Nevada
Environmental
Restoration
Project

DOE/NV-11718-209
UC-702

RECEIVED
NOV 27 1998
ISO

Streamlined Approach for
Environmental Restoration
Closure Report for
Corrective Action Unit 452:
Historical Underground Storage
Tank Release Sites,
Nevada Test Site, Nevada

Controlled Copy No.:

Revision: 0

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

April 1998

MASTER

Approved for public release; further distribution is authorized

Environmental Restoration
Division

U.S. Department of Energy
Nevada Operations Office

This report has been reproduced from the best available copy.

DOE and DOE contractors can obtain copies of this report from the Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831, (423) 576-8401.

This report is publicly available from the National Technical Information Service, U. S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, (703) 487-4650.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

**STREAMLINED APPROACH FOR ENVIRONMENTAL
RESTORATION CLOSURE REPORT FOR
CORRECTIVE ACTION UNIT NO. 452
HISTORICAL UNDERGROUND STORAGE
TANK RELEASE SITES,
NEVADA TEST SITE, NEVADA**

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

Controlled Copy No.:

Revision: 0

**Prepared by
Bechtel Nevada
Environmental Restoration**

April 1998

THIS PAGE INTENTIONALLY LEFT BLANK

**STREAMLINED APPROACH FOR ENVIRONMENTAL
RESTORATION CLOSURE REPORT FOR
CORRECTIVE ACTION UNIT 452
HISTORICAL UNDERGROUND STORAGE
TANK RELEASE SITES,
NEVADA TEST SITE, NEVADA**

Approved by: Janet Appenzeller-Wing
Janet L. Appenzeller-Wing, Project Manager
Industrial Sites Subproject

Date: 4/14/98

Approved by: Robert M. Ranger Jr.
for Runore C. Wycoff, Project Manager
Nevada Environmental Restoration Project

Date: 4/14/98

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS	v
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION	1
1.1 PURPOSE	3
1.2 SCOPE	3
1.3 CLOSURE REPORT CONTENTS	3
2.0 CLOSURE ACTIVITIES	5
2.1 DESCRIPTION OF CORRECTIVE ACTION ACTIVITIES	5
2.1.1 Sampling Protocol	5
2.1.2 Description and Background: Release Site 25-3101-1	6
2.1.2.1 Drilling Activities: Release Site 25-3101-1	6
2.1.3 Description and Background: Release Site 25-3102-3	8
2.1.3.1 Drilling Activities : Release Site 25-3102-3	8
2.1.4 Description and Background: Release Site 25-3152-1	10
2.1.4.1 Drilling Activities: Release Site 25-3152-1	10
2.2 DEVIATIONS FROM THE SAFER WORK PLAN	12
2.3 CORRECTIVE ACTION SCHEDULE AS COMPLETED	12
2.4 SITE PLAN	12
3.0 WASTE DISPOSITION	14
4.0 CLOSURE RESULTS	15
4.1 RELEASE SITE 25-3101-1 (CAS 25-25-09)	15
4.1.1 A Through K Evaluation: UST Release Site 25-3101-1	15
4.2 RELEASE SITE 25-3102-3 (CAS 25-25-14)	19
4.2.1 A Through K Evaluation: UST Release Site 25-3102-3	21
4.3 RELEASE SITE 25-3152-1 (CAS 25-25-15)	23
4.3.1 A Through K Evaluation: UST Release Site 25-3152-1	24
5.0 CONCLUSIONS	29
6.0 REFERENCES	30
APPENDIX A - UST CLOSURE INFORMATION	
APPENDIX B - DISPOSAL DOCUMENTATION	
APPENDIX C - BOREHOLE LOGS	
APPENDIX D - LABORATORY ANALYTICAL DATA	

TABLE OF CONTENTS (continued)

FIGURES

FIGURE 1 - SITE LOCATION MAP CAU 452	2
FIGURE 2 - BUILDING 3101 SITE LAYOUT AND BOREHOLE LOCATIONS	7
FIGURE 3 - BUILDING 3101 SITE LAYOUT AND BOREHOLE LOCATIONS	9
FIGURE 4 - BUILDING 3152 SITE LAYOUT AND BOREHOLE LOCATIONS	11
FIGURE 5 - CAU 452 SITE CHARACTERIZATION ACTIVITY SCHEDULE	13

TABLES

TABLE 1 - CAU 452 HYDROCARBON RELEASE SITES	1
TABLE 2 - DRILL SITE 25-3101-1: SUMMARY OF SOIL ANALYTICAL RESULTS ...	16
TABLE 3 - DRILL SITE 25-3102-3: SUMMARY OF SOIL ANALYTICAL RESULTS ...	20
TABLE 4 - DRILL SITE 25-3152-1: SUMMARY OF SOIL ANALYTICAL RESULTS ...	26

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
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
EPA	U.S. Environmental Protection Agency
FFACO	Federal Facility Agreement and Consent Order
ft	feet
gal	gallons
in	inches
km	kilometer
L	liters
m	meters
m ³	cubic meters
mg/kg	milligrams per kilogram
mi	mile
NAC	Nevada Administrative Code
NDEM	Nevada Division of Environmental Management

ACRONYMS AND ABBREVIATIONS (continued)

NDEP	Nevada Division of Environmental Protection
MDL	method detection limit
NEL	Nevada Environmental Laboratories
NTS	Nevada Test Site
OVM	Organic Vapor Monitor
PCB	Polychlorinated Biphenyl
ppm	parts per million
SAFER	Streamlined Approach for Environmental Restoration
TPH	Total Petroleum Hydrocarbon
UST	Underground Storage Tank
VOC	Volatile Organic Compound
yd ³	cubic yards

EXECUTIVE SUMMARY

This report addresses the site characterization of three historical underground storage tank (UST) petroleum hydrocarbon release sites identified as 25-3101-1, 25-3102-3, and 25-3152-1. The sites are located within the Nevada Test Site in Area 25 at Buildings 3101, 3102, and 3152. The characterization was completed to support administrative closure of the sites. The sites are listed in the Federal Facility Agreement and Consent Order (FFACO) in Appendix III and are identified as Corrective Action Unit (CAU) 452. Work was completed following the Nevada Division of Environmental Protection (NDEP) approved Streamlined Approach for Environmental Restoration Work Plan for CAUs 452, 454, 456, and 464. Closure of Historical UST Release Sites.

Characterization was completed using drilling equipment to delineate the extent of hydrocarbon impact. Clean closure had been previously attempted at each of these sites using backhoe equipment without success due to adjacent structures, buried utilities, or depth restrictions associated with each site. Although the depth and extent of hydrocarbon impact was determined to be too extensive for clean closure, it was verified through drilling that the sites should be closed through an administrative closure. The Nevada Administrative Code "A Through K" evaluation completed for each site supports that there is no significant risk to human health or the environment from the impacted soils remaining at each site.

Based upon site observations and the soil sample analytical results, it is requested that a Notice of Completion be provided by the NDEP. Upon approval of the closure of the release sites, CAU 452 will be promoted from Appendix III to Appendix IV of the FFACO "Closed Corrective Action Units."

THIS PAGE LEFT INTENTIONALLY BLANK

1.0 INTRODUCTION

This report addresses the site characterization of three historical underground storage tank (UST) petroleum hydrocarbon release sites identified as 25-3101-1, 25-3102-3, and 25-3152-1 (Table 1). The sites are and are located within the Nevada Test Site (NTS) in Area 25 at Buildings 3101, 3102, and 3152 (Figure 1). Characterization was completed to support administrative closure of the sites which are listed in the Federal Facility Agreement and Consent Order (FFACO) in Appendix III and are identified as Corrective Action Unit (CAU) 452 (FFACO, 1996). Each tank and associated hydrocarbon release has been assigned a Corrective Action Site (CAS) number (Table 1). The USTs identified in this report were closed by removal in 1994 by the U.S. Department of Energy, Nevada Operations Office (DOE/NV). Subsequent to tank closure the Nevada Division of Environmental Protection (NDEP) was provided amended U.S. Environmental Protection Agency (EPA) Forms 7530-1, in addition to tank closure information and analytical data. Based on the closure information provided, the NDEP concurred with the tank closures for these sites (NDEP, 1994, 1995). Tank closure information is provided in Appendix A.

TABLE 1 - CAU 452 HYDROCARBON RELEASE SITES

UST ID ¹	UST CAS NUMBER ²	RELEASE CAS NUMBER ³	NDEM NUMBER ⁴	LOCATION	DATE REMOVED/ CLOSED ⁵
25-3101-1	25-02-13	25-25-09	H940825C	Area 25 Control Point Facility	July 20, 1994
25-3102-3	25-02-18	25-25-14	H940314E	Area 25 Control Point Facility	March 9, 1994
25-3152-1	25-02-19	25-25-15	H941020E	Area 25 Former Rad Safe Building	August 24, 1994

Notes:

¹ Underground Storage Tank Identification Number.

² Corrective Action Site Number assigned to the UST within the FFACO.

³ Corrective Action Site Number assigned to the hydrocarbon release within the FFACO.

⁴ Nevada Division of Environmental Management Number assigned at time of release identification.

⁵ Date which tank was closed by removal.

1.1 PURPOSE

Hydrocarbon releases were identified at each of the three sites based on laboratory analytical data collected at the time of tank closure. Hydrocarbon concentrations at these sites exceeded the Nevada Administrative Code (NAC) Action Level of 100 milligrams per kilogram (mg/kg) (NAC 459.9973, 1996). NDEP requires assessment and corrective actions for soil with a petroleum hydrocarbon concentration exceeding the NAC Action Level. Each release was assigned a Nevada Division of Emergency Management (NDEM) number at the time of spill notification.

The purpose of this Closure Report (CR) is to provide documentation of the activities conducted during the characterization of the three hydrocarbon release sites. The work was completed as outlined in the Streamlined Approach for Environmental Restoration (SAFER) Work Plan for CAUs 452, 454, 456, and 464, Closure of Historical UST Release Sites (US DOE, 1997). The documentation provided in this CR supports a request to NDEP for an administrative closure of CAU 452.

1.2 SCOPE

The scope of work consisted of collecting soil samples at each release site to characterize the lateral and vertical extent of the petroleum hydrocarbon plume. Characterization was completed using a Mobil Drill B-59 continuous flight, hollow-stem auger drill rig. Drilling was required at these sites due to the depth of hydrocarbon impact and proximity to buildings and/or subsurface utilities. A minimum of three boreholes were drilled at each site to sufficiently delineate the hydrocarbon plume.

1.3 CLOSURE REPORT CONTENTS

This CR has been developed to support administrative closures for CASs 25-25-09, 25-25-14, and 25-25-15. The format of the report is as follows:

- Section 1.0 - Introduction, Purpose, and Scope.
- Section 2.0 - Closure Activities.
- Section 3.0 - Waste Disposition.
- Section 4.0 - Closure Results (including the A through K Evaluation).
- Section 5.0 - Conclusions.

- Section 6.0 - References.
- Appendix A - UST Closure Data.
- Appendix B - Waste Disposal Documentation
- Appendix C - Borehole Logs.
- Appendix D - Laboratory Analytical Data.

The SAFER Plan was implemented using information and guidance provided from the following documents:

- SAFER Work Plan for CAUs 452, 454, 456, and 464 Closure of Historical UST Release Sites, Nevada Test Site (US DOE, 1997).
- Site Specific Health and Safety Plan for SAFER Closure of Historical UST Release Sites - Areas 2, 9, 12, 23, and 25 (BN, 1997a).
- Field Management Plan: CAU 452, 454, 456, and 464 Closure of Historical UST Release Sites, Nevada Test Site (BN, 1997b).
- Closure of Historical UST Release Sites, Construction Work Plan (BN, 1997c).
- Nevada Environmental Restoration Project, Project Management Plan (US DOE, 1994).
- Nevada Environmental Restoration Project, Health and Safety Plan (US DOE, 1996a).
- Nevada Environmental Restoration Project, Industrial Sites, Quality Assurance Project Plan, Nevada Test Site (US DOE, 1996b).

2.0 CLOSURE ACTIVITIES

2.1 DESCRIPTION OF CORRECTIVE ACTION ACTIVITIES

2.1.1 Sampling Protocol

The CAU 452 sites were characterized to obtain data to support an administrative closure (A through K evaluation). The objective was to complete the drilling and sampling in order to define the petroleum hydrocarbon impacted area. Prior to drilling, the proposed borehole locations were cleared for underground utilities (Goldak) and a signed excavation permit was issued. The boreholes were drilled using continuous flight, hollow-stem auger drilling equipment. Prior to each sampling event, sample equipment was decontaminated using Alconox cleaning solution and rinsed with distilled water. Augers were decontaminated using Alconox cleaning solution followed by a high pressure water rinse. All rinse water was placed within 208-liter (L) (55-gallon [gal]) drums (Section 3.0).

Soil samples for logging and chemical analysis were collected at approximate 1.5 meters (m) (5 feet [ft]) intervals by advancing a split-spoon sampler, equipped with brass liners, into the undisturbed soil beyond the tip of the cutting head. If a sufficient volume of soil was recovered in the split-spoon, the bottom brass sleeve was retained, sealed with plastic end caps, and submitted to the off-site laboratory for analysis. If sufficient soil volume was not retained, the sample was placed into a clean 250-milliliter (ml) glass laboratory sample jar. All samples were labeled with the sample identification, date and time sampled, samplers initials, and analysis to be performed. Samples were placed in a ice chest and cooled to approximately four degrees Centigrade (39.2 degrees Fahrenheit). Samples were kept in the custody of the project geologist or in a secured location until delivered to Nevada Environmental Laboratories (NEL) located in Las Vegas, Nevada. Samples were submitted to NEL on a weekly basis.

The first sample depth for each borehole was determined based on the bottom depth of the former tank, the greatest depth excavated in prior interim remedial actions, or field observations as boreholes were completed. Soil samples were screened in the field using a Dexsil PetroFLAG™ hydrocarbon analyzer kit. PetroFLAG™ analyzes for the presence of hydrocarbons to a detection level of greater than (>)2,000 parts per million (ppm). Samples were also screened using an Organic Vapor Monitoring (OVM) model 580B calibrated to 100 ppm Isobutylene at the beginning of each field day. However, borehole advancement or termination relied primarily on the reported PetroFLAG™ results.

If hydrocarbons were detected in the screened samples, the boreholes were advanced until field screening indicated a PetroFLAG™ result of <50 ppm. One to two screened samples which indicated the presence of hydrocarbons and the two subsequent confirmatory "clean" samples were then submitted to an off-site laboratory. Once the vertical extent of a borehole was defined, the borehole locations were stepped out to define the lateral extent of impacted soil

following the same screening process. The distance that each borehole was stepped out was contingent on drill rig access and the defined vertical depth of the hydrocarbon plume. In some instances where hydrocarbons were not present in the screened samples, one sample was collected at the depth of the former tank bottom followed by two confirmatory "clean" samples and submitted to NEL for analysis.

Upon completion of each borehole, clean graded sand was slowly placed into the borehole using the augers as a tremmie pipe to prevent bridging. The upper 1.5 m (5 ft) was then filled with approximately 0.3 m to 0.6 m (1 to 2 ft) of 1.0 centimeter (cm) (3/8 inch [in]) bentonite pellets, hydrated, and sealed with a concrete plug.

