June 26, 2007
File: 78578.03

Lisa Johnson
Nevada Division of Environmental Protection
Bureau of Corrective Actions
901 South Stewart Street, Suite 4001
Carson City, Nevada 89701-5249

SUBJECT: Sampling and Analysis Plan
Proposed Wal-Mart Site 2106-03
US 395 and East 2nd Street
Reno, Nevada

Dear Ms. Johnson:

Kleinfelder is pleased to submit this Sampling and Analysis Plan (SAP) for the proposed Wal-Mart Site at US 395 and East 2nd Street in Reno, Nevada.

If you have any questions or require additional information, please do not hesitate to call either of the undersigned at (775) 689-7800.

Respectfully Submitted,

KLEINFELDER WEST, INC.

Prepared by:	Reviewed by:
Joshua P. Fortmann, C.E.M.	David J. Herzog, C.E.M.
Project Geologist	Senior Hydrogeologist

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable Federal, State and local statutes, regulations, and ordinances.

Attachment: Sampling and Analysis Plan

cc: Scott Nebesky, Reno-Sparks Indian Colony

78578.03/REN7R103

SAMPLING AND ANALYSIS PLAN
PROPOSED WAL-MART SITE 2106-03
US 395 AT EAST 2nd STREET
RENO, NEVADA

June 26, 2007
File: 78578.03

Prepared for:

Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City, Nevada 89701-5249

Prepared by:

Kleinfelder, Inc.
4835 Longley Lane
Reno, Nevada 89502

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ACRONYMS AND ABBREVIATIONS

APN	Assessors Parcel Number
ARARs	Applicable or relevant and appropriate requirements
BIA	Bureau of Indian Affairs
CEM	Certified environmental manager
CERCLA	Comprehensive Environmental Response, Cleanup, and Liability Act
DQA	Data quality assessment
DQI	Data quality indicator
DQO	Data quality objective
DRO	Diesel range organics
EPA	U.S. Environmental Protection Agency
ESA	Environmental site assessment
GC/MS	Gas chromatography and mass spectrometry
GRO	Gasoline range organics
HASP	Health and Safety Plan
HRGC/HRMS	High resolution gas chromatography/high resolution mass spectrometry
ICAL	Initial calibration
ICP/MS	Inductively coupled plasma (atomic emission spectrometry) and mass spectrometry
IDW	Investigation-derived waste
LCS	Laboratory control sample
MDL	Method detection limit
Mg/Kg	Milligrams per kilogram
mg/L	Milligrams per liter
mL	milliliters
µg/L	Micrograms per liter
MQO	Measurement quality objective
MS/MSD	Matrix spike and matrix spike duplicate
NAC	Nevada Administrative Code
NBP	Nevada Brownfields Program
NCP	National Contingency Plan
NDEP	Nevada Division of Environmental Protection
NPL	National Priorities List
NRS	Nevada Revised Statues
OERR	Office of Emergency and Remedial Response
ORO	Oil range organics
PARCCS	Precision, accuracy, representativeness, completeness, comparability, and sensitivity
PPE	Personal protective equipment
PRG	Preliminary remediation goal
PRQL	Project-required quantitation limit
QA	Quality assurance
QA/QC	Quality assurance/quality control
QARrP	Quality Assurance Program Plan

QC	Quality control
QCSR	Quality control summary report
QL	Quantitation limit
%R	Percent recovery
RBCA	Risk-based corrective action
RCRA	Resource Conservation and Recovery Act
RDL	Required detection limit
RECs	Recognized environmental conditions
RPD	Relative percent difference
SAP	Sampling and analysis plan (an integrated field sampling plan and QA project plan)
SD	Standard deviation
SOP	Standard operating procedure
SOW	Statement of work
SQL	Sample quantitation limit
TCLP	Toxicity characteristic leaching procedure
TDS	Total dissolved solids
TPH	Total petroleum hydrocarbons
TSA	Technical system audit
USTs	Underground storage tanks
VOC	Volatile organic compound
VSP	Visual sample plan
WCDHD	Washoe County District Health Department
YSA	Yearly systems audit

SAMPLING AND ANALYSIS PLAN
PROPOSED WAL-MART SITE
RENO, NEVADA

1. INTRODUCTION

Kleinfelder, Inc. (Kleinfelder) prepared this Sampling and Analysis Plan (SAP) for the proposed Wal-Mart site 2106-03 in Reno, Nevada (Site). The Site is located at the northeast corner of the intersection of US 395 and East 2nd Street, as shown in Plate 1. This SAP was prepared in accordance with the Nevada Division of Environmental Protection (NDEP) Quality Assurance Program Plan (QAPrP) (NDEP 2007).

Historical information and analytical data indicate that Site soil has been contaminated from recent and historical on-site activities. Although the Site is currently vacant, several commercial and industrial businesses previously operated on the property. The most recent occupants included a nightclub, a plant nursery, an automobile scrap yard, and an automobile body shop. Historical operations included various automotive shops and other businesses that may have used chemicals and/or generated waste.

The purpose of this project is to complete additional soil remediation activities at the Site and allow for Site closure. Based on available soil sample results, contaminants remaining in Site soil at concentrations exceeding cleanup goals are total petroleum hydrocarbons (TPH) – diesel range organics (DRO), TPH-oil range organics (ORO), and lead. Soil samples will be collected from two on-site areas, as discussed below.

Lead Cleanup Area

Soil samples will be collected from the lead cleanup area and used to assess lead concentrations in soil. Based on the sample results, soil containing lead at concentrations exceeding EPA residential cleanup goals and/or soil containing leachable lead at hazardous concentrations will be remediated.

Drum Storage/Soil Stained Area (DS-4)

After trench excavation at proposed underground utility locations, soil samples will be collected from the DS-4 area to assess remaining TPH concentrations in soil.

1.1 Site Name

Proposed Wal-Mart Supercenter #2106-03.

1.2 Site Location

The Site is approximately 22.52 acres in size, and is composed of Washoe County Assessors Parcel Numbers (APNs) 012-301-04, -07, -08, -10, -12, -13, -15, -19, and 20. The Site is located in an area of predominantly commercial and industrial site use. The Truckee River is located adjacent to the north of the Site, East 2nd Street is located adjacent to the south, US-395 is located adjacent to the west, and a State of Nevada restitution facility is located adjacent to the east.

1.3 Responsible Agency

The majority of the Site is held in trust by the federal government for the Reno-Sparks Indian Colony. One parcel at the Site (APN 012-301-20, 0.62 acres) is owned by the Reno-Sparks Indian Colony, and is not yet accepted into trust by the Bureau of Indian Affairs (BIA). This portion of the subject Site remains under the jurisdiction of the NDEP and Washoe County District Health Department (WCDHD). The trust property is under oversight of the EPA, with guidance provided by NDEP. Proposed remediation activities will be performed on trust and non-trust property.

1.4 Project Organization

The Quality Assurance (QA) Manager will oversee quality control (QC) of all activities and review all documents. The QA Manager will provide project oversight to ensure that the data quality objectives (DQOs) are achieved, but will not direct the field or data acquisition activities. Prior to the start of field activities, the Project Manager will hold preparatory meetings with the field crew to discuss project objectives, field methods, the Health and Safety Plan (HASP), and to ensure the use of appropriate documentation during field activities. If field conditions require modifications to protocols outlined in the plan, or if questions arise, then the field crew will stop work and the field team leader will contact the Project Manager for direction. The field team leader is responsible for overseeing the sampling activities in the field and ensuring that the SAP is followed.

TITLE/RESPONSIBILITY	NAME/PHONE NUMBER
Kleinfelder Project Manager	Josh Fortmann/ 775-689-7800
Kleinfelder Quality Assurance Manager	Dave Herzog/ 775-689-7800
Kleinfelder Field Team Leader	Phil Tousignant/ 775-689-7800
Kleinfelder Data Manager	Phil Tousignant/ 775-689-7800
Kleinfelder Health and Safety Officer	Jim Grippa/ 801-261-3306

2. BACKGROUND

The Site consists of predominantly vacant commercial and industrial property. One structure and multiple building foundations remain on the Site. All underground utilities, including nine septic systems, remain onsite. Plate 1 shows the layout of the Site, and the locations of remediation activities.

