June 18, 2020

Mr. Mike Leigh
Nevada Division of Environmental Protection
Bureau of Sustainable Materials Management
901 S Stewart St Carson City, NV 89701

Ms. Alison Oakley
Nevada Division of Environmental Protection
Bureau of Corrective Actions
901 S Stewart St Carson City, NV 89701

Subject: NV Energy - Reid Gardner Generating
Station Administrative Order on Consent
Draft SA-4 Waste Profile Work Plan
Response to Comments

Dear Mr. Leigh and Ms. Oakley:

In response to your comments (dated May 19, 2020) on the initial submittal of the draft *SA-4 Units 1-3 and SA-4 WMU-12 Coal Pile Areas Waste Profile Sampling and Analysis Plan* dated April 2020, attached are our responses along with revision 1 of the plan. The investigations are now planned to occur beginning July 6, 2020 following completion of demolition activities in the areas.

Hard copies of the revised work plan will be provided to you by mail. A link to an electronic version of this work plan (stored on FilesAnywhere) is provided in the accompanying e-mail transmittal. If you have any questions, please feel free to contact me directly at 702-622-8654.

Respectfully,

Michael Rojo
Supervisor, Environmental Services
NV Energy

CC: Cliff Banuelos, NDEP (electronic copy via FilesAnywhere)
Paul Eckert, NDEP SMM

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

Document Title NDEP Comments to the SA-4 Units 1-3 andSA-4 WMU-12 Coal Pile Areas Waste Profile Sampling and Analysis Plan, Reid Gardner Station

Preparer Jacobs

Draft #1

To NDEP	From NV Energy
Submittal Date April 16, 2020	Comment Date May 19, 2020
Response Date June 18, 2020	
Commenter Alison Oakley	Responder Michael Rojo

Comment #1
Section 1. Objective, page 1: Last sentence, please correct the permit number to SW138REV00 (old SNHD number is no longer applicable).

Comment #1 Response

Reference changed.

Comment #2
Section 2. Background, page 1: Please provide a figure that indicates the location of the sampling points/borings/wells used to generate the fill thickness contours on Figure 1. Please also provide a separate figure or figures to show the cross-sectional profiles indicated on Figure 1.

Comment #2 Response

The sampling and analysis plan has been revised as requested.

Comment #3
Section 3. Boring Locations, pages 1-2: This section describes 20 planned borings over an area of approximately 28 acres. Petroleum Contaminated Soil (PCS) due to equipment failures during past operations (reservoir rupture or hydraulic hose burst) would tend to be concentrated over a relatively small area and would most likely not disperse over a large enough area to be represented in the planned borings unless the respective boring were coincidentally right in the location of a petroleum release. As such, it is anticipated that additional borings and/or specific inspection techniques may be required during excavation to ensure that potential PCS areas will be adequately delineated.

Comment #3 Response

Provisions will be included in the corrective action work plans to monitor the excavation process for evidence of staining and odor. PID readings will be collected and recorded if petroleum presence is suspected. Suspect areas will then be cordoned off until laboratory testing confirms presence or absence of petroleum impacts. Excavated material will then be handled in accordance with the applicable requirements for either offsite or onsite disposal.

Comment #4
Section 3. Boring Locations and Section 5.1.1. Grab samples: Please revise references to "cuttings" to be inclusive of the soil cores and hand auger samples which may be recovered. For example, in Section 3 the final sentence of the first paragraph might state, "when the total depth of the ash material is reached, as evidenced by a change in composition of drill cuttings, soil cores, or hand-auger samples."

Comment #4 Response
The clauses in Sections 3 and 5.1.1 have been re-written as suggested:
Section 3, second paragraph last sentence - "…as evidenced by a change in composition of drill cuttings, soil cores, or hand auger samples."

Section 5.1.1, first sentence - "Drill cuttings, soil cores, or hand auger samples will be screened…" and "…screening of cuttings, soil cores, or hand auger samples suggest the presence…"

Comment #5
Section 5. Solids Sampling. General Comment: Sonic drill rigs can generate heat, potentially impacting volatile organic compounds in the soil core. If sonic drilling is performed and heat is generated, sampling methods should address the potential impact on volatile constituents.

