysene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Dibenz(a,h)Anthracene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Dibenzofuran	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Diethylphthalate	330	UG/KG	U	330
ERS00020	8/16/97	Soil	DimethylPhthalate	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Di-N-Butylphthalate	330	UG/KG	U	330
ERS00020	8/16/97	Soil	di-N-OctylPhthalate	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Fluoranthene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Fluorene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Hexachlorobenzene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Hexachlorobutadiene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Hexachlorocyclopentadiene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Hexachloroethane	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Indeno(1,2,3-CD)Pyrene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Isophorone	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Naphthalene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Nitrobenzene	330	UG/KG	U	330

ER Sites Analytical Data

Sample Number	Sample Date	Sample Matrix	Parameter	Result	Units	Qualifier	Detection Limit
ERS00020	8/16/97	Soil	N-nitroso-di-n-propylamine	330	UG/KG	U	330
ERS00020	8/16/97	Soil	n-Nitrosodiphenylamine	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Pentachlorophenol	1600	UG/KG	U	1600
ERS00020	8/16/97	Soil	Phenanthrene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Phenol	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Pyrene	330	UG/KG	U	330
ERS00020	8/16/97	Soil	Gasoline	500	UG/KG	U	500
ERS00020	8/16/97	Soil	Cesium-137	0.56	PCI/G		0.17
ERS00020	8/16/97	Soil	Lead-212	0.73	PCI/G		0.33
ERS00020	8/16/97	Soil	Lead-214	0.65	PCI/G	U	0.37
ERS00020	8/16/97	Soil	Potassium-40	10.2	PCI/G		2.13
ERS00020	8/16/97	Soil	Thallium-208	0.44	PCI/G		0.17
ERS00020	8/16/97	Soil	Gross Alpha	15.0	PCI/G		3.41
ERS00020	8/16/97	Soil	Gross Beta	22.9	PCI/G		3.63

ANALYTICAL RESULTS FROM 2001 SAMPLING OF CAS 22-99-06

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Las Vegas Division
4208 Arcata Way, Suite A • Las Vegas, NV 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: V1090
PROJECT NUMBER: 23081

NEL ORDER ID: L0105011

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 5/1/01.

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

Stan Van Wagenen
Laboratory Manager

5/4/01 Re issue
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

LIENT: Bechtel Nevada
ROJECT ID: V1090
ROJECT #: 23081

CLIENT ID: 3305-1
DATE SAMPLED: 4/27/01
NEL SAMPLE ID: L0105011-01

EST: Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992
ETHOD: EPA 8015M
ATRIX: Solid
LUTION: 1

ANALYST: CCS - Las Vegas Division
EXTRACTED: 5/2/01
ANALYZED: 5/2/01

ARAMETER	Result		Reporting Limit
soline Range (C8-C12)	ND		10. mg/kg
esel Range (C12-C22)	ND		10. mg/kg
l Range (C12-C34)	170	mg/kg	50. mg/kg
tal	170	mg/kg	10. mg/kg

UALITY CONTROL DATA:

urrogate	% Recovery	Acceptable Range
:tacosane	87	54 - 130

) - Not Detected

LIENT:	Bechtel Nevada	CLIENT ID:	3305-2
ROJECT ID:	V1090	DATE SAMPLED:	4/27/01
ROJECT #:	23081	NEL SAMPLE ID:	L0105011-02

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

ETHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
ATRIX:	Solid	EXTRACTED:	5/2/01
ILUTION:	1	ANALYZED:	5/2/01

ARAMETER	Result		Reporting Limit
asoline Range (C8-C12)	ND		10. mg/kg
iesel Range (C12-C22)	ND		10. mg/kg
il Range (C12-C34)	850	mg/kg	50. mg/kg
otal	850	mg/kg	10. mg/kg

UALITY CONTROL DATA:

urrogate	% Recovery	Acceptable Range
ctacosane	78	54 - 130

D - Not Detected

LIENT:	Bechtel Nevada	CLIENT ID:	3305-3
ROJECT ID:	V1090	DATE SAMPLED:	4/27/01
ROJECT #:	23081	NEL SAMPLE ID:	L0105011-03
EST:	Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992		
ETHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
ATRIX:	Solid	EXTRACTED:	5/2/01
ILUTION:	1	ANALYZED:	5/2/01

ARAMETER	Result		Reporting Limit
asoline Range (C8-C12)	ND		10. mg/kg
iesel Range (C12-C22)	ND		10. mg/kg
il Range (C12-C34)	220	mg/kg	50. mg/kg
otal	220	mg/kg	10. mg/kg

UALITY CONTROL DATA:

urrogate	% Recovery	Acceptable Range
ctacosane	102	54 - 130

D - Not Detected

LIENT:	Bechtel Nevada	CLIENT ID:	3305-4
ROJECT ID:	V1090	DATE SAMPLED:	4/27/01
ROJECT #:	23081	NEL SAMPLE ID:	L0105011-04
EST:	Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992		
ETHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
ATRIX:	Solid	EXTRACTED:	5/2/01
ILUTION:	1	ANALYZED:	5/2/01

ARAMETER	Result		Reporting Limit
asoline Range (C8-C12)	ND		10. mg/kg
iesel Range (C12-C22)	ND		10. mg/kg
il Range (C12-C34)	88	mg/kg	50. mg/kg
otal	88	mg/kg	10. mg/kg

UALITY CONTROL DATA:

urrogate	% Recovery	Acceptable Range
ctacosane	86	54 - 130

D - Not Detected

LIENT:	Bechtel Nevada	CLIENT ID:	3305-S
ROJECT ID:	V1090	DATE SAMPLED:	4/27/01
ROJECT #:	23081	NEL SAMPLE ID:	L0105011-05
EST:	Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992		
ETHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
ATRIX:	Solid	EXTRACTED:	5/2/01
ILUTION:	1	ANALYZED:	5/2/01

ARAMETER	Result		Reporting Limit
asoline Range (C8-C12)	ND		10. mg/kg
iesel Range (C12-C22)	ND		10. mg/kg
il Range (C12-C34)	77	mg/kg	50. mg/kg
otal	77	mg/kg	10. mg/kg

UALITY CONTROL DATA:

urrogate	% Recovery	Acceptable Range
ctacosane	89	54 - 130

D - Not Detected

LIENT:	Bechtel Nevada	CLIENT ID:	3305-6
ROJECT ID:	V1090	DATE SAMPLED:	4/27/01
ROJECT #:	23081	NEL SAMPLE ID:	L0105011-06
EST:	Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992		
ETHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
ATRIX:	Solid	EXTRACTED:	5/2/01
ILUTION:	1	ANALYZED:	5/2/01

ARAMETER	Result		Reporting Limit
asoline Range (C8-C12)	ND		10. mg/kg
iesel Range (C12-C22)	ND		10. mg/kg
il Range (C12-C34)	320	mg/kg	50. mg/kg
otal	320	mg/kg	10. mg/kg

UALITY CONTROL DATA:

urrogate	% Recovery	Acceptable Range
ctacosane	79	54 - 130

D - Not Detected

CLIENT:	Bechtel Nevada	CLIENT ID:	3305-7
PROJECT ID:	V1090	DATE SAMPLED:	4/27/01
PROJECT #:	23081	NEL SAMPLE ID:	L0105011-07

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

METHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
MATRIX:	Solid	EXTRACTED:	5/2/01
DILUTION:	1.3	ANALYZED:	5/2/01

PARAMETER	Result	Reporting Limit
Gasoline Range (C8-C12)	ND	13. mg/kg
Diesel Range (C12-C22)	ND	13. mg/kg
Oil Range (C12-C34)	630 mg/kg	65. mg/kg
Total	630 mg/kg	13. mg/kg

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	119	54 - 130

ND - Not Detected

This report shall not be reproduced except in full, without the written approval of the laboratory.

CLIENT:	Bechtel Nevada	CLIENT ID:	330D4-1
PROJECT ID:	V1090	DATE SAMPLED:	4/30/01
PROJECT #:	23081	NEL SAMPLE ID:	L0105011-08
TEST:	Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992		
METHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
MATRIX:	Solid	EXTRACTED:	5/2/01
DILUTION:	1	ANALYZED:	5/2/01

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

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	89	54 - 130

ND - Not Detected

LIENT:	Bechtel Nevada	CLIENT ID:	330D4-2
ROJECT ID:	V1090	DATE SAMPLED:	4/30/01
ROJECT #:	23081	NEL SAMPLE ID:	L0105011-09

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

ETHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
ATRIX:	Solid	EXTRACTED:	5/2/01
ILUTION:	1	ANALYZED:	5/2/01

ARAMETER	Result	Reporting Limit
asoline Range (C8-C12)	ND	10. mg/kg
iesel Range (C12-C22)	ND	10. mg/kg
il Range (C12-C34)	ND	50. mg/kg
otal	ND	10. mg/kg

UALITY CONTROL DATA:

urrogate	% Recovery	Acceptable Range
icosane	96	54 - 130

D - Not Detected

LIENT:	Bechtel Nevada	CLIENT ID:	330D4-3
ROJECT ID:	V1090	DATE SAMPLED:	4/30/01
ROJECT #:	23081	NEL SAMPLE ID:	L0105011-10
EST:	**Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992**		
ETHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
ATRIX:	Solid	EXTRACTED:	5/2/01
ILUTION:	1	ANALYZED:	5/2/01

ARAMETER	Result	Reporting Limit
asoline Range (C8-C12)	ND	10. mg/kg
iesel Range (C12-C22)	ND	10. mg/kg
il Range (C12-C34)	ND	50. mg/kg
otal	ND	10. mg/kg

UALITY CONTROL DATA:

urrogate	% Recovery	Acceptable Range
ctacosane	68	54 - 130

D - Not Detected

LIENT:	Bechtel Nevada	CLIENT ID:	330D4-4
ROJECT ID:	V1090	DATE SAMPLED:	4/30/01
ROJECT #:	23081	NEL SAMPLE ID:	L0105011-11
EST:	**Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992**		
IETHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
IATRIX:	Solid	EXTRACTED:	5/2/01
ILUTION:	1	ANALYZED:	5/2/01

ARAMETER	Result	Reporting Limit
asoline Range (C8-C12)	ND	10. mg/kg
iesel Range (C12-C22)	ND	10. mg/kg
il Range (C12-C34)	ND	50. mg/kg
otal	ND	10. mg/kg

UALITY CONTROL DATA:

urrogate	% Recovery	Acceptable Range
ctacosane	99	54 - 130

D - Not Detected

LIENT:	Bechtel Nevada	CLIENT ID:	330D4-5
ROJECT ID:	V1090	DATE SAMPLED:	4/30/01
ROJECT #:	23081	NEL SAMPLE ID:	L0105011-12
EST:	Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992		
ETHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
ATRIX:	Solid	EXTRACTED:	5/2/01
ILUTION:	1	ANALYZED:	5/2/01

ARAMETER	Result	Reporting Limit
asoline Range (C8-C12)	ND	10. mg/kg
iesel Range (C12-C22)	ND	10. mg/kg
il Range (C12-C34)	ND	50. mg/kg
otal	ND	10. mg/kg

UALITY CONTROL DATA:

urrogate	% Recovery	Acceptable Range
ctacosane	98	54 - 130

D - Not Detected

CLIENT:	Bechtel Nevada	CLIENT ID:	330D4-6
PROJECT ID:	V1090	DATE SAMPLED:	4/30/01
PROJECT #:	23081	NEL SAMPLE ID:	L0105011-13
TEST:	Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992		
METHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
MATRIX:	Solid	EXTRACTED:	5/2/01
DILUTION:	1	ANALYZED:	5/2/01