The Site was previously occupied by multiple indistrial and commercial businesses that most recently included a nightclub, a plant nursery, an automobile scrap yard, and an automobile body shop. Historic Site occupants included a radiator shop, an auto repair facility, a machine shop, a sheet metal fabricating company, a glass company, an electronics lab and a construction company. Chemical use by previous occupants included petroleum products and metals. Septic systems used by previous occupants remain onsite.

Assessment activities performed in 2005 and 2006 identified concentrations of lead and TPH in soil in excess of regulatory limits. The majority of soil containing concentrations of TPH above the action level was remediated in 2007. However, limited additional remediation is warranted for soil containing concentrations of TPH above the action level and concentrations of lead above the EPA residential cleanup goals and/or leachable lead at hazardous concentrations.

2.1 Sampling Area Description

The two proposed remediation areas are shown in Plate 1.

Lead Cleanup Area
The existing excavation and proposed additional excavation areas are located on the south side of the Site (Plate 1). Soil samples will be collected to assess the lead concentration in soil, and to assess the soil volume to be remediated.

Drum Storage/Soil Stained Area (DS-4)
The existing excavation and proposed additional excavation areas are located near the northeast corner of the Site (Plate 1). Soil samples will be collected after trench excavation to confirm removal of TPH-contaminated soil from the utility trenches.

2.2 Operational History

The Reno-Sparks Indian Colony currently owns the Site. Based on available information, at least one residential structure, located at 2395 East 2nd Street, was present on the Site as early as 1925. The Site use during, and prior to, this time is unknown. Based on the available information, sources of soil contamination included commercial and industrial businesses located onsite that used petroleum and metal products, including auto repair shops and a radiator shop.

2.3 Previous Investigations and Regulatory Involvement

Several site assessments have been performed for the Site, or portions of the Site. These include:

- A&R Environmental Services, Preliminary Phase ESA Report #APN 012-301-12, dated May 10 1995
- A&R Environmental Services, Preliminary Phase ESA Report #APN 012-301-13, dated May 31, 1995
- SEA, Incorporated, Phase I ESA Report #2025-04-01, dated February 8, 1996
- Broadbent and Associates, Inc., Phase II ESA Report #97548.2, dated October, 1997
- Pezonella Associates, Inc. Consulting Engineers and Geologists, Phase I ESA Report #3844.04K, dated October 21, 1999
- Pezonella Associates, Inc. Consulting Engineers and Geologists, Phase I ESA Report #3844.06K, dated May 17, 2000
- Pezonella Associates, Inc. Consulting Engineers and Geologists, Phase I ESA Report #3844.07K, dated March 19, 2001
- CEI Engineering Associates, Inc., Phase I ESA, Future Wal-Mart Supercenter #2106-03, Project # 18637.0.20180, dated November, 2004
- CEI Engineering Associates, Inc., Phase I ESA, Future Wal-Mart Supercenter #2106-03, Project # 18637.0.20180, dated November, 2006

The Phase I ESA reports prepared by CEI Engineering Associate, Inc. (CEI), November 2004 and November 2006, were provided to Kleinfelder for review. The 2006 report included a summary of the Recognized Environmental Conditions (RECs) that were identified in CEI's 2004 Phase I ESA for the Site. The 2004 report identified several RECs, including:

- Numerous 55 gallon drums of waste oil, oil products, and unknown substances
- Surface staining from unknown substances

- An above-ground storage tank
- Construction equipment, waste tires, and buckets of waste oil and other unknown substances
- A painting operation at a work yard
- Septic tank systems
- Light ballasts and fixtures

The 2004 Phase I ESA also provided documentation regarding five heating oil underground storage tanks (USTs) on the Site. One UST was formerly located at 2395 E. 2nd Street. The UST had been previously filled in-place with slurry, and one soil sample collected at the time of removal did not contain a reportable concentration of TPH. Additional documentation included four USTs located at 2445 E. 2nd Street. One UST (#1) was filled in-place with slurry in 1990, and reportedly remains on the Site. Two of the remaining USTs (#2 and #4) were filled with slurry prior to 1999 and removed in 1999. Soil samples were collected beneath the three removed USTs. Only one of the soil samples, from UST #4, contained a reportable concentration of TPH at 19 milligrams per kilogram (mg/Kg). A copy of a WCDHD "closure letter" was included, apparently in reference to UST #4. CEI did not identify any of the USTs as an REC.

The Phase I ESA prepared by CEI, dated November 2006, only revealed one REC, the former existence of numerous industrial/commercial operations historically located on the Site. The numerous drums and unknown waste containers had been removed, and only one structure remained on the Site. However, several concrete pads were still present and septic tanks/systems were left in place. According to the Phase I ESA, the other earlier assessments did not reveal additional RECs other than those identified by CEI.

Some of the historical occupants of the Site have included a radiator shop, an auto repair facility, a machine shop, a sheet metal fabricating company, a glass company, an electronics lab, and a construction company. A Maaco Auto Painting and Bodyshop, previously located on the Site at 2445 E. 2nd Street, was destroyed by an explosion in April 1999. The explosion resulted in a confirmed release of diesel, propane, paints, and thinner due to the runoff from fire suppression efforts. The WCDHD was the responding agency, and indicated that the runoff was minimal.

In September 2005, soil assessment for lead and TPH assessment, and soil remediation was performed. This included the collection of soil samples adjacent to the former radiator shop (2453 East 2nd Street) and the Buggy Barn (2455 East 2nd Street), and soil excavation. These activities were performed for the Reno Sparks Indian

Colony, and were not overseen by any regulatory agency. The stockpiled soil remains onsite.

In January 2006, Kleinfelder performed assessment activities at the Site including the collection of surface and subsurface soil samples at locations of TPH and hazardous materials use. The analytical results indicated concentrations of TPH and lead in Site soil in excess of regulatory limits. The applicable regulatory limits are the EPA Region 9 Preliminary Remediation Goal (PRG) for lead in soil at residential sites (400 mg/Kg) and the State of Nevada action level for TPH in soil (100 mg/kg).

2.4 Previous Remedial Activities

2.4.1 Lead Cleanup Area

Plate 1 shows the limits of the existing excavation at the lead cleanup area in the southern portion of the Site (in green). Soil remediation within the lead cleanup area included the excavation of approximately 485 tons of soil. Because concentrations of the lead in soil samples analyzed using the toxicity characteristic leaching procedure (TCLP) exceeded hazardous levels (5 mg/L), the excavated soil was disposed of as hazardous waste.

Soil containing lead in excess of the residential PRG remains onsite to the north and east of the existing excavation. Based on analytical results for soil samples collected for a supplemental assessment (Plate 2), the lateral extent of soil containing lead in excess of the residential PRG has been defined. Soil samples that contained lead concentrations in excess of the residential PRG are shown in bold-face font (Table 1).

Analytical results also indicate that soil containing TPH concentrations in excess of the action level is present in the sidewalls of the existing excavation at the lead cleanup area. Soil samples that contained TPH concentrations in excess of the action level are shown in bold-face font (Table 1).

2.4.2 Drum Storage/ Stained Soil Areas

Soil remediation was performed at a total of six areas of former drum storage and observed soil staining (DS-1, DS-3, DS-4, DS-6, DS-7 and DS-10). Soil excavation and disposal followed by confirmation sample collection was performed at all six areas. Remediation was completed at five areas, with area DS-4 (Plate 1) requiring additional remediation.