Comment #5 Response
Sonic drill rigs generate heat when drilling through hard, competent material. Some areas at Reid Gardner have exhibited cobbles in alluvial paleochannels or cemented/indurated layers that are difficult drilling. For this sampling task and based on previous sampling of the same materials, we don't expect conditions that would heat up the core barrel from drilling effort or friction since the ash-soil fill doesn't have coarse clasts and is not cemented.

The shallow depth of the boreholes will limit the time required to trip in and out so the core material will not have more than 20 minutes (often much less time) in contact with the core barrel to transfer any heat.

If difficult drilling is encountered at a borehole, slowing advance or requiring extra sonic energy, the borehole location will be moved within a 10-foot radius for a new attempt to sample that location. The re-drilling will be advanced at rate less than 2 minutes per foot to minimize potential heating.

Clarifying text has been added to Section 5.

Comment #6
Section 5.1.4. Sample Analysis. page 3: Section 5.1.4 indicates grab samples will only be analyzed for TPH-GRO. The NDEP notes that diesel is a contaminant of concern in the area. As such, please analyze the grab samples for TPH-DRO and TPH-ORO, as well as TPH-GRO.

Comment #6 Response
Section 5.1.4 has been revised to state "Grab samples will be analyzed for TCLP VOCs, and TPH diesel- and oil-range organics (DRO and ORO)."

Comment #7
Section 6. Laboratory Testing Methods, page 4: Samples with total TPH concentrations greater than 100 mg/kg will be subject to further evaluation using silica gel treatment and subsequent TPH analysis. The NDEP requests that a comparative summary of the respective TPH analysis, pre and post silica-gel treatment (SGT) be provided for agency concurrence prior to final disposition of the excavated soils.

Comment #7 Response
A comparative summary of laboratory results will be provided to NDEP including TPH levels pre- and post- silica gel treatment, prior to final disposition of the excavated soils.

Final

To _____ From _____

Submittal Date _____ Comment Date _____

Response Date _____

Commenter _____ Responder _____

Jacobs

SA-4 Units 1–3 and SA-4 WMU-12 Coal Pile Areas

Waste Profile Sampling and Analysis Plan
Reid Gardner Station

June 2020

NV Energy

Rev 1

SA-4 Units 1–3 and SA4 WMU12 Coal Pile Areas

Project No:	NVE01903, NVE01904
Document Title:	Waste Profile Sampling and Analysis Plan
Document No.:	FES0403201407LAS
Revision:	1
Document Status:	Final
Date:	June 18, 2020
Client Name:	NV Energy
Project Manager:	Ralph Dresel
Author:	Lisa Schwan

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Document history and status

Revision	Date	Description	Author
0	April 16, 2020	Initial Submittal	Schwan
1	June 18, 2020	Revisions per review comments	Schwan, Dresel

Certifications

NV Energy Certification

I certify that this document and all attachments submitted to the Nevada Division of Environmental Protection were prepared under the direction or supervision of NV Energy in accordance with a system designed to gather and evaluate the information by appropriately qualified personnel. Based on my inquiry of the person or persons who manage the system(s) or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted and provided by NV Energy is, to the best of my knowledge and belief, true, accurate, and complete in all material respects. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:	
Name:	Mathew Johns
Title:	Director, Environmental Remediation and Resource Development
Company:	NV Energy
Date:	June 18, 2020

Environmental Manager Jurat

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.

Signature:	
Name:	Jay Piper
Title:	Project Manager
Company:	Jacobs
Date:	June 18, 2020
CEM Cert. #:	CEM-1579
CEM Expire. Date:	Nov. 7, 2021

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1. Objective

The objective of this sampling and analysis plan (SAP) is to collect representative waste profile samples of onsite ash fill material beneath SA4 Units 1–3 and SA-4 Waste Management Unit (WMU) 12 (Unit 4)[1] Coal Pile areas at the NV Energy Reid Gardner Generating Station (RGS). This waste profile SAP is designed to sample and analyze the ash fill material for relevant constituents of interest (refer to Table 2) to determine if the excavated ash fill material meets specific regulatory criteria[2] such that it can be placed in the onsite RGS Class III Site landfill (Permit Number SW138REV00).