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

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	105	54 - 130

ND - Not Detected

CLIENT:	Bechtel Nevada	CLIENT ID:	330D4-7
PROJECT ID:	V1090	DATE SAMPLED:	4/30/01
PROJECT #:	23081	NEL SAMPLE ID:	L0105011-14
TEST:	Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992		
METHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
MATRIX:	Solid	EXTRACTED:	5/2/01
DILUTION:	1	ANALYZED:	5/2/01

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

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	91	54 - 130

ND - Not Detected

CLIENT:	Bechtel Nevada	CLIENT ID:	Method Blank
PROJECT ID:	V1090	DATE SAMPLED:	NA
PROJECT #:	23081	NEL SAMPLE ID:	010502TPHS-FP-BLK
TEST:	Total Extractable Petroleum Hydrocarbons Fuel Finger Print by EPA Method 8015M, July 1992		
METHOD:	EPA 8015M	ANALYST:	CCS - Las Vegas Division
MATRIX:	Solid	EXTRACTED:	5/2/01
		ANALYZED:	5/2/01

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

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	88	54 - 130

ND - Not Detected

Level 4 L0105011

Bechtel Nevada

ANALYTICAL SERVICES LABORATORY
SERVICES REQUEST & CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT/ CLIENT INFORMATION

Project: CAU 330 BN Org#: 2152
Charge No.: COB38E21 ASL Prog.:
Project Manager: Tom Fitzmaurice
Phone: 6168 Fax: 5-7761 M/S: NTS306

REPORT INFORMATION

Send Report to: Marcus Dixon
Phone: 5-4001 Fax: 5-7761 M/S: NTS306
Turnaround: ( ) Standard - 30 days Non-rad, 60 Days Rad, Other: ______ (X) Rush Preliminary by: 5/3/01 Final by: ______
Final report format: (X) Standard ( ) NTS-WAC ( ) Other: ______

SAMPLE INFORMATION

Sampling Site: Desert Rock Airport CAU 330
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: V1090
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: TPH 8015mod (DRO + oil range); Req Item 10.21

	ITEM	ID / DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	TPH 8015mod (DRO + oil range)
01	0	3305-1	4/27/01	9:10	Soil	X
02	1	3305-2	4/27/01	9:13	Soil	X
03	2	3305-3	4/27/01	9:15	Soil	X
04	3	3305-4	4/27/01	9:18	Soil	X
05	4	3305-5	4/27/01	9:21	Soil	X
06	5	3305-6	4/27/01	9:24	Soil	X
07	6	3305-7	4/27/01	9:27	Soil	X
	7	LAST ITEM				
	8					
	9					

SAMPLE RECEIPT INFORMATION

Are all sample containers received intact (X) Yes ( ) No
Comments: ______
Do the labels agree with this form? (X) Yes ( ) No
Comments: ______
Was a Material Clearance Tag submitted? (X) Yes ( ) No
Comments: ______

COMMENTS
(Preservative, size/volume, MS/MSD, special analysis, rad matrix code, count time, etc.)
250 ml clear glass jar

Custody Seal Intact: (Y) N None Temp: 4°C
Condition when received: Poor (Good)

Transfer of samples submitted for analyses

Sampled/Relinquished (Signature/Organization)	DATE / TIME	Received by (Signature/Organization)
Marcus Dixon BN	5/1/01 7:30am	Kevin Campbell BN
K. Campbell BN	5/1/01 0737	CD Castaneda

Complete for samples shipped to an OFF-SITE Subcontract Laboratory: NEL

Relinquished (BN Representative Signature)	DATE / TIME	Received (Courier & Tracking Info.)
CD Castaneda	5/1/01 1300	BN COURIER
Relinquished (Courier & Tracking Info.)	DATE / TIME	Received (1st tier Subcontractor Rep)
BN Courier	5/1/01 1[illegible]	[illegible signature]
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 (02/00)

Level 4 L0105011

Bechtel Nevada

ANALYTICAL SERVICES LABORATORY
SERVICES REQUEST & CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT/ CLIENT INFORMATION

Project: CAU 330 BN Org#: 2152
Charge No.: C0838E21 ASL Prog.:
Project Manager: Tom Fitzmaurice
Phone: 5-6168 Fax: M/S: NTS 306

REPORT INFORMATION

Send Report to: Marcus Dixon
Phone: 5-4001 Fax: 5-7761 M/S: NTS 306
Turnaround: ( ) Standard - 30 days Non-rad, 60 Days Rad, Other: (X) Rush Preliminary by: 5/3/01 Final by:
Final report format: (X) Standard ( ) NTS-WAC ( ) Other:

SAMPLE INFORMATION

Sampling Site: Desert Rock Airport CAU 330
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: V1090
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: TPH 8015 modified (DRO + oil); Run Item 10.21

SAMPLE RECEIPT INFORMATION

Are all sample containers received intact (X) Yes ( ) No
Comments:
Do the labels agree with this form? (X) Yes ( ) No
Comments:
Was a Material Clearance Tag submitted? (X) Yes ( ) No
Comments:

ITEM	ID / DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	TPH 8015 modified (DRO + oil)		COMMENTS (Preservative, size/volume, MS/MSD, special analysis, rad matrix code, count time, etc.)
0	330D4-1	4/30/01	1818	Soil	X	08	125 clear glass jar
1	330D4-2	↓	18:03	↓	X	09	↓
2	330D4-3	↓	17:55	↓	X	10	↓
3	330D4-4	↓	17:40	↓	X	11	↓
4	330D4-5	↓	17:50	↓	X	12	↓
5	330D4-6	↓	18:33	↓	X	13	↓
6	330D4-7	↓	1847	↓	X	14	↓
7	LAST ITEM						
8	↓						
9	↓						

Custody Seal Intact: (Y) N None Temp. 4°C
Condition when received: Poor / (Good)

Transfer of samples submitted for analyses

Sampled/Relinquished (Signature/Organization)	DATE / TIME	Received by (Signature/Organization)
Marcus Dixon BN	5/1/01 7:30	Kevin Campbell
Kevin Campbell BN	5/1/01 07:46	C A Castaneda

Complete for samples shipped to an OFF-SITE Subcontract Laboratory: NEL

Relinquished (BN Representative Signature)	DATE / TIME	Received (Courier & Tracking Info.)
CA Castaneda	5/1/01 1300	BN COURIER
Relinquished (Courier & Tracking Info.)	DATE / TIME	Received (1st tier Subcontractor Rep)
[illegible] COURIER	5/1/01 1535	[illegible]
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)

PHOTOS OF CAS 22-99-06 AT BUILDING T-1001

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U.S. Department of Energy/Nevada Operations Office
Environmental Protection Division

NEVADA TEST SITE
ENVIRONMENTAL COMPLIANCE INVENTORY FORM

Compiled by Robert E. Friedrichs Date 6/7/91

Provide the information requested below for Nevada Test Site (NTS) operations, facilities, and waste disposal sites (both active and abandoned).

1. Photo Taken, Yes X, No ____ 2. Write-up Number 22-99-L

3. Name and Organization of Contact ____

   Phone No. ____

4. Location (map coordinates, etc.) Camp Desert Rock, Area 22

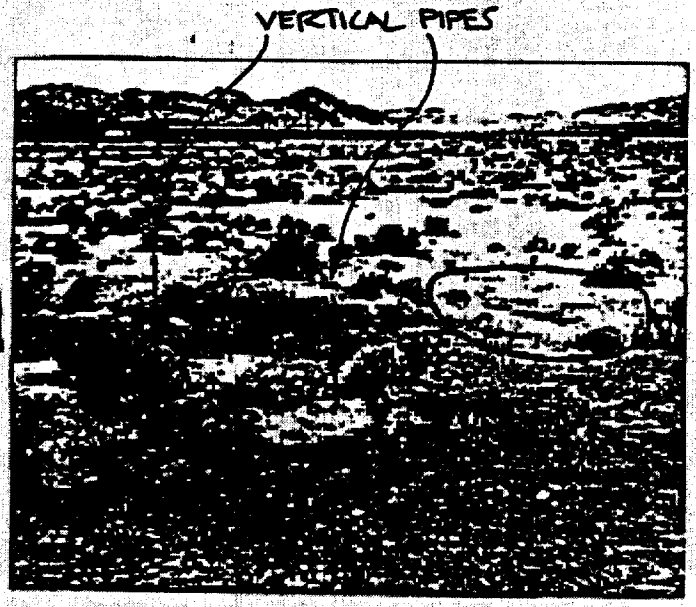
   (Original Corps of Engineers map showing exact location is attached.)

5. Active ____, Abandoned X, Inactive but not Abandoned ____

   Operated by ____

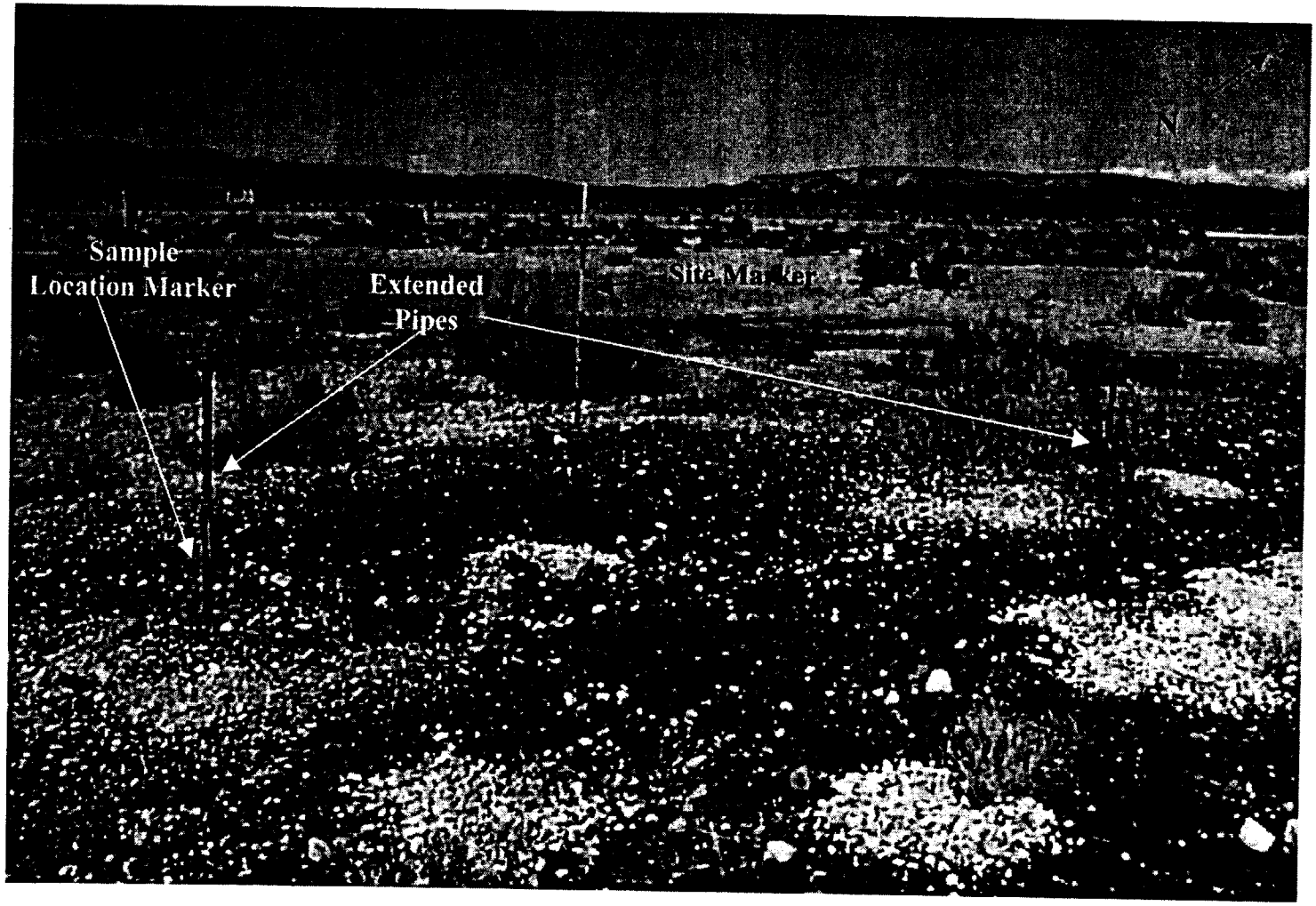
6. Description: Describe the operation, facility, or disposal site. Include information on materials used, stored, produced, disposed of. Also provide information on quantity/rate of disposal, quantity stored, and period of use or operation, etc.