2.1.2 Description and Background: Release Site 25-3101-1

Tank 25-3101-1 was located on the south side of Building 25-3101 within the Area 25 Reactor Control Point (RCP) Facility. The tank had an approximate capacity of 15,000 L (4,000 gal) and was used for storing diesel fuel. One soil sample collected below the east tank bottom, at the time of tank removal on July 20, 1994, had a total petroleum hydrocarbon (TPH) concentration of 2,400 mg/kg at a depth of approximately 3 m (9.5 ft) below ground surface (bgs). Analytical results from subsequent soil sampling on October 24, 1994, had a petroleum hydrocarbon concentration of 544 mg/kg at a depth of approximately 4 m (12.5 ft) bgs. Additional excavation was not completed in this area due to the following site limitations:

- The former tank location is bordered on the north by Building 3101 which has a loading dock within 1 m [3 ft] of the tank excavation footprint.
- A 25 cm (10 in) diameter utility (water) line was identified within the original tank excavation to the south approximately 3 m (10 ft) south of the Building 3101 loading dock. The utility line is buried at an approximate depth of 1.5 m (5 ft) bgs. In addition, water lines and sewer lines are connected into the building east of the former tank location.

Closure of the UST (CAS No. 25-02-13) was accepted by the NDEP (NDEP, 1995). Closure of the hydrocarbon release (NDEM No. H940825C, CAS No. 25-25-09) is addressed in this report.

2.1.2.1 Drilling Activities: Release Site 25-3101-1

Three boreholes were completed at this site (3101-B1 through 3101-B3) as indicated in the SAFER Work Plan (US DOE, 1997). Borehole locations are shown on Figure 2. Borehole B1 was located approximately 0.6 m (2 ft) from the east excavation footprint/release area and was completed to a depth of 11 m (36 ft) bgs. Borehole B2 was located approximately 3.4 m (11 ft) east of the release area and was completed to a depth of 6.4 m (21 ft) bgs. Borehole B3 was first

FIGURE 2
 BUILDING 3101 SITE LAYOUT AND BOREHOLE LOCATIONS

located approximately 2.1 m (7 ft) south of the release area; however, impacted soils were encountered starting at approximate depths of 3 m to 4 m (10 to 15 ft) bgs. The borehole was then abandoned and relocated an additional 1.8 m (6 ft) south (4.0 m [13 ft] south of the release area) and was completed to a depth of 6.4 m (21 ft) bgs. Field observation and analytical results are discussed and summarized in Section 4.0, Closure Results.

2.1.3 Description and Background: Release Site 25-3102-3

Tank 25-3102-3 was located on the southwest corner of Building 25-3102 within the Area 25 RCP Facility. The tank had an approximate capacity of 2,100 L (560 gal) and was used for storing waste oil. Analysis of the tank contents identified waste oil, polychlorinated biphenyls (PCBs), and barium. The tank contents were characterized as hazardous and subsequently removed and treated following appropriate state and federal regulations. The tank was removed on March 9, 1994, and triple rinsed prior to disposal.

Soil samples collected below the north and south tank bottom from approximately 3 m (10 ft) bgs had petroleum hydrocarbon concentrations of 981 mg/kg and 157 mg/kg, respectively. PCBs and barium were not detected in the soil samples collected below the tank bottom.

Additional excavation was completed on May 1, 1995. Samples collected from a depth of approximately 4 m (13 ft) bgs from the north and south end of the tank excavation had hydrocarbon concentrations of 170 mg/kg and 620 mg/kg, respectively. Further remedial activities were not completed at the site due to the following limitations:

- The former tank location is bordered by Building 25-3102 to the north.
- The site is on a sloped embankment limiting backhoe accessibility.
- A 5-cm (2-in) utility line is located diagonally across the south end of the excavation footprint limiting the range of movement of the backhoe.

Closure of the UST (CAS No. 25-02-18) was accepted by the NDEP (NDEP, 1994). Closure of the hydrocarbon release (NDEM No. H940314E, CAS No. 25-25-14) is addressed in this report.

2.1.3.1 Drilling Activities : Release Site 25-3102-3

Three boreholes were completed at this site (3102-B1 through 3012-B3) as indicated in the SAFER Work Plan (US DOE, 1997). Borehole locations are shown on Figure 3. Borehole B1 was located within the former tank excavation and was completed to a depth of 11 m (36 ft). Since the borehole was located within the former tank excavation, steel casing was placed in the top 1.5 m (5 ft) in order to complete the borehole. Borehole B2 was located approximately

FIGURE 3
 BUILDING 3102 SITE LAYOUT AND BOREHOLE LOCATIONS

0.3 m (1 ft) east of the former excavation footprint and was completed to a depth of 9 m (31 ft) bgs. Borehole B3 was located approximately 1.5 m (5 ft) west of the former excavation footprint and was completed to a depth of 6.4 m (21 ft) bgs. Field observations and analytical results are discussed and summarized in Section 4.0, Closure Results.

2.1.4 Description and Background: Release Site 25-3152-1

Tank 25-3152-1 was located on the west side of the former Radiological Safety (Rad Safe) Building 25-3152 in Area 25. The tank had an approximate capacity of 3,800 L (1,000 gal) and supplied fuel oil to a boiler. The tank was removed on August 24, 1994. A soil sample collected below the south excavation bottom from approximately 3 m (10 ft) bgs had a petroleum hydrocarbon concentration of 372 mg/kg. Hydrocarbons were not detected below the north tank bottom. Additional excavation was completed on May 9, 1995. A sample collected from a depth of approximately 6 m (20 ft) bgs from the south end had a TPH concentration of 1,900 mg/kg. Petroleum hydrocarbons were not detected in sidewall samples. Due to the depth of impacted soils encountered, site characterization using drilling equipment was warranted.

Closure of the UST (CAS No. 25-02-19) was accepted by the NDEP (NDEP, 1995). Closure of the hydrocarbon release (NDEM No. H941020E, CAS No. 25-25-15) is addressed in this report.

2.1.4.1 Drilling Activities: Release Site 25-3152-1

Six boreholes were completed at this site (3152-B1 through 3152-B6). Borehole locations are shown on Figure 4. Four boreholes were proposed in the SAFER Plan; however, six were required to sufficiently define the lateral and vertical extent of the hydrocarbon plume. Borehole B1 was located approximately 1.5 m (5 ft) south of the former excavation footprint/release area and was completed to a depth of 14 m (46 ft) bgs. Borehole B2 was located approximately 5.5 m (18 ft) south of the release area and was completed to a depth of 12.5 m (41 ft) bgs. Borehole B3 was located approximately (14 ft) west of the release area and was completed to a depth of 12.5 m (41 ft) bgs. Borehole B4 was located approximately 2.4 m (8 ft) west of the release area (approximately 1 m [3 ft] from Building 3152) and was completed to a depth of 15 m (50 ft) bgs. Borehole B5 was completed as an extension of Borehole B1 since analytical data indicated that the vertical extent was not sufficiently defined by B1. Borehole B5 was located approximately 1.2 m (4.0 ft) north of B1 and was terminated at a depth of 17 m (56 ft) bgs due to auger refusal. Borehole B6 was completed to define the lateral extent to the south since analytical data indicated that Borehole B2 did not sufficiently define the extent of impact. Borehole B6 was located approximately 2 m (7 ft) from Borehole B2 (7.3 m [24 ft] south of the release area) and was completed to a depth of 15 m (50 ft) bgs. Field observations and analytical results are discussed and summarized in Section 4.0, Closure Results.

FIGURE 4
 BUILDING 25-3152 SITE LAYOUT AND BOREHOLE LOCATIONS

2.2 DEVIATIONS FROM THE SAFER WORK PLAN

Deviations from the SAFER Work Plan were minimal. At each of the sites some of the borehole locations varied from the SAFER Plan designated locations due to access, nearby utilities, subsurface interference (concrete, cobbles, etc.), and/or the depth at which hydrocarbons were encountered in other completed boreholes at the site. In addition, the initial sample depth was modified in some instances to correlate with the depth at which hydrocarbons were encountered in other boreholes. For example, at Building 3152 impacted soils were not identified at depths less than 6 m (20 ft) bgs, therefore, sampling in some of the boreholes did not start until a depth of 6 m (20 ft) was achieved versus the 2.7 m (9 ft) stated in the SAFER Plan.

Soil samples were not delivered to the Bechtel Nevada Analytical Services Section as stated in the SAFER Plan. The soils were retained by the project geologist and delivered to NEL on a weekly basis. NEL, a state-approved laboratory, was used in order to expedite analysis.

Borehole locations were not surveyed using the Global Positioning System. Since each borehole is adjacent to structures which are not anticipated to be removed in the near future, an accurate site plan could be created from field measurements. At sites 25-3102 and 3152, the borehole locations were also staked with the location identification as well as photographs taken for each site.

Impacted soils from each of the drilling sites were placed into 208-L (55-gal) metal drums instead of being placed into a soil pile. Soil piles interfered with the mobility of the drill rig moving between borehole location and provided better control for waste management.

2.3 CORRECTIVE ACTION SCHEDULE AS COMPLETED

Drilling was completed without significant delays due to inclement weather, equipment breakdown, or laboratory analysis. Drilling for CAU 452 was started on January 13, 1998 and completed on February 2, 1998, and consisted of the completion of 12 boreholes. Figure 5 provides the project schedule for the completed field activities.

2.4 SITE PLAN

Site plans have been prepared depicting the borehole locations, estimated extent of hydrocarbon-impacted soils, and general site layout (Figures 2 through 4). Since no modifications to subsurface utilities or facilities were made, engineering "as-builts" were not warranted. However, a copy of each site plan will be submitted to the files at the Archives and Records Center located in Mercury, Nevada.

3.0 WASTE DISPOSITION

Waste generated from the drilling activities consisted of petroleum hydrocarbon impacted soils and decontamination rinsewater. Soils were managed by placing the drill cuttings into 208-L (55-gal) metal drums. Decontamination rinsewater, generated from sampling and drilling equipment, was solidified using the soil cuttings generated at the drilling sites, or by adding bentonite. Each site was assigned a Waste Tracking Number. The tracking number was applied to the outside of each drum along with the corresponding borehole identification and date generated.

Soil and solidified rinsewater was disposed at the Area 6 Hydrocarbon Landfill on February 18, 1998. Disposal was based on analytical data collected during the tank closure, previous remedial work, and/or laboratory analysis from soil samples taken during this investigation. A radiological "green tag," bill of lading, and weight ticket accompanied each load to the Area 6 Hydrocarbon Landfill. Waste disposal documentation is provided in Appendix B.

4.0 CLOSURE RESULTS

4.1 RELEASE SITE 25-3101-1 (CAS 25-25-09)

Three boreholes were drilled at this site in order to define the lateral and vertical extent of petroleum hydrocarbons. Figure 2 provides a plan view of the site indicating the borehole locations and estimated lateral extent of petroleum hydrocarbons.

Borehole B1 was drilled to a depth of 10.7 m (35 ft) to delineate the vertical extent of impact. TPH as diesel was detected at a depth of 6 m (20 ft) at a concentration of 420 mg/kg. Samples collected at depths of 7.6 m (25 ft), 9 m (30 ft), and 10.7 m (35 ft) did not contain TPH as diesel above the method detection limit (MDL) of 10 mg/kg. The vertical extent of hydrocarbons was determined not to exceed 7.6 m (25 ft) bgs.

Borehole B2 was installed east of the hydrocarbon release area. Samples collected from depths of 3 m (10 ft), 4.6 m (15 ft), and 6 m (20 ft) did not contain TPH as diesel above the MDL of 10 mg/kg. A blind replicate of the soil sample collected from a depth of 3 m (10 ft) was also analyzed and was reported at a concentration of <10 mg/kg. The lateral extent of hydrocarbon impact to the east was defined by Borehole B2 and was determined not to exceed a distance of 2.7 m (9 ft) from the release area.

Borehole B3 was drilled south of the release area. Samples collected from depths of 3 m (10 ft), 4.6 m (15 ft), and 6 m (20 ft) did not contain TPH as diesel above the MDL of 10 mg/kg. Although not requested, the laboratory analyzed for TPH as oil in each of the samples and TPH as gasoline in the 6 m (20 ft) sample submitted. The results from the additional analysis reported that values were below the MDL of 10 mg/kg for gasoline and 50 mg/kg for oil. The lateral extent of petroleum hydrocarbons to the south was defined by Borehole B3 and was determined not to exceed a distance of 4.6 m (15 ft) from the release area.

Soils at the site consisted of interbedded fine sand and gravels in each borehole. Drilling logs detailing lithologic conditions, PetroFLAG™ results, and OVM readings, are provided in Appendix C. Sample analytical and PetroFLAG™ screening results are provided in Table 2. Analytical data packages are provided in Appendix D.

4.1.1 A Through K Evaluation: UST Release Site 25-3101-1

The following is the NAC "A through K" evaluation which supports the request for an Administrative Closure of CAS 25-25-09 (NAC, 1996).

TABLE 2 - DRILL SITE 25-3101-1: SUMMARY OF SOIL ANALYTICAL RESULTS

BOREHOLE ID	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH BGS meters [feet]	TPH ¹ (mg/kg)			PETROFLAG™ RESULTS (ppm)
				GAS	DIESEL	OIL	
Borehole 1*	3101/B1@20	January 21, 1998	6.1 [20]	NA	420	NA	872
	3101/B1@25	January 21, 1998	7.6 [25]	NA	<10	NA	60
	3101/B1@30	January 21, 1998	9.1 [30]	NA	<10	NA	17
	3101/B1@35	January 21, 1998	10.7 [35]	NA	<10	NA	8
Borehole 2	3101/B2@10	January 22, 1998	3.0 [10]	NA	<10	NA	19
	3101/B2@13 (duplicate)				<10 duplicate		
	3101/B2@15	January 22, 1998	4.6 [15]	NA	<10	NA	8
Borehole 3	3101/B2@20	January 22, 1998	6.1 [20]	NA	<10	NA	12
	3101/B3@10	January 26, 1998	3.0 [10]	NA	<10	<50	13
	3101/B3@15	January 26, 1998	4.6 [15]	NA	<10	<50	8
	3101/B3@20	January 26, 1998	6.1 [20]	<10	<10	<50	0

Notes:

¹ Total Petroleum Hydrocarbons - US EPA Method SW-846 8015, Modified

Borehole B1* - PetroFLAG™ results at 3 m (10 ft) and 4.6 m (15 ft) were each >2,000 ppm. All other results reported in table above.
mg/kg - milligrams per kilogram

NA - Not analyzed

State regulatory requirements - The state regulatory requirement affecting the closure of CAS 25-25-09 is the requirement of the NAC 459.9973, Action by Division When Excessive Petroleum Is Present in Soil, referred to as "A through K."

Depth of groundwater (A) - Depth to groundwater at the site is estimated to be at 335 m (1,100 ft) bgs. The estimated depth is based on the regional general potentiometric surface map provided in the DOE Environmental Impact Statement (US DOE, 1996c).

Distance to irrigation or drinking water wells (B) - The nearest drinking water supply is from Well J-12 located approximately 9.7 kilometers (km) (6.0 miles [mi]) from the site. The well obtains water from the volcanic tuff aquifer. The static water level in Water Well J-12 in 1993 was measured at 225 m (739 ft) bgs (US DOE, 1996c).

Type of soil (C) - The site is within the Jackass Flats Valley. Soils in this area consist of alluvial deposits. Soils identified during the drilling activities consisted of interbedded sand and gravels typical of alluvial deposits.

Annual precipitation (D) - Annual rainfall in the site vicinity over a 16-year period (December 1957 to December 1985) is tabulated in the report, Daily, Seasonal, and Annual Precipitation At The Nevada Test Site, Nevada (DRI, 1986). The average annual precipitation, over the 16-year period, was 11.9 cm (4.67 in).