Completed soil remediation included the excavation of approximately 1,174 tons of soil. Based on the analytical results, soil containing TPH concentrations in excess of the action level was completely excavated at all locations except DS-4, where some TPH-contaminated soil remains. Following the stockpiling of approximately 225 tons of soil at DS-4, excavation activities were terminated. Soil containing TPH was observed on the north, west, and south sidewalls of the existing DS-4 excavation. Plate 3 presents a detail of the existing DS-4 excavation near the northeast corner of the Site and locations of supplemental assessment soil samples. Table 2 presents the analytical results for soil samples from DS-4.

2.5 Environmental and/or Human Impact

Based on the available data, TPH and lead-contaminated soils are present at the Site. However, adverse human health effects have not been documented at the Site.

3. PROJECT DATA QUALITY OBJECTIVES

3.1 Project Task and Problem Definition

The laboratory data that will be collected for this project will be definitive data. Definitive data are the result of quantitating organic and inorganic compounds using EPA procedures. The resulting data, if they meet QC criteria, will be used to delineate concentrations of lead and TPH in Site soils and to make decisions regarding the volume of soil to be remediated.

Based on previous investigations and our current knowledge of the Site, our investigation will focus on the lead cleanup area and drum storage/soil stained area DS-4.

3.2 Data Quality Objectives (DQOs) Process

The DQO process (EPA 2006) is a systematic planning tool that is used to establish performance or acceptance criteria. These criteria, in turn, serve as the basis for designing a plan for collecting data of sufficient quality and quantity to support the goals of a study. The DQO process consists of seven iterative steps, as described in the following sections and summarized in Table 3.

3.2.1 Step 1: State the Problem

Based on the available data, lead and TPH remain in Site soil at concentrations exceeding the cleanup goals. Additional data are needed for delineating areas of soil that require remediation, remediating those soils, and verifying that contaminant concentrations are sufficiently low to allow a risk-based closure of the Site.

3.2.2 Step 2: Identify Project Goals and Decision Statements

Lead Cleanup Area

The initial goal of the project is to delineate the volume of soil containing lead concentrations in excess of the residential PRG (400 mgKg); if so, remediation will be required. The project will also evaluate whether concentrations of lead, as determined by the toxicity characteristic leaching procedure (TCLP), exceed the action level of 5 mg/L lead in the leachate. Again, soils exceeding this action level will require remediation.

DS-4 Area

Data from this study will be used to guide excavation of soil containing TPH concentrations in excess of the action level (100 mg/Kg) in proposed utility trench locations. Soil exhibiting visual and/or olfactory evidence of TPH will be excavated from the trenches locations. Soil samples will be collected to assess removal of soil in excess of the action level. Based on the sample results, additional excavation may be necessary to complete remediation in the trench locations. Soil samples will also provide data to evaluate whether TPH concentrations in soil remaining after excavation require additional corrective action (using the factors contained in Nevada Administrative Code 445A.227).

3.2.3 Step 3: Identify Inputs Needed to Make Decisions

The project scope includes collecting additional analytical data for lead and TPH in Site soil located adjacent to areas of completed remediation (existing excavations) and proposed additional remediation. Tables 5, 6, 7, and 8 present action levels and reporting limits for the chemicals of concern.

Lead Cleanup Area

The soil in the lead cleanup area will be screened using the EPA residential PRG (400 mg/kg). The Site will be developed with a commercial structure, but the future Site user requires soils to meet the residential PRG for lead (400 mg/Kg). Due to the presence of undocumented fill in the building footprint, soil located in the building footprint will require excavation and reprocessing or removal. Based on the required excavation of soil during construction, the soil in the lead cleanup area will also be screened using the TCLP method.

DS-4 Area

The soil in the DS-4 area will be screened using the action level for TPH in soil. Soil will only be screened in the future utility trench locations (shown in red on Plate 1).

3.2.4 Step 4: Define Target Population and Study Boundaries

Soil sampling and remediation activities are anticipated to require three weeks. Section 4 provides soil sampling rationale, and Section 6.2 describes sampling procedures.

Lead Cleanup Area

The target population includes surface (0 to 0.5 ft below ground surface [bgs]) and subsurface (0.5 to 5 ft bgs) soil located adjacent to existing excavations. The anticipated area of excavation extends 10 feet north, 10 feet east, and 10 feet west of the existing excavation. The anticipated excavation area also includes the parking slab on the south side of the excavation. The anticipated maximum excavation depth is 5 feet bgs.

DS-4 Area

The target population is all soil located in future utility trench locations. It is anticipated that 100 linear feet of total trench will be installed to depths of 2 to 5 feet bgs. Based on the current survey, 4 sections of utility trench will be excavated north and south of the existing excavation, as shown in Plate 1.

3.2.5 Step 5: Develop Decision Rules

Lead Cleanup Area

If the total lead concentration in a soil sample exceeds the EPA Region 9 residential PRG for lead, then the entire soil grid will be excavated to a depth of 5 feet bgs and disposed of in an appropriate manner.

If the lead concentration in a TCLP leachate for a soil sample exceeds 5 mg/L, then the soil grid will be excavated to a depth of 5 feet bgs and disposed as hazardous waste.

DS-4 Area

If the TPH (TPH-DRO and TPH-ORO) concentration in a soil sample exceeds the action level for TPH in soil (100 mg/Kg), then the soil grid will be excavated to a depth of 2 or 5 feet bgs and disposed of in an appropriate manner.

3.2.6 Step 6: Specify Acceptance Criteria

Lead Cleanup Area

Systematic random samples will be collected from grid blocks, and the concentration data (total lead and TCLP lead) for each sample will be compared to the action levels for total (400 mg/Kg) and leachable lead (5 mg/L).

DS-4 Area

Concentration data for TPH in each soil sample will be compared to the action level of 100 mg/kg. If the concentration in the soil sample exceeds the action level, then additional soil in that trench section will be excavated.

3.2.7 Step 7: Optimize the Sampling Design

Lead Cleanup Area

A random systematic sampling design will define grid blocks of specific dimensions. Soil samples will then be collected from random locations within each grid block.

Each grid block will be represented by two soil samples (one sidewall sample and one ground surface sample). If the concentration of lead in either of the samples exceeds the limits for total lead (400 mg/kg) or TCLP lead (5 mg/L), then soil in that grid block will be excavated.

Following initial excavation of grid blocks, subsequent grid blocks will be represented by one sample (sidewall soil sample), and assessed as described above.

DS-4 Area

Systematic random samples will be collected from trench sections. Concentration data for TPH in soils will be compared to the Nevada action level of 100 mg/kg. If the concentration in the sample exceeds the action level, then additional soil in that trench section will be excavated for offsite disposal.

3.3 Data Quality Indicators (DQIs)

The effectiveness of a QA program is measured by the quality of data generated by the laboratory. Data quality is judged in terms of precision, accuracy, representativeness, completeness, comparability, and analytical sensitivity; referred to as the PARCCS parameters. Overall measurement quality objectives (MQOs) established for the Nevada Brownfields Program (NBP) are provided in Appendix D of the QAPrP (NDEP 2007). Specific MQOs applicable to this project are discussed in the following paragraphs.

Precision

Precision is the degree of mutual agreement between or among independent measurements of a similar property (usually reported as a standard deviation [SD] or relative percent difference [RPD]). This indicator relates to the analysis of duplicate laboratory or field samples. An RPD of <20% for water and <35% for soil, depending upon the chemical being analyzed, is generally acceptable. Typically field precision is assessed by co-located samples, field duplicates, or field splits; and laboratory precision is assessed using laboratory duplicates, matrix spike duplicates, or laboratory control sample duplicates.

The following QC data will be collected to assess field and analytical precision:

- Laboratory precision will be assessed by the analysis of QC samples in accordance with the referenced laboratory Standard Operating Procedures (SOPs), see Appendix A.

Additional QC information is provided in Section 10.

