

Document and Response to Comments Tracking Form
NV Energy – Reid Gardner Station
Administrative Order On Consent Implementation

Document Title Sampling and Analysis Plan for Diesel Impact to Soil

Preparer Stanley Consultants

Draft #1

To NDEP

From NV Energy

Submittal Date 12/18/2008

Comment Date 1/23/09

Response Date 3/18/09

Commenter Shannon Harbour, P.E

Responder _____

Comment #1

General comment, throughout this SAP the objective/purpose of the SAP is not consistent and/or unclear. Please note that NDEP did not comment on every instance of this inconsistency found in this SAP. Please revise the SAP to address this inconsistency.

Response #1

The objective/purpose of the SAP has been revised as follows:

The objective of this SAP is to determine the extent of TPH contamination in vadose zone soils exceeding 100 mg/kg at the Plant Site. The Plant Site as referred to in this SAP includes the fenced plant area and the Nevada Bureau of Land Management (BLM) land located east of the plant that is affected by the petroleum release. The Plant Site has also been referred to as Area 6 in the 2002 Reid Gardner Station Revised Hydrogeologic Characterization Report and other documents. Petroleum contamination detected in other areas of the Station (i.e. WMU-7) and site-wide groundwater issues will be addressed in separate investigations.

The data obtained from this SAP will be used to evaluate the risk from TPH to human health and the environment, to plan future use of areas with soil contamination, and to evaluate the extent of soil remediation which may be required.

Comment #2

General comment, the Final SAP should incorporate the dynamic work plan concept based on the clarified objective/purpose of the SAP.

Response #2

The dynamic work plan concept as a whole was not incorporated into this work plan due to the physical barriers at the site. The amount of time and resources required to clear the boring locations of utilities does not allow easy re-location or addition of borings, and locating all possible drilling locations would be very time consuming.

Some aspects of the dynamic work plan concept were incorporated into the SAP. The investigation is focused with goals and objectives clearly defined, and the Project Geologist will be responsible for making the final sampling interval decisions in the field.

Comment #3

General comment, NDEP does not recommend collecting soil samples in saturated soils as part of a source area soil characterization for light non-aqueous phase liquids (LNAPLs) such as diesel and gasoline. NVE should revise this document according to the clarified objective/purpose of this SAP.

Response #3

The SAP has been revised to state that soil samples will only be collected in the vadose zone.

Comment #4

General comment, several sections of the SAP seem unnecessary and should consist of reference to QAPP. Please revise SAP based on this comment.

Response #4

Several sections of the SAP were removed and referenced to the QAPP. Changes were made on the following pages: 6-2, 9-1, and 10-2.

Comment #5

Section 1, page 1-1, NVE has included information in the Introduction that would be better placed in the Background section of this SAP (e.g. historic free product recovery). Please revise as necessary.

Response #5

Some of the information in the Introduction, including the section on historic free product recovery, has been moved to the Background section of the SAP.

Comment #6

Section 2.2, page 2-1 to 2-2, NVE states that the depth to groundwater ranges from approximately 6 to 30 feet below ground surface (fbgs). It is unclear whether NVE is referencing the depth to groundwater across the entire plant site area or just the area in the immediate vicinity of the 850,000-gal AST. Please clarify.

Response #6

Section 2.2 page 2-1 has been updated to state that depth to groundwater within the estimated 100 mg/kg TPH soil plume ranges from approximately 6 to 30 feet below grade.

Comment #7

Table 2-1, page 2-2, please revise this table as necessary based on the SAP objective. (i.e. Should this table contain multiple source areas that are not in the proximity of the 850,000 gallon AST if the objective is to only investigate the 850,000-gal AST?)

Response #7

This table was not revised. The SAP objective was revised for clarification.

Comment #8

Section 2-5, page 2-3, this section should expound on the referenced “other releases”

Response #8

This section has been revised as follows:

In addition to the diesel release associated with AST product piping, there have been other releases that may have contributed to soil contamination at the Station. These releases include spills in the diesel unloading area west of the 850,000 gallon AST and spills from the product recovery tanks located within the berm areas. These spills were reportedly remediated with soil excavations.

Comment #9

Section 3, page 3-1, NVE states that “The purpose of this soil sampling effort is to delineate the horizontal and vertical extent of diesel contamination in soil associated with the 850,000-gallon diesel AST and piping.” However, the SAP proposes borings in the vicinity of other potential source areas and not in the vicinity of the 850,000-gal AST. Please clarify whether this SAP is to address the soil impacts from the 850,000-gal AST only or all potential soil impacts from the potential diesel and gasoline source areas at the Site. Please revise the SAP as necessary.