Type of regulated substance released (E) - The tank formally located at the site was used to store diesel fuel for a boiler located in Building 3101. TPH as diesel is the identified constituent of concern (COC). Diesel was detected in samples collected below the east bottom of the tank during removal activities (2,400 mg/kg at 3 m [9.5 ft]) and during remedial activities (544 mg/kg at 4 m [12.5 ft]).

Extent of contamination (F) - The extent of impacted soils was determined from the drilling activities conducted in January 1998. The vertical extent of hydrocarbons do not extend below a depth of 7.6 m (25 ft). TPH was detected at a concentration of 420 mg/kg at a depth of 6.1 m (20 ft) but was not detected (<10 mg/kg) at a depth of 7.6 m (25 ft). The lateral extent was defined by two boreholes to the east and south of the release area. Based on analytical data and field observations, the lateral extent was defined by Borehole B2 located 3.4 m (11 ft) east of the release area and by B3 located 4.0 m (13 ft) south of the release area. Diesel was not detected (<10 mg/kg) in the samples collected from these boreholes drilled to a maximum depth of 6.1 m (20 ft) bgs.

Present and potential land use (G) - The site is located adjacent to Building 3101 within the RCP Compound. The Compound is still used intermittently to support military training exercises. Immediate surrounding land use consists of a helicopter landing area to the north (bordered by Road H), a storage warehouse to the east, an abandoned leachfield system to the south, and open desert to the west. There is also evidence that the vicinity surrounding the

compound previously had buildings and/or trailers to support the area activities. Due to its central location within Area 25, the compound could potentially be used to support technology development or testing agencies. However, it is anticipated that for the near future the compound will continue to be used to support military training.

Preferred routes of migration/exposure pathways of concern (H) - Since the release originated from a UST, surface migration is not a concern. The most likely route of migration would be vertically through the porous alluvial soils. However, due to the depth of groundwater, low amount of annual precipitation, high amount of evaporation, and the low TPH concentrations, it is unlikely that hydrocarbons would reach groundwater.

The site does not have an exposure pathway since all impacted soils are below the ground surface. The area is predominantly covered with asphalt and it is assumed based on the defined lateral extent of impacted soils that the plume is partially covered by the adjacent building and loading dock. Physical contact or disturbance of the soil will not occur unless excavation activity is completed within the tank area. VOCs were not identified as an exposure concern during past excavation and drilling activities, therefore, inhalation of VOCs is not an expected pathway.

Location of structures or impediments (I) - Building 25-3101, is located in close proximity to the north of the release site (Figure 2). The building is still used intermittently and receives power service. There is no known documentation to indicate that the building has been identified for removal or demolition. On the south of the release site, approximately 3 m (10 ft) from Building 3101, is a 25-cm (10-in) waterline located parallel to the building. To the east of the release area located perpendicular to the building are water lines and sewer drain lines.

Potential for hazard related to fire, vapor, or explosion (J) - The potential for fire, vapor ignition, or explosion at the site as a result of this release is extremely low. This is supported by the low concentrations of hydrocarbons detected at the time of tank closure and subsequent site investigations. In addition, headspace measurements of samples collected during drilling activities indicate that the volatility of weathered diesel is very low (Appendix C - drilling logs).

Other factors specific to the site (K) - The following are additional factors specific to the site which should be considered in the evaluation for closure;

- The fuel tank was closed by removal in 1994 eliminating the original source of the subsurface release. In addition, during the tank removal activities and subsequent remediation investigations approximately 34 cubic meters (m^3) (45 cubic yards [yd^3]) of impacted soil was removed from the site reducing the volume of impacted soils contributing to the plume.
- The site is located within the secured boundaries of the NTS. The likelihood that the site would be used for future private use is very low.

- No other COCs were identified at this release site and the concentrations of the petroleum hydrocarbons (diesel) detected were low.

4.2 RELEASE SITE 25-3102-3 (CAS 25-25-14)

Three boreholes were completed at this CAS in an effort to delineate the lateral and vertical extent of petroleum hydrocarbons. Figure 3 provides a plan view of the site indicating the borehole locations and estimated lateral extent of petroleum hydrocarbons.

Borehole B1 was drilled within the former tank excavation to a depth of 10.7 m (35 ft) to delineate the vertical extent of impacted soils. TPH as diesel was detected at a depth of 7.6 m (25 ft) at a concentration of 26 mg/kg. Samples collected at depths of 9 m (30 ft) and 10.7 m (35 ft) did not contain TPH as diesel above the MDL of 10 mg/kg. The vertical extent of petroleum hydrocarbons did not exceed 9 m (30 ft) bgs.

Borehole B2 was drilled east of the former tank location/release area. Samples collected from depths of 4.6 m (15 ft) and 6 m (20 ft) contained diesel concentrations of 1,400 mg/kg and 27 mg/kg, respectively. Samples collected from depths of 7.6 m (25 ft) and 9 m (30 ft) did not contain TPH concentrations above the MDL of 10 mg/kg for diesel and 50 mg/kg for oil. The lateral extent of hydrocarbons to the east could not be defined by Borehole B2 due to the presence of a concrete pad supporting large radiators and ventilation equipment. However, the borehole did confirm that the vertical extent of impacted soils does not exceed a depth of 9 m (30 ft) bgs.

Borehole B3 was drilled west of the release area. Samples collected from depths of 3 m (10 ft), 4.6 m (15 ft), and 6 m (20 ft) did not contain diesel concentrations above the MDL of 10 mg/kg and 50 mg/kg for oil. The lateral extent of hydrocarbon impact to the west was defined by Borehole B3 and did not exceed a distance of 3.7 m (12 ft) from the former tank/release area.

Soils at the site consisted of interbedded sand and gravelly sand. Drilling logs detailing lithologic conditions, PetroFLAG™ results, and OVM readings are provided in Appendix C.

Although not requested, the laboratory analyzed for TPH as gasoline in the bottom samples submitted from each borehole. The results from the additional analysis reported that values were below the MDL of 10 mg/kg. Sample analytical and PetroFLAG™ screening results are provided in Table 3. Analytical data packages are provided in Appendix D.

TABLE 3 - DRILL SITE 25-3102-3: SUMMARY OF SOIL ANALYTICAL RESULTS

BOREHOLE ID	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH BGS meters [feet]	TPH ¹ (mg/kg)			PETROFLAG™ RESULTS (ppm)
				GAS	DIESEL	OIL	
Borehole 1	3102/B1@25	January 28, 1998	7.6 [25]	NA	26	<50	92
	3102/B1@30	January 28, 1998	9.1 [30]	NA	<10	<50	28
	3102/B1@35	January 28, 1998	10.7 [35]	<10	<10	<50	12
Borehole 2*	3102/B2@15	January 26, 1998	4.6 [15]	NA	1,400	<50	>2,000
	3102/B2@20	January 26, 1998	6.1 [20]	NA	27	<50	225
	3102/B2@25	January 26, 1998	7.6 [25]	NA	<10	<50	12
	3102/B2@30	January 26, 1998	9.1 [30]	<10	<10	<50	8
Borehole 3	3102/B3@10	January 27, 1998	3.0 [10]	NA	<10	<50	NA
	3102/B3@15	January 27, 1998	4.6 [15]	<10	<10	<50	7
	3102/B3@20	January 27, 1998	6.1 [20]	<10	<10	<50	0

Notes:

¹ Total Petroleum Hydrocarbons: US EPA Method SW-846 8015, Modified

Borehole 2* - The PetroFLAG™ result at 3 m (10 ft) was 913 ppm. All other results reported in table above.

mg/kg - milligrams per kilogram

NA - Not analyzed

4.2.1 A Through K Evaluation: UST Release Site 25-3102-3

The following is the NAC "A through K" evaluation which supports the request for an Administrative Closure of CAS 25-25-14 (NAC, 1996).

State regulatory requirements - The state regulatory requirement affecting the closure of CAS 25-25-14 is the requirement of the NAC 459.9973, Action by Division When Excessive Petroleum Is Present in Soil, referred to as "A through K."

Depth of groundwater (A) - Depth to groundwater at the site is estimated to be at 335 m (1,100 ft) bgs. The estimated depth is based on the regional general potentiometric surface map provided in the DOE Environmental Impact Statement (US DOE, 1996c).

Distance to irrigation or drinking water wells (B) - The nearest drinking water supply is from Well J-12 located approximately 9.7 km (6 mi) from the site. The well obtains water from the volcanic tuff aquifer. The static water level in Water Well J-12 in 1993 was measured at 225 m (739 ft) bgs (US DOE, 1996c).

Type of soil (C) - The site is within the Jackass Flats Valley. Soils in this area consist of alluvial deposits. Soils identified during the drilling activities consisted of interbedded sand and gravels typical of alluvial deposits.

Annual precipitation (D) - Annual rainfall in the site vicinity over a 16-year period (December 1957 to December 1985) is tabulated in the report, Daily, Seasonal, and Annual Precipitation At The Nevada Test Site, Nevada (DRI, 1986). The average annual precipitation, over the 16-year period, was 11.9 cm (4.67 in).

Type of regulated substance released (E) - The tank formally located at the site was used to store waste oil. Although hydrocarbons, polychlorinated biphenyls, and barium were identified in the tank contents, only hydrocarbons were identified in the soil below the tank during subsequent site investigations. TPH as diesel/oil has been identified as the COC. TPH were detected in soil samples collected below the north and south bottom of the tank during removal activities at concentrations of 981 mg/kg and 157 mg/kg, respectively from a depth of 3 m (9.5 ft) bgs. During remedial activities concentrations of soil samples collected below the north and south excavation bottom were reported at 170 mg/kg and 620 mg/kg, respectively from a depth of 4 m (12 ft) bgs.

Extent of contamination (F) - The extent of hydrocarbon impacted soils was determined from the drilling activities conducted in January 1998. The vertical extent of diesel does not extend below a depth of 9 m (30 ft) bgs. TPH was detected at a concentration of 26 mg/kg at a depth of 7.6 m (25 ft) but was not detected (<10 mg/kg) at a depth of 9 m (30 ft). Due to limited accessibility the lateral extent was not defined by Borehole B2 located 0.3 m (1 ft) east of the former tank excavation. Diesel was detected in the 4.6 m (15 ft) and 6 m (20 ft) sample at

concentrations of 1,400 mg/kg and 27 mg/kg, respectively. However, the lateral extent was defined by Borehole B3 located 1.5 m (5 ft) west of the former tank excavation area. TPH was not detected above the MDL in the 3 m (10 ft), 4.6 m (15 ft), and 6 m (20 ft) samples collected.

Present and potential land use (G) - The site is located adjacent to Building 3102 within the RCP Compound. Building 3102 is not used as a housing or office facility and still retains two large locomotive engines/generators. The compound is still used intermittently to support military training exercises. Immediate surrounding land use consists of a helicopter landing area to the north (bordered by Road H), a storage warehouse to the east, an abandoned leachfield system to the south, and open desert to the west. There is also evidence that the vicinity surrounding the compound previously had buildings and/or trailers to support historical area activities. Due to its central location within Area 25 the compound could be used to support future technology development or testing agencies. However, it is anticipated that for the near future the compound will continue to be used to support military training.

Preferred routes of migration/exposure pathways of concern (H) - Since the release originated from a UST, surface migration is not a concern. The most likely route of migration would be vertically through the porous alluvial soils. However, due to the depth of groundwater, low amount of annual precipitation, high amount of evaporation, and the low TPH concentrations, it is unlikely that hydrocarbons would reach groundwater.

The site does not have an exposure pathway since all impacted soils are below the ground surface. The impacted soils are at a minimum depth of 3 m (10 ft) bgs and it is estimated based on the defined lateral extent of impacted soils that the plume is continues below the building and concrete pad supporting two large radiators and blowers. Physical contact or disturbance of the soil will not occur unless excavation activity is completed within the tank area. VOCs were not identified as an exposure concern during past excavation and drilling activities, therefore, inhalation of VOCs is not an expected pathway.

Location of structures or impediments (I) - Building 25-3102 borders the northern edge of the former tank excavation (Figure 3). A concrete pad is in close proximity to the eastern edge of the former tank excavation. Access to the site is difficult to the close proximity of the site to the structures as well as the sloping gradient of the building pad and perimeter fencing. There is no known documentation to indicate that the building has been identified for removal or demolition.

Potential for hazard related to fire, vapor, or explosion (J) - The potential for fire, vapor ignition, or explosion at the site as a result of this release is extremely low. This is supported by the low concentrations of hydrocarbons detected at the time of tank closure and subsequent site investigations. In addition, headspace measurements of samples collected during drilling activities indicate that the volatility of weathered diesel is very low (Appendix C - drilling logs).

Other factors specific to the site (K) - The following are additional factors specific to the site which should be considered in the evaluation for closure:

- The fuel tank was closed by removal in 1994 eliminating the original source of the subsurface release. In addition, during the tank removal activities and subsequent remediation investigations approximately 30.6 m³ (40 yd³) of impacted soils were removed from the site reducing the volume of impacted soils contributing to the plume.
- The site is located within the secured boundaries of the NTS. The likelihood that the site would be used for future private use is very low.
- No other COCs were identified at this release site and the concentrations of the petroleum hydrocarbons (diesel/oil) detected were low.

4.3 RELEASE SITE 25-3152-1 (CAS 25-25-15)

Six boreholes were drilled at this site in an effort to define the lateral and vertical extent of hydrocarbon impacted soils. Figure 4 provides a plan view of the site indicating the borehole locations and estimated lateral extent of petroleum hydrocarbons.

Boreholes B1 and B5 were drilled to define the vertical extent of hydrocarbon impacted soil. Borehole B1 was drilled to 13.7 m (45 ft) bgs but did not sufficiently define the vertical extent of diesel. Borehole B5 was drilled as an extension of B1 approximately 1 m (3 ft) north to a depth of 15.2 m (55 ft) where auger refusal was encountered and the borehole terminated. Samples were analyzed from B1 at depths of 10.7 m (35 ft), 12 m (40 ft), and 13.7 m (45 ft) with reported concentrations of 1,700 mg/kg, 620 mg/kg, and 74 mg/kg, respectively. Samples were analyzed in B5 from depths of 15 m (50 ft), and 16.8 m (55 ft) with reported concentrations of 77 mg/kg and 20 mg/kg, respectively. Although two consecutive samples did not report concentrations below MDLs, the last three samples did have concentrations below the NAC Action Level of 100 mg/kg. In addition, hydrocarbon concentrations decreased with depth indicating that the vertical extent of impacted soils were near termination. Based on the concentrations detected it is estimated that the vertical extent of impacted soils did not exceed 18 m (60 ft) bgs.

Borehole B2 was drilled south of the former tank excavation/release area. Samples collected from depths of 9.1 m (30 ft) and 10.7 m (35 ft) did not contain TPH as diesel concentrations above the MDL of 10 mg/kg. However, the sample collected from a depth of 12.2 m (40 ft) had a diesel concentration of 120 mg/kg requiring an additional step-out borehole. Borehole B6 was drilled as a step-out borehole for B2. Samples were collected at 12.2 m (40 ft), 13.7 m (45 ft), and 15.2 (50 ft) bgs. TPH as diesel was not encountered above the MDL of 20 mg/kg. The

lateral extent of impacted soils does not extend to the south beyond 7.3 m (24 ft) from the former tank/release area as defined by Borehole B6.

Borehole B3 was drilled to the west of the former tank excavation/release area. One sample collected from a depth of 9.1 (30 ft) bgs contained a TPH as diesel concentration of 13 mg/kg (MDL at 10 mg/kg). The other two samples collected from B3 from a depth of 10.7 m (35 ft) and 12 m (40 ft) bgs did not contain TPH concentrations above the MDL of 10 mg/kg for diesel.