Accuracy

Accuracy is a determination of how close the measurement is to the true value. Accuracy can be assessed using laboratory control samples (LCSs), standard reference materials, or spiked environmental samples. The accuracy of the data submitted for this project will be assessed in the following manner:

The percent recovery of a matrix spike (MS), matrix spike duplicate (MSD), LCS, or spiked surrogates (organic analysis only) will be calculated. The level of target compounds that are found (if any) in laboratory method blanks will be checked. If a target compound is found above the practical quantitation limit in the method or field blank corresponding to a batch of samples and the same target compound is found in a sample, the data will not be "background subtracted," but will be qualified to indicate that the compound was detected in the blank.

Representativeness

Representativeness is a qualitative parameter that reflects the extent to which a given sample is characteristic of a given population at a specific location or under a given environmental condition. Representativeness is best satisfied by making certain that sampling locations are selected properly, a sufficient number of samples are collected, and an appropriate sampling technique is employed. Sampling locations, number of samples, and analytical methods are presented in Table 4. The sampling locations are based on the DQOs as described in Section 3.2. A systematic random sampling design will be employed. Section 4 provides soil sampling rationale and Section 6.2 describes sampling procedures.

Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared with the amount that was expected to be obtained under normal conditions. To be considered complete, the data set must contain all analytical results and data specified for the project. In addition, all data are compared to project requirements to ensure that specifications are met. Completeness is evaluated by comparing the project objectives to the quality and quantity of the data collected to determine if any deficiencies exist. Missing data can result from any number of circumstances ranging from sample acquisition and accessibility problems to sample breakage and rejection of analytical data because of QC deficiencies. Completeness will be quantitatively assessed as the percent of controlled QC parameters that are within limits.

The minimum requirement for completeness for all QC parameters, except holding times, will be 80%. The requirement for holding times will be 100%. Any deviations will be reported in the report narrative. Valid data are defined as those data points that are not qualified as rejected.

Comparability

Comparability expresses the confidence with which one data set can be compared to another data set measuring the same property. To ensure comparability, field procedures will be standardized and field operations will adhere to outlined procedures. Laboratory data comparability will be assured by use of established and approved analytical methods, consistency in the basis of analysis (wet weight, volume, etc.), and consistency in reporting units (mg/L, mg/Kg, etc.).

Analysis of standard reference materials will follow EPA or other standard analytical methods, which use standard units of measurement, methods of analysis, and reporting format.

Sensitivity (Detection Limits)

The laboratory shall report results below the required detection limit (RDL) and above the method detection limit (MDL) as “estimated” because, by definition, the accuracy and precision of the data at that level have greater uncertainty. Matrix effects (e.g., highly contaminated samples requiring dilution for analysis, dilution to bring detected levels within the range of calibration, and matrix interference requiring elevation of detection limits) will be considered in assessing compliance with the requirements for sensitivity. The RDL and action levels for the analytes of concern are listed in Tables 5 through 8.

3.4 Data Review and Validation

The intent of the data review and validation process is to establish the levels of PARCCS parameters of the final results with respect to the project MQOs.

As part of the data review process, Alpha Analytical, Inc. of Sparks, Nevada (Alpha) will generate and review all laboratory data. Regularly scheduled analysis of duplicates, standards, and spiked samples are routine aspects of data reduction, validation, and reporting procedures. Alpha will perform QA/QC procedures in accordance with the SOPs included as AppendixA.

The QA Manager will supervise and/or perform data quality assessment tasks. Kleinfelder will consistently evaluate and document measurement data to monitor consistency with MQOs, to quantitatively assess data quality, and to identify potential limitations to data use.

Kleinfelder will review field and analytical laboratory data generated for this project, including the following:

- Chain of custody documentation;
- Laboratory batch QC frequency;
- Results of batch and field QC analyses; and
- Sample results influenced by outlier QC sample results.

Each data point will be assessed as non-qualified or qualified based upon the acceptance criteria. Data may be qualified as "estimated" (J-qualified); these data are used as is. Some data may be qualified as "rejected" (R-qualified) if critical QC parameters are not met; these data are unusable for any purpose. Sample re-analysis, for data not meeting MQOs, will be considered as a possible corrective action. Third-party data validation will not be performed.

3.5 Data Management

A unique identification number will be assigned to each sample. This number will be an alphanumeric sequence that serves as an acronym to identify the sample. The sample area designation, sample number, and depth of the sample will be incorporated into the sample identification designation (ID). The following format will be used:

Sample ID: LAS01-5-01

LAS01- represents the Sample Area designation (Lead Area Sidewall Grid 1)
5- represents the depth at which the sample was collected (5 feet bgs)
01- represents the sample number (sample #1)

Information pertaining to a particular sample will be referenced by its identification number. This number will be entered on the sample data sheet, sample container, field logbook, and sample chain-of-custody form. Before sample collection, the sample label will be completed in waterproof ink and secured to the sample container.

A chain-of-custody form will be completed for each sample container. The chain-of-custody will include the laboratory identification number, sample location, sample fraction (abbreviation for sample container type and preservative), parameter list (abbreviation for the list of analytes to be performed), sample type, and Site ID. In addition, there are spaces for entry of the sample collection date and time, sample depth, sample collection technique, signature of the persons relinquishing and receiving samples, and the status of samples upon receipt by the laboratory.

3.6 Assessment Oversight

Before performing work in the field, environmental staff will review the scope of work, and the HASP (Appendix C), coordinate the work to be done with the Project Manager, assemble the necessary sample equipment containers, and check and clean equipment to be used in the field.

The QA Manager will oversee QC of all activities and review all documents. Prior to the start of field activities, the Project Manager will hold preparatory meetings with the field crew and ensure the use of appropriate forms during field activities. If field conditions require modifications to protocols outlined in the SAP or if questions arise, then the field crew will contact the Project Manager for direction.

As conditions in the field may vary, it may become necessary to implement minor modifications to sampling as presented in this plan. When appropriate, the QA Manager will be notified and a verbal approval will be obtained before implementing the changes. Modifications to the approved plan will be documented in the sampling project report as “deviations from the sampling plan”.

4. SAMPLING RATIONALE

Table 4 lists the locations and number of samples that will be collected, and specifies the analytical methods. The sampling rationale is discussed in Section 4.1.1. The rationale for choosing the analytical methods is presented in Section 4.1.2. Soil sample collection procedures are described in Sections 6.2 and 6.2.1.

4.1 Soil Sampling

Lead Cleanup Area

Kleinfelder will collect soil samples from the sidewalls of the existing excavation, and from the ground surface surrounding the excavation. The purpose of the soil samples is to provide additional lead concentration data for assessment of the soil volume to be excavated.

Soil containing lead in excess of the residential PRG will be excavated for disposal. In addition, if the total lead concentration within the soil grid is below the residential PRG, but the TCLP indicates hazardous concentrations, the soil will be excavated. This is intended to prevent soil containing lead at a hazardous concentration from remaining onsite and becoming disturbed during demolition and/or construction activities.

Following excavation of soil in excess of the residential PRG, or at a hazardous concentration, confirmation samples of the soil in the sidewalls of the excavated grids will be collected. Based on the sample results, additional soil will be excavated until soil containing lead in excess of applicable regulations is removed.

DS-4 Area

Soil samples will be collected as follows, from three general areas within the DS-4 area:

a) After excavation of soil within the proposed utility trenches, four soil samples will be collected from the utility trenches to confirm that soil containing TPH concentrations in excess of the action level has been excavated.
b) Two soil samples will be collected to the north and east of the existing sample locations at DS-4 to further assess the lateral extent of TPH in soil remaining in place.

c) Two soil samples will be collected from soil visually identified as “stained” to assess contaminant concentrations remaining at DS-4.

4.1.1 Soil Sampling Locations

Lead Cleanup Area

Soil samples will be collected using a gridded sampling design (see Plate 2). In plan view, the grid blocks are 10 feet by 10 feet in size. The existing excavation is five feet deep, so the sidewall area of each grid block will be 10 feet wide by 5 feet high. On the ground surface adjacent to the existing excavation, the width of each grid block will be 5 feet; so that the each ground surface grid block will be 10 feet long by five feet wide. The software ELIPGRID-PC (ORNL, 1995) was used to calculate the probability of detecting an assumed elliptical target (“hot spot”) given the selected grid size. The program output indicated that the selected grid size will result in a 95% probability of detecting an elliptical target with a semi-major axis length of 5 feet.