2. Background

The SA-4 Units 1–3 Coal Pile area (Figure 1) was originally constructed between 1965 and 1968 when the first two RGS generating units went into service. During this time, coal storage occurred on the northern half of what is currently identified as the Units 1–3 coal pile area. Between 1973 and 1975, when the third generating unit was constructed and placed into service, the coal storage area was enlarged to the south by leveling the area with an ash/soil mixture. The ash was obtained from unspecified former ash storage areas at RGS. Estimated quantities of ash/soil fill were developed by comparing digitized surfaces based on bore hole data and original ground surfaces with those obtained from recent ground survey data. The estimated quantity of ash/soil fill in Units 1–3 Coal Pile area is approximately 103,000 cubic yards. Ash fill varies with maximum depth at approximately 12.5 feet. Figures 2 through 5 show the borehole locations used to develop the estimated fill thickness along with the resulting sections.

The SA-4 WMU-12 Coal Pile area (Figure 1) was constructed between 1980 and 1983 by leveling the area with ash/soil mixture. The ash was mostly obtained from a former ash pond located in the north station area near the current raw water ponds. The estimated quantity of ash/soil mixture in WMU-12, is approximately 183,000 cubic yards. Ash fill thickness varies with maximum depth at approximately 22.5 feet.

Initial borehole testing conducted by NV Energy in 2016 and 2017 (Stanley, 2017 and 2019) (Figures 4 and 5), detected total petroleum hydrocarbons (TPH) at greater than 100 milligrams per kilogram (mg/kg) in 17 of 46 samples, as quantified by U.S. Environmental Protection Agency (EPA) Method 8015M. EPA Method 8015M is not specific to petroleum-derived hydrocarbons; Method 8015M will also extract hydrocarbons present in other materials (such as coal), which may overestimate the amount of petroleum present. Because of this, follow-up sampling was conducted by NV Energy in 2018 (Jacobs, 2019) to determine the source of TPH.

The results of this follow-up sampling indicated that most of the TPH appeared to be indicative of particulate coal. There was one location of probable petroleum contamination identified in the Units 1–3 Coal Pile area (TP02), and one location of potential petroleum contamination in WMU-12 (TP06) (Figure 1). These two areas will be excavated separately and disposed of offsite as petroleum-contaminated waste and are not further addressed in this SAP.

This SAP addresses the rest of the ash fill within SA-4 Units 1–3 and WMU-12 Coal Pile areas.

[1] The ash fill material beneath the Unit 4 Coal Pile was identified in 1998 and designated WMU-12 (*PSAICR*; Stanley 2014). The ash fill material beneath the Units 1-3 Coal Pile was identified recently in 2016 (*Station Area SA-4 Units 1-3 Coal Pile Area Soil and Groundwater Characterization Report*, Stanley 2018), and not designated a Waste Management Unit. For parallelism between discussion of the two coal pile areas, which are both underlain by ash fill material, the Unit 4 Coal Pile area will be referred to as WMU-12 in this report.

[2] The principal criteria for assessing the appropriateness for disposal of the ash fill material to the onsite landfill are: (1) the material is not a Resource Conservation and Recovery Act (RCRA) hazardous waste; and (2) total petroleum hydrocarbon concentrations are less than 100 mg/kg.

3. Boring Locations

NV Energy will install up to a total of 20 borings: 11 borings will be installed within the Units 1–3 Coal Pile area and 9 borings will be installed within the WMU-12 Unit 4 Coal Pile area, as shown on Figure 1. The Units 1–3 and WMU-12 Coal Pile areas are approximately 14 acres each. Borings are spaced across each of the ash fill areas to provide an even sample distribution for evaluation of the relatively physically and chemically consistent ash and soil fill (as determined by soil borings review [Stanley 2017, 2019]).