The lateral extent of diesel to the west was defined by Borehole B3 and was determined not to exceed 4.3 m (14 ft) beyond the former tank/release area.

Borehole B4 was drilled 1.5 (5 ft) east of the center of the former tank excavation/release area. The borehole was drilled as close as possible to the existing building. Samples collected from depths of 10.7 m (35 ft) and 12 m (40 ft) bgs contained diesel concentrations of 1,600 mg/kg and 77 mg/kg, respectively. Samples collected from depths of 13.7 m (45 ft) and 15.2 m (50 ft) bgs did not contain TPH as diesel concentrations greater than the MDL of 10 mg/kg. Although the lateral extent to the east could not be defined due to the location of Building 3152, the vertical extent of impacted soils was determined not to exceed 13.7 m (45 ft) bgs in close proximity to the release area.

Soils at the site consisted of interbedded silty sand and sand. Drilling logs detailing lithologic conditions, PetroFLAG™ results, and OVM readings, are provided in Appendix C. Sample analytical and PetroFLAG™ screening results are provided in Table 4. Analytical data packages are provided in Appendix D.

4.3.1 A Through K Evaluation: UST Release Site 25-3152-1

The following is the NAC "A through K" evaluation which supports the request for an Administrative Closure of CAS 25-25-15 (NAC, 1996).

State regulatory requirements - The state regulatory requirement affecting the closure of CAS 25-25-15 is the requirement of the NAC 459.9973, Action by Division When Excessive Petroleum Is Present in Soil, referred to as "A through K."

Depth of groundwater (A) - Depth to groundwater at the site is estimated to be at 335 m (1,100 ft) bgs. The estimated depth is based on the regional general potentiometric surface map provided in the DOE Environmental Impact Statement (US DOE, 1996c).

Distance to irrigation or drinking water wells (B) - The nearest drinking water supply is from Well J-12 located approximately 12.2 km (7.6 mi) from the site. The well obtains water from the volcanic tuff aquifer. The static water level in Water Well J-12 in 1993 was measured at 225 m (739 ft) bgs (US DOE, 1996c).

TABLE 4 - DRILL SITE 25-3152-1: SUMMARY OF SOIL ANALYTICAL RESULTS

BOREHOLE ID	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH BGS meters [feet]	TPH ¹ (mg/kg)			PETROFLAG™ RESULTS (ppm)
				GAS	DIESEL	OIL	
Borehole 1	3152/B1@35	January 15, 1998	10.7 [35]	NA	1,700	NA	1,750
	3152/B1@40	January 15, 1998	12.2 [40]	NA	620	NA	0
	3152/B1@45	January 15, 1998	13.7 [45]	NA	74	NA	0
Borehole 2	3152/B2@30	January 20, 1998	9.1 [30]	NA	<10	<50	9
	3152/B2@35	January 20, 1998	10.7 [35]	NA	<10	<50	0
	3152/B2@40	January 20, 1998	12.2 [40]	NA	120	NA	8
Borehole 3	3152/B3@30	January 20, 1998	9.1 [30]	NA	13	NA	7
	3152/B3@35	January 20, 1998	10.7 [35]	NA	<10	NA	2
	3152/B3@40	January 20, 1998	12.2 [40]	NA	<10	NA	0
Borehole 4	3152/B4@35	January 14, 1998	10.7 [35]	NA	1,600	NA	>2000
	3152/B4@40	January 14, 1998	12.2 [40]	NA	77	NA	213
	3152/B4@45	January 14, 1998	13.7 [45]	NA	<10	NA	172
	3152/B4@50	January 14, 1998	15.2 [50]	NA	<10	NA	32

TABLE 4 - DRILL SITE 25-3152-1: SUMMARY OF SOIL ANALYTICAL RESULTS (Continued)

BOREHOLE ID	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH BGS meters [feet]	TPH ¹ (mg/kg)			PETROFLAG™ RESULTS (ppm)
				GAS	DIESEL	OIL	
Borehole 5 (Extension of Borehole B1)	3152/B5@50	January 29, 1998	15.2 [50]	NA	77	<50	221
	3152/B5@55	January 29, 1998	16.8 [55]	<10	20	<50	NA
Borehole 6 (Extension of Borehole B2)	3152/B6@40	February 2, 1998	12.2 [40]	NA	<20	NA	6
	3152/B6@45	February 2, 1998	13.7 [45]	NA	<20	NA	0
	3152/B6@50	February 2, 1998	15.2 [50]	NA	<20	NA	6

Notes:

¹ Total Petroleum Hydrocarbons: US EPA Method SW-846 8015, Modified

Borehole 1 - The PetroFLAG™ results of the 6.1 m (20 ft), 7.6 m (25 ft) and 9.1 m (30 ft) samples were 0, 0, and 1,100 ppm respectively.

Borehole 2 -The PetroFLAG™ results of the 6.1 m (20 ft) and 7.6 m (25 ft) samples were 0 and 1.0 ppm, respectively.

Borehole 3 -The PetroFLAG™ results of the 6.1 m (20 ft) and 7.6 m (25 ft) samples were 2 and 0 ppm, respectively.

Borehole 4 -The PetroFLAG™ results of the 3.0 m (10 ft), 4.6 m (15 ft), and 6.1 m (20 ft) samples were 25, 38, and 79 ppm, respectively. The results of the 7.6 m (25 ft) and 9.1 m (30 ft) samples were 38 and >2,000 ppm, respectively.

mg/kg - milligrams per kilogram

NA - Not analyzed

Type of soil (C) - The site is within the Jackass Flats Valley. Soils in this area consist of alluvial deposits. Soils identified during the drilling activities consisted of interbedded sand, silty sand, and gravels typical of alluvial deposits.

Annual precipitation (D) - Annual rainfall in the site vicinity over a 16-year period (December 1957 to December 1985) is tabulated in the report, Daily, Seasonal, and Annual Precipitation At The Nevada Test Site, Nevada (DRI, 1986). The average annual precipitation, over the 16-year period, was 11.9 cm (4.67 in).

Type of regulated substance released (E) - The tank formally located at the site was used to store diesel fuel for a boiler located in Building 3152. TPH as diesel is the identified COC. TPH were detected in samples collected below the south bottom of the tank during removal activities (372 mg/kg at 3 m [10 ft]) and during remedial activities (1,900 mg/kg at 6 m [20 ft] bgs).

Extent of contamination (F) - The extent of hydrocarbon impacted soils was determined from the drilling activities conducted in January 1998. Based on analytical data and site observation (PetroFLAG results, headspace readings, and drilling difficulty), the vertical extent is not believed to extend beyond a depth of 18 m (60 ft) bgs. Due to auger refusal at a depth of 16.8 m (55 ft) bgs, additional samples were not collected. However, the concentrations of the 15.2-m (50-ft) and 16.8-m (55-ft) samples were 77 mg/kg and 20 mg/kg, respectively, indicating a reduction in concentrations with increasing depth.

The lateral extent was defined to the west by Borehole B3, located approximately 4.3 m (14 ft) from the release area. Borehole B6, located approximately 7.3 m (24 ft) from the former tank/release area, defined the lateral extent to the south.

Present and potential land use (G) - The site is located adjacent to Building 3152, formally used as the Area 25 Rad Safe Building. The building is no longer being used. Land surrounding the building is open desert immediately to the north, a closed Fire Station to the west, a former storage/dog kennel to the east, and Cane Springs Road to the south. There are no known plans at this time for using the facility but the potential exists for it to be used in training exercises or temporary offices to support a project.

Preferred routes of migration/exposure pathways of concern (H) - Since the release was from a UST, surface migration is not a concern. The most likely route of migration would be vertically through the porous alluvial soils. Due to the depth of groundwater, low amount of annual precipitation, high amount of evaporation, and the low TPH concentrations, it is unlikely that hydrocarbons would reach groundwater.

The site does not have an exposure pathway since all impacted soils are below the ground surface (minimum depth of 3 m [10 ft]). Physical contact or disturbance of the soil will not occur unless excavation activity is completed within the tank area. VOCs were not identified as

an exposure concern during past excavation and drilling activities, therefore, inhalation of VOCs is not an expected pathway.

Location of structures or impediments (I) - Building 25-3152 is located within 3 m (10 ft) of the former tank location (Figure 4). A concrete pad supporting a water pumping system is in close proximity to the southern edge of the former tank excavation. A 5-cm (2-in) water line is connected into the building from the pumping system. In addition, water lines connect to the building from the south (from Cane Springs Road) and from the southwest.

Potential for hazard related to fire, vapor, or explosion (J) - The potential for fire, vapor ignition, or explosion at the site as a result of this release is extremely low. This is supported by the low concentrations of hydrocarbons detected at the time of tank closure and subsequent site investigations and the presence of weathered diesel which exhibits very low volatility.

Other factors specific to the site (K) - The following are additional factors specific to the site which should be considered in the evaluation for closure:

- The fuel tank was closed by removal in 1994 eliminating the original source of the subsurface release. In addition, during the tank removal activities and subsequent remediation investigations approximately 53 m³ (70 yd³) of impacted soils were removed from the site reducing the volume of impacted soils contributing to the plume.
- No other COCs were identified at the site and the concentrations of the petroleum hydrocarbons (diesel) detected were low.
- The site is located within the secured boundaries of the NTS. The likelihood that the site would be used for future private use is very low.

5.0 CONCLUSIONS

Site characterization was completed at three UST release sites identified as CAU 452. Characterization was completed using drilling equipment to delineate the extent of hydrocarbon impact. Clean closure had been previously attempted at each of these sites using backhoe equipment without success due to structural, utility, or depth restrictions associated with each site. Although the depth and extent of hydrocarbon impact was determined to be too extensive for clean closure, it was verified through drilling that the sites should be closed through an administrative closure. The NAC A through K evaluation completed for each site supports that there is no significant risk to human health or the environment from the impacted soils remaining at each site. The source for the release has been removed by closing the respective USTs, the soils with the highest hydrocarbon concentrations were removed during the closure and subsequent remedial efforts, and the drilling data indicates the hydrocarbon plume associated with each site is limited in vertical and lateral extent.

Based upon site observations and the soil sample analytical results it is requested that a Notice of Completion be provided by the NDEP each of the release CASSs. Upon approval of the closure of the release CASSs, CAU 452 will be promoted from Appendix III to Appendix IV of the FFACO "Closed Corrective Action Units."

6.0 REFERENCES

BN, 1997a, Site Specific Health and Safety Plan for SAFER Closure of Historical UST Release Sites - Areas 2, 9, 12, 23, and 25, prepared by Bechtel Nevada Environmental Remediation Projects.

BN, 1997b, Field Management Plan: CAU 452, 454, 456, and 464 Closure of Historical UST Release Sites, Nevada Test Site, prepared by Bechtel Nevada Environmental Remediation Projects.

BN, 1997c, Closure of Historical UST Release Sites, Construction Work Plan, prepared by Bechtel Nevada Construction.

DRI, 1986, Daily, Seasonal, and Annual precipitation at the Nevada Test Site, Nevada, Desert Research Institute Water Resources Center, Las Vegas, Nevada, September 1986.

FFACO, 1996, Federal Facility Agreement and Consent Order agreed to by the state of Nevada, U.S. Department of Energy, and U.S. Department of Defense.

NAC 459.9973, 1996, Nevada Administrative Code, Chapter 459, "Presence of excessive petroleum in soil: Evaluation; assessment of risk; corrective action." Carson City, Nevada: Nevada Division of Environmental Protection.

NDEP, 1994, Permanent Closure and Removal for 12 Abandoned Underground Storage Tanks on the Nevada Test Site, Nevada Division of Environmental Protection, April 12, 1994.

NDEP, 1994, Permanent Closure and Removal for 12 Abandoned Underground Storage Tanks on the Nevada Test Site, Nevada Division of Environmental Protection, January 4, 1995.

US DOE, 1994, Nevada Environmental Restoration Project, Project Management Plan, Rev.0, Las Vegas, Nevada.

US DOE, 1996a, Nevada Environmental Restoration Project, Health and Safety Plan, Rev.2, Las Vegas, Nevada.

US DOE, 1996b, Nevada Environmental Restoration Project, Industrial Sites, Quality Assurance Project Plan, Nevada Test Site, Nevada, Rev.1, DOE/NV-372, Las Vegas, Nevada.

US DOE, 1996c, Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada, Volume 1, Chapters 1-9, United States Department of Energy, Nevada Operations Office, Las Vegas, Nevada, August 1996.

US DOE, 1997, SAFER Work Plan for CAUs 452, 454, 456, and 464 Closure of Historical UST Release Sites, Nevada Test Site, August 1997, DOE/NV-11718-133, UC-702. Las Vegas, Nevada, Environmental Restoration Division.

APPENDIX A

UST CLOSURE INFORMATION

(702) 486-7010

FAX (702) 486-7014

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION

(Las Vegas Office)

1515 E. Tropicana, Suite 395

Las Vegas, Nevada 89119

April 12, 1994

Donald R. Elle, Ph.D., Director
Environmental Protection Division
U.S. Department of Energy
Nevada Operations Office
P.O. Box 98518
Las Vegas, NV 89193-8518

RE: Permanent Closure and Removal for 12 Abandoned Underground
Storage Tanks (USTs) on the Nevada Test Site (NTS)

Dear Dr. Elle:

The Nevada Division of Environmental Protection (NDEP) has received notification relating to the closure of 12 abandoned underground storage tanks located at the Nevada Test Site (NTS), as listed below:

11-1-1	12-8-1	12-8-2	12-9-1
12-9-2	12-13-1	²³ 12-110-1	23-112-1
25-3102-3	25-3205-1	27-5170-1	27-5310-1

In accordance with 40 CFR 280.72, the required site assessments have been evaluated and determined to have been conducted satisfactorily.

Accordingly, based on the information provided by the Department of Energy/Environmental Protection Division, the Division of Environmental Protection, State of Nevada accepts as final closure, the documentation for the closure of the above mentioned tanks as presented.

Continuation of remediation of those closures associated with soil contamination will continue through the spill/release corrective action program, and 40 CFR 280 Subpart F, as previously agreed to.

Donald R. Elle, Ph.D., Director
April 12, 1994
Page 2

If you should have any questions, please feel free to contact me at
(702) 486-7010.

Sincerely,

Dean Mierau, EMSIII
Project Manager
Bureau of Federal Facilities
Las Vegas Office

DM:kf

cc: Paul Liebendorfer, Chief, NDEP, Carson City, Nevada
Richard Serdoz, Manager, Las Vegas, Nevada
Howard Dickson, REECO, P.O. Box 98521, M/S #417, Las Vegas, NV
89193-8521
Barbara Yoerg, DOE/NTSO, P.O. Box 98518, M/S #701, Las Vegas
Nevada 89193-8518

PETER G. MORROS
Director

STATE OF NEVADA
BOB MILLER
Governor

L. H. DODGION
Administrator

(702) 486-7010

JAN 12 10 33 AM '95

FAX (702) 486-7014

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION

(Las Vegas Office)

1515 E. Tropicana, Suite 395

Las Vegas, Nevada 89119

January 4, 1995

Dr. Donald R. Elle
Environmental Protection Division
U.S. Department of Energy
Nevada Operations Office
P. O. Box 98518
Las Vegas, NV 89193-8518

RE: Permanent Closure and Removal for 12 Abandoned Underground Storage Tanks (USTs) on the Nevada Test Site (NTS)

Dear Dr. Elle:

The Nevada Division of Environmental Protection (NDEP) has received notification relating to the closure of 12 abandoned underground storage tanks located at the Nevada Test Site (NTS), as listed below:

15-CM-1	25-3101-1	25-3129-1	26-2102-1
23-BPY-1	25-3102-4	25-3123-1	26-2101-1
25-3152-1	25-3110-1	26-2205-1	26-2101-2

In accordance with 40 CFR 280.72, the required site assessments have been evaluated and determined to have been conducted satisfactorily.