West side of T-1004 pad in motor pool has small depression where liquids were poured onto ground. (Pit also contains ford fuel pump.)



Desert Rock Motor Pool oil drain pipes 6-7-91

BEST PHOTO AVAILABLE



File: 229906g1

Note: Photograph 229906p2, taken on September 23, 1997, shows the stained soil area, site marker, two pipes extending out of the ground, the red volcanic rock, and a sample location marker from the 1997 sampling effort. The concrete slab from Building T-1001 is behind the spill site. A building can be seen in the background. This photograph was taken facing west. (IT, 1997-1999)

MEMORANDUM

To: Ronald Jackson
cc: Robert Bull
FFACO File
From: Frank M. Forsgren
Subject: CAU 397, CAS 23-25-05 Sampling Report
Date: March 23, 1998

Corrective Action Unit (CAU) 397, Corrective Action Site (CAS) 23-25-05, Asphalt Oil Spill/Tar Release Site, is located approximately 200 yards north of Building 160 in Mercury, Area 23 of the Nevada Test Site (NTS). Sample team visits suggest the release is located in an ephermal drainage.

Samples ERS00007 and ERS00008 were collected from soils immediately beneath the asphalt oil/tar on August 14, 1997. One sample was collected near the head of the spill, the second sample collected approximately 100 feet downstream. The intent of the sampling was to collect soil considered most likely to be contaminated to determine the identity of potential contaminants of concern (PCOCs). The soil samples were analyzed as total concentrations by Quanterra Environmental Services.

Review of the analytical results indicate some analytes are present at concentrations above detection limits, including:

- total Volatile Organic Compounds (VOCs)
- total Semivolatile Organic Compounds (SVOCs)
- Total Petroleum Hydrocarbons (TPH)
- total *Resource Conservation and Recovery Act* (RCRA)-8 Metals
- Radionuclides

One PCOC has been identified based on the comparison of the analytical results with the various regulatory guidelines, including both screening levels and action levels, as shown on Table F-1. Only those analytes which exceeded detection limits were compared to the regulatory guidelines. Arsenic is the only analyte which has been identified as a PCOC. Arsenic exceeds the U.S. Environmental Protection Agency Preliminary Remediation Goal for residential soils.

IT digital photographs 232505p4, 232505p5, and 232505p6 were taken of the site on September 4, 1997.

Attachments:

Attachment A - Sample Collection Log
Attachment B - Field Activities Daily Log
Attachment C - Analytical Results
Attachment D - IT Tier I and Tier II Data Verification Results
Attachment E - Radiological Data Review Results
Attachment F - Potential Contaminants of Concern and Criteria Table

Attachment A
Sample Collection Log

INTERNATIONAL TECHNOLOGY CORPORATION

DATE	08 14 97
TIME	1400
PAGE ___ OF ___	
PAGE	
PROJECT NO.	771037.11020000

SAMPLE COLLECTION LOG

PROJECT NAME ER Site Spill Sampling

SAMPLE NO. ERS00007

SAMPLE LOCATION CAS 23-25-05 CAU 397

SAMPLE TYPE Soil

COMPOSITE ___ YES ✓ NO

COMPOSITE TYPE NA

DEPTH OF SAMPLE Surface

WEATHER Clear, Light Winds, ~90°F

CONTAINERS USED	AMOUNT COLLECTED
Amber Glass (AG)	2 X 4oz.
" "	7 X 8oz.

COMMENTS: Electra: Background: ___ dpm β; ___ dpm α
" : Site: ___ dpm β, ___ dpm α
HNu: Background: ___ ppm; Site ___ ppm
Soil sample was collected at base of soil piles beneath asphalt/tar spill. Tar was removed and soil was collected beneath. Soils were collected in the following order for the analyses indicated below:

ERS00007 Total VOC 1X4oz. AG
Semi V 1X8oz.
TPH-Diesel/Oil 1X8oz.
Total 8 RCRA Metals 2X8oz. *
Total PCB 1X8oz.
Gross α, β 1X4oz. *
Gamma Spec 2X8oz. *

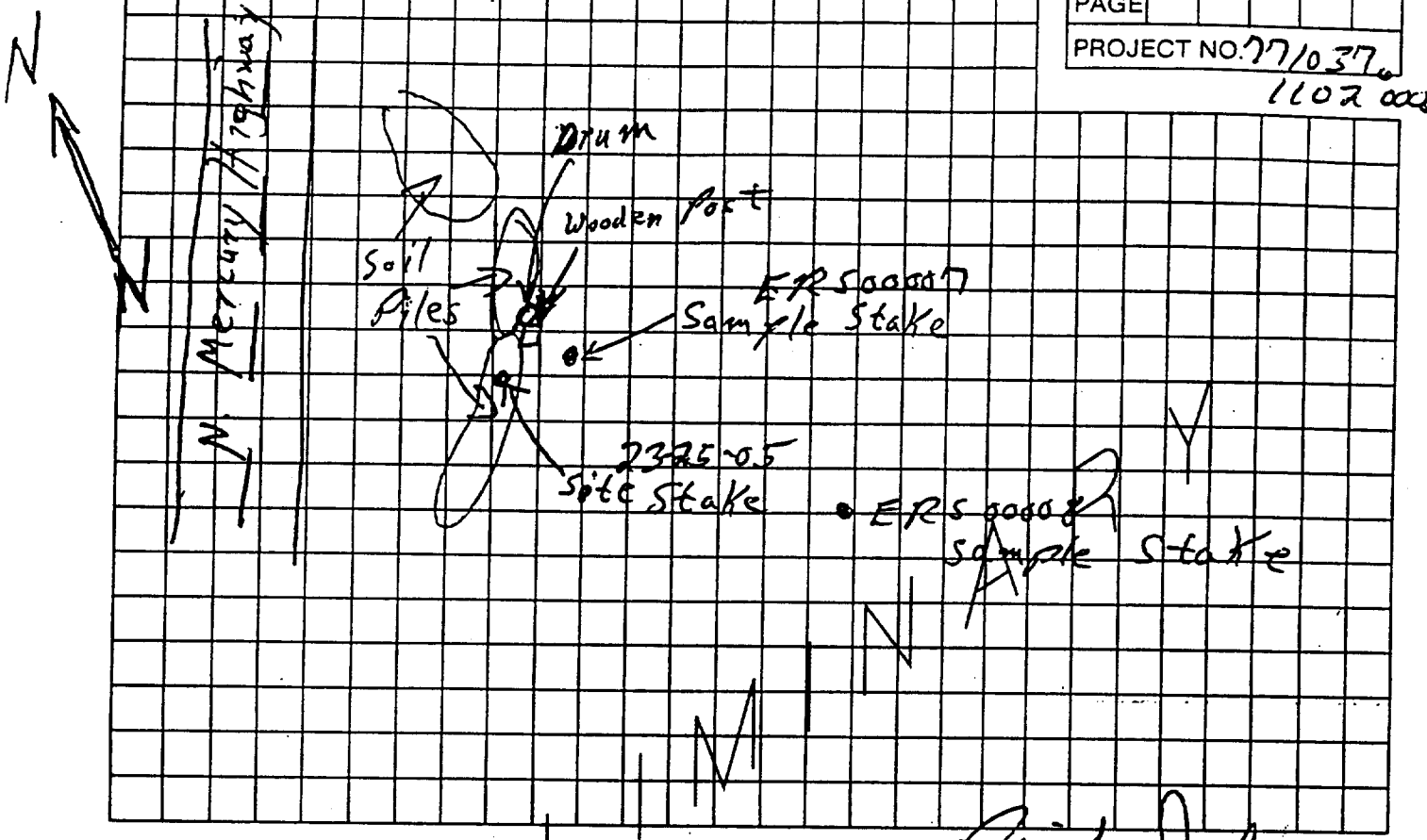
* Bottle Variance: 2X8oz. substituted for 1X16oz AG; 1X4oz. substituted for 1X2oz. Poly.
Site (Sample location) was staked with a 1X2" wooden stake with flor. orange paint and an aluminum label.

PREPARED BY: Rick Johnson

Sample collected RJJ 8-14-97 RJJ 8-14-97

COMMENTS: (Continued) Site located 52 E, 345 ft from 23-25-05 site stake to sample location stake.

DATE	0	8	1	4	9	7
TIME	1	4	0	0		
PAGE ___ OF ___						
PAGE						
PROJECT NO.	77037.1102.000					



PREPARED BY: Rick Johnson III

PRELIM

LEGEND

1. A SAMPLE COLLECTION LOG IS TO BE COMPLETED FOR EACH SAMPLE.
2. ALWAYS COMPLETE BOTH SIDES. IF SECOND SIDE IS NOT USED, DRAW A LINE THROUGH IT AND MARK N/A. FILL IN CONTROL BLOCK AND PREPARED BY.
3. ALL ENTRIES ON LOG ARE TO BE COMPLETED, IF NOT APPLICABLE MARK N/A.
4. DATE: USE MONTH/DAY/YEAR; I.E., 10/30/85
5. TIME: USE 24-HOUR CLOCK; I.E., 1835 FOR 6:35 P.M.
6. PAGE: EACH SAMPLE TEAM SHOULD NUMBER PAGE _____ OF _____ FOR THE DAY'S ACTIVITIES FOR ALL SHEETS PREPARED ON A SINGLE DAY, I.E., IF THERE ARE A TOTAL OF 24 PAGES (INCLUDING FRONT AND BACK) NUMBER 1 OF 24, 2 OF 24, ETC.
7. SAMPLE LOCATION: USE BORING OR MONITORING WELL NUMBER, GRID LOCATION (TRANSECT), SAMPLING STATION I.D., OR COORDINATE TO PHYSICAL FEATURES WITH DISTANCES. INCLUDE SKETCH IN COMMENT SECTION IF NECESSARY.
8. SAMPLE TYPE: USE THE FOLLOWING - SOIL; WATER (SURFACE OR GROUND); AIR (FILTERS, TUBES, AMBIENT, PERSONNEL); SLUDGE; DRUM CONTENTS; OIL; VEGETATION; WIPE; SEDIMENT.
9. COMPOSITE TYPE: I.E., 24-HOUR, LIST SAMPLE NUMBERS IN COMPOSITE, SPATIAL COMPOSITE.
10. DEPTH OF SAMPLE: GIVE UNITS, WRITE OUT UNITS SUCH AS INCHES, FEET. DON'T USE ' OR ".
11. WEATHER: APPROXIMATE TEMPERATURE, SUN AND MOISTURE CONDITIONS.
12. CONTAINERS USED: LIST EACH CONTAINER TYPE AS NUMBER, VOLUME, MATERIAL (E.G., 2 - IL GLASS; 4 - 40 ML GLASS VIAL; 1 - 400 ML PLASTIC; 1 - 3 INCH STEEL TUBE; 1 - 8 OZ. GLASS JAR).
13. AMOUNT COLLECTED: VOLUME IN CONTAINERS (E.G. 1/2 FULL).