Soil samples will be collected from the excavation sidewall and the ground surface adjacent to the excavation at grid blocks 1, 2, 3, 4, 6, 7, 9, 10, 12, 13, 15, 16, 18, 19, 20, 21, 22, 24, 25, 27, 28, and 30. The soil samples will be collected from randomly selected locations in each grid block. The sidewall soil samples will be collected approximately two feet down the sidewall (depth of two feet bgs), and the ground surface soil samples will be collected from a depth of 0.5 feet bgs.

DS-4 Area

a) One soil sample will be collected from approximately every 25 linear feet of trench. Four sections of trench, approximately 25 feet long each, will be excavated at the locations shown in red in Plate 1. The soil samples will be collected at depths of two feet (water line) and five feet (sewer line) bgs. The soil samples will be analyzed for TPH-DRO and TPH-ORO by EPA Method 8015.

b) One soil sample will be collected approximately 40 feet north of the existing excavation and a second soil sample will be collected approximately 20 feet east of the existing excavation. These samples will provide additional data, regarding the lateral extent of TPH-contaminated soil, for use during possible risk based site closure evaluation. The soil samples will be collected from an anticipated depth of two feet bgs, and analyzed for TPH-DRO and TPH-ORO by EPA Method 8015.

c) Samples of visibly stained soil (assumed to be TPH-containing soil) will be collected from an anticipated depth of two feet bgs, and analyzed for TPH-GRO, TPH-DRO, and TPH-ORO by EPA Method 8015, volatile organic compounds (VOCs) by EPA Method 8260B and seven RCRA metals by EPA Method SW6020.

4.1.2 Analytes of Concern for Soil

Lead Cleanup Area

Based on existing analytical results, lead and TPH are present in soil within the lead cleanup area. All soil samples from the lead cleanup area will be analyzed for total lead by EPA Method 6010B and leachable lead by EPA Method SW6020/SW6020A using the TCLP. Eight sidewall samples will also be analyzed for TPH-DRO and TPH-ORO. The TPH analyses will provide data for TPH concentrations remaining in Site soils; these data will be used to evaluate possible risk-based site closure.

DS-4 Area

Based on existing analytical data, TPH is present in soil in the DS-4 area. All soil samples from the DS-4 area will be analyzed for TPH-DRO and TPH-ORO. Two of the samples collected from areas of stained soil will also be analyzed for VOCs and metals. The VOC and metals data will be used to evaluate risk-based site closure.

5. REQUEST FOR ANALYSES

One commercial laboratory (Alpha) will provide analytical services for this project.

5.1 Analyses Narrative

As discussed in Section 4.1.1 and Section 4.1.2 and as enumerated in Table 4, soil samples will be collected at the described locations.

5.2 Analytical Laboratory

Option 2 of the Sampling and Analysis Plan Guidance and Template (EPA, 2004) will be followed. This option acknowledges that sampling organization (Kleinfelder) agrees to the DQIs defined by the laboratory. Accordingly, the SOPs for Alpha are included as Appendix A. Based on a review of the SOPs, Alpha's DQIs will meet the project needs

6. FIELD METHODS AND PROCEDURES

This section outlines the field equipment required, and the procedures for collection of soil samples.

6.1 Field Equipment

Equipment to be used during field activities:

- Track-mounted excavator;
- Personal protective equipment (PPE): steel-toed boots, nitrile gloves, work gloves, and hard hats;
- Sampling equipment: stainless steel trowel, sample containers;
- Decontamination equipment: deionized water, liquinox, buckets, brushes, and sprayers.

6.2 Surface Soil Sampling

Surface soil is defined as 0 to 0.5 feet bgs, and subsurface soil is defined as 0.5 to 5 feet bgs.

Surface soil samples will be collected by hand, using a stainless steel trowel to collect soil from approximately 0.5 feet bgs. The trowel will be used to transfer the soil sample directly to the 8-ounce sample jar. The sampling equipment will be decontaminated between every sample, in accordance with the method described in this section. Sample containers will be filled to the top, taking care to prevent soil from remaining in the lid threads prior to being sealed to prevent potential contaminant migration to or from the sample. Sample containers will be labeled and sealed as soon as they are filled and placed in a cooler chilled to 4 degrees Celsius (°C).

6.2.1 Subsurface Soil Sampling

A track-mounted excavator will be used to excavate to the desired sample depth, from which the subsurface soil samples will be collected using a stainless steel trowel. Soil samples will be placed in 8-ounce soil jars. The trowel will be used to collect the sample from the bottom of the excavation, and transfer the sample to the sample jar. The sampling equipment will be decontaminated between every sample, in accordance with the method described in this section. Sample containers will be filled to the top, taking care to prevent soil from remaining in the lid threads prior to being sealed to prevent potential contaminant migration to or from the sample. Sample containers will be labeled and sealed as soon as they are filled and placed in a cooler chilled to 4 degrees Celsius (°C).

6.3 Decontamination Procedures

The decontamination procedures that will be followed are in accordance with industry standards. Decontamination of sampling equipment will be conducted consistently to assure the quality of the samples. All equipment that comes into contact with potentially contaminated soil will be decontaminated prior to and after each sample is collected. All sampling devices used, including trowels, will be decontaminated according to the following procedures:

1. Wash with liquinox and potable water.
2. Rinse with potable water.
3. Rinse with deionized/distilled water.

6.4 Sample Containers, Preservation, and Storage

The laboratory will supply pre-cleaned 8-ounce glass containers for sample storage. Immediately upon collection, the samples will be placed in an iced cooler chilled to 4° Celsius.

7. DISPOSAL OF RESIDUAL MATERIALS

In the process of collecting environmental samples at the Site, generated types of potentially contaminated investigation-derived wastes (IDW) will include the following:

- Used PPE;
- Disposable sampling equipment;
- Decontamination fluids.

The EPA's National Contingency Plan (NCP) requires that management of IDW generated during sampling comply with all applicable or relevant and appropriate requirements (ARARs) to the extent practicable. The sampling plan will follow the *Office of Emergency and Remedial Response (OERR) Directive 9345.3-02* (May 1991), which provides the guidance for the management of IDW. In addition, other legal and practical considerations that may affect the handling of IDW will be considered.

- Used PPE and disposable equipment will be double bagged and placed in a municipal refuse dumpster. These wastes are not considered hazardous and can be sent to a municipal landfill. Any PPE and disposable equipment that is to be disposed of which can still be reused will be rendered inoperable before disposal in the refuse dumpster.
- Decontamination fluids that will be generated in the sampling event will consist of deionized water, residual contaminants, and water with non-phosphate detergent. The volume and concentration of the decontamination fluid will be sufficiently low to allow disposal at the Site or sampling area. The water (and water with detergent) will be poured onto the ground or into a storm drain.

8. FIELD AND SAMPLE DOCUMENTATION

8.1 Field Notes

8.1.1 Field Documentation

All field activities will be documented on standardized Daily Field Forms and in a logbook used for the project. The following information will be recorded:

- Team members and their responsibilities;
- Time of arrival/entry onsite and time of site departure;
- Other personnel onsite;
- Summary of meetings or discussions with federal, state, or other regulatory agencies;
- Deviations from sampling plans, site safety plans, and SAP procedures;
- Changes in personnel and responsibilities with reasons for the changes;
- Sample name, locations and descriptions, and;
- Weather conditions during field activities.

In addition, a separate Sample Control Log will be used to record information on the samples collected. The following information will be recorded:

- Date and time of sample collection;
- Sample, name, location, and description;
- Sample matrix, number of containers, and container type;
- Observations and details related to analysis or integrity of samples (conditions, noticeable odors, colors, etc.);
- Sampler's name(s);
- Sample preservation;
- Chain-of-custody form numbers, and;
- Name(s) of recipient laboratory.