Accordingly, based on the information provided by the Department of Energy, Environmental Protection Division, the Division of Environmental Protection, State of Nevada accepts as final closure, the documentation for the closure of the above mentioned tanks as presented.

Don Elle
January 4, 1995
Page 2

Continuation of remediation of those closures associated with soil contamination will continue through the spill/release corrective action program, and 40 CFR 280 Subpart F, as previously agreed to.

If any questions should require input from our staff please contact me at (702) 486-7010.

Sincerely,

Dean Mierau, EMSIII
Project Manager
Bureau of Federal Facilities
Las Vegas Office

DM:dm

cc: Richard Serdoz
Paul Liebendorfer
Howard Dickson
Barbara Yoerg

APPENDIX B

WASTE DISPOSAL DOCUMENTATION

STY/E 005 / ARE / MASTER AS ADAPTOR / sty/mark Co. Chicago IL 60646 8004321-5908

WEIGH TICKET

GATE 100 INSPECTION STATION

REYNOLDS ELECTRICAL & ENGINEERING CO., INC.
POST OFFICE BOX 98521 • LAS VEGAS, NV 89193-8521

NO. 005260

PROPERTY REMOVAL NO. _____

COMMODITY HYDRO CARBON FROM A-25 DATE 2-12-98

CUSTOMER NO. _____ () P/O _____ () SHIPPER _____

DELIVER TO A-6-Well 3 () AREA A-25 () BLDG. NO. _____

VEHICLE LICENSE NO. 83363 TRUCK NO. 83363 TRAILER(S) LICENSE NO. N/A

DRIVER'S SIGNATURE (IN) Don Tait DRIVER'S SIGNATURE (OUT) Jack Ron

32620
14820
17800

LBS. GROSS — DRIVER OFF ()
LBS. TARE — DRIVER OFF ()
LBS. NET

GROSS-VERIFIED () WEIGHMASTER'S SIGNATURE _____ SUPERVISOR'S SIGNATURE _____

TARE-VERIFIED () WEIGHMASTER'S SIGNATURE _____ SUPERVISOR'S SIGNATURE _____

RE-8632 (5/88)

WEIGH TICKET

GATE 100 INSPECTION STATION

REYNOLDS ELECTRICAL & ENGINEERING CO., INC.
POST OFFICE BOX 98521 • LAS VEGAS, NV 89193-8521

NO. 005261

PROPERTY REMOVAL NO. _____

COMMODITY Drycleaner Soid FROM A-2 DATE 2/12/98

CUSTOMER NO. _____ () P/O _____ () SHIPPER Bechtel

DELIVER TO A-6 Landfill () AREA _____ () BLDG. NO. _____

VEHICLE LICENSE NO. _____ TRUCK NO. 83363 TRAILER(S) LICENSE NO. _____

DRIVER'S SIGNATURE (IN) Don Tait DRIVER'S SIGNATURE (OUT) Jack Ron

G+020440 1b GR LIVE
T+003000 1b GR KPTA
N+017440 1b
CH 32
14820 LT.WT.
5,620#
ccg 2/24/98

LBS. GROSS — DRIVER OFF ()
LBS. TARE — DRIVER OFF ()
LBS. NET

GROSS-VERIFIED () WEIGHMASTER'S SIGNATURE _____ SUPERVISOR'S SIGNATURE _____

TARE-VERIFIED () WEIGHMASTER'S SIGNATURE _____ SUPERVISOR'S SIGNATURE _____

RE-8632 (5/88)

DATE: 2-18-98 NO. A 5797

Reynolds Electrical & Engineering Co., Inc.
Radiological Control Department-Ramatrol

Material Clearance

MONITOR: MC CLOSKEY

ORGANIZATION: BN ER

SURVEY LOCATION: A-6

FROM: A-6

TO: A-6 HYDROCARBON
LANDFILL

☒ UNRESTRICTED

☐ OFF-SITE

☒ ON-SITE

☐ SALVAGE

☐ EXCESS

THIS MATERIAL HAS BEEN SURVEYED FOR
RADIOACTIVITY AND MEETS DOE
STANDARDS FOR RELEASE TO PUBLIC
USE

INITIAL

gpc

☐ CONTROLLED

DESCRIPTION:

16 ea BARRELS of
HYDROCARBON IMPACTED
SOIL

REMARKS:

EXP-2-25-98

DATE: 2-18-98 NO. A 5789

Reynolds Electrical & Engineering Co., Inc.
Radiological Control Department-Ramatrol

Material Clearance

MONITOR: McCloskey

ORGANIZATION: BN ER

SURVEY LOCATION: A-6

FROM: A-6

TO: A-6 HYDROCARBON LANDFILL

☒ UNRESTRICTED

☐ OFF-SITE

☒ ON-SITE

☐ SALVAGE

☐ EXCESS

THIS MATERIAL HAS BEEN SURVEYED FOR
RADIOACTIVITY AND MEETS DOE
STANDARDS FOR RELEASE TO PUBLIC
USE

INITIAL

gpc

☐ CONTROLLED

DESCRIPTION:

16 ea BARRELS OF
HYDROCARBON IMPACTED
SOIL

REMARKS:

EXP-2-25-98

APPENDIX C
BOREHOLE LOGS

GEOLOGIC LOGS FOR 25-3101-1

PROJECT: CAU 452, CAS 25-25-09

GEOLOGIST/LOGGER: J.F. Bonn

LOCATION: South of Building 25-3101

DRILLING COMPANY: Bechtel Nevada

BEGINNING DATE: January 21, 1998

DRILL RIG MODEL: Mobile Drill B-59

ENDING DATE: January 21, 1998

DRILLING METHOD: Hollow-stem auger

GROUND SURFACE ELEVATION:
Approx. 3640 feet above mean sea level

SAMPLING METHOD: Split-spoon sampler (2-feet long by 2.5-inches in diameter) driven with 140-pound 30-inch drop hammer

BOREHOLE DIAMETER: 7 inches

BOREHOLE COMPLETION: Backfilled with sand to approx. 5 feet below ground surface and capped with bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					Ground Surface
					0 to 0.3 ft. ASPHALT.
5 (1.5)					0.3 to approx. 7 ft. SAND (SP): Yellowish Brown (10YR5/4); 10% non-plastic fines; 90% predominantly-fine (to medium) sand, trace coarse sand; trace fine gravel; damp; no hydrocarbon odor.
					Approx. 7 to approx. 9 ft. SANDY GRAVEL (GP): 25% fine to coarse sand, 75% fine to coarse gravel to 1 in.
10 (3.0)	30.7	>2,000			Approx. 9 to approx. 18 ft. GRAVELLY SAND (SP): Yellowish Brown (10YR5/4); 10% non-plastic fines; 70% predominantly-fine (to coarse) sand; 20% fine to coarse gravel; damp, hydrocarbon odor.
15 (4.6)	53.7	>2,000			At 15 ft: As above, 5% non-plastic fines; 65% predominantly-fine (to coarse) sand; 30% fine to coarse gravel; damp, hydrocarbon odor.
20 (6.1)	20.4	872			Approx. 18 to approx. 28 ft: SAND (SP): Yellowish Brown (10YR5/4); 5% non-plastic fines; 95% predominantly-fine (to coarse) sand; trace fine to medium gravel; damp, slight hydrocarbon odor.
25 (7.6)	2.0	60			At 25 ft: As above, size distribution of sand becomes slightly more coarse.
30 (9.1)					(continued on following page)

PROJECT: CAU 452, CAS 25-25-09**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** South of Building 25-3101**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 21, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 21, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3640 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
30 (9.1)		17			(continued from preceding page)
					Approx. 28 to 36 ft. GRAVELLY SAND (SW): Yellowish Brown (10YR5/4); 5% non-plastic fines; 80% fine to coarse sand; 15% fine to medium gravel; trace coarse gravel; damp, no hydrocarbon odor.
35 (10.7)		8			At 35 ft: As above.
					Drilling Terminated At 36 Feet.
40 (12.2)					
45 (13.7)					
50 (15.2)					
60 (18.3)					

PROJECT: CAU 452, CAS 25-25-09

GEOLOGIST/LOGGER: J.F. Bonn

LOCATION: South of Building 25-3101

DRILLING COMPANY: Bechtel Nevada

BEGINNING DATE: January 22, 1998

DRILL RIG MODEL: Mobile Drill B-59

ENDING DATE: January 22, 1998

DRILLING METHOD: Hollow-stem auger

GROUND SURFACE ELEVATION:
Approx. 3640 feet above mean sea level

SAMPLING METHOD: Split-spoon sampler (2-feet long by 2.5-inches in diameter) driven with 140-pound 30-inch drop hammer

BOREHOLE DIAMETER: 7 inches

BOREHOLE COMPLETION: Backfilled with sand to approx. 5 feet below ground surface and capped with bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					Ground Surface
					0 to 0.3 ft. ASPHALT.
					0.3 to approx. 7 ft. SAND (SP): Yellowish Brown (10YR4/4); 10% non-plastic fines; 90% predominantly-fine (to medium) sand, trace coarse sand; damp; no hydrocarbon odor.
5 (1.5)					
					Approx. 7 to approx. 9 ft. SANDY GRAVEL (GP): 5% non-plastic fines; 25% fine to coarse sand, 70% fine to coarse gravel to 1 in.
10 (3.0)	0	19			Approx. 9 to 21 ft. SAND (SP): Yellowish Brown (10YR5/4); 5% non-plastic fines; 85% predominantly-fine and medium (to coarse) sand; 10% fine to medium gravel; damp, no hydrocarbon odor.
					At 12 ft: Difficult drilling then refusal, relocated borehole 2 ft. west.
15 (4.6)	0	8			At 15 ft: As above, Brown (10YR4/3); 5% non-plastic fines; 85% predominantly-fine (to coarse) sand; 5% fine gravel; damp, no hydrocarbon odor.
20 (6.1)	0	12			At 20 ft: As above, 5% non-plastic fines; 95% predominantly-fine (to coarse) sand; trace fine gravel; damp, no hydrocarbon odor.
					Drilling Terminated At 21 Feet.
25 (7.6)					
30 (9.1)					

PROJECT: CAU 452, CAS 25-25-09**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** South of Building 25-3101**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 26, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 26, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3640 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long by 2.5-inches in diameter) driven with 140-pound 30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to approx. 5 feet below ground surface and capped with bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					Ground Surface
					0 to 0.3 ft. ASPHALT.
					0.3 to approx. 7 ft. SAND (SP): Dark Yellowish Brown (10YR4/4); trace non-plastic fines; predominantly-fine (to medium) sand; damp; no hydrocarbon odor.
5 (1.5)					
					Approx. 7 to approx. 9 ft. SANDY GRAVEL (GP): Dark Yellowish Brown (10YR4/4); 5% non-plastic fines; 20% fine to coarse sand, 75% fine to coarse gravel; damp; no hydrocarbon odor.
10 (3.0)	0	13			Approx. 9 to approx. 13 ft. SAND (SP): Dark Yellowish Brown (10YR4/4); 5% non-plastic fines; 90% predominantly-fine (to coarse) sand; 5% fine to medium gravel; damp; no hydrocarbon odor.
15 (4.6)	0	8			Approx. 13 to approx. 18 ft. GRAVELLY SAND (SP): 5% non-plastic fines; 70% predominantly-fine (to coarse) sand; 25% fine to coarse gravel to 1 in; damp; no hydrocarbon odor.
20 (6.1)	0	0			Approx. 18 to 21 ft. SAND (SP): Dark Yellowish Brown (10YR4/4); 5% non-plastic fines; 90% predominantly-fine (to coarse) sand; 5% fine to medium gravel; damp; no hydrocarbon odor.
					Drilling Terminated At 21 Feet.
25 (7.6)					
30 (9.1)					

GEOLOGIC LOGS FOR 25-3102-3

PROJECT: CAU 452, CAS 25-25-14

GEOLOGIST/LOGGER: J.F. Bonn

LOCATION: Southwest of Building 25-3102

DRILLING COMPANY: Bechtel Nevada

BEGINNING DATE: January 27, 1998

DRILL RIG MODEL: Mobile Drill B-59

ENDING DATE: January 28, 1998

DRILLING METHOD: Hollow-stem auger

GROUND SURFACE ELEVATION:
Approx. 3640 feet above mean sea levelSAMPLING METHOD: Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer

BOREHOLE DIAMETER: 7 inches

BOREHOLE COMPLETION: Backfilled with sand to
approx. 5 feet below ground surface and capped with
3/8-inch bentonite hole plug to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					Ground Surface
5 (1.5)					0 to approx. 15 ft. FILL: Pea-gravel backfill from UST excavation.
10 (3.0)					
15 (4.6)					Approx. 15 to approx. 21 ft. SAND (SP): Reddish Brown (5YR4/4); 5% non-plastic fines; 90% predominantly-fine (to coarse) sand; 5% fine to medium gravel; damp, hydrocarbon odor.
20 (6.1)	0				At 20 ft: As above, increased proportion of gravel.
25 (7.6)	0	92			Approx. 21 to 36 ft. GRAVELLY SAND (SP): Reddish Brown (5YR5/4); 5% non-plastic fines; 80% predominantly-fine (to coarse) sand; 15% fine to medium gravel; damp, no hydrocarbon odor.
30 (9.1)					(continued on following page)

PROJECT: CAU 452, CAS 25-25-14**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** Southwest of Building 25-3102**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 27, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 28, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3640 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
3/8-inch bentonite hole plug to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
30 (9.1)	0	28			(continued from preceding page)
					At 30 ft: As above, sand more well graded.
35 (10.7)	0	12			At 35 ft: As above, fine to coarse gravel.
					Drilling Terminated At 36 Feet.
40 (12.2)					
45 (13.7)					
50 (15.2)					
55 (16.8)					
60 (18.3)					

PROJECT: CAU 452, CAS 25-25-14**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** Southwest of Building 25-3102**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 26, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 26, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3640 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
1 foot of 3/8-inch bentonite hole plug and 4 feet of
cement to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					<i>Ground Surface</i>
5 (1.5)					0 to approx. 14 ft. SAND (SP): Dark Yellowish Brown (10YR4/4); 5% non-plastic fines; 95% predominantly-fine (to coarse) sand; trace fine gravel; dry, no hydrocarbon odor.
10 (3.0)	0	913			At 10 ft: As above, Reddish Brown (5YR4/4); 10% non-plastic fines; 90% predominantly-fine (to medium) sand, trace coarse sand; dry to damp, no hydrocarbon odor. At 13 ft: Increased proportion of gravel and hydrocarbon odor in cuttings.
15 (4.6)	17.6	>2000			Approx. 14 to 31 ft. GRAVELLY SAND (SP): Reddish Brown (5YR4/4); 10% non-plastic fines; 75% fine to coarse sand; 5% fine to coarse gravel; damp, moderate hydrocarbon odor.
20 (6.1)	2.2	225			At 20 ft: As above.
25 (7.6)	0	12			At 25 ft: As above, no hydrocarbon odor.
30 (9.1)					(continued on following page)

PROJECT: CAU 452, CAS 25-25-14**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** Southwest of Building 25-3102**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 26, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 26, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3640 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE TOTAL DEPTH:** 31 feet**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
1 foot of 3/8-inch bentonite hole plug and 4 feet of
cement to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
30 (9.1)		8			(continued from preceding page) At 30 ft. As above.
					Drilling Terminated At 31 Feet.
35 (10.7)					
40 (12.2)					
45 (13.7)					
50 (15.2)					
55 (16.8)					
60 (18.3)					