Borings will generally be installed using either a sonic drill rig or hollow-stem auger drill rig equipped with a split spoon sampling device. Use of a split spoon sampler will minimize disturbance to samples that will be analyzed for volatile organic compounds (VOCs) and TPH. Drilling will cease when the total depth of the ash material is reached, as evidenced by a change in composition of drill cuttings, soil cores, or hand auger samples.

At the northern end of the Units 1–3 Coal Pile area, where the ash fill thickness is thin, samples may be collected by hand auger or shovel.

Borings will be located and staked by NV Energy surveyors. Air-knifing underground utility clearance activities will not be conducted because buried utilities have been taken out of service as part of the RGS demolition; however, the USA North Call Before You Dig (811) will be contacted and the requirements of Nevada Administrative Code (NAC) 455 – Excavations and High Voltage Power Lines will be followed.

4. Investigation Team

Jacobs Engineering Group Inc. (Jacobs) will provide oversight for the field activities. NV Energy will survey the soil boring locations to be installed as part of this Work Plan. Cascade Drilling will provide sonic or hollow-stem auger drilling services. Eurofins TestAmerica, a Nevada-certified laboratory, will be the primary laboratory for all analyses. Data validation will be performed by Jacobs.

Each contractor will be responsible for providing its own Health and Safety Plan to NV Energy prior to site activities, in accordance with contract requirements. All field personnel are required to complete NV Energy contractor safety training prior to starting site work; this NV Energy contractor safety training will be conducted onsite by NV Energy Personnel if required by NV Energy at the time of the site work.

5. Solids Sampling

Previous investigations indicate ash and soil fill within the investigation area is consistent based on a review of soil borings (Stanley Consultants, Inc., 2017, 2019); therefore, samples collected from each boring location are considered representative of the material within the cell shown on Figure 1. Analytical results associated with each boring will be used to determine whether the ash is suitable for management at the onsite landfill or will require profiling for offsite disposal. Table 1 provides a summary of planned work activities.

The Units 1–3 Coal Pile area will consist of 10 cells with 11 boring locations. From nine of the cell locations shown on Figure 1, one boring will be installed from which one composite and one grab sample will be collected.

Two borings will be installed at the cell location in the north end of the Units 1–3 Coal Pile area, because the area is large, and the fill is much shallower than the rest of the area. Material from these two borings will be composited into one sample for this cell location for analysis of the non-volatile analytical parameters listed on Table 1. For the volatile parameters listed in Table 1 (Toxicity Characteristic Leaching Procedure [TCLP], VOCs, and TPH gasoline range organics [GRO]), a grab sample from the boring with the highest photoionization detector (PID) reading will be collected. The composite from both borings, and a single grab sample selected from one of these two borings, will be analyzed at this larger cell location, for a total of 10 composites and 10 grab samples collected from the Units 1–3 Coal Pile.

Within WMU-12, one composite and one grab sample each will be collected from nine individual cell/boring locations as shown on Figure 1.

Sonic drill rigs generate heat when drilling through hard, competent material. Some areas at Reid Gardner have exhibited cobbles in alluvial paleochannels or cemented/indurated layers that are difficult drilling. For this sampling task and based on previous sampling of the same materials, conditions that would heat up the core barrel from drilling effort or friction are not expected since the ash-soil fill doesn't have coarse clasts and is not cemented. If difficult drilling is encountered at a borehole (slow advancement or requiring extra sonic energy), the borehole location will be moved within a 10-foot radius for a new attempt to sample that location. The re-drilling will be advanced at rate less than 2 minutes per foot to minimize potential heating.

5.1 Sampling Procedures

Grab samples and composite samples will be collected for analysis.