INTERNATIONAL TECHNOLOGY CORPORATION

DATE	08	14	97
TIME	14	30	
PAGE ___ OF ___			
PAGE			
PROJECT NO:	771037		

11020000

SAMPLE COLLECTION LOG

PROJECT NAME ER Site Spill Sampling

SAMPLE NO. ERS 00008

SAMPLE LOCATION CAS 23-25-05 CAU 397

SAMPLE TYPE Soil

COMPOSITE ___ YES ✓ NO

COMPOSITE TYPE NA

DEPTH OF SAMPLE Surface

WEATHER Clear, Light Winds, ~95°F

CONTAINERS USED	AMOUNT COLLECTED
Amber Glass (AG)	2 X 4 oz.
↓ ↓	7 X 8 oz.

COMMENTS: Screened background and sample location for using HNu and Electra - refer to instrument logs. Sample location was southeast of first sample at this CAS (i.e., ERS00001). Soil was collected beneath tar/asphalt spill. The ~~tar~~ soil was collected at an exposed headcut where the soil profile was exposed beneath the tar material. Soil samples were collected in the following order for the analyses indicated below:

ERS00008 Total VOC - 1 X 4 oz AG
↓ Semi ↓ - 1 X 8 oz
TPH-Diesel Soil - 1 X 8 oz
Total 8 RCRA Metals - 2 X 8 oz *
Total PCB - 1 X 8 oz
Gross α, β - 1 X 4 oz. *
Gamma Spec - 2 X 8 oz ✓ *

* Bottle Variances: 2 X 8 oz. substituted for 1 X 16 oz AG; 1 X 4 oz. substituted for 1 X 2 oz Poly.

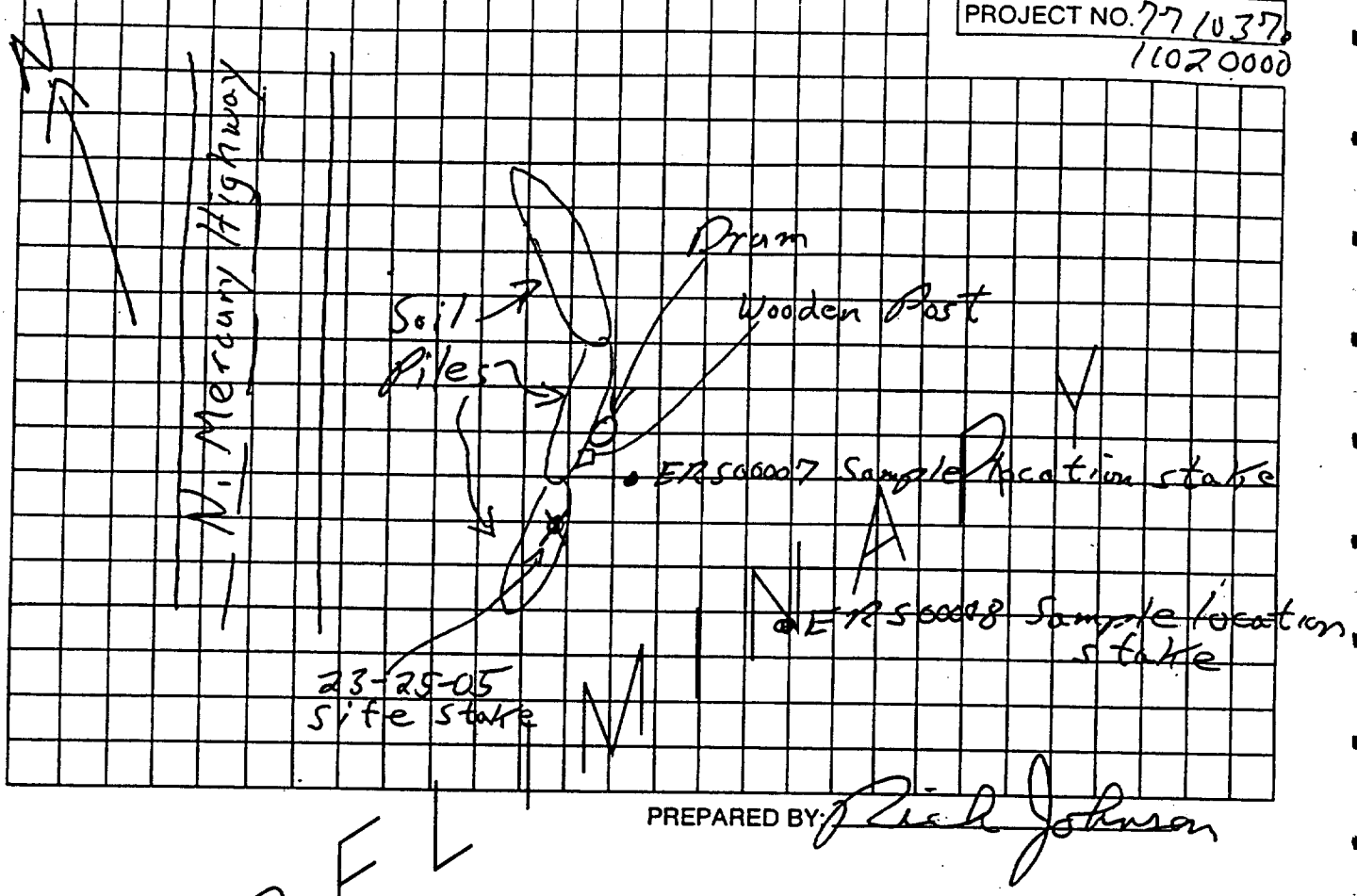
Sample location site was staked with a 1" X 2" wooden stake with florescent orange paint and labeled with an aluminum tag.

520801 - COFC.

PREPARED BY: Rick Johnson III

COMMENTS: (Continued) Sample site located S2E, 128 ft. from 23-25-05 site stake. See map below.

DATE	0	8	1	4	9	7
TIME	1	4	3	0		
PAGE ___ OF ___						
PAGE						
PROJECT NO. 77 1037.1102 0000						



PREPARED BY: Rick Johnson

PRELIM

LEGEND

1. A SAMPLE COLLECTION LOG IS TO BE COMPLETED FOR EACH SAMPLE.
2. ALWAYS COMPLETE BOTH SIDES. IF SECOND SIDE IS NOT USED, DRAW A LINE THROUGH IT AND MARK N/A. FILL IN CONTROL BLOCK AND PREPARED BY.
3. ALL ENTRIES ON LOG ARE TO BE COMPLETED. IF NOT APPLICABLE MARK N/A.
4. DATE: USE MONTH/DAY/YEAR; I.E., 10/30/85
5. TIME: USE 24-HOUR CLOCK; I.E., 1835 FOR 6:35 P.M.
6. PAGE: EACH SAMPLE TEAM SHOULD NUMBER PAGE _____ OF _____ FOR THE DAY'S ACTIVITIES FOR ALL SHEETS PREPARED ON A SINGLE DAY, I.E., IF THERE ARE A TOTAL OF 24 PAGES (INCLUDING FRONT AND BACK) NUMBER 1 OF 24, 2 OF 24, ETC.
7. SAMPLE LOCATION: USE BORING OR MONITORING WELL NUMBER, GRID LOCATION (TRANSECT), SAMPLING STATION I.D., OR COORDINATE TO PHYSICAL FEATURES WITH DISTANCES. INCLUDE SKETCH IN COMMENT SECTION IF NECESSARY.
8. SAMPLE TYPE: USE THE FOLLOWING - SOIL; WATER (SURFACE OR GROUND); AIR (FILTERS, TUBES, AMBIENT, PERSONNEL); SLUDGE; DRUM CONTENTS; OIL; VEGETATION; WIPE; SEDIMENT.
9. COMPOSITE TYPE: I.E., 24-HOUR, LIST SAMPLE NUMBERS IN COMPOSITE, SPATIAL COMPOSITE.
10. DEPTH OF SAMPLE: GIVE UNITS, WRITE OUT UNITS SUCH AS INCHES, FEET. DON'T USE ' OR ".
11. WEATHER: APPROXIMATE TEMPERATURE, SUN AND MOISTURE CONDITIONS.
12. CONTAINERS USED: LIST EACH CONTAINER TYPE AS NUMBER, VOLUME, MATERIAL (E.G., 2 - 1L GLASS; 4 - 40 ML GLASS VIAL; 1 - 400 ML PLASTIC; 1 - 3 INCH STEEL TUBE; 1 - 8 OZ. GLASS JAR).
13. AMOUNT COLLECTED: VOLUME IN CONTAINERS (E.G. 1/2 FULL).

Attachment B
Field Activities Daily Log

INTERNATIONAL TECHNOLOGY CORPORATION

DAILY LOG | DATE 8 14 97 | NO. | SHEET 1 OF 1

FIELD ACTIVITY DAILY LOG

PROJECT NAME ER Site Spill Sampling | PROJECT NO. 777137.1102.000

FIELD ACTIVITY SUBJECT: Spill Sampling 8-14-97 Page 10

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 - Loaded Gear. Calibrated HNu; Calib. Electra - Refer Calib. Log
0715 - At CAS 23-25-01; Health and Safety Tailgate Mtg
① Electra: 51.8 dpm α ; β 1.42 K dpm ; - Background
62.2 dpm α ; β 1.22 K dpm ; - Site
② HNu: 1.4 ppm - Background
1.6 ppm - Site
Assigned Sample Numbers ER500001 - ER500040
③ Collected Sample ER500003 - Soil
" " ER500004 - Trip Blank
Refer to Sample Collect. Log and Chain of Custody
0800 - Off site CAS 23-25-02
0900-0940: Attempted to Located another HNu
0940 - At CAS 23-25-02
Recalib HNu; Measured HNu & Electra; Collected Soil samples ER500005
1120 - off site CAS 23-25-02; Refer to Sample Collection Log & Chain of Custody
1121 - On site CAS 23-25-03. Checked backgr. and site w/ HNu & Electra (refer to logs); Collected Soil sample ER500006. Refer to Sample Collection Log and Chain of Custody
1200 - Off site CAS 23-25-03;
1200-1250: Lunch Break;
1250-1310: Housing Arrangements for weekend.
1310-1315: Unload equip. @ storage trailer
1315: At CAS 23-25-05. Refer to FAOL prepared by F. Forsgren; from this point on the two sample teams worked together;

VISITORS ON SITE:

NA

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.

16 oz. Sample bottles - Subst 2 x 8 oz AG
2 oz Poly " - Subst 1 x 40 z AG

WEATHER CONDITIONS: Clear, Calm, ~80°F @ 0715;

IMPORTANT TELEPHONE CALLS:

NA

IT PERSONNEL ON SITE: F. Forsgren, J. Quarles, S. Morgenmeier, C. Spicer, R. Johnson

SIGNATURE Rich Johnson DATE: 8-14-97

INTERNATIONAL TECHNOLOGY CORPORATION

FIELD ACTIVITY DAILY LOG

DAILY LOG | DATE 8 14 87 | NO. | SHEET 1 OF 2

PROJECT NAME ER Sites Spill Sampling | PROJECT NO. 771037.1102.0000

FIELD ACTIVITY SUBJECT: Soil sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

07:00 Load equipment. Discuss days activities and goals.

07:15 At CAS 23-25-01. Calibrate HNu + Electra. Tailgate safety meeting. Multiple markers 23-25-01 and 23-02-02 on south center of pad. Field screen. Stains present as noted in Lab. Stains occur on asphalt and blow/wash sand. No hydrocarbon odor noted. ~~Sample~~ ~~Composite~~ Sample ERS 00003 collected from North, ~~west, and~~ south side of pad at distance of 1-2 feet from pad near east tank footing. Collected at 0800.