Response #9

This section was revised as follows:

Sampling and remediation activities at the Plant Site in the past have focused on investigating free product and groundwater contamination. The objective of this SAP is to determine the extent of TPH contamination in soil in the vadose zone exceeding 100 mg/kg on the Plant Site.

Comment #10

Section 4, page 4-1, NDEP has the following comments:

- a. This section should be revised as necessary based on whether the SAP is for the 850,000-gal AST area or the entire potential diesel/gasoline impacted area.*
- b. NVE should note that the soil borings should be to the base of the impacted soils (e.g. two consecutive samples that appear unaffected and do not display elevated PID readings) or until saturated soil is encountered.*
- c. NVE should review the referenced historic data used for determining the extent of diesel soil impact for the erroneous inclusion of saturated samples from down-gradient borings. Please see above-comment for additional information.*

Response #10

a. This section has been revised to coincide with the clarified SAP objective and sampling limited to the vadose zone.

b. Section 4 paragraph 1 has been revised as follows:

The soil borings will continue to the base of the impacted soils (e.g. two consecutive samples that appear unaffected and do not display elevated PID readings), or until saturated soil is encountered. The soil borings will not be advanced into the saturated zone.

c. The referenced historic data was reviewed for the inclusion of saturated samples from down-gradient borings. The historic data was used only as a general screening tool as several different laboratory methods were used, some of the samples were collected more than 20 years ago and may not be representative of current conditions, and some samples may have been collected in the saturated zone although many of the boring logs are not clear on this issue. All of these issues have been taken into account. The proposed number of soil borings has been revised to 16 and some of the proposed sampling locations have been changed.

Comment #11

Section 6, page 6-1, NDEP has the following comments:

- a. NVE states that the seventeen soil borings will be “completed in the unconsolidated aquifer material on site”. The purpose of the borings has been stated to be for investigation of diesel soil impacts; therefore, the borings should be completed in the unconsolidated vadose zone. Please revise SAP as necessary.*
- b. NVE states that “a second sample will be collected at the bottom of the boring for down-gradient borings identifying contamination.” As previously stated in the above-comments, the purpose of this SAP has been stated to be the investigation on source area soil impact. The collection of down-gradient saturated samples is for the delineation of LNAPL and/or groundwater impacts. Please clarify the purpose of this SAP and revise accordingly.*

Response #11

Section 6 has been revised as follows:

- a. The investigation involves advancing sixteen soil borings completed in the unconsolidated vadose zone.
- b. Soil samples will not be collected in the saturated zone.

Comment #12

Figure 2, this figure should be revised as necessary based on clarification of the purpose of this SAP. Please see above-comments for further information.

Response #12

Figures have been revised.

Comment #13

Figure 3, this figure should be revised as necessary based on review of the historic data. TPH concentrations collected within saturated soil down-gradient of the source areas should not be included in the delineation of the "TPH Soil Plume". Please see above-comments for further information.

Response #13

Figures have been revised.

Comment #14

Figure 4, this figure should be revised as necessary based on clarification of the purpose of this SAP and review of historic data. Please see above-comments for further information.

Response #14

Figures have been revised.

Draft #2

To NDEP

From NV Energy

Submittal Date 3/18/2009

Comment Date 4/24/09

Response Date 6/19/09

Commenter Shannon Harbour, P.E

Responder NV Energy

Diesel Area SAP

Comment #1

General comment, NVE should note that for the purpose of this SAP, potential sources that have not been characterized may require investigation and the completeness of reported remedial excavations where other known releases occurred may require verification.

Response #1

The objective/purpose of the SAP on page 1-1 of Section 1 has been revised as follows:

“The objective of this SAP is to determine if TPH contamination in vadose zone soils exceeds 100 mg/kg in the immediate vicinity of the 850,000-gallon AST. The purpose of this SAP is not to characterize potential sources of petroleum contamination or the extent of TPH contamination, but rather to obtain information that can be used by NVE to evaluate risks to site workers, evaluate future remediation expenditures, and plan for future uses in the area of the 850,000-gallon AST. NVE is completing this work under this SAP so that data collected may be used as part of future investigations and decision-making under the AOC, if appropriate.”

Comment #2

Section 1, Page 1-1, the objective for this SAP should be revised to include investigation and characterization based on known and potential TPH source areas within the Plant Site.

Response #2

The objective of this SAP has been revised (see response #1).

Comment #3

Section 3, NDEP has the following comments:

- a. NVE should include that the collected analytical results will be used to evaluate risk at the Site as stated in Section 1 of this SAP*
- b. NVE should consider sampling for other SRCs if a risk assessment is being considered for this area.*

Response #3

- a. Section 3- The objective of this SAP has been revised (see response #1), and NVE has stated in this section that the results will be used to evaluate risks to site workers.
- b. NVE does not plan to sample for other SRCs at this time as this is a limited investigation for the purpose of evaluating the vadose zone soil contamination in the immediate vicinity of the 850,000-gallon AST.