5.1.1 Grab Samples

Drill cuttings, soil cores, or hand auger samples will be screened using a PID as well as visual/olfactory signs of impacts as drilling progresses. At intervals where screening of cuttings, soil cores, or hand auger samples suggest the presence of volatiles (elevated PID readings, staining, or odor), a sufficient section of the split spooned soil will be removed, placed into appropriate laboratory-provided sample containers and packed tightly to ensure no head space within the sample container. These grabs for TCLP VOCs and TPH will continue throughout the boring. The grab with the highest PID reading; or absent any detectable PID reading, the sample with any visual or olfactory evidence of hydrocarbons, or other documented basis for selection, will be submitted to the laboratory for TCLP VOC, TPH-GRO, TPH-DRO, and TPH-ORO analysis. At least one grab sample will be selected from each boring for TCLP VOC and TPH analysis. For borings where elevated PID readings, visual or olfactory evidence is not observed, samples will be selected at random.

Areas of suspected petroleum contamination will be cordoned off until laboratory testing confirms presence or absence of petroleum impacts. Excavated material will then be handled in accordance with the applicable requirements for either offsite or onsite disposal.

5.1.2 Composite Samples

Aliquots of ash material will be collected, including the grab samples from PID screening and homogenized as the borings are advanced to create a single composite sample from each boring for nonvolatile analyses. A single composite sample will be collected in a similar manner from aliquots obtained from the two borings located at the north end of the Units 1–3 Coal Pile area.

A decontaminated stainless steel scoop or spoon will be used to collect the aliquots and transfer them into a decontaminated stainless steel bowl. Aliquots will be collected throughout the length of the boring randomly and at changes of material (e.g., texture, color, odor). Once aliquots from the entire length of the boring have been placed into the bowl, they will be thoroughly mixed. A stainless-steel scoop or spoon will be used to transfer the sample from the bowl into the laboratory-provided sample containers.

5.1.3 Sample Handling

Samples will be logged by the field geologist and screened with a PID. Organic vapor readings and observations of odors and discolored soils will be documented in the field notes.

The VOC and TPH-GRO sample containers will be filled immediately to avoid the loss of analytes. The remaining non-VOC sample jars will then be filled. Samples will be placed in a cooler with ice, chilled to 4 degrees Celsius, and processed for shipment to the laboratory.

5.1.4 Sample Analysis

Composite samples will be extracted using the TCLP method and analyzed for non-volatile parameters, including TCLP metals, TCLP pesticides, TCLP herbicides, and TCLP semivolatile organic compounds (SVOCs), radionuclides, including radium-226 and radium-228, and pH. The composite samples will also be analyzed for TPH diesel- and oil-range organics (DRO and ORO).

Grab samples will be analyzed for TCLP VOCs, TPH-GRO, TPH-DRO, and TPH-ORO. None of the TPH analyses will include TCLP extraction.

Note that twice the normal sample quantities for TPH (Table 2) will need to be collected for each sample location. If the total TPH is greater than 100 mg/kg, then the sample will need to undergo additional forensic analysis, as described below. This forensic analysis will help determine if any TPH detections are caused by the presence of coal or by the presence of petroleum.