0830 ~~Collected off~~ Collected ERS-00004 trip blank, prepared by lab.

0845 Calls for PID, pick up at Medical Facility - broken and not available. Check other on-site sources for PID. None available.

0945 At CAS 23-25-02. Perform radiation and organic vapor surveys.

1015 Lv CAS 23-25-02 to pick up equipment and supplies. Other crews conducting sampling.

1035 Area 6 Road Repair. Check Electra, try to get replacement HNu.

1120 Arrive Area 6 ITLV storage. Load up materials for transfer to USGS trailer in Mercury.

1230 At Mercury - Break for lunch. Call for HNu

1300 Transfer materials to USGS trailer.

1320 At CAS 23-25-05. Perform background check. Collect ESR-00007 at 1400 and ESR 00008 at 1430.

1500 At CAS - 23-22-01. No pallets observed. Minor paint spots/splashes observed on southwest corner of west trailer. Total impacted area << 1 ft². Not sampled - does not meet collection criteria. Stake laying on ground ~ 100 ft southwest of trailers.

1545 At CAS 23-01-02. Two ASTs. Active. No stain or odor. No Sample.

VISITORS ON SITE:

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
2-8oz AG bottles substituted for 1-16oz AG bottle.
1-4oz AG bottle substituted for 2-oz poly bottle. Waiting for bottles from lab.

WEATHER CONDITIONS:
Mostly clear, 80's am, 90's pm

IMPORTANT TELEPHONE CALLS:

IT PERSONNEL ON SITE: F. Fonseca, R. Johnson, T. Quarles, C. Spua, S. Mergenmeier

SIGNATURE Frank MF DATE: 8/14/87

INTERNATIONAL TECHNOLOGY CORPORATION

FIELD ACTIVITY DAILY LOG

DAILY LOG | DATE 8 14 97 | NO. | SHEET 2 OF 2

PROJECT NAME ER Sites Spill Sampling | PROJECT NO. 771037.1102000

FIELD ACTIVITY SUBJECT: Soil Sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1600 Return Mercury. Stop work.
1730 Organize Sample Collection Logs.
1830 Break for meal.
2000 Plan activities for tomorrow, review CAS files.
2130 Finish for day.

PRELIMINARY

VISITORS ON SITE:

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
as previous page

WEATHER CONDITIONS:
as previous page

IMPORTANT TELEPHONE CALLS:

IT PERSONNEL ON SITE: Foreman, Johnson, Quarles, Spicer, Management

SIGNATURE Frank M

DATE: 8/14/97

INTERNATIONAL TECHNOLOGY CORPORATION

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	9	4	97
	NO.			
	SHEET	1	OF	1

PROJECT NAME ER Sites Spill Sampling | PROJECT NO. 771037.1102.0000

FIELD ACTIVITY SUBJECT: Site Photodocumentation

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0900 Lv ITLV office for NTS with Jeff Whitesides. Get gas and lunch.
1030 An NTS drop off sample for Lowell Willie. Hold tailgate safety meeting.
1045 An 23-25-05. 3 photos
1115 An 23-22-01. 2 photos. Not previously sampled due to limited extent of paint spills. CAS marker loose on the ground - needs to be replaced.
1125 An 23-25-01. 1 photo.
1200 An 23-25-02. aka 23-~~25~~ 21-03 on adjacent CAS marker. 1 photo.
1230 An 23-25-03. 2 photos
1270 An 23-21-01. - skid shots. 3 photos
1250 An 23-01-02 - tank farm. 3 photos.
1340 An 05-20-02 - Not sampled due to perceived radiation danger from tritium evaporation ponds. Difficult to locate ponds after locating marker. Earthwork has obscured berms and/or pond margins. 2 photos
1400 An 05-07-01. 1 photo. Pond apparently receives outfall from floor drains in Bldg 5-6 and concrete pad west of Bldg 5-6.
1440 An 26-03-01. 1 photo.
1455 An 26-99-03. 1 photo
1510 An 26-09-01. 2 photos. Not sampled. Washdown area and sump concrete have no material available to sample.
1530 Depart 26-07-01. for Las Vegas

VISITORS ON SITE:

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.

WEATHER CONDITIONS:
Clear → partly cloudy, 80's → 90's, still to light breeze

IMPORTANT TELEPHONE CALLS:

IT PERSONNEL ON SITE: Frank Fonsgren, Jeff Whitesides

SIGNATURE Frank Fonsgren DATE: 9/4/97

PRELIMINARY

Attachment C
Analytical Results

CAU 397, CAS 23-25-05 Total Volatile Organic Compounds Analysis (by EPA Method 8260A)

03-Apr-98

SAMPLE NUMBER	SAMPLE DATE	PARAMETER	RESULT	UNITS	DETECTION LIMIT	LAB QUALIFIER	IT QUALIFIE
ERS00007	8/14/97	1,1,1-Trichloroethane	5	UG/KG	5	U	
ERS00007	8/14/97	1,1,2,2-Tetrachloroethane	5	UG/KG	5	U	
ERS00007	8/14/97	1,1,2-Trichloroethane	5	UG/KG	5	U	
ERS00007	8/14/97	1,1-Dichloroethane	5	UG/KG	5	U	
ERS00007	8/14/97	1,1-Dichloroethene	5	UG/KG	5	U	
ERS00007	8/14/97	1,2-Dichloroethane	5	UG/KG	5	U	
ERS00007	8/14/97	1,2-Dichloroethene (total)	5	UG/KG	5	U	
ERS00007	8/14/97	1,2-Dichloropropane	5	UG/KG	5	U	
ERS00007	8/14/97	2-Butanone (MEK)	20	UG/KG	20	U	
ERS00007	8/14/97	2-Hexanone	20	UG/KG	20	U	
ERS00007	8/14/97	4-Methyl-2-Pentanone (MIBK)	20	UG/KG	20	U	
ERS00007	8/14/97	Acetone	20	UG/KG	20	U	
ERS00007	8/14/97	Benzene	5	UG/KG	5	U	
ERS00007	8/14/97	Bromodichloromethane	5	UG/KG	5	U	
ERS00007	8/14/97	Bromoform	5	UG/KG	5	U	
ERS00007	8/14/97	Bromomethane	10	UG/KG	10	U	
ERS00007	8/14/97	Carbon Disulfide	5	UG/KG	5	U	
ERS00007	8/14/97	Carbon Tetrachloride	5	UG/KG	5	U	
ERS00007	8/14/97	Chlorobenzene	5	UG/KG	5	U	
ERS00007	8/14/97	Chloroethane	10	UG/KG	10	U	
ERS00007	8/14/97	Chloroform	5	UG/KG	5	U	
ERS00007	8/14/97	Chloromethane	10	UG/KG	10	U	
ERS00007	8/14/97	cis-1,3-Dichloropropene	5	UG/KG	5	U	
ERS00007	8/14/97	Dibromochloromethane	5	UG/KG	5	U	
ERS00007	8/14/97	EthylBenzene	5	UG/KG	5	U	
ERS00007	8/14/97	Methylene Chloride	5	UG/KG	5	U	
ERS00007	8/14/97	Styrene	5	UG/KG	5	U	
ERS00007	8/14/97	Tetrachloroethene	5	UG/KG	5	U	
ERS00007	8/14/97	Toluene	5	UG/KG	5		
ERS00007	8/14/97	trans-1,3-Dichloropropene	5	UG/KG	5	U	
ERS00007	8/14/97	Trichloroethene	5	UG/KG	5	U	
ERS00007	8/14/97	Vinyl Chloride	10	UG/KG	10	U	
ERS00007	8/14/97	Xylene (total)	5	UG/KG	5	U	
ERS00008	8/14/97	1,1,1-Trichloroethane	5	UG/KG	5	U	
ERS00008	8/14/97	1,1,2,2-Tetrachloroethane	5	UG/KG	5	U	
ERS00008	8/14/97	1,1,2-Trichloroethane	5	UG/KG	5	U	
ERS00008	8/14/97	1,1-Dichloroethane	5	UG/KG	5	U	
ERS00008	8/14/97	1,1-Dichloroethene	5	UG/KG	5	U	
ERS00008	8/14/97	1,2-Dichloroethane	5	UG/KG	5	U	
ERS00008	8/14/97	1,2-Dichloroethene (total)	5	UG/KG	5	U	
ERS00008	8/14/97	1,2-Dichloropropane	5	UG/KG	5	U	
ERS00008	8/14/97	2-Butanone (MEK)	20	UG/KG	20	U	
ERS00008	8/14/97	2-Hexanone	20	UG/KG	20	U	
ERS00008	8/14/97	4-Methyl-2-Pentanone (MIBK)	20	UG/KG	20	U	
ERS00008	8/14/97	Acetone	12	UG/KG	20	U	
ERS00008	8/14/97	Benzene	5	UG/KG	5	U	
ERS00008	8/14/97	Bromodichloromethane	5	UG/KG	5	U	
ERS00008	8/14/97	Bromoform	5	UG/KG	5	U	
ERS00008	8/14/97	Bromomethane	10	UG/KG	10	U	

SAMPLE NUMBER	SAMPLE DATE	PARAMETER	RESULT	UNITS	DETECTION LIMIT	LAB QUALIFIER	IT QUALIFI
ERS00008	8/14/97	Carbon Disulfide	5	UG/KG	5	U	
ERS00008	8/14/97	Carbon Tetrachloride	5	UG/KG	5	U	
ERS00008	8/14/97	Chlorobenzene	5	UG/KG	5	U	
ERS00008	8/14/97	Chloroethane	10	UG/KG	10	U	
ERS00008	8/14/97	Chloroform	5	UG/KG	5	U	
ERS00008	8/14/97	Chloromethane	10	UG/KG	10	U	
ERS00008	8/14/97	cis-1,3-Dichloropropene	5	UG/KG	5	U	
ERS00008	8/14/97	Dibromochloromethane	5	UG/KG	5	U	
ERS00008	8/14/97	EthylBenzene	5	UG/KG	5	U	
ERS00008	8/14/97	Methylene Chloride	5	UG/KG	5	U	
ERS00008	8/14/97	Styrene	5	UG/KG	5	U	
ERS00008	8/14/97	Tetrachloroethene	5	UG/KG	5	U	
ERS00008	8/14/97	Toluene	5	UG/KG	5		
ERS00008	8/14/97	trans-1,3-Dichloropropene	5	UG/KG	5	U	
ERS00008	8/14/97	Trichloroethene	5	UG/KG	5	U	
ERS00008	8/14/97	Vinyl Chloride	10	UG/KG	10	U	
ERS00008	8/14/97	Xylene (total)	5	UG/KG	5	U	

CAU 397, CAS 23-25-05 Total Semivolatile Organic Compounds Analysis (by EPA Method 8270)