Comment #4

Figure 4, the distribution of TPH in soil associated with sources should be distinguished from that associated with groundwater impacts. The SAP should specifically address all known or potential sources of hydrocarbon releases, rather than simply bound areas of impact from an assumed single source.

Response #4

This figure has been removed as the objective of this SAP has been revised and this figure is no longer applicable.

Response-To-Comments (RTC)

Comment #1

RTC-1, NVE's revised objective for this SAP is to "determine the extent of TPH contamination in the vadose zone soils exceeding 100 mg/kg at the plant site." Additionally, NVE states that "The data obtained ... will be used to evaluate the risk from TPH to human health and the environment, to plan future use of areas with soil contamination, and to evaluate the extent of soil remediation which may be required". NVE should note that the area of investigation includes a number of potential sources of hydrocarbon releases including a diesel unloading area, three former under ground storage tanks (USTs), two existing USTs, three existing above ground storage tanks (ASTs), associated product piping, and product recovery tanks in berm areas. NDEP believes that the objective of this investigation should include identifying and characterizing the sources of hydrocarbon contamination to the subsurface that have resulted in individual and co-mingled areas of free product and/or soil contamination in the Plant area. Much of the soil contamination currently identified in the Plant area (Figures 3 & 4) is likely associated with free product movement on the groundwater surface and/or dissolved phase transport of hydrocarbons in groundwater away from its source. NVE should focus on whether all sources have been identified and whether residual contamination in the vicinity of each individual source represents a continued threat to groundwater contamination. Extent of the vadose impacts may also be included in this SAP but the main focus should be the characterization of the source areas. The current SAP seems to assume the existence of only one source area while the data provided indicate otherwise.

Response #1

The objective of this SAP has been revised (See Diesel Area SAP Response #1).

Future AOC investigations will address petroleum contamination detected in other areas of the Station, other petroleum sources, the extent of petroleum impact, and site-wide groundwater issues.

Comment #2

RTC-3, please note that NDEP believes that it is unlikely that contaminant mass has migrated a significant distance laterally from a source without having encountered groundwater. Groundwater elevations are often transient resulting in contaminant smear zones across the range of water level fluctuation. For example, current groundwater elevations may indicate that a sample from a certain depth should be classified as a vadose zone sample; however, this sample depth may have been formerly been saturated and was impacted by way of groundwater transport. NVE should distinguish between the distribution of hydrocarbons in soil associated with sources and those associated with groundwater impacts.

Response #2

Soil samples will not be collected in the saturated or formerly saturated zones. Section 4 of the SAP has been revised as follows:

“Soil samples will be collected above the historic high groundwater table elevation. The historic high groundwater table is estimated at approximately 9 feet bgs inside the berm area, based on data from nearby monitoring wells.”

Comment #3

RTC-6, due to the reported large variability in depth to water across the Plant Area, a surface elevation map and groundwater elevation map should be provided for the area of concern so that depth to groundwater can be easily discerned. Additionally, NVE should provide a table that lists the current depth to groundwater and the historic range of groundwater depths at each referenced sampling location shown on Figure 3.

Response #3

A surface and groundwater elevation map has been added to Appendix A (Figure 3). A table listing the current depth to groundwater and the historic range of groundwater depths in monitoring wells adjacent to proposed boring locations has been added to Appendix B.

Comment #4

RTC-9, as previously stated, the objective of this SAP should focus on the soil contamination associated with known or potential sources of hydrocarbons. The overall distribution of hydrocarbon mass will then encompass soil, free product, and groundwater contamination, including hydrocarbon mass in the smear zone associated with fluctuating groundwater elevations.

Response #4

The objective of this SAP has been revised (see response #1)

Comment #5

RTC-10c, NVE should note that if soil samples do not exhibit TPH concentrations until the approximate depth of groundwater (or historic groundwater highs), they should be considered associated with groundwater transport and not a source area.

Response #5

Section 4 has been revised to state that soil samples submitted for laboratory analysis will be collected above the historic high groundwater table.

Comment #6

RTC-13, Figure 3 was to have been revised based on review of the historic data to only include those samples that show vadose zone contamination. This Figure still considers samples from boring that exhibit no TPH concentrations until the vicinity of the groundwater elevation. NVE should revise this Figure and remove the TPH concentrations at or near groundwater without observed soil contamination at more shallow depths (e.g., HM-26) from the “Estimated 100 mg/kg TPH Soil Plume – Vadose Zone” demarcation as these detections should be considered associated with groundwater transport and not a source area.

Response #6

This figure has been eliminated as the SAP objective has been revised.

Final

To _____

From _____

Submittal Date _____

Approval Date _____

Approver _____