8.1.2 Photographs

Photographs will be taken at the sampling locations and at other areas of interest on Site or sampling area. They will serve to verify information entered in the field logbook. For each photograph taken, the following information will be written in the logbook or recorded in a separate field photography log:

- Time, date, location, and weather conditions;
- Description of the subject photographed; and
- Name of person taking the photograph.

8.2 Labeling

All samples collected will be labeled in a clear and precise manner for proper identification in the field and for tracking in the laboratory. The samples will have pre-assigned, identifiable, and unique nomenclature. The sample labels will contain the following information: date and time of collection, and method of preservation. Every sample will be assigned a unique sample number. Example sample numbers are shown in Section 3.5.

8.3 Chain-of-Custody Forms

Chain-of-custody forms are used to document sample collection and shipment to laboratories for analysis. All samples collected will be accompanied by a chain-of-custody record. Form(s) will be completed and sent with the samples for each delivery to the laboratory. If multiple containers are sent to a single laboratory on a single day, form(s) will be completed and sent with each cooler. The chain-of-custody forms will be affixed to the inside of the lid of the custody sealed shipping container, in a waterproof zip lock-type bag.

The chain-of-custody form will identify the contents of each shipment and maintain the custodial integrity of the samples. Generally, a sample is considered to be in someone's custody if it is either in someone's physical possession, in someone's view, locked up, or kept in a secured area that is restricted to authorized personnel. Until the samples are delivered to the laboratory, the custody of the samples will be the responsibility of Kleinfelder. The field team leader or designee will sign the chain-of-custody form in the "relinquished by" box and note date, time, and air bill number. Copies of all field forms are included as Appendix B.

9. LABORATORY QUALITY CONTROL

9.1 Field Quality Control Samples

Field quality control samples are intended to help evaluate conditions resulting from field activities and are intended to accomplish two primary goals, assessment of field contamination and assessment of sampling variability. The former looks for substances introduced in the field due to environmental or sampling equipment and is assessed using blanks of different types. The latter typically includes variability due to sampling technique and instrument performance as well as variability possibly caused by the heterogeneity of the matrix being sampled.

9.1.1 Assessment of Field Contamination

Equipment rinsate blanks will be collected to evaluate field sampling and decontamination procedures by pouring deionized water over the decontaminated sampling equipment. One equipment rinsate blank will be collected per matrix each day that sampling equipment is decontaminated in the field. If multiple sampling teams are collecting samples, equipment rinsate blanks will be collected each day by each team for each set of sampling equipment. Equipment rinsate blanks will be obtained by passing water over the decontaminated sampling devices used that day. The rinsate blanks that are collected will be analyzed for TPH-GRO/DRO and lead.

The equipment rinsate blanks will be preserved, packaged, and sealed in the manner described for the environmental samples. A separate sample number and station number will be assigned to each sample, and it will be submitted blind to the laboratory.

9.1.1.2 Temperature Blanks

For each cooler that is shipped or transported to an analytical laboratory, a 40 mL VOA vial will be included that is marked “temperature blank.” This blank will be used by the sample custodian to check the temperature of samples upon receipt.

9.1.1.3 Field Blanks

Field blanks will be collected to evaluate whether contaminants have been introduced into the samples during the sampling due to ambient conditions or from sample containers. Field blank samples will be obtained by pouring deionized water into a sampling container at a randomly selected sampling location. One field blank per day per sampling team will be collected. The field blanks will be analyzed for TPH-GRO/ORO/DRO and lead.

9.1.2 Assessment of Field Variability

The artificial fill from undocumented sources contributes to highly heterogeneous soils at the Site. For such heterogeneous media, field duplicates tend to be as variable as independent samples. As a result, no field duplicate samples will be collected for this project; rather, variability will be assessed using data from independent samples.

9.2 Laboratory Quality Control Samples

Laboratory QC samples are analyzed as part of the standard laboratory practice. Laboratory QC samples consist of matrix spike/matrix spike duplicate (MS/MSD) samples. A routinely collected soil sample (a full 8-oz sample jar) contains sufficient volume for both routine sample analysis and additional laboratory QC analyses. Therefore, a separate soil sample for laboratory QC purposes will not be collected.

10. FIELD VARIANCES

Because conditions in the field may deviate from expected conditions, it may become necessary to implement minor modifications to sampling as presented in this plan. When appropriate, the QA Manager will be notified and a verbal approval will be obtained before implementing the changes. Modifications to the approved plan will be documented in the sampling project report as "Deviations from the Sampling Plan."

11. FIELD HEALTH AND SAFETY PROCEDURES

All work will be performed by following the safety procedures as outlined in the HASP. A copy of the HASP is included in Appendix C.

REFERENCES

ORNL Environmental Technology Section, 1995, ORNL ELIPGRID-PC Version 10/20/95: PC Based Hot Spot Probability Calculations

EPA, 2006, "Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G-4"

Kleinfelder, Inc., February 26, 2007, "Report of Findings, Phase II Environmental Site Assessment, Proposed Wal-Mart Site 2106-03, Glendale Avenue at US 395, Reno, Nevada"

Kleinfelder, Inc., March 8, 2007, "Soil Remediation Workplan, Proposed Wal-Mart Site 2106-03, US 395 at East 2nd Street, Reno, Nevada"

Kleinfelder, Inc., March 12, 2007, "Soil Remediation Workplan, Former Radiator Shop, 2453 East 2nd Street, Reno, Nevada"

Kleinfelder, Inc., April 19, 2007, "Recommended Soil Remediation Option, Proposed Wal-Mart Site 2106-03, East 2nd Street and US 395": Memorandum

Kleinfelder, Inc., May 9, 2007, "Recommended Soil Remediation Option, Proposed Wal-Mart Site 2106-03, Reno, Nevada": Memorandum

Kleinfelder, Inc., May 29, 2007, "Asbestos Abatement Specifications, Proposed Wal-Mart Site 2106-03, US 395 at East 2nd Street, Reno, Nevada"

Table 1

Summary of Analytical Results for Soil Samples
Former Radiator Shop (Lead Cleanup Area)
Reno-Sparks Indian Colony
Reno, Nevada

Date	Sample Number	Sample Location	Depth (feet)	Total Lead (mg/Kg)	TPH-E (mg/Kg)	TCLP Lead (mg/L)
3/14/2007	LC-031407-01	Grid 01	2	34	45	NA
3/14/2007	**LC-031407-02L**	**North lateral- Grid 02**	**1.5**	**100**	**670**	**NA**
3/14/2007	**LC-031407-04L**	**West lateral- Grid 04**	**1.5**	**120**	**252**	**NA**
3/14/2007	LC-031407-05	Grid 05	2	140	2,170	NA
3/14/2007	LC-031407-06	Grid 06	2	10	66	NA
3/14/2007	LC-031407-07	Grid 07	2.5	230	1,130	NA
3/14/2007	LC-031407-08	Grid 08	2.5	260	550	NA
3/14/2007	LC-031407-09	Grid 09	3	180	580	NA
3/14/2007	LC-031407-10	Grid 10	3.5	290	271	NA
3/14/2007	LC-031407-11	Grid 11	3.5	89	164	NA
3/14/2007	LC-031407-12	Grid 12	3.5	77	250	NA
3/14/2007	LC-031407-13	Grid 13	4	80	141	NA
3/14/2007	LC-031407-14	Grid 14	5	15	26	NA
3/14/2007	**LC-031407-15L**	**East lateral- Grid 15**	**1.5**	**270**	**2,620**	**1.8 (320*)**
3/14/2007	LC-031407-16	Grid 16	5	11	<10	NA
3/14/2007	LC-031407-18	Grid 18	5	5.3	<10	NA
3/14/2007	LC-031407-19	Grid 19	5	240	760	NA
3/14/2007	**LC-031407-20L**	**South lateral- Grid 20**	**1.5**	**260**	**3,030**	**NA**
3/14/2007	LC-031407-21	Grid 21	2	1,100	1,090	NA
3/14/2007	LC-031407-22	Grid 22	3	86	516	NA
3/14/2007	LC-031407-24	Grid 24	2	310	890	NA
3/14/2007	LC-031407-28	Grid 28	2	320	610	1.4 (290*)
3/19/2007	LC-031907-21	Grid 21- resample	5	5.8[(1)]	ND	NA
3/21/2007	LC-032107-08	Grid 8-resample	6	6.7	ND	NA