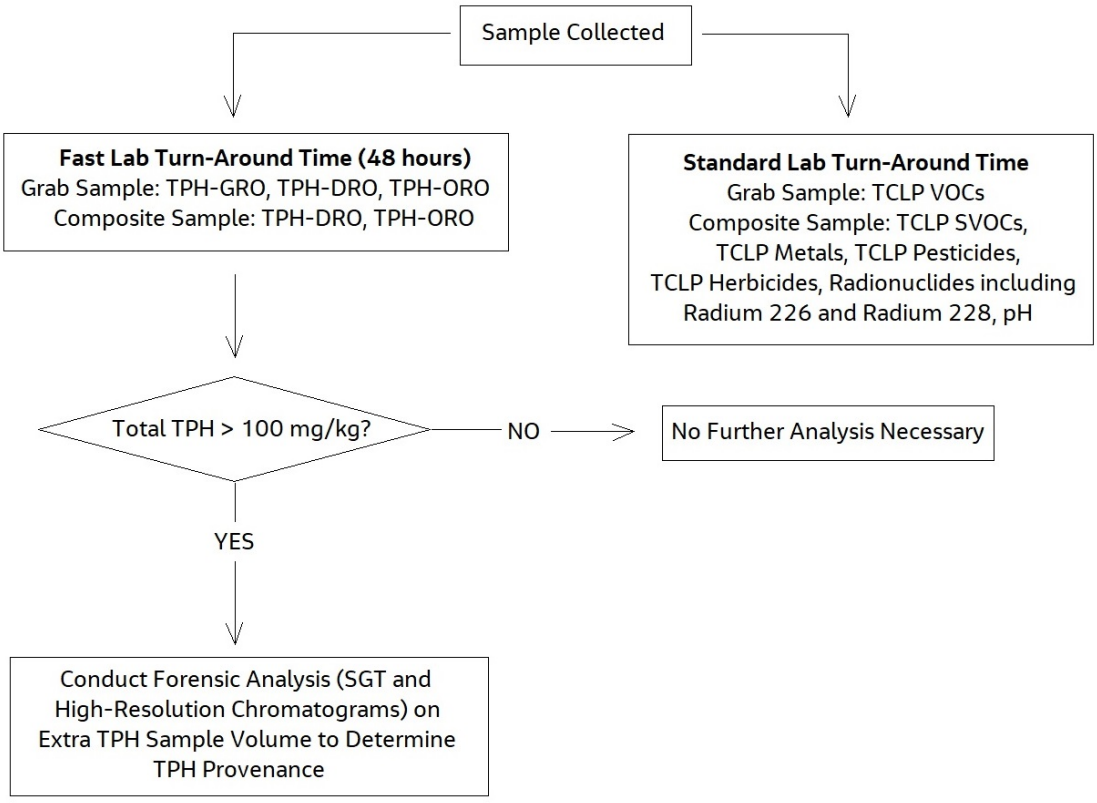
6. Laboratory Testing Methods

The laboratory will provide the appropriate sample containers and preservatives for all sampling events. Analytical methods, sample containers, holding times, and target method reporting limits are provided in Table 2.

Parameters for analysis include TCLP VOCs, TCLP SVOCs, TCLP metals, TCLP pesticides, TCLP herbicides, radionuclides, including radium-226 and radium-228, pH, and TPH as shown in Table 2 and the Flow Chart below.

Petroleum parameters consist of GRO, DRO, and ORO. Total TPH will be calculated by adding the detected concentrations of GRO, DRO, and ORO. Initial TPH sample collection for total TPH concentrations will be sent to the laboratory for fast turnaround time (48 hours) to determine if total TPH concentrations are under 100 mg/kg.

Samples with total TPH concentrations greater than 100 mg/kg will undergo forensic analysis using silica gel treatment (SGT) and repeat TPH analysis, and TPH analysis with a high-resolution chromatogram recorded, to evaluate whether detected concentrations are associated with standard or nonstandard TPH profiles to determine TPH source. The standard TPH profile is defined as petroleum-derived TPH while the nonstandard TPH profile refers to coal-derived TPH. A comparative summary of laboratory results will be provided to NDEP including TPH levels pre- and post- silica gel treatment, prior to final disposition of the excavated soils.



7. Field Equipment Calibration

The PID will be calibrated prior to mobilization and then will be calibrated daily or if conditions change. The frequency meets the minimum requirements specified by the equipment manufacturer, industry standard operating procedures, and EPA guidance. This calibration will be documented in the logbook.

8. Field Documentation

Field data will be recorded in the logbook, on field activity forms, and/or electronically. Field activities will be photo documented.

9. Decontamination

Drilling equipment will be decontaminated between each boring. Decontamination liquids such as non-phosphate detergent and deionized (DI) water will be collected and containerized for future disposal by NV Energy.

10. Investigation-Derived Waste

Residual ash material generated during drilling operations will be replaced down the originating boring hole or adjacent to the borehole, because all the material will be removed and disposed of based on the waste characterization being performed in this SAP.

U.S. Department of Transportation-specification drums will be provided by the driller to contain decontamination liquids.