03-Apr-98

SAMPLE NUMBER	SAMPLE DATE	PARAMETER	RESULT	UNITS	DETECTION LIMIT	LAB QUALIFIER	IT QUALIF
ERS00007	8/14/97	1,2,4-Trichlorobenzene	330	UG/KG	330	U	
ERS00007	8/14/97	1,2-Dichlorobenzene	330	UG/KG	330	U	
ERS00007	8/14/97	1,3-Dichlorobenzene	330	UG/KG	330	U	
ERS00007	8/14/97	1,4-Dichlorobenzene	330	UG/KG	330	U	
ERS00007	8/14/97	2,2'-oxybis (1-Chloropropane)	330	UG/KG	330	U	
ERS00007	8/14/97	2,4,5-Trichlorophenol	330	UG/KG	330	U	
ERS00007	8/14/97	2,4,6-Trichlorophenol	330	UG/KG	330	U	
ERS00007	8/14/97	2,4-Dichlorophenol	330	UG/KG	330	U	
ERS00007	8/14/97	2,4-Dimethylphenol	330	UG/KG	330	U	
ERS00007	8/14/97	2,4-Dinitrophenol	1600	UG/KG	1600	U	
ERS00007	8/14/97	2,4-Dinitrotoluene	330	UG/KG	330	U	
ERS00007	8/14/97	2,6-Dinitrotoluene	330	UG/KG	330	U	
ERS00007	8/14/97	2-Chloronaphthalene	330	UG/KG	330	U	
ERS00007	8/14/97	2-Chlorophenol	330	UG/KG	330	U	
ERS00007	8/14/97	2-Methylnaphthalene	330	UG/KG	330	U	
ERS00007	8/14/97	2-Methylphenol	330	UG/KG	330	U	
ERS00007	8/14/97	2-Nitroaniline	1600	UG/KG	1600	U	
ERS00007	8/14/97	2-Nitrophenol	330	UG/KG	330	U	
ERS00007	8/14/97	3,3'-Dichlorobenzidine	660	UG/KG	660	U	
ERS00007	8/14/97	3-Nitroaniline	1600	UG/KG	1600	U	
ERS00007	8/14/97	4,6-Dinitro-2-Methylphenol	1600	UG/KG	1600	U	
ERS00007	8/14/97	4-Bromophenyl-Phenyl Ether	330	UG/KG	330	U	
ERS00007	8/14/97	4-Chloro-3-Methylphenol	660	UG/KG	660	U	
ERS00007	8/14/97	4-Chloroaniline	660	UG/KG	660	U	
ERS00007	8/14/97	4-Chlorophenyl-PhenylEther	330	UG/KG	330	U	
ERS00007	8/14/97	4-Methylphenol	330	UG/KG	330	U	
ERS00007	8/14/97	4-Nitroaniline	1600	UG/KG	1600	U	
ERS00007	8/14/97	4-Nitrophenol	1600	UG/KG	1600	U	
ERS00007	8/14/97	Acenaphthene	330	UG/KG	330	U	
ERS00007	8/14/97	Acenaphthylene	330	UG/KG	330	U	
ERS00007	8/14/97	Anthracene	330	UG/KG	330	U	
ERS00007	8/14/97	Benzo(a)Anthracene	330	UG/KG	330	U	
ERS00007	8/14/97	Benzo(a)Pyrene	330	UG/KG	330	U	
ERS00007	8/14/97	Benzo(b)Fluoranthene	330	UG/KG	330	U	
ERS00007	8/14/97	Benzo(g,h,i)Perylene	330	UG/KG	330	U	
ERS00007	8/14/97	Benzo(k)Fluoranthene	330	UG/KG	330	U	
ERS00007	8/14/97	Benzoic Acid	1600	UG/KG	1600	U	
ERS00007	8/14/97	Benzyl Alcohol	660	UG/KG	660	U	
ERS00007	8/14/97	bis(2-Chloroethoxy)Methane	330	UG/KG	330	U	
ERS00007	8/14/97	bis(2-Chloroethyl)Ether	330	UG/KG	330	U	
ERS00007	8/14/97	bis(2-Ethylhexyl)Phthalate	380	UG/KG	330		
ERS00007	8/14/97	ButylBenzylPhthalate	450	UG/KG	330		
ERS00007	8/14/97	Chrysene	330	UG/KG	330	U	
ERS00007	8/14/97	Di-N-Butylphthalate	330	UG/KG	330	U	
ERS00007	8/14/97	di-N-OctylPhthalate	330	UG/KG	330	U	
ERS00007	8/14/97	Dibenz(a,h)Anthracene	330	UG/KG	330	U	
ERS00007	8/14/97	Dibenzofuran	330	UG/KG	330	U	
ERS00007	8/14/97	Diethylphthalate	330	UG/KG	330	U	
ERS00007	8/14/97	DimethylPhthalate	330	UG/KG	330	U	
ERS00007	8/14/97	Fluoranthene	330	UG/KG	330	U	

FROM PLASTICS IN SAMPLING EQUIP.

SAMPLE NUMBER	SAMPLE DATE	PARAMETER	RESULT	UNITS	DETECTION LIMIT	LAB QUALIFIER	IT QUALIF
ERS00007	8/14/97	Fluorene	330	UG/KG	330	U	
ERS00007	8/14/97	Hexachlorobenzene	330	UG/KG	330	U	
ERS00007	8/14/97	Hexachlorobutadiene	330	UG/KG	330	U	
ERS00007	8/14/97	Hexachlorocyclopentadiene	330	UG/KG	330	U	
ERS00007	8/14/97	Hexachloroethane	330	UG/KG	330	U	
ERS00007	8/14/97	Indeno(1,2,3-CD)Pyrene	330	UG/KG	330	U	
ERS00007	8/14/97	Isophorone	330	UG/KG	330	U	
ERS00007	8/14/97	N-nitroso-di-n-propylamine	330	UG/KG	330	U	
ERS00007	8/14/97	n-Nitrosodiphenylamine	330	UG/KG	330	U	
ERS00007	8/14/97	Naphthalene	330	UG/KG	330	U	
ERS00007	8/14/97	Nitrobenzene	330	UG/KG	330	U	
ERS00007	8/14/97	Pentachlorophenol	1600	UG/KG	1600	U	
ERS00007	8/14/97	Phenanthrene	330	UG/KG	330	U	
ERS00007	8/14/97	Phenol	330	UG/KG	330	U	
ERS00007	8/14/97	Pyrene	330	UG/KG	330	U	
ERS00008	8/14/97	1,2,4-Trichlorobenzene	330	UG/KG	330	U	
ERS00008	8/14/97	1,2-Dichlorobenzene	330	UG/KG	330	U	
ERS00008	8/14/97	1,3-Dichlorobenzene	330	UG/KG	330	U	
ERS00008	8/14/97	1,4-Dichlorobenzene	330	UG/KG	330	U	
ERS00008	8/14/97	2,2'-oxybis (1-Chloropropane)	330	UG/KG	330	U	
ERS00008	8/14/97	2,4,5-Trichlorophenol	330	UG/KG	330	U	
ERS00008	8/14/97	2,4,6-Trichlorophenol	330	UG/KG	330	U	
ERS00008	8/14/97	2,4-Dichlorophenol	330	UG/KG	330	U	
ERS00008	8/14/97	2,4-Dimethylphenol	330	UG/KG	330	U	
ERS00008	8/14/97	2,4-Dinitrophenol	1600	UG/KG	1600	U	
ERS00008	8/14/97	2,4-Dinitrotoluene	330	UG/KG	330	U	
ERS00008	8/14/97	2,6-Dinitrotoluene	330	UG/KG	330	U	
ERS00008	8/14/97	2-Chloronaphthalene	330	UG/KG	330	U	
ERS00008	8/14/97	2-Chlorophenol	330	UG/KG	330	U	
ERS00008	8/14/97	2-Methylnaphthalene	330	UG/KG	330	U	
ERS00008	8/14/97	2-Methylphenol	330	UG/KG	330	U	
ERS00008	8/14/97	2-Nitroaniline	1600	UG/KG	1600	U	
ERS00008	8/14/97	2-Nitrophenol	330	UG/KG	330	U	
ERS00008	8/14/97	3,3'-Dichlorobenzidine	660	UG/KG	660	U	
ERS00008	8/14/97	3-Nitroaniline	1600	UG/KG	1600	U	
ERS00008	8/14/97	4,6-Dinitro-2-Methylphenol	1600	UG/KG	1600	U	
ERS00008	8/14/97	4-Bromophenyl-Phenyl Ether	330	UG/KG	330	U	
ERS00008	8/14/97	4-Chloro-3-Methylphenol	660	UG/KG	660	U	
ERS00008	8/14/97	4-Chloroaniline	660	UG/KG	660	U	
ERS00008	8/14/97	4-Chlorophenyl-PhenylEther	330	UG/KG	330	U	
ERS00008	8/14/97	4-Methylphenol	330	UG/KG	330	U	
ERS00008	8/14/97	4-Nitroaniline	1600	UG/KG	1600	U	
ERS00008	8/14/97	4-Nitrophenol	1600	UG/KG	1600	U	
ERS00008	8/14/97	Acenaphthene	330	UG/KG	330	U	
ERS00008	8/14/97	Acenaphthylene	330	UG/KG	330	U	
ERS00008	8/14/97	Anthracene	330	UG/KG	330	U	
ERS00008	8/14/97	Benzo(a)Anthracene	330	UG/KG	330	U	
ERS00008	8/14/97	Benzo(a)Pyrene	330	UG/KG	330	U	
ERS00008	8/14/97	Benzo(b)Fluoranthene	330	UG/KG	330	U	
ERS00008	8/14/97	Benzo(g,h,i)Perylene	330	UG/KG	330	U	
ERS00008	8/14/97	Benzo(k)Fluoranthene	330	UG/KG	330	U	
ERS00008	8/14/97	Benzoic Acid	1600	UG/KG	1600	U	
ERS00008	8/14/97	Benzyl Alcohol	660	UG/KG	660	U	
ERS00008	8/14/97	bis(2-Chloroethoxy)Methane	330	UG/KG	330	U	
ERS00008	8/14/97	bis(2-Chloroethyl)Ether	330	UG/KG	330	U	

SAMPLE NUMBER	SAMPLE DATE	PARAMETER	RESULT	UNITS	DETECTION LIMIT	LAB QUALIFIER	IT QUALI
ERS00008	8/14/97	bis(2-Ethylhexyl)Phthalate	390	UG/KG	330		
ERS00008	8/14/97	ButylBenzylPhthalate	330	UG/KG	330	U	
ERS00008	8/14/97	Chrysene	330	UG/KG	330	U	
ERS00008	8/14/97	Di-N-Butylphthalate	330	UG/KG	330	U	
ERS00008	8/14/97	di-N-OctylPhthalate	330	UG/KG	330	U	
ERS00008	8/14/97	Dibenz(a,h)Anthracene	330	UG/KG	330	U	
ERS00008	8/14/97	Dibenzofuran	330	UG/KG	330	U	
ERS00008	8/14/97	Diethylphthalate	330	UG/KG	330	U	
ERS00008	8/14/97	DimethylPhthalate	330	UG/KG	330	U	
ERS00008	8/14/97	Fluoranthene	330	UG/KG	330	U	
ERS00008	8/14/97	Fluorene	330	UG/KG	330	U	
ERS00008	8/14/97	Hexachlorobenzene	330	UG/KG	330	U	
ERS00008	8/14/97	Hexachlorobutadiene	330	UG/KG	330	U	
ERS00008	8/14/97	Hexachlorocyclopentadiene	330	UG/KG	330	U	
ERS00008	8/14/97	Hexachloroethane	330	UG/KG	330	U	
ERS00008	8/14/97	Indeno(1,2,3-CD)Pyrene	330	UG/KG	330	U	
ERS00008	8/14/97	Isophorone	330	UG/KG	330	U	
ERS00008	8/14/97	N-nitroso-di-n-propylamine	330	UG/KG	330	U	
ERS00008	8/14/97	n-Nitrosodiphenylamine	330	UG/KG	330	U	
ERS00008	8/14/97	Naphthalene	330	UG/KG	330	U	
ERS00008	8/14/97	Nitrobenzene	330	UG/KG	330	U	
ERS00008	8/14/97	Pentachlorophenol	1600	UG/KG	1600	U	
ERS00008	8/14/97	Phenanthrene	330	UG/KG	330	U	
ERS00008	8/14/97	Phenol	330	UG/KG	330	U	
ERS00008	8/14/97	Pyrene	330	UG/KG	330	U	