Table 1 (Continued)

4/4/2007	LA-T1W-01	West of Existing Excavation	3	38	110	NA
4/4/2007	LA-T2W-01	West of Existing Excavation	3	270	NA	NA
4/4/2007	LA-T2W-02	West of Existing Excavation	2	25	236	NA
4/4/2007	LA-T2W-03	West of Existing Excavation	0.5	34	NA	NA
4/4/2007	**LA-T1N-01**	North of Existing Excavation	**2**	**580**	**NA**	NA
4/4/2007	LA-T1N-02	North of Existing Excavation	3.5	61	103	NA
4/4/2007	**LA-T1E-01**	East of Existing Excavation	**3.5**	**730**	**NA**	NA
4/4/2007	LA-T1E-02	East of Existing Excavation	3	52	273	NA

Notes:
* Total lead reanalysis
(1) Resample collected following additional excavation
mg/Kg = Milligrams per kilogram
mg/L = Milligrams per liter
TPH-E = Total petroleum hydrocarbons, extractable
TCLP = Toxicity characteristic leaching procedure

Table 2

Summary of Analytical Results for Soil Samples
Drum Storage Area and Stained Soil Locations in the DS-4 Area
Reno-Sparks Indian Colony
Reno, Nevada

Date	Sample Number	Sample Location	Depth (feet)	TPH-DRO (mg/Kg)	TPH-ORO (mg/Kg)
1/3/2007	DS-4-2'	DS-4 Existing Excavation	2	**650**	**4000**
3/20/2007	DS-4-6-0320207	DS-4 Existing Excavation	6	<10	37
4/4/2007	NA-T1W-01	West of DS-4 Existing Excavation	3	ND	ND
4/4/2007	NA-T1N-01	North of DS-4 Existing Excavation	3	**24**	**130**
4/4/2007	NA-T1E-01	East of DS-4 Existing Excavation	4	**17**	**99**
4/4/2007	NA-T1S-01	South of DS-4 Existing Excavation	3	ND	28

Notes:
mg/Kg = Milligrams per kilogram
mg/L = Milligrams per liter
TPH-DRO = Total petroleum hydrocarbons, diesel range organics
TPH-ORO = Total petroleum hydrocarbons, oil range organics

TABLE 3: SYSTEMATIC PLANNING: DQO SUMMARY TABLE FOR PROPOSED WAL-MART SITE

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7
State the Problem	**Identify Goals and Decision Statements**	**Identify Inputs Needed**	**Define Study Boundaries**	**Develop Analytical Approach (Decision Rules)**	**Specify Acceptance Criteria (Tolerable Limits on Errors)**	**Optimize Plan for Obtaining Data (Sampling Design)**
The site was used historically by several commercial and industrial businesses, including auto shops that may have used/generated hazardous chemicals/waste. Soil at the site contains petroleum and lead at concentrations exceeding risk-based levels. The site developer requires regulatory site closure prior to the start of construction. Additional data are needed for making a risk-based decision to remediate the soils and/or verify that contaminant concentrations are sufficiently low for demolition to start. **Lead** Samples will be collected as step-out samples from specified grid blocks extending outward from the existing excavation. A minimum of one sample per grid block will be collected and used to characterize the soil within that block. **TPH** Samples will be collected as confirmation samples following utility trench excavation.	**Lead** (1) Do concentrations of total lead in site soils exceed the action level for lead in soil of 400 mg/kg? (2) Do concentrations of lead, as determined by the toxicity characteristic leaching procedure (TCLP), exceed the action of 5 mg/L lead in the leachate? **TPH** (3) Do concentrations of petroleum (measured as TPH-E) in TPH-contaminated soil exceed the Nevada action level of 100 mg/kg?	New and existing analytical data for site soils New data will be collected for total and TCLP lead and TPH in site soil adjacent to areas of completed remediation (existing excavations). Risk-based cleanup goals **Lead** Residential PRG (400 mg/kg) based on future site user requirement TCLP limit of 5 mg/L lead in the leachate. **TPH** Nevada action level of 100 mg/kg for TPH-E in soils (NAC 445A.227)in future utility trench locations only	The vertical boundary includes surface and subsurface soil. Surface soil (0' to 0.5' bgs), subsurface soil (0.5' to 5' bgs) **Lead** Lateral boundaries include all possible soil samples located adjacent to existing excavation (10' north, east, west parking slab to south) to a depth of 5' bgs. Soil sample grid blocks (10' wide x 5' wide x 5' height). Excavation anticipated to extend two grid blocks laterally north, east, west. **TPH** Lateral boundaries include all possible soil samples located in future utility trench locations. 100 linear feet of total trench, trench depth 2-5' bgs Temporal boundary is anticipated to be three weeks based on the required excavation activities.	**Lead** (1a) If the concentration of total lead in a soil sample exceeds the action level of 400 mg/kg, then the soil grid will be excavated and disposed. (1b) If the concentration of total lead in a soil sample does not exceed the action level of 400 mg/kg, then no excavation of soil is needed. (2a) If the concentration of TCLP lead in a soil sample exceeds the action level, then the soil grid will be excavated and disposed as hazardous waste. (2b) If the concentration of lead does not exceed the action level of 5 mg/L in the TCLP leachate for a soil sample, then no excavation is needed. **TPH** (3a) If the maximum concentration of TPH-E in a soil sample exceeds the action level of 100 mg/kg, then additional soil in the trench section will be excavated and disposed. (3b) If the maximum concentration of TPH-E in a soil sample does not exceed the action level of 100 mg/kg, then no excavation is needed.	**Lead** Systematic random samples will be collected from grid blocks, then the concentration data (total lead and TCLP lead) for each sample will be compared to the action levels for total and leachable lead. Initially each grid block will be represented by two samples; if the concentration of lead in the samples exceeds the limits for total lead (400 mg/kg) or TCLP lead (5 mg/L), then soil in that grid block will be excavated. Following initial excavation of grid blocks, subsequent grid blocks will be represented by one sample, and assessed as described above. **TPH** Systematic random samples will be collected from trench sections. Concentration data for TPH in soils will be compared to the Nevada action level of 100 mg/kg. If the concentration in the sample exceeds the action level, then additional soil in that trench section will be excavated. MQOs established for analytical data are described in the QA Program Plan for the Nevada Brownfields Program.	**Lead** The sampling area will be step-out samples from the existing excavation, these will be sidewall grid blocks within existing excavation, step-out grid blocks on the surface surrounding the existing excavation. **TPH** The sampling area will be utility trench excavations to be located adjacent to the existing excavation DS-4.