11. Quality Control Samples

Equipment blanks (EB) will be collected to evaluate field sampling and decontamination procedures (if performed) by pouring DI water over the decontaminated equipment and collecting this water for laboratory analysis. EBs will be collected at a frequency of one per day. EBs will be analyzed by the laboratory for the same parameters specified for the soil samples. Laboratory-provided trip blanks will be shipped with samples submitted for VOC analyses.

12. Data Validation

Soil data will be validated by the Jacobs chemist. Stage 2 data validation will review the data for precision, accuracy, representativeness, completeness, comparability and sensitivity, in accordance with accepted protocols (EPA 2009, 2014).

13. Data Evaluation and Reporting

Laboratory test results will be compared to the toxicity characteristic regulatory limits from Title 40 of the Code of Federal Regulations Part 261 Subpart C, landfill permit requirements (Southern Nevada Health District, 2014), Nevada Division of Environmental Protection (NDEP) regulatory requirements for solid waste landfills (NAC 444.570 through 444.7499), and the NDEP guideline of 100 mg/kg for TPH.[3]

- Exceedances of a toxicity characteristic regulatory limit—Material will be properly classified as indicated above. Because hazardous waste is not expected based on previous sampling and analyses, NV Energy will evaluate whether the value was the result of sampling, analysis, or calculation error. If data are substantially different from previous data or otherwise appear to be inconsistent, the sample material held at the laboratory may be re-extracted and reanalyzed. If this is not possible within holding times, or if the reanalyzed results are still inconsistent, a new solids sample may be collected and analyzed, if possible.
- Exceedances of NDEP TPH 100 mg/kg guideline limit—Samples exceeding the 100-mg/kg TPH guideline will undergo forensic TPH analyses to evaluate the if the TPH profiles for these samples are petroleum-derived or coal-derived. The forensic analyses will consist of SGT before another TPH analysis, and TPH analysis reported with a high-resolution chromatogram.

Areas of ash fill, as defined on Figure 1, that are characterized as nonhazardous, comply with onsite landfill permit requirements and are less than the 100 mg/kg TPH guidance limit will be disposed of in the onsite landfill.

[3] NDEP Guidelines for Acceptance of Petroleum Contaminated Soil at Landfills, April 1, 2020.

Areas of ash fill that are characterized as hazardous or otherwise that do not meet the above requirements will be disposed of at an appropriately permitted offsite receiving facility in accordance with applicable regulatory requirements.

14. References

Nevada Division of Environmental Protection (NDEP). 2015. *Comments and Concurrence with Request for Approval of Indicator Constituents of Concern for Reid Gardner Station*. NV Energy, Reid Gardner Station, Moapa, Nevada. May 6.

Southern Nevada Health District. 2014. *Permit to Operate a Solid Waste Disposal Site, Control Number LF—6-CMF-01*, Reid Gardner Station. April 4.

U.S. Environmental Protection Agency (EPA). 2009. *Guidance for Labelling Externally Validated Laboratory Analytical Data for Superfund Use.* EPA 540-R-08-005. January.

U.S. Environmental Protection Agency (EPA). 2014. *National Functional Guidelines for Inorganic Superfund Data Review*. August.

Stanley Consultants, Inc. 2017. *Station Area SA-4 Units 1-3 Coal Pile Area Soil and Groundwater Characterization Report*. September.

Stanley Consultants, Inc. 2019. *Station Area SA-4 Unit 4 Coal Pile Area Soil and Groundwater Characterization Report,* August.

Jacobs Engineering Group Inc. (Jacobs). 2019. *Coal Pile Test Pit Investigation*. December.