PROJECT: CAU 452, CAS 25-25-14**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** Southwest of Building 25-3102**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 27, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 27, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3640 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
1 foot of 3/8-inch bentonite hole plug and 4 feet of
cement to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					Ground Surface
				0 to 4 ft. FILL: Type II fill material.
5 (1.5)					4 to approx. 8 ft. SAND (SP): Dark Yellowish Brown (10YR4/4); 5% non-plastic fines; 90% predominantly-fine (to coarse) sand; 5% fine to medium gravel; damp, no hydrocarbon odor.
10 (3.0)	0				Approx. 8 to 21 ft. GRAVELLY SAND (SP): Reddish Brown (5YR4/4); 5% non-plastic fines; 80% fine to coarse sand; 15% fine to coarse gravel; damp, no hydrocarbon odor.
15 (4.6)	0	7			At 15 ft: As above.
				At 17 ft: Difficult drilling in hard gravel zone, gravel to 1.5 in. in drill cuttings.
20 (6.1)	0	0			At 20 ft: As above, 5% non-plastic fines; 70% well-graded fine to coarse sand; 25% fine to coarse gravel; damp, no hydrocarbon odor.
					Drilling Terminated At 21 Feet.
25 (7.6)					
30 (9.1)					

GEOLOGIC LOGS FOR 25-3152-1

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 15, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 15, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3600 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					Ground Surface
5 (1.5)					0 to approx. 18 ft. SILTY SAND (SM) : Yellowish Brown (10YR5/4); 15% non-plastic fines; 80% fine to coarse sand; 5% fine gravel; damp, no hydrocarbon odor.
10 (3.0)					
15 (4.6)					
20 (6.1)	0	0			Approx. 18 to approx. 23 ft. SAND (SP) : Brown (10YR4/3); 10% non-plastic fines; 80% fine to coarse sand; 10% fine gravel; damp, no hydrocarbon odor.
25 (7.6)	0	0			Approx. 23 to 46 ft. SILTY SAND (SM) : Brown (10YR4/3); 15% non-plastic fines; 85% fine to coarse sand; trace fine gravel; damp, no hydrocarbon odor.
30 (9.1)					(continued on following page)

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 15, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 15, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3600 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
30 (9.1)	3.6	1100			(continued from preceding page) At 30 ft: As above, hydrocarbon odor.
35 (10.7)	46	1750			At 35 ft: As above.
40 (12.2)	22.1	0			At 40 ft: 15% non-plastic fines; 80% fine to coarse sand; 5% fine gravel; trace coarse gravel to 1 in; damp, no hydrocarbon odor.
45 (13.7)	3.6	0			At 45 ft: As above with increased proportion of medium sand.
50 (15.2)					Drilling Terminated At 46 Feet.
55 (16.8)					
60 (18.3)					

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 20, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 20, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3600 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					Ground Surface
5 (1.5)					0 to approx. 33 ft. SILTY SAND (SM): Yellowish Brown (10YR5/4); 15% non-plastic fines; 85% predominantly-fine (to coarse) sand; trace fine gravel; damp, no hydrocarbon odor.
10 (3.0)					
15 (4.6)					
20 (6.1)	0	0			
25 (7.6)	0	1.0			At 20 ft. As above.
					At 25 ft. As above.
30 (9.1)					(continued on following page)

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 20, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 20, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3600 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
30 (9.1)	0	9.0			(continued from preceding page) At 30 ft. As above.
35 (10.7)	0	0			Approx. 33 to approx. 38 ft. SAND (SP): Brown (10YR5/3); 10% non-plastic fines; 90% fine to coarse sand; damp, no hydrocarbon odor.
40 (12.2)	0	8.0			Approx. 38 to 41 ft. SILTY SAND (SM): Yellowish Brown (10YR5/4); 15% non-plastic fines; 85% fine to coarse sand; trace fine gravel; damp, no hydrocarbon odor.
45 (13.7)					Drilling Terminated At 41 Feet.
50 (15.2)					
55 (16.8)					
60 (18.3)					

PROJECT: CAU 452, CAS 25-25-15

GEOLOGIST/LOGGER: J.F. Bonn

LOCATION: West of Building 25-3152

DRILLING COMPANY: Bechtel Nevada

BEGINNING DATE: January 20, 1998

DRILL RIG MODEL: Mobile Drill B-59

ENDING DATE: January 20, 1998

DRILLING METHOD: Hollow-stem auger

GROUND SURFACE ELEVATION:
Approx. 3600 feet above mean sea level

SAMPLING METHOD: Split-spoon sampler (2-feet long by 2.5-inches in diameter) driven with 140-pound 30-inch drop hammer

BOREHOLE DIAMETER: 7 inches

BOREHOLE COMPLETION: Backfilled with sand to approx. 5 feet below ground surface and capped with bentonite and concrete to the ground surface

BOREHOLE TOTAL DEPTH: 41 feet

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					Ground Surface
5 (1.5)					0 to approx. 33 ft. SILTY SAND (SM) : Yellowish Brown (10YR5/4); 15% non-plastic fines; 80% predominantly-fine (to coarse) sand; 5% fine gravel; damp, no hydrocarbon odor.
10 (3.0)					
15 (4.6)					
20 (6.1)		2			
25 (7.6)		0			At 20 ft: As above.
					At 25 ft: 85% fine to coarse sand; trace fine gravel.
30 (9.1)					(continued on following page)

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 20, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 20, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3600 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
30 (9.1)		7			(continued from preceding page) At 30 ft: Trace coarse sand; no gravel.
35 (10.7)		2			Approx. 33 to approx. 38 ft. SAND (SP): Yellowish Brown (10YR5/4); 10% non-plastic fines; 90% fine to medium sand, trace coarse sand; trace fine gravel; damp, no hydrocarbon odor.
40 (12.2)		0			Approx. 38 to 41 ft. SILTY SAND (SM): Yellowish Brown (10YR5/4); 15% non-plastic fines; 85% fine to medium sand, trace coarse sand; damp, no hydrocarbon odor.
45 (13.7)					Drilling Terminated At 41 Feet.
50 (15.2)					
55 (16.8)					
60 (18.3)					

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 14, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 14, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**

Approx. 3600 feet above mean sea level

SAMPLING METHOD: Split-spoon sampler (2-feet long by 2.5-inches in diameter) driven with 140-pound 30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to approx. 5 feet below ground surface and capped with bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					<i>Ground Surface</i>
					0 to approx. 33 ft. SILTY SAND (SM): Yellowish Brown (10YR5/4); 15% non-plastic fines; 85% fine to medium sand, trace coarse sand; trace fine gravel; damp, no hydrocarbon odor.
5 (1.5)					
10 (3.0)	0	25			At 10 ft: 90% fine to coarse sand; 10% fine gravel; damp; no hydrocarbon odor.
15 (4.6)	0	38			At 15 ft: Medium gravel noted.
20 (6.1)	0	79			At 20 ft: 15% non-plastic fines; 65% fine to coarse sand; 20% fine to medium gravel; damp; no hydrocarbon odor.
25 (7.6)	0	38			At 25 ft: As above.
30 (9.1)					(continued on following page)

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 14, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 14, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3600 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
30 (9.1)	0	225			(continued from preceding page) At 30 ft: As above.
35 (10.7)	80	>2000			Approx. 33 to approx. 43 ft. SAND (SP): Yellowish Brown (10YR5/4); 10% non-plastic fines; 85% fine to coarse sand; 5% fine gravel; damp, moderate hydrocarbon odor.
40 (12.2)	29	213			At 40 ft: 10% non-plastic fines; 90% fine to medium sand; damp; moderate hydrocarbon odor.
45 (13.7)	6.4	172			Approx. 43 to 51 ft. SILTY SAND (SM): Yellowish Brown (10YR5/4); 15% non-plastic fines; 80% fine to coarse sand; 5% fine gravel; damp, no hydrocarbon odor. At 48 to 49 ft: Very difficult drilling.
50 (15.2)	0	32			At 50 ft: As above.
55 (16.8)					Drilling Terminated At 51 Feet.
60 (18.3)					

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 29, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 29, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3600 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long by 2.5-inches in diameter) driven with 140-pound 30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to approx. 5 feet below ground surface and capped with bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					<i>Ground Surface</i> 0 to 1 ft. FILL: 1/4-inch pea gravel.
5 (1.5)					1 to approx. 18 ft. SILTY SAND (SM): Yellowish Brown (10YR5/4); 15% non-plastic fines; 85% fine to coarse sand, trace fine gravel; damp, no hydrocarbon odor.
10 (3.0)			Grab Sample		
15 (4.6)					
20 (6.1)			Grab Sample		Approx. 18 to approx. 23 ft. GRAVELLY SAND (SW): Yellowish Brown (10YR5/4); 5% non-plastic fines; 80% fine to coarse sand; 15% fine gravel; damp, minor hydrocarbon odor.
25 (7.6)			Grab Sample		Approx 23 to 56 ft. SILTY SAND (SM): Brown (10YR4/3); 15% non-plastic fines; 85% fine to coarse sand, trace fine gravel; damp, no hydrocarbon odor.
30 (9.1)					(continued on following page)

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** January 29, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** January 29, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**

Approx. 3600 feet above mean sea level

SAMPLING METHOD: Split-spoon sampler (2-feet long by 2.5-inches in diameter) driven with 140-pound 30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to approx. 5 feet below ground surface and capped with bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
30 (9.1)					(continued from preceding page)
35 (10.7)			Grab Sample		At 35 ft: As above.
40 (12.2)	64.6		Split Spoon		At 40 ft: As above; hydrocarbon odor.
45 (13.7)	6.6		Split Spoon		At 45 ft: As above; Dark Yellowish Brown (10YR4/4).
50 (15.2)	9.9	221	Split Spoon		At 50 ft: As above; Brown (10YR5/3); 25% non-plastic fines; 75% fine to coarse sand; damp, slight hydrocarbon odor. At 52 to 53 ft: Zone of fine to coarse gravel.
55 (16.8)	0.0		Split Spoon		At 55 ft: 25% non-plastic fines; 75% fine to coarse sand; damp, no hydrocarbon odor. At 55 to 56 ft: Very difficult drilling, auger refusal at 56 ft.
					Drilling Terminated At 56 Feet.
60 (18.3)					

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** February 2, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** February 2, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**

Approx. 3600 feet above mean sea level

SAMPLING METHOD: Split-spoon sampler (2-feet long by 2.5-inches in diameter) driven with 140-pound 30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to approx. 5 feet below ground surface and capped with bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
0					Ground Surface
5 (1.5)			Grab Sample		0 to 51 ft. SILTY SAND (SM): Yellowish Brown (10YR5/4); 15% non-plastic fines; 85% fine to coarse sand, trace fine gravel; damp, no hydrocarbon odor.
10 (3.0)					
15 (4.6)					
20 (6.1)			Grab Sample		
25 (7.6)					At 20 ft: As above.
30 (9.1)					(continued on following page)

PROJECT: CAU 452, CAS 25-25-15**GEOLOGIST/LOGGER:** J.F. Bonn**LOCATION:** West of Building 25-3152**DRILLING COMPANY:** Bechtel Nevada**BEGINNING DATE:** February 2, 1998**DRILL RIG MODEL:** Mobile Drill B-59**ENDING DATE:** February 2, 1998**DRILLING METHOD:** Hollow-stem auger**GROUND SURFACE ELEVATION:**
Approx. 3600 feet above mean sea level**SAMPLING METHOD:** Split-spoon sampler (2-feet long
by 2.5-inches in diameter) driven with 140-pound
30-inch drop hammer**BOREHOLE DIAMETER:** 7 inches**BOREHOLE COMPLETION:** Backfilled with sand to
approx. 5 feet below ground surface and capped with
bentonite and concrete to the ground surface

DEPTH feet (meters)	OVM ppm	PETRO FLAG ppm	SAMPLE INTERVAL	GRAPHIC LOG	SOIL DESCRIPTION
30 (9.1)			Grab Sample		(continued from preceding page) At 30 ft: As above.
35 (10.7)					
40 (12.2)	0	6	Split Spoon		At 40 ft: As above; trace fine to medium gravel.
45 (13.7)	0	0	Split Spoon		At 45 ft: As above: 15% non-plastic fines; 75% fine to coarse sand; 10% fine to medium gravel; damp, no hydrocarbon odor.
50 (15.2)	0	6	Split Spoon		At 50 ft: As above.
					Drilling Terminated At 51 Feet.
60 (18.3)					

APPENDIX D

LABORATORY ANALYTICAL DATA

NEL LABORATORIES

Reno • Las Vegas
Phoenix • Burbank

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

PROJECT NAME: Environ. Restoration
PROJECT NUMBER: 2150

NEL ORDER ID: L9801134

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

Samples submitted for this project were not sampled by NEL Laboratories. Samples were received by NEL in good condition, under chain of custody on 1/16/98.

Samples were analyzed as received.

Where applicable we have included the following quality control data:

Method blank - used to demonstrate absence of contamination or interferences in the analytical process.
Laboratory Control Spike (LCS) - used to demonstrate laboratory ability to perform the method within specifications by spiking representative analytes into a clean matrix.
Surrogates - compounds added to each sample to ensure that the method requirements are met for each individual sample.

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

1/23/98
Date

CERTIFICATIONS:

	<u>Reno</u>	<u>Las Vegas</u>	<u>Burbank</u>
Arizona	AZ0520	AZ0518	AZ0325
California	1707	2002	1192
US Army Corps of Engineers	Certified	Certified	Certified

	<u>Reno</u>	<u>Las Vegas</u>	<u>Burbank</u>
Idaho	Certified	Certified	
Montana	Certified	Certified	
Nevada	NV033	NV052	CA084
Washington			Certified

NEL LABORATORIES

CLIENT: Bechtel Nevada Corp.

PROJECT NAME: Environ. Restoration

PROJECT NUMBER: 2150

TEST: Total Extractable Petroleum Hydrocarbons by EPA Method 8015M, July 1992

METHOD: EPA 8015M

MATRIX: Soil

ANALYST: Michael

CLIENT SAMPLE ID	SAMPLE DATE	NEL SAMPLE ID	RESULT mg/kg	C.R.	Reporting Limit	Surrogate Recovery*	EXTRACTED	ANALYZED
3152/B4 @ 35	1/14/98	L9801134-01	1600	D	10.mg/kg	90 %	1/21/98	1/21/98
3152/B4 @ 40	1/14/98	L9801134-02	77	D	10.mg/kg	90 %	1/21/98	1/21/98
3152/B4 @ 45	1/14/98	L9801134-03	ND		10.mg/kg	92 %	1/21/98	1/21/98
3152/B4 @ 50	1/14/98	L9801134-04	ND		10.mg/kg	87 %	1/21/98	1/21/98
3152/B1 @ 35	1/15/98	L9801134-05	1700	D	10.mg/kg	97 %	1/21/98	1/21/98
3152/B1 @ 40	1/15/98	L9801134-06	620	D	10.mg/kg	90 %	1/21/98	1/22/98
3152/B1 @ 45	1/15/98	L9801134-07	74	D	10.mg/kg	92 %	1/21/98	1/22/98

CR: Carbon Range

D Diesel Range Organics (C10 to C28).

Note: The reporting limit for Oil Range Organics in soil is 50 mg/kg.