PRELIM

CAU 397, CAS 23-25-05 Total Petroleum Hydrocarbons Analysis (by EPA Method 8015)

03-Apr-98

SAMPLE NUMBER	SAMPLE DATE	PARAMETER	RESULT	UNITS	DETECTION LIMIT	LAB QUALIFIER	IT QUA
ERS00007	8/14/97	Diesel	25	MG/KG	25	U	
ERS00007	8/14/97	Waste Oil	37	MG/KG	25		
ERS00008	8/14/97	Diesel	25	MG/KG	25	U	
ERS00008	8/14/97	Waste Oil	25	MG/KG	25	U	

CAU 397, CAS 23-25-05 Total Polychlorinated Biphenyl Analysis (by EPA Method 8015)

03-Apr-98

SAMPLE NUMBER	SAMPLE DATE	PARAMETER	RESULT	UNITS	DETECTION LIMIT	LAB QUALIFIER	IT QUALIFI
ERS00007	8/14/97	Aroclor-1016	33	UG/KG	33	U	
ERS00007	8/14/97	Aroclor-1221	33	UG/KG	33	U	
ERS00007	8/14/97	Aroclor-1232	33	UG/KG	33	U	
ERS00007	8/14/97	Aroclor-1242	33	UG/KG	33	U	
ERS00007	8/14/97	Aroclor-1248	33	UG/KG	33	U	
ERS00007	8/14/97	Aroclor-1254	33	UG/KG	33	U	
ERS00007	8/14/97	Aroclor-1260	33	UG/KG	33	U	
ERS00008	8/14/97	Aroclor-1016	33	UG/KG	33	U	
ERS00008	8/14/97	Aroclor-1221	33	UG/KG	33	U	
ERS00008	8/14/97	Aroclor-1232	33	UG/KG	33	U	
ERS00008	8/14/97	Aroclor-1242	33	UG/KG	33	U	
ERS00008	8/14/97	Aroclor-1248	33	UG/KG	33	U	
ERS00008	8/14/97	Aroclor-1254	33	UG/KG	33	U	
ERS00008	8/14/97	Aroclor-1260	33	UG/KG	33	U	

CAU 397, CAS 23-25-05 Total RCRA-8 Metals Analysis (by EPA Method 6010 and EPA 7470)

03-Apr-98

SAMPLE NUMBER	SAMPLE DATE	PARAMETER	RESULT	UNITS	DETECTION LIMIT	LAB QUALIFIER	IT QUAL
ERS00007	8/14/97	Arsenic	2.6	MG/KG	1.0		
ERS00007	8/14/97	Barium	61.5	MG/KG	20.0		
ERS00007	8/14/97	Cadmium	0.11	MG/KG	0.50	U	
ERS00007	8/14/97	Chromium	4.0	MG/KG	1.0		
ERS00007	8/14/97	Lead	5.0	MG/KG	0.30		
ERS00007	8/14/97	Mercury	0.050	MG/KG	0.10	U	
ERS00007	8/14/97	Selenium	0.37	MG/KG	0.50	U	
ERS00007	8/14/97	Silver	0.18	MG/KG	1.0	U	
ERS00008	8/14/97	Arsenic	4.3	MG/KG	1.0		
ERS00008	8/14/97	Barium	91.2	MG/KG	20.0		
ERS00008	8/14/97	Cadmium	0.070	MG/KG	0.50	U	
ERS00008	8/14/97	Chromium	7.3	MG/KG	1.0		
ERS00008	8/14/97	Lead	10.1	MG/KG	0.30		
ERS00008	8/14/97	Mercury	0.050	MG/KG	0.10	U	
ERS00008	8/14/97	Selenium	0.37	MG/KG	0.50	U	
ERS00008	8/14/97	Silver	0.18	MG/KG	1.0	U	

PRELIMINARY

CAU 397, CAS 23-25-05 Radiological Analysis (by HASL 300 SM 7110)

03-Apr-98

SAMPLE NUMBER	SAMPLE DATE	PARAMETER	RESULT	UNITS	DETECTION LIMIT	LAB QUALIFIER	IT QUALI
ERS00007	8/14/97	Cesium-137	0.31	PCI/G	0.31	U	U
ERS00007	8/14/97	Gross Alpha	7.76	PCI/G	4.44		U
ERS00007	8/14/97	Gross Beta	14.4	PCI/G	4.38		
ERS00007	8/14/97	Potassium-40	9.17	PCI/G	2.94		
ERS00007	8/14/97	Radium-224	6.43	PCI/G	3.35		U
ERS00008	8/14/97	Cesium-137	0.41	PCI/G	0.41	U	U
ERS00008	8/14/97	Gross Alpha	10.6	PCI/G	5.55		
ERS00008	8/14/97	Gross Beta	19.3	PCI/G	4.10		
ERS00008	8/14/97	Lead-212	0.50	PCI/G	0.35		U
ERS00008	8/14/97	Lead-214	0.69	PCI/G	0.31		U
ERS00008	8/14/97	Potassium-40	3.70	PCI/G	3.02		U

Note: IT Qualifier, when present, supercedes Lab Qualifier

Attachment D

IT Tier I and Tier II Data Verification Results

INTERNATIONAL TECHNOLOGY CORPORATION

Memorandum

To: File

Date: December 22, 1997

From: Syl Hersh

Project No. 772857.02010000

Subject: **SDG 15603 CHEMICAL DATA EVALUATION SUMMARY**

The chemical analytical data reported in Quanterra Laboratories SDG 15603 have been subjected to Tier I and Tier II data evaluation. The results of this evaluation are presented in the attached table:

The verified results and/or qualifiers presented in the attached table supersede those in the original report. All other results and qualifiers remain as reported by the laboratory. These changes have been entered into the ITEMS database.

Several of the volatile and semivolatile organic analytes were present at high enough levels that the samples had to be reanalyzed at significant dilutions. In reporting and using these data, the results from the dilution analyses should be used.

cc: Bob Bull
Frank Forsgren

PRELIMINARY

LV/12-22-97/G:\WPFILES\RCRA\ERSITES\15603.VAL

ERS00003	2-Butanone (MEK)	97		97	J	Surrogate recovery was outside CLP limits.
ERS00003	2-Hexanone	24		24	J	Surrogate recovery was outside CLP limits.
ERS00003	Acetone	240	BE	240	R	Value was above the standard calibration range.
ERS00003	Methylene Chloride	33		33	J	Surrogate recovery was outside CLP limits.
ERS00003	Cadmium	0.38	B	0.38	U	Value < 5 times contamination in continuing calibration/method blank.
ERS00003DL1	2-Butanone (MEK)	260	D	260		The reported value is from the dilution run.
ERS00003DL1	2-Hexanone	63	DJ	63	J	The reported value is from the dilution run.
ERS00003DL1	Acetone	110	BD	110		The reported value is from the dilution run.
ERS00003DL1	Methylene Chloride	83	D	83		The reported value is from the dilution run.
ERS00004	Acetone	4	BJ	20	U	Blank contamination.
ERS00004	Methylene Chloride	3	BJ	5	U	Blank contamination.
ERS00005	Acetone	14	BJ	20	U	Blank contamination.
ERS00005	Methylene Chloride	32		32	J	Surrogate recovery was outside CLP limits.
ERS00005	Silver	0.29	B	0.29	U	Value < 5 times contamination in continuing calibration/method blank.
ERS00005RE1	Acetone	37	B	37	J	Surrogate recovery was outside CLP limits.
ERS00005RE1	Methylene Chloride	28		28	J	Surrogate recovery was outside CLP limits.
ERS00006	2-Butanone (MEK)	22		22	J	Surrogate recovery was outside CLP limits.
ERS00006	Acetone	55	B	55	J	Surrogate recovery was outside CLP limits.
ERS00006	Methylene Chloride	34		34	J	Surrogate recovery was outside CLP limits.
ERS00006	Bis(2-Ethylhexyl)Phthalate	13000	E	13000	R	Value was above the standard calibration range.
ERS00006	Silver	0.19	B	0.19	U	Value < 5 times contamination in continuing calibration/method blank.
ERS00006DL	2,4,6-Tribromophenol	0	D	0		Surrogates diluted out.
ERS00006DL	Bis(2-Ethylhexyl)Phthalate	33000	D	33000		The reported value is from the dilution run.
ERS00006DL	Butylbenzylphthalate	1900	DJ	1900	J	The reported value is from the dilution run.
ERS00006DL	Di-N-Octylphthalate	3100	DJ	3100	J	The reported value is from the dilution run.
ERS00006RE1	2-Butanone (MEK)	26		26	J	Surrogate recovery was outside CLP limits.
ERS00006RE1	Acetone	100	B	100	J	Surrogate recovery was outside CLP limits.
ERS00006RE1	Methylene Chloride	17		17	J	Surrogate recovery was outside CLP limits.
ERS00007	Cadmium	0.11	B	0.11	U	Value < 5 times contamination in continuing calibration/method blank.
ERS00008	2-Butanone (MEK)	8	BJ	20	U	Blank contamination.
ERS00008	Acetone	12	BJ	12	U	Blank contamination.
ERS00008	Methylene Chloride	5	B	5	U	Blank contamination.
ERS00008	Cadmium	0.070	B	0.070	U	Value < 5 times contamination in continuing calibration/method blank.

PRELIM

U - Undetected
J - Estimated
R- Unusable
UJ - Undetected. The detection limit is estimated.

B (organics) - Found in the associated blank as well as in the sample
B (inorganics) - Above instrument detection limit but below method detection limit

PRELIMINARY

Attachment E
Radiological Data Review Results

From: Steven R. Adams
To: FFORSGRE
Date: 2/27/98 1:49pm
Subject: Rad Review of ER Site Sample Delivery Packages - Positive Hits > Background

Per your request I have reviewed the concentration of the radionuclides analyzed for ER site samples and compared the concentrations to that found in soil samples taken from background locations. This comparison has been performed for the Sample Delivery Packages listed below. All of the data packages have received Tier II data review and approval in the January time period. Please note that neither the data packages nor the ER site data base information that I have identifies the ER site location for any sample delivery group package or any specific sample.

Sample Delivery Group Data Package	Any Samples > Background
15643	Yes, see attachment
15718	Yes, see attachment
15603	No
15703	No
15207	No
16515	No
16494	No
16325	No
16262	No
16237	No
16062	No
15720	No

Please note - The positive samples results exceeding background for 15643 are very significant. The Cs-137 concentrations are around 50 pCi/g . The Am-241 are in the range of 14 to 17 pCi/g and suggest that there may be plutonium present in the samples. Typical plutonium to americium-241 ratios are in the range of 10 to 30, therefore the associated plutonium concentration could be as high as 140 to 510 pCi/g. No plutonium analysis was included in the data packages.

The positive lead-212 results for 15718 are not dramatic and most likely are background. No specific lead-212 analysis has been performed for background locations soil, the concentration is derived from the concentration of its parent thorium-232 concentration.

CC: MOHAGAN, KBEACH, LTRYBOSK, JWHITESI, KSCHMIDT, MFO...