Notes: bgs = Below ground surface DQO = Data quality objective MQO = Measurement quality objective

TABLE 4

SUMMARY OF SOIL SAMPLING
RENO-SPARKS INDIAN COLONY
RENO, NEVADA

Sample Location	Sample Numbers	Sample Depth (feet)	Sample Matrix	Analytical Methods	Number of Equipment Blanks, Analysis Method
Lead Cleanup Area Grid 1 (sidewall)	LAS1-2-1	2	Soil	EPA 6010B, EPA SW6020/6020A EPA SW8015B	
Lead Cleanup Area Grid 2 (sidewall)	LAS2-2-2	2	Soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 3 (sidewall)	LAS3-2-3	2	Soil	EPA 6010B, EPA SW6020/6020A EPA SW8015B	
Lead Cleanup Area Grid 4 (sidewall)	LAS4-2-4	2	Soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 6 (sidewall)	LAS6-2-5	2	Soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 7 (sidewall)	LAS7-2-6	2	Soil	EPA 6010B, EPA SW6020/6020A EPA SW8015B	
Lead Cleanup Area Grid 9 (sidewall)	LAS9-2-8	2	Soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 10 (sidewall)	LAS10-2-9	2	Soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 12 (sidewall)	LAS12-2-10	2	Soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 13 (sidewall)	LAS13-2-11	2	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 15 (sidewall)	LAS15-2-12	2	soil	EPA 6010B EPA SW6020/6020A EPA SW8015B	
Lead Cleanup Area Grid 16 (sidewall)	LAS16-2-14	2	soil	EPA 6010B, EPA SW6020/6020A EPA SW8015B	

Table 4 (Continued)

Sample Location	Sample Numbers	Sample Depth (feet)	Sample Matrix	Analytical Methods	Number of Equipment Blanks, Analysis Method
Lead Cleanup Area Grid 18 (sidewall)	LAS18-2-15	2	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 19 (sidewall)	LAS19-2-16	2	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 20 (sidewall)	LAS20-2-17	2	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 21 (sidewall)	LAS21-2-18	2	soil	EPA 6010B EPA SW6020/6020A EPA SW8015B	
Lead Cleanup Area Grid 22 (sidewall)	LAS22-2-19	2	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 24 (sidewall)	LAS24-2-20	2	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 25 (sidewall)	LAS25-2-21	2	soil	EPA 6010B EPA SW6020/6020A	LAS25-RB1-23, EPA 6010B EPA SW6020/6020A
Lead Cleanup Area Grid 27 (sidewall)	LAS27-2-24	2	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 28 (sidewall)	LAS28-2-25	2	soil	EPA 6010B EPA SW6020/6020A EPA SW8015B	
Lead Cleanup Area Grid 29 (sidewall)	LAS29-2-26	2	soil	EPA 6010B, EPA SW6020/6020A EPA SW8015B	
Lead Cleanup Area Grid 30 (sidewall)	LAS30-2-27	2	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 1 (ground surface)	LAG1-0.5-28	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 2 (ground surface)	LAG2-0.5-29	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 3 (ground surface)	LAG3-0.5-30	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 4 (ground surface)	LAG4-0.5-31	0.5	soil	EPA 6010B EPA SW6020/6020A	

Table 4 (Continued)

Sample Location	Sample Numbers	Sample Depth (feet)	Sample Matrix	Analytical Methods	Number of Equipment Blanks, Analysis Method
Lead Cleanup Area Grid 6 (ground surface)	LAG6-0.5-32	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 7 (ground surface)	LAG7-0.5-33	0.5	soil	EPA 6010B EPA SW6020/6020A	LAG7-RB2-35, EPA 6010B EPA SW6020/6020A
Lead Cleanup Area Grid 9 (ground surface)	LAG9-0.5-36	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 10 (ground surface)	LAG10-0.5-37	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 12 (ground surface)	LAG12-0.5-38	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 13 (ground surface)	LAG13-0.5-39	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 15 (ground surface)	LAG15-0.5-40	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 16 (ground surface)	LAG16-0.5-41	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 18 (ground surface)	LAG18-0.5-42	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 19 (ground surface)	LAG19-0.5-43	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 20 (ground surface)	LAG20-0.5-44	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 21 (ground surface)	LAG21-0.5-46	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 22 (ground surface)	LAG22-0.5-47	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 24 (ground surface)	LAG24-0.5-48	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 25 (ground surface)	LAG25-0.5-49	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 27	LAG27-0.5-50	0.5	soil	EPA 6010B	

Table 4 (Continued

Sample Location	Sample Numbers	Sample Depth (feet)	Sample Matrix	Analytical Methods	Number of Equipment Blanks, Analysis Method
(ground surface)				EPA SW6020/6020A	
Lead Cleanup Area Grid 28 (ground surface)	LAG28-0.5-51	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 29 (ground surface)	LAG29-0.5-52	0.5	soil	EPA 6010B EPA SW6020/6020A	
Lead Cleanup Area Grid 30 (ground surface)	LAG30-0.5-53	0.5	soil	EPA 6010B EPA SW6020/6020A	
DS-4 Trench 1	DS4T1-2-55	2	soil	EPA SW8015B	
DS-4 Trench 2	DS4T2-2-56	2	soil	EPA SW8015B	
DS-4 Trench 3	DS4T3-5-57	5	soil	EPA SW8015B	
DS-4 Trench 4	DS4T4-5-58	5	soil	EPA SW8015B	DS4T4-RB3-60, EPA SW8015B
DS-4 Existing Excavation	DS4EE-2-61, DS4EE-2-62	2	soil	EPA SW8015B EPA SW 8260B EPA SW6020	
DS-4 North of Existing Excavation	DS4NEE-2-63	2	soil	EPA SW8015B	
DS-4 East of Existing Excavation	DS4EEE-2-64	2	soil	EPA SW8015B	

TABLE 5

REQUIRED DETECTION LIMITS AND ACTION LEVELS
FOR TOTAL AND TCLP LEAD
(ICPMS EPA SW6020/SW6020A and SW1311)
RENO-SPARKS INDIAN COLONY
RENO, NEVADA

Contaminant of Concern	RDL – Soil Extract (mg/L)	Action Level – Soil Extract (mg/L)	RDL – Soil (mg/Kg)	Action Level – Soil (mg/kg)
Total Lead	---	---	1.0	400
TCLP Lead	0.1	5.0	---	---

TABLE 6

REQUIRED DETECTION LIMITS AND ACTION LEVEL
FOR TOTAL PETROLEUM HYDROCARBONS (BY EPA SW8015B)
RENO-SPARKS INDIAN COLONY
RENO, NEVADA

Contaminant of Concern	RDL – Soil (mg/Kg)	Action Level – Soil (mg/kg)
TPH	10.0	100

TABLE 7

REQUIRED DETECTION LIMITS FOR
VOLATILE ORGANIC COMPOUNDS BY GC/MS (SW-846 8260B)
RENO-SPARKS INDIAN COLONY
RENO, NEVADA

Compound	RDL – Soil (µg/kg)
Chloromethane	80
Bromomethane	80
Vinyl Chloride	20
Chloroethane	20
Dichloroethane	80
Trichlorofluoromethane	20
1,1-Dichloroethene	20
Dichloromethene	20
1,1-Dichloroethane	20
Cis-1,2-dichloroethene	20
Trans-1,2-dichloroethene	20
Chloroform	20
1,2-Dichloroethane	20
1,1,1-Trichloroethane	20
Carbon Tetrachloride	20
Bromodichloromethane	20
1,2-Dichloropropane	20
cis-1,3-Dichloropropene	20
Trichloroethene	20
Dibromochloromethane	20
1,1,2-Trichloroethane	20
Benzene	20
Trans-1,3-dichloropropene	20
Tetrachloroethene	20
1,1,2,2-Tetrachloroethane	20
Bromoform	20
Toluene	20
Chlorobenzene	20
Ethylbenzene	20
Total Xylenes	20
1,3-Dichlorobenzene	20
1,4-Dichlorobenzene	20
1,2-Dichlorobenzene	20

Notes: RDL – Required Detection Limits

TABLE 8

REQUIRED DETECTION LIMITS FOR
METALS ANALYSES BY ICPMS (SW6020/SW6020A)
RENO-SPARKS INDIAN COLONY
RENO, NEVADA

Metal	RDL – Soil (mg/kg)
Arsenic	1
Beryllium	1
Cadmium	1
Chromium	1
Nickel	2
Lead	1
Antimony	1

APPENDIX A

Laboratory Standard Operating Procedures

APPENDIX B

Field Forms

APPENDIX C

Health and Safety Plan

PLATES

TABLES