QUALITY CONTROL DATA (Total for Gas and Diesel Range):

Sample ID	Result	Acceptable Range	Surrogate Recovery*	Sample Number
Blank, 980121tphs -BLK	ND	< 10.mg/kg	83 %	NA
LCS, 980121tphs - LCS	78 %	55 - 102 %	92 %	NA
MS, 980121tphs - MS	80 %	38.3 - 110 %	93 %	L9801187-01
MSD, 980121tphs - MSD	80 %	38.3 - 110 %	97 %	L9801187-01

ND - Not Detected

* Surrogate used was Octacosane, acceptance limits 70-130%.

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

PROJECT / CLIENT INFORMATION

Project: ENVIRON. RESTORATION BN Org#: 2150

Charge Number: C4N-3A0DE ASL Prog:

Project Manager: DAVE COWSE / JERRY BOND

Phone: 295-7341 Fax: 295-7726 M/S: NTS 306

REPORT INFORMATION

Send Report to: TED REDDING

Phone: 295-7220 Fax: 295-4773 M/S: NTS 273

Turnaround: (X) Standard [20 days Non-rad, 60 days (or negotiated) Rad] 5 DAY
() RUSH Preliminary by: Final by:

Final report format: (X) Standard () NTS-WAC () Other:

SAMPLE INFORMATION

Sampling Site: AREA 25-Bldg. 3152

The samples submitted contain (check);
() Hazardous () Radioactive () 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. HYDROCARBON ONLY

LAB USE ONLY

Rad SDG: Non-rad SDG:

Rad Packet: Non-rad Packet:

Client Services Representative:

Will these analyses be performed under a signed SOW? () YES () NO

If so, do analyses entered here agree with the SOW? () YES () NO () N/A

If not, identify the variation:

CSR initials indicating review and approval: Date:

ANALYSES & METHOD

I T E M	ID/DESCRIPTION	SAMPLING		MATRIX
		DATE	TIME	
0	3152/B4@35	1-14-98	1320	SOIL
1	3152/B4@40	↓	1345	↓
2	3152/B4@45	↓	1410	↓
3	3152/B4@50	↓	1500	↓
4	3152/B1@35	1-15-98	1315	↓
5	3152/B1@40	↓	1335	↓
6	3152/B1@45	↓	1400	↓
7				
8				
9				

TPH AS DIESEL 8015M

SAMPLE RECEIPT INFORMATION

Are all sample containers received intact? (X) Y () N
Explain Discrepancies:Do the labels agree with this form? (X) Y () N
Explain Discrepancies:Was a Material Clearance Tag submitted? () Y () N
Explain Discrepancies:

COMMENTS

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

L9801134

Transfer of samples submitted for analyses

Sampled/Relinquished (Signature) DATE / TIME Received by (Signature)

Jung Bond 1-16-98/907 Mike Eng

Complete if samples will be shipped to an OFF-SITE Subcontract Laboratory

Relinquished (BN Representative Signature) DATE / TIME Received (Courier & Tracking Info.)

Relinquished (Courier & Tracking Info.) DATE / TIME Received (1st tier Subcontractor Rep)

Relinquished (1st tier Subcontractor Rep) DATE / TIME Received (2nd tier Subcontractor Rep)

NEL LABORATORIES

Reno • Las Vegas
Phoenix • Burbank

Las Vegas Division
4208 Arcata Way, Suite A • Las Vegas, NV 89030
(702) 657-1010 • Fax: (702) 657-1577
1-888-368-328

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

PROJECT NAME: A25 Release Sites
PROJECT NUMBER: 2150

NEL ORDER ID: L9801222

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

Samples submitted for this project were not sampled by NEL Laboratories. Samples were received by NEL in good condition, under chain of custody on 1/23/98.

Samples were analyzed as received.

Where applicable we have included the following quality control data:

Method blank - used to demonstrate absence of contamination or interferences in the analytical process.
Laboratory Control Spike (LCS) - used to demonstrate laboratory ability to perform the method within specifications by spiking representative analytes into a clean matrix.
Surrogates - compounds added to each sample to ensure that the method requirements are met for each individual sample.

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

1/27/98
Date

CERTIFICATIONS:

	<u>Reno</u>	<u>Las Vegas</u>	<u>Burbank</u>
Arizona	AZ0520	AZ0518	AZ0325
California	1707	2002	1192
US Army Corps of Engineers	Certified	Certified	Certified

	<u>Reno</u>	<u>Las Vegas</u>	<u>Burbank</u>
Idaho	Certified	Certified	
Montana	Certified	Certified	
Nevada	NV033	NV052	CA084
Washington			Certified

NEL LABORATORIES

CLIENT: Bechtel Nevada Corp.
PROJECT NAME: A25 Release Sites
PROJECT NUMBER: 2150

TEST: Total Extractable Petroleum Hydrocarbons by EPA Method 8015M, July 1992

METHOD: EPA 8015M

MATRIX: Soil

ANALYST: Suzanne

CLIENT SAMPLE ID	SAMPLE DATE	NEL SAMPLE ID	RESULT mg/kg	C.R.	Reporting Limit	Surrogate Recovery*	EXTRACTED	ANALYZED
3152/B3 @ 30	1/20/98	L9801222-01	13	D	10.mg/kg	84 %	1/27/98	1/28/98
3152/B3 @ 35	1/20/98	L9801222-02	ND		10.mg/kg	81 %	1/27/98	1/28/98
3152/B3 @ 40	1/20/98	L9801222-03	ND		10.mg/kg	79 %	1/27/98	1/28/98
3152/B2 @ 30	1/20/98	L9801222-04	ND		10.mg/kg	88 %	1/27/98	1/28/98
3152/B2 @ 35	1/20/98	L9801222-05	ND		10.mg/kg	80 %	1/27/98	1/28/98
3152/B2 @ 40	1/20/98	L9801222-06	120	D	10.mg/kg	94 %	1/27/98	1/28/98
3101/B1 @ 20	1/21/98	L9801222-07	420	D	10.mg/kg	89 %	1/27/98	1/28/98
3101/B1 @ 25	1/21/98	L9801222-08	ND		10.mg/kg	81 %	1/27/98	1/28/98
3101/B1 @ 30	1/21/98	L9801222-09	ND		10.mg/kg	84 %	1/27/98	1/28/98
3101/B1 @ 35	1/21/98	L9801222-10	ND		10.mg/kg	85 %	1/27/98	1/28/98
3101/B2 @ 10	1/22/98	L9801222-11	ND		10.mg/kg	88 %	1/27/98	1/28/98
3101/B2 @ 13	1/22/98	L9801222-12	ND		10.mg/kg	86 %	1/27/98	1/28/98
3101/B2 @ 15	1/22/98	L9801222-13	ND		10.mg/kg	92 %	1/27/98	1/28/98

CR: Carbon Range

D Diesel Range Organics (C10 to C28).

Note: The reporting limit for Oil Range Organics in soil is 50 mg/kg.

QUALITY CONTROL DATA (Total for Gas and Diesel Range):

Sample ID	Result	Acceptable Range	Surrogate Recovery*	Sample Number
Blank, 980127tphs -BLK	ND	< 10. mg/kg	78 %	NA
LCS, 980127tphs - LCS	72 %	55 - 102 %	85 %	NA
MS, 980127tphs - MS	78 %	38.3 - 110 %	99 %	L9801222-01
MSD, 980127tphs - MSD	79 %	38.3 - 110 %	101 %	L9801222-01

ND - Not Detected

* Surrogate used was Octacosane, acceptance limits 70-130%.

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

NEL LABORATORIES

CLIENT: Bechtel Nevada Corp.

PROJECT NAME: A25 Release Sites

PROJECT NUMBER: 2150

TEST: Total Extractable Petroleum Hydrocarbons by EPA Method 8015M, July 1992

METHOD: EPA 8015M

MATRIX: Soil

ANALYST: Suzanne

CLIENT SAMPLE ID	SAMPLE DATE	NEL SAMPLE ID	RESULT mg/kg	C.R.	Reporting Limit	Surrogate Recovery*	EXTRACTED	ANALYZED
3101/B2 @ 20	1/22/98	L9801222-14	ND		10.mg/kg	85 %	1/27/98	1/28/98

CR: Carbon Range

D Diesel Range Organics (C10 to C28).

Note: The reporting limit for Oil Range Organics in soil is 50 mg/kg.

QUALITY CONTROL DATA (Total for Gas and Diesel Range):

Sample ID	Result	Acceptable Range	Surrogate Recovery*	Sample Number
Blank, 980127tphs -BLK	ND	< 10.mg/kg	78 %	NA
LCS, 980127tphs - LCS	72 %	55 - 102 %	85 %	NA
MS, 980127tphs - MS	78 %	38.3 - 110 %	99 %	L9801222-01
MSD, 980127tphs - MSD	79 %	38.3 - 110 %	101 %	L9801222-01

ND - Not Detected

* Surrogate used was Octacosane, acceptance limits 70-130%.

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

P.O. 16874

ANALYTICAL SERVICES LABORATORY
SERVICES REQUEST FORM AND CHAIN OF CUSTODY

Rev. 23-DEC-97

Page 1 of 2

1/28

PROJECT / CLIENT INFORMATION				REPORT INFORMATION				SAMPLE INFORMATION					
Project: A25 RELEASE SITES		BN Org#: 2150		Send Report to: TED REDDING				Sampling Site: AREA 25					
Charge Number: CYN-3MODE		ASL Prog:		Phone: 295-7220		Fax: 295-4773		M/S: NTS223		The samples submitted contain (check): () Hazardous () Radioactive () 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.			
Project Manager: STEVE NACHT / JERRY BONN				Turnaround: () Standard [30 days Non-rad, 60 days (or negotiated) Rad] 72 HR () RUSH Preliminary by: Final by:				HYDROCARBON ONLY					
Phone: 295-7341		Fax: 295-7761		M/S: NTS306		Final report format: (X) Standard () NTS-WAC () Other:							
LAB USE ONLY				ANALYSES & METHOD				SAMPLE RECEIPT INFORMATION					
Rad SDG:		Non-rad SDG:		TPH AS DIESEL 80ISM				Are all sample containers received intact? () Y () N					
Rad Packet:		Non-rad Packet:						Explain Discrepancies:					
Client Services Representative: TED REDDING								Do the labels agree with this form? () Y () N					
Will these analyses be performed under a signed SOW? (X) YES () NO If so, do analyses entered here agree with the SOW? (X) YES () NO () N/A If not, identify the variation: CSR initials indicating review and approval: Date:								Explain Discrepancies:					
Will these analyses be performed under a signed SOW? (X) YES () NO If so, do analyses entered here agree with the SOW? (X) YES () NO () N/A If not, identify the variation: CSR initials indicating review and approval: Date:				ANALYSES & METHOD				Was a Material Clearance Tag submitted? () Y () N					
Explain Discrepancies:													
COMMENTS (Preservative, size/volume, MS/MSD, special analysis, rad matrix code, count time, etc.)													
0 3152/B3C30 1/20/98 1110 SOIL X								19801222 (01)					
1 3152/B3C35 1/20/98 1130 X								(02)					
2 3152/B3C40 1/20/98 1145 X								(03) 3E					
3 3152/B2C30 1/20/98 1455 X								(04)					
4 3152/B2C35 1/20/98 1510 X								(05)					
5 3152/B2C40 1/20/98 1520 X								(06)					
6 3101/B1C20 1/21/98 1450 X								(07)					
7 3101/B1C25 1/21/98 1505 X								(08)					
8 3101/B1C30 1/21/98 1535 X								(09)					
9 3101/B1C35 1/21/98 1550 X				(10)									
Transfer of samples submitted for analyses				Complete if samples will be shipped to an OFF-SITE Subcontract Laboratory									
Sampled/Relinquished (Signature)		DATE / TIME		Received by (Signature)		Relinquished (BN Representative Signature)		DATE / TIME		Received (Courier & Tracking Info.)			
[Signature]		1/23/98 919		[Signature]									
						Relinquished (Courier & Tracking Info.)		DATE / TIME		Received (1st tier Subcontractor Rep)			
						Relinquished (1st tier Subcontractor Rep)		DATE / TIME		Received (2nd tier Subcontractor Rep)			

SAMPLE INFORMATION

The samples submitted contain (check);
☐ Hazardous ☐ Radioactive ☐ 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.

Final report format: () Standard () NTS-WAC () Other:

SAMPLE RECEIPT INFORMATION

CSR initials indicating review and approval: _____ Date: _____

Was a Material Clearance Tag submitted? () Y () N
Explain Discrepancies:

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

69601222-11
 Mack Y N None 12
 Condition when received None 13
 14

Relinquished (1st tier Subcontractor Rep)	DATE / TIME	Received (2nd tier Subcontractor Rep)
---	-------------	---------------------------------------

Received (2nd tier Subcontractor Rep)

NEL LABORATORIES

Reno • Las Vegas
Phoenix • Burbank

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: Area 2 & 25
PROJECT NUMBER: 2150

NEL ORDER ID: L9802053

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 2/6/98.

Samples were analyzed as received.

Where applicable we have included the following quality control data:

Method blank - used to demonstrate absence of contamination or interferences in the analytical process.
Laboratory Control Spike (LCS) - used to demonstrate laboratory ability to perform the method within specifications by spiking representative analytes into a clean matrix.
Surrogates - compounds added to each sample to ensure that the method requirements are met for each individual sample.

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

Michael Amarat Sr S.V.W.
Stan Van Wagenen
Laboratory Manager

2/13/98
Date

CERTIFICATIONS:

	<u>Reno</u>	<u>Las Vegas</u>	<u>Burbank</u>
Arizona	AZ0520	AZ0518	AZ0325
California	1707	2002	1192
US Army Corps of Engineers	Certified	Certified	Certified

	<u>Reno</u>	<u>Las Vegas</u>	<u>Burbank</u>
Idaho	Certified	Certified	
Montana	Certified	Certified	
Nevada	NV033	NV052	CA084
Washington			Certified

**TOTAL
PETROLEUM
HYDROCARBONS
DIESEL RANGE ORGANICS
RESULTS**

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Area 2 & 25
PROJECT NUMBER: 2150

CLIENT ID: 3152/B6 @ 40'
DATE SAMPLED: 2/2/98
NEL SAMPLE ID: L9802053-01

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

MATRIX: Solid
DILUTION: 2

EXTRACTED: 2/6/98
ANALYZED: 2/9/98

ANALYST: Michael

PARAMETER	Result	Reporting Limit
Diesel Range (C12-C22)	ND	20. mg/Kg

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Area 2 & 25
PROJECT NUMBER: 2150

CLIENT ID: 3152/B6 @ 45'
DATE SAMPLED: 2/2/98
NEL SAMPLE ID: L9802053-02

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

MATRIX: Solid

EXTRACTED: 2/6/98

DILUTION: 2

ANALYZED: 2/9/98

ANALYST: Michael

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	ND	20. mg/Kg

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Area 2 & 25
PROJECT NUMBER: 2150

CLIENT ID: 3152/B6 @ 50'
DATE SAMPLED: 2/2/98
NEL SAMPLE ID: L9802053-03

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

MATRIX: Solid
DILUTION: 2

EXTRACTED: 2/6/98
ANALYZED: 2/9/98

ANALYST: Michael

PARAMETER	Result	Reporting Limit
Diesel Range (C12-C22)	ND	20. mg/Kg

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Area 2 & 25
PROJECT NUMBER: 2150

CLIENT ID: Method Blank
DATE SAMPLED: NA
NEL SAMPLE ID: 980206tphs-ase-BK

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

MATRIX: Solid

EXTRACTED: 2/6/98

ANALYZED: 2/9/98

ANALYST: Michael

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	ND	20 mg/Kg

**SUPPORTING
DATA**

SAMPLE DELIVERY GROUP: SDG V352 CLIENT: RP - JERRY BONN

LABORATORY: NEL

FINAL REPORT RECEIVED: 03/16/98

DATE REVIEWED: 03/24/98

REVIEWED BY:

TPH - DIESEL:

MATRIX: SOIL

ARE TPH DATA ACCEPTABLE: YES

ARE CRITERIA MET

1. QC SAMPLES ACCEPTABLE
2. MATRIX SPIKE ACCEPTABLE
3. METHOD BLANK ACCEPTABLE
4. HOLDING TIMES ACCEPTABLE

YESYESYESYES

		# DAYS	ACCEPTABLE
a. Earliest Date Sampled:	<u>2/2/98</u>	<u>0</u>	<u>0</u>
b. Date ASL Received:	<u>N/A</u>	<u>N/A</u>	<u>1</u>
c. Date Contract Lab Received:	<u>2/6/98</u>	<u>4</u>	<u>5</u>
d. Date Extracted:	<u>2/6/98</u>	<u>4</u>	<u>14</u>
e. Date Analyzed:	<u>2/9/98</u>	<u>3</u>	<u>40</u>
5. CALCULATIONS ACCEPTABLE:	<u>YES</u>		
6. CORRECT CONC. UNITS USED:	<u>YES</u>		
7. FORMS ACCEPTABLE:	<u>YES</u>		
8. CHAIN-OF-CUSTODY AGREES:	<u>YES</u>		

COMMENTS: Method associated quality assurance and control criteria were met. Preliminary results
were transmitted to the client on 2/10 and 2/17/98.