Positive Samples Found in SDG#s 15643 15718 Exceeding Background

IT Sample #	Lab ID #	Parameter	Result	Error	MDC	Background	units
ERS00035	15643-003	Cs-137	48.4	6.4	0.46	0.4 - 7	pCi/g
ERS00036	15643-004	Cs-137	53	7	0.45	0.4 - 7	pCi/g
ERS00083	15643-020	Am-241	17.4	2.2	0.73	<0.04	pCi/g
ERS00052	15643-021	Am-241	13.9	1.9	0.54	<0.04	pCi/g
ERS00052	15643-021	gross alpha	209	23	3.04	10 -45	pCi/g
ERS00052	15643-021DUP	Am-241	15.4	2.1	0.7	<0.04	pCi/g
ERS00053	15643-022	gross alpha	258	28	2.98	10 -45	pCi/g
ERS00053	15643-022	Cs-137	8.09	1.22	0.44	0.4 - 7	pCi/g
ERS00128	15718-004	Pb-212	3.93	0.89	0.54	0.5 -2.4	pCi/g
ERS00129	15718-005	Pb-212	3.51	0.72	0.46	0.5 - 2.4	pCi/g
ERS00126	15718-021	Pb-212	3.29	0.79	0.58	0.5 - 2.4	pCi/g
ERS00126	15718-021DUP	Pb-212	3.92	0.97	0.67	0.5 - 2.4	pCi/g

Attachment F
Potential Contaminants of Concern and Criteria Table

Table F-1
CAU 397, CAS 23-25-05
Potential Contaminants of Concern

Analytical Method	Preliminary Remediation Goals for Residential Soil[a]	Generic Soil Screening Levels[b]	Resource Conservation and Recovery Act (RCRA)[c]	Corrective Action[d]	Toxic Substances Control Act (TSCA)[e]	Comparision of Results with NTS Background[f]	Potential Contaminants of Concern
VOCs by EPA Method 8260	None	None	None	NA	NA	NA	Toulene
SVOCs by EPA Method 8270	None	None	None	NA	NA	NA	bis(2-Ethylhexyl)Phthalate ButylBenzylPhthalate
TPH by EPA Method 8015	NA	NA	NA	None	NA	NA	Waste Oil
PCBs by EPA Method 8082	None	None	NA	NA	None	NA	None
RCRA Metals by EPA Methods 6010/7000	None	Arsenic	None	NA	NA	NA	Arsenic, Barium, Chromium, Lead
Gross Alpha/Beta by EPA 900.0	NA	NA	NA	NA	NA	None	Gross Alpha, Gross Beta
Gamma Spectroscopy by EPA 901.1	NA	NA	NA	NA	NA	None	Potassium-40

[a] *Region 9 Preliminary Remediation Goals* (U.S. EPA, 1996)
[b] *Soil Screening Guidance: Users Guide* (U.S. EPA, 1996)
[c] *Guidance on Resource Conservation and Recovery Act* (40 CFR Part 261, 1998)
[d] Corrective Action (*Nevada Administrative Code*, 1996)
[e] *Toxic Substances Control Act* (40 CFR Part 761)
[f] Comparision of Results with NTS Background
[g] *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (U.S. EPA, 1996)
[h] Standard Methods for the Examination of Water and Wastewater (APHA, 1992)
[i] *Environmental Measurements Laboratory Procedures Manual*, HASL-300 (DOE, 1992)

232505.xls

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COMMENT RESPONSES

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DOCUMENT REVIEW SHEET

Document Title/Number: Draft Streamlined Approach for Environmental Restoration Work Plan for Corrective Action Unit 330: Areas 6, 22, and 23 Tanks and Spill Sites, Nevada Test Site, Nevada.
Document Date: May 2001
Revision Number: 0
Originator/Organization: Tom Fitzmaurice, Bechtel Nevada Environmental Restoration
Date Comments Due: June 25, 2001
Reviewer/Organization: Mike McKinnon, NDEP

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
1. Table of Contents, 7.0 References, Appendix A-2	M	This appendix was not included in the plan.	Appendix A-2 is included.	Yes
2. Table of Contents, 7.0 References, Appendix A-3	M	This appendix was mislabeled as Appendix A-2.	This appendix has been labeled A-3.	Yes
3. Executive Summary, 4th bullet	M	"...a half-buried The 208-liter...". Remove "The".	The text has been modified as requested.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
4. Executive Summary, 5th bullet & Section 1.2, 1rst bullet	M	Closure for CAS 06-02-04, particularly for the inlet/outlet piping, will depend upon the characterization of the tank contents.	The text has been changed to say that the piping will be removed for disposal if COCs are identified within the tank. If COCs are not found in the tank the piping will be grouted-closed and left in place.	Yes
5. Executive Summary, 8th bullet & Section 1.2, 4th bullet	M	Closure for CAS 23-25-05 must account for the 55-gallon drum. There is nothing in the plan with reference to sampling of this drum or to indicate process knowledge of the drum contents.	The SAFER plan has been modified to include characterization of the 55-gallon drum. Disposal of this drum will be contingent on the characterization results.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
6. Section 2.1.2	M	Since the original REECo information pertaining to CA 22-99-06 identified the site adjacent to the building T-1004 concrete foundation, which is contradictory to ITLV project files, which identifies the site adjacent to the building T-1001 concrete foundation, NDEP is concerned as to whether the site has been adequately located. Please provide additional information to allay these concerns.	The Environmental Compliance Inventory Form (ECIF) compiled by REECo indicates that the spill is on the west side of building T-1004. However, the picture in the report shows the area west of building T-1001. Two vertical water pipes are in the photo. Building T-1004 does not have water pipes, building T-1001 does. The ECIF mentions the presence of a fuel pump in the depression. This fuel pump is at building T-1001. The photo from the ECIF and a more recent photo of the area next to building T-1001 have been included into Appendix A-3 for comparison.	Yes

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
7. Section 2.3.1, 3rd paragraph	M	The referenced sample results (October 3, 1998) should be included as an appendix to this plan.	The reference to the October 3, 1998 sampling event is from the IT Preliminary Assessment (ITPA) report on information characterizing this CAU. This is a typographical error in the PA report and the reference should be for October 3, 1994. This data is already provided in Appendix A-3. The text in Section 2.3.1 and everywhere else in the document has been changed to reflect the correct sampling date.	No

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
8. Section 2.3.2, 3rd paragraph	M	For CAS 22-99-06, in addition to the benzo(a)pyrene, arsenic, lead and waste oil, Appendix A-3 indicates barium, cadmium, and chromium are also present at concentrations in excess of TCLP standards.	The analysis conducted was for total RCRA metals not TCLP. Therefore the TCLP standard is not directly applicable. However the accepted convention is to divide the total concentrations by 20 to develop a conservative estimate of what the TCLP value would be. Dividing the concentrations by 20 is conservative because it assumes that the total quantity being analyzed is leachable. Dividing the total concentrations reported for barium, cadmium, and chromium yield values below the RCRA TCLP standards. Therefore, for waste disposal purposes the soils from CAS 22-99-06 are not hazardous.	No

a. Comment Types: M=Mandatory S=Suggested

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Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
9. Section 2.4	M	40 CFR 261.24, Table 1, Maximum Concentration of Contaminates for Toxicity Characteristic, should be included as a closure standard.	40 CFR 261.24, Table 1 is for determining if solid waste is hazardous for landfill disposal purposes. They were not established as clean-up standards and have not been used as such at the NTS. Historically the closure standards used are the EPA Region 9 PRGs as indicated in this SAFER Plan.	No
10. Section 3.1.2	M	"...The only COC identified from the list is TPH...". Samples ERS00019 and ERS00020 (Appendix 3) indicate barium, cadmium, chromium, and lead all exceed TCLP standards.	See comment response number 8. Lead does not exceed the EPA Region 9 PRG Standards for industrial soils. Therefore it is not considered a COC. However, by RCRA Table 1 TCLP standards, soils removed from this CAS may be considered hazardous for disposal purposes.	No

a. Comment Types: M=Mandatory S=Suggested

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Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
11. Section 3.1.4	M	The sampling referenced in this paragraph is not reflected in the plan appendices. There is no indication as to the medium which was sampled - tar, soil beneath the tar, etc. This paragraph also indicates one SVOC [bis(2-Ethylhexyl)pthalate] was above the EPA PRG of 35 mg/kg. Was this contaminate also detected in the field blank?	The sampling analytical results have been added to Appendix A-3. The medium that was sampled was the soil directly beneath the tar. The result for bis(2-Ethylhexyl)pthalate reported in Table 2 is not above the EPA PRG of 35 mg/kg. This statement was incorrect and has been removed from the document.	Yes
12. Section 3.2.1	M	"...Inlet and outlet piping (if found to exist) will be grouted closed and left in place...". Final disposition of this piping should depend on characterization of the UST contents.	The final disposition of the piping has been tied into the assessment of the tank contents and will be removed and disposed of if COC are found within the tank.	Yes
13. Section 3.2.2	M	Verification sampling must also account for barium, cadmium, and lead, in addition to TPH.	See comment response number 8. Barium, cadmium, and lead are below the EPA Region 9 PRGs for industrial soils. Therefore, verification sampling for these metals is not necessary.	No

a. Comment Types: M=Mandatory S=Suggested

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Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
14. Section 3.1.4, Page 19 and Section 3.3	M	Section 3.1.4 should be 3.2.4. "..Verification sampling will not be required...". The 55-gallon drum must be assessed. Whether verification sampling is required or not depending upon this assessment.	The 55-gallon drum will be characterized. Verification sampling will be required based on the results of the drum sampling.	Yes
15. Section 3.4	M	The Industrial Sites-Quality Assessment Project Plan (IS-QAPP, 1996) should be referenced here.	The reference was added.	Yes
16. Section 3.5	M	All references to closure activities should reflect the "future" tense versus the "past" tense, i.e., Tank will be removed from the site versus has been removed from the site.	The tense has been changed.	Yes
17. Table 5, page 29	M	Entries for "Hazardous Waste" for CASs 22-99-06 and 23-05-05 should indicate "Potential".	The word "potential" has been added for CAS 22-99-06, and 23-05-05.	Yes

a. Comment Types: M=Mandatory S=Suggested

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Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
18. Section 5.2.3	M	CAS 22-99-06 also has potential for hazardous waste (barium, cadmium, chromium, and lead).	According to previous sampling barium, cadmium and chromium do not exceed the TCLP standards (40 CFR 261.24, Table 1) (see comment 8). However lead may, and has been added.	Partial

a. Comment Types: M=Mandatory S=Suggested

DOCUMENT REVIEW SHEET

Document Title/Number: Streamlined Approach for Environmental Restoration Work Plan for Corrective Action Unit 330: Areas 6, 22, and 23 Tanks and Spill Sites, Nevada Test Site, Nevada.
Document Date: May 2001
Revision Number: 0
Originator/Organization: Tom Fitzmaurice, Bechtel Nevada Environmental Restoration
Date Comments Due: July 18, 2001
Reviewer/Organization: Mike McKinnon, NDEP

Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
1. Entire Document	M	Periods, and punctuation other than commas, have been deleted from this entire document. This alone would not have necessitated a disapproval, but the omission of periods (decimals) from Appendix A-3 makes interpretation of data difficult.	An error occurred during the printing of the document. Apparently some of the copies did not have the punctuation as described in the comment. These copies were transmitted to the NDEP. No change will be made to the electronic files of the document. However copies reproduced from the master will be screened prior to the submittal of this revision.	Yes

a. Comment Types: M=Mandatory S=Suggested

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Comment Number/ Location	Type[a]	Comment	Comment Response	Accept
2. Executive Summary, 5th bullet, Next to last line.	M	The words, "*if found these*", have been deleted. This wording should be reinserted before "*impacted soils*".	The sentence has been corrected.	Yes
3. Section 3.5.2 and 3.5.3	M	Section 3.5.2 and 3.5.3 still retain "past tense" as if these activities have already occurred.	All of the bullets in Sections 3.5.2 and 3.5.3 have been changed to future tense.	Yes

a. Comment Types: M=Mandatory S=Suggested

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