PROJECT / CLIENT INFORMATION		REPORT INFORMATION		SAMPLE INFORMATION	
Project: <u>P.O. 16874</u>	BN Org#: <u>250</u>	Send Report to: <u>TEO REDDING</u>	<u>2/9 - 2/13</u>		Sampling Site: <u>AREAS 2 & 25</u>
Charge Number: <u>C4N3A0DE</u>	ASL Prog:	Phone: <u>295-7220</u>	Fax: <u>295-4773</u>	M/S: <u>NTS</u>	The samples submitted contain (check); () Hazardous () Radioactive () Unknown
Project Manager: <u>STEVE NACHT / SEERY BONN</u>		Turnaround: () Standard [30 days Non-rad, 60 days (or negotiated) Rad] (X) RUSH Preliminary by: _____ Final by: _____		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. <u>HYDROCARBON</u>	
Phone: <u>295-7341</u>	Fax: <u>295-7761</u>	M/S: <u>NTS</u>		Final report format: (X) Standard () NTS-WAC () Other: _____	

LAB USE ONLY					ANALYSES & METHOD										SAMPLE RECEIPT INFORMATION		
Rad SDG:	Non-rad SDG: <u>V352</u>				TPHAS DIESEL SOIL												Are all sample containers received intact? () Y () N
Rad Packet:	Non-rad Packet: <u>W1373R</u>																Explain Discrepancies: _____
Client Services Representative: <u>3/24/98</u>																	Do the labels agree with this form? () Y () N
Will these analyses be performed under a signed SOW? (X) YES () NO If so, do analyses entered here agree with the SOW? (X) YES () NO () N/A If not, identify the variation: _____ CSR initials indicating review and approval: _____ Date: _____																	Explain Discrepancies: _____
I T E M	ID/DESCRIPTION	DATE	TIME	MATRIX													COMMENTS (Preservative, size/volume, MS/MSD, special analysis, rad matrix code, count time, etc.)
0	3152/B6 @ 40'	2/2/98	1500	SOIL	X	-01											* 24HR
1	3152/B6 @ 45'		1510		X	-02											* 24HR
2	3152/B6 @ 50'	↓	1530		X	-03											* 24HR * (4)
3	2-300/B1 @ 15'	2/4/98	1100		X	-04											5 DAY
4	2-300/B1 @ 18'		1115		X	-05											5 DAY
5	2-300/B1 @ 20'		1215		X	-06											5 DAY
6	2-300/B1 @ 25'		1145		X	-07											* 24HR
7	2-300/B1 @ 30'	↓	1245		X	-08											* 24HR * (1)
8	2-300/B2 @ 10'	2/5/98	0915		X	-09											* 24HR
9	2-300/B2 @ 15'	↓	0935		X	-10											* 24HR

Transfer of samples submitted for analyses

Sampled/Relinquished (Signature)	DATE / TIME	Received by (Signature)
<u>Steve Nacht</u>	2-6-98/8:30am	<u>Michael Duran</u>

Complete if samples will be shipped to an OFF-SITE Subcontract Laboratory

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

Relinquished (1st tier Subcontractor Rep)	DATE / TIME	Received (2nd tier Subcontractor Rep)
---	-------------	---------------------------------------

NEL LABORATORIES

Reno • Las Vegas
Phoenix • Burbank

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

PROJECT NAME: NA
PROJECT NUMBER: NA

NEL ORDER ID: L9801291

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

Samples submitted for this project were not sampled by NEL Laboratories. Samples were received by NEL in good condition, under chain of custody on 1/30/98.

Samples were analyzed as received.

Where applicable we have included the following quality control data:

Method blank - used to demonstrate absence of contamination or interferences in the analytical process.
Laboratory Control Spike (LCS) - used to demonstrate laboratory ability to perform the method within specifications by spiking representative analytes into a clean matrix.
Surrogates - compounds added to each sample to ensure that the method requirements are met for each individual sample.

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

Michael A. Wagenen
Stan Van Wagenen
Laboratory Manager

2/2/98
Date

CERTIFICATIONS:

	<u>Reno</u>	<u>Las Vegas</u>	<u>Burbank</u>		<u>Reno</u>	<u>Las Vegas</u>	<u>Burbank</u>
Arizona	AZ0520	AZ0518	AZ0325	Idaho	Certified	Certified	
California	1707	2002	1192	Montana	Certified	Certified	
US Army Corps of Engineers	Certified	Certified	Certified	Nevada	NV033	NV052	CA084
				Washington			Certified

NEL LABORATORIES

Reno • Las Vegas
Phoenix • Burbank

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

PROJECT NAME: NA
PROJECT NUMBER: NA

NEL ORDER ID: L9801291

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

Samples submitted for this project were not sampled by NEL Laboratories. Samples were received by NEL in good condition, under chain of custody on 1/30/98.

Samples were analyzed as received.

Where applicable we have included the following quality control data:

- Method blank - used to demonstrate absence of contamination or interferences in the analytical process.
- Laboratory Control Spike (LCS) - used to demonstrate laboratory ability to perform the method within specifications by spiking representative analytes into a clean matrix.
- Surrogates - compounds added to each sample to ensure that the method requirements are met for each individual sample.

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

2/4/98
Date

CERTIFICATIONS:

	<u>Reno</u>	<u>Las Vegas</u>	<u>Burbank</u>
Arizona	AZ0520	AZ0518	AZ0325
California	1707	2002	1192
US Army Corps of Engineers	Certified	Certified	Certified

	<u>Reno</u>	<u>Las Vegas</u>	<u>Burbank</u>
Idaho	Certified	Certified	
Montana	Certified	Certified	
Nevada	NV033	NV052	CA084
Washington			Certified

L9801291-

ANALYTICAL SERVICES LABORATORY
SERVICES REQUEST FORM AND CHAIN OF CUSTODY

PROJECT / CLIENT INFORMATION			REPORT INFORMATION			SAMPLE INFORMATION	
Project: <u>P.O. 16874</u>		BN Org#:	Send Report to: <u>TEO Reading</u>		Sampling Site: <u>ARSA 25</u>		
Charge Number: <u>CYN-3A00E</u>	ASL Prog:	Phone:	Fax:	M/S:	The samples submitted contain (check); ☐ Hazardous ☐ Radioactive ☐ 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. <u>Hydrocarbon only</u>		
Project Manager:		Turnaround: ☐ Standard [30 days Non-rad, 60 days (or negotiated) Rad] ☐ RUSH Preliminary by: _____ Final by: _____					
Phone:	Fax:	M/S:	Final report format: ☐ Standard ☐ NTS-WAC ☐ Other: _____				

[illegible]

Transfer of samples submitted for analyses			Complete if samples will be shipped to an OFF-SITE Subcontract Laboratory		
Sampled/Relinquished (Signature)	DATE / TIME	Received by (Signature)	Relinquished (BN Representative Signature)	DATE / TIME	Received (Courier & Tracking Info.)
1/30/98 0805
			Relinquished (Courier & Tracking Info.)	DATE / TIME	Received (1st tier Subcontractor Rep)
			Relinquished (1st tier Subcontractor Rep)	DATE / TIME	Received (2nd tier Subcontractor Rep)

NEL LABORATORIES

CLIENT: Bechtel Nevada

CLIENT ID: 3101/B 3 @ 10

PROJECT NAME: Mercury Pitch

DATE SAMPLED: 1/26/98

PROJECT NUMBER: NA

NEL SAMPLE ID: L9801291-01

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Suzanne

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	ND	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	ND	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	87	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Mercury Pitch
PROJECT NUMBER: NA

CLIENT ID: 3101/B 3 @ 15
DATE SAMPLED: 1/26/98
NEL SAMPLE ID: L9801291-02

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

MATRIX: Soil
DILUTION: 1

EXTRACTED: 1/30/98
ANALYZED: 2/1/98

ANALYST: Suzanne

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

ND - Not Detected

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	100	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada

CLIENT ID: 3101/B 3 @ 20

PROJECT NAME: Mercury Pitch

DATE SAMPLED: 1/26/98

PROJECT NUMBER: NA

NEL SAMPLE ID: L9801291-03

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Suzanne

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

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	97	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Mercury Pitch
PROJECT NUMBER: NA

CLIENT ID: 3102/B 2 @ 15
DATE SAMPLED: 1/26/98
NEL SAMPLE ID: L9801291-04

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Suzanne

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	1400 mg/Kg	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	1400 mg/Kg	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	99	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada

CLIENT ID: 3102/B 2 @ 20

PROJECT NAME: Mercury Pitch

DATE SAMPLED: 1/26/98

PROJECT NUMBER: NA

NEL SAMPLE ID: L9801291-05

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Suzanne

PARAMETER	Result	Reporting Limit
Diesel Range (C12-C22)	27 mg/Kg	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	27 mg/Kg	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	80	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Mercury Pitch
PROJECT NUMBER: NA

CLIENT ID: 3102/B 2 @ 25
DATE SAMPLED: 1/26/98
NEL SAMPLE ID: L9801291-06

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

MATRIX: Soil
DILUTION: 1

EXTRACTED: 1/30/98
ANALYZED: 2/1/98

ANALYST: Suzanne

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	ND	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	ND	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	91	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Mercury Pitch
PROJECT NUMBER: NA

CLIENT ID: 3102/B 2 @ 30
DATE SAMPLED: 1/26/98
NEL SAMPLE ID: L9801291-07

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

MATRIX: Soil
DILUTION: 1

EXTRACTED: 1/30/98
ANALYZED: 2/1/98

ANALYST: Suzanne

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	ND	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	ND	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	89	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Mercury Pitch
PROJECT NUMBER: NA

CLIENT ID: 3102/B 3 @ 10
DATE SAMPLED: 1/27/98
NEL SAMPLE ID: L9801291-08

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Suzanne

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	ND	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	ND	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	97	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada

CLIENT ID: 3102/B 3 @ 15

PROJECT NAME: Mercury Pitch

DATE SAMPLED: 1/27/98

PROJECT NUMBER: NA

NEL SAMPLE ID: L9801291-09

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Suzanne

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	ND	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	ND	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	98	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Mercury Pitch
PROJECT NUMBER: NA

CLIENT ID: 3102/B 3 @ 20
DATE SAMPLED: 1/27/98
NEL SAMPLE ID: L9801291-10

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Suzanne

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	ND	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	ND	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	97	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada

CLIENT ID: 3102/B 1 @ 25

PROJECT NAME: Mercury Pitch

DATE SAMPLED: 1/28/98

PROJECT NUMBER: NA

NEL SAMPLE ID: L9801291-11

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Suzanne

PARAMETER	Result	Reporting Limit
Diesel Range (C12-C22)	26 mg/Kg	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	26 mg/Kg	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	94	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Mercury Pitch
PROJECT NUMBER: NA

CLIENT ID: 3102/B 1 @ 30
DATE SAMPLED: 1/28/98
NEL SAMPLE ID: L9801291-12

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Suzanne

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	ND	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	ND	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	94	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Mercury Pitch
PROJECT NUMBER: NA

CLIENT ID: 3102/B 1 @ 35
DATE SAMPLED: 1/28/98
NEL SAMPLE ID: L9801291-13

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

MATRIX: Soil
DILUTION: 1

EXTRACTED: 1/30/98
ANALYZED: 2/1/98

ANALYST: Suzanne

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

ND - Not Detected

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	92	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada

CLIENT ID: 3152/B 5 @ 50

PROJECT NAME: Mercury Pitch

DATE SAMPLED: 1/29/98

PROJECT NUMBER: NA

NEL SAMPLE ID: L9801291-14

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Suzanne

PARAMETER	Result	Reporting Limit
Diesel Range (C12-C22)	77 mg/Kg	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	77 mg/Kg	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

Surrogate	% Recovery	Acceptable Range
Octacosane	89	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada

CLIENT ID: 3152/B 5 @ 55

PROJECT NAME: Mercury Pitch

DATE SAMPLED: 1/29/98

PROJECT NUMBER: NA

NEL SAMPLE ID: L9801291-15

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

MATRIX: Soil

EXTRACTED: 1/30/98

DILUTION: 1

ANALYZED: 2/1/98

ANALYST: Michael

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	27 mg/Kg	10. mg/Kg
Oil Range (C12-C34)	ND	50. mg/Kg
Total	27 mg/Kg	10. mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	92	70 - 130

NEL LABORATORIES

CLIENT: Bechtel Nevada
PROJECT NAME: Mercury Pitch
PROJECT NUMBER: NA

CLIENT ID: Method Blank
DATE SAMPLED: NA
NEL SAMPLE ID: 980130TPHS-BK

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

MATRIX: Soil

EXTRACTED: 1/30/98

ANALYZED: 2/1/98

ANALYST: Suzanne

<u>PARAMETER</u>	<u>Result</u>	<u>Reporting Limit</u>
Diesel Range (C12-C22)	ND	10 mg/Kg
Oil Range (C12-C34)	ND	50 mg/Kg
Total	ND	10 mg/Kg

ND - Not Detected

QUALITY CONTROL DATA:

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Octacosane	86	70 - 130

DISTRIBUTION LIST

DISTRIBUTION LIST

Copies

Paul Liebendorfer
Bureau of Federal Facilities
Division of Environmental Protection
333 W. Nye Lane, Room 13B
Carson City, NV 89706-0866

2

Donald Garrepy
Bureau of Federal Facilities
Division of Environmental Protection
555E. Washington, Suite 4300
Las Vegas, NV 89101

2

U.S. Department of Energy, Nevada Operations Office
Environmental Restoration Division
P. O. Box 98518
Las Vegas, NV 89193-8518

J. L. Appenzeller-Wing
C. W. Barrow
S. Bonnell

1

2

1

Public Reading Room
P.O. Box 98521, M/S NLV040
Las Vegas, NV 89193-8521

1

Technical Information Resource Center
P.O. Box 98518, M/S 505
Las Vegas, NV 89193-8518

1

U.S. Department of Energy,
Office of Scientific and Technical Information
175 Oak Ridge Turnpike
P. O. Box 62
Oak Ridge, TN 37831

2

Bechtel Nevada
P. O. Box 98521
Las Vegas, NV 89193-8521

Correspondence Control

J. F. Bonn

1

D. K. Cowser

1

S. J. Nacht

1

K. A. Quintana

1

1