Tables

Table 1. Summary of Planned Work Activities

Location/Quantity		Field Measurements	Laboratory Analyses
Installation of 20 total soil borings to characterize solids to evaluate acceptance of solids at onsite landfill			
Units 1–3			
Borings 1a and 1b	▪ Grab for TCLP VOCs, TPH GRO, TPH DRO, and TPH ORO at highest PID reading of the two borings ▪ Composite of borings 1a and 1b for non-VOC parameters	PID readings will be logged. Observations of odors, discolored soils will be logged	▪ TCLP VOCs ▪ TCLP SVOCs ▪ TCLP pesticides ▪ TCLP herbicides ▪ TCLP Metals ▪ pH ▪ Radionuclides (Ra-226, Ra-228) ▪ TPH GRO ▪ TPH DRO* ▪ TPH ORO *
Boring 2 Boring 3 Boring 4 Boring 5 Boring 6 Boring 7 Boring 8 Boring 9 Boring 10	▪ For each boring #2-10: ▪ Grab for TCLP VOCs, TPH GRO, TPH DRO, and TPH ORO at highest PID reading ▪ Composite for non-VOC parameters	PID readings will be logged. Observations of odors, discolored soils will be logged	▪ TCLP VOCs ▪ TCLP SVOCs ▪ TCLP pesticides ▪ TCLP herbicides ▪ TCLP Metals ▪ pH ▪ Radionuclides (Ra-226, Ra-228) ▪ TPH GRO ▪ TPH DRO* ▪ TPH ORO*
WMU-12			
Boring 11 Boring 12 Boring 13 Boring 14 Boring 15 Boring 16 Boring 17 Boring 18 Boring 19	For each boring #11-19: ▪ Grab for TCLP VOCs, TPH GRO, TPH DRO, and TPH ORO at highest PID reading ▪ Composite for non-VOC parameters	PID readings will be logged. Observations of odors, discolored soils will be logged	▪ TCLP VOCs ▪ TCLP SVOCs ▪ TCLP pesticides ▪ TCLP herbicides ▪ TCLP Metals ▪ pH ▪ Radionuclides (Ra-226, Ra-228) ▪ TPH GRO ▪ TPH DRO * ▪ TPH ORO *

* Request Chromatograms

Notes:
PID/FID = photoionization detector/flame ionization detector
Ra-226 = radium-226
Ra-228 = radium-228

Table 2. Laboratory Analytical Summary Table

Turn Around time	Analytical Parameter	Analytical Test Method	Sample Volume (Minimum)	Sample Container Type	Preservative	Jar (see note)	Holding Time (days)
7 days	TCLP VOCs	EPA SW-846 1311/ 8260B	4 ounces	Glass jar with Teflon closure	Cool 4˚C	A	14/14*
7 days	TCLP SVOCs	EPA SW-846 1311/ 8270C	4 ounces			B	14/7/40**
7 days	TCLP Pesticides/ herbicides	EPA SW-846 1311/ 8081B/8151A				B	14/7/40**
7 days	TCLP Metals (Total)	EPA SW-846 6000/ 7000	4 ounces			C	180 (28-Mercury)
7 days	TCLP Extraction	EPA SW-846 1311				C	180 (28-Mercury)
7 days	pH	EPA OSW-9040C				C	15 minutes***
7 days	Radionuclides (Radium 226/228)	EPA SW-846 904	4 ounces			D	180
48-hour TAT	Standard TPH-DRO	EPA 8015M	8 ounces			E	14
	Standard TPH-ORO	EPA 8015M					
	Standard TPH-GRO	EPA 8015M	4 ounces			F	
Laboratory Standard TAT	Silica Get Treatment (SGT)-TPH DRO and ORO	EPA 8015M SGT TPH-DRO/ORO Lab will include a polar surrogate prior to SGT for TPH analyses	8 ounces			E	14
Laboratory Standard TAT	High resolution TPH Fingerprinting	High-resolution extended TPH analysis C8-C40 including sample chromatograms	8 ounces			G	14

* = TCLP Leach to occur within 14 days of sample collection and analysis within 14 days after leach.

** = TCLP Leach to occur within 14 days of sample collection, extraction of leachate to occur within 7 days to extract leachate and analysis within 40 days after extraction.

*** = Analysis within 15 minutes of extraction.

Notes:

°C = degree(s) Celsius

> = greater than

oz. = ounce

Jar = specific 4oz or 8oz containers A through G used for one or more analytical parameters; jar E appears on 2 separate rows

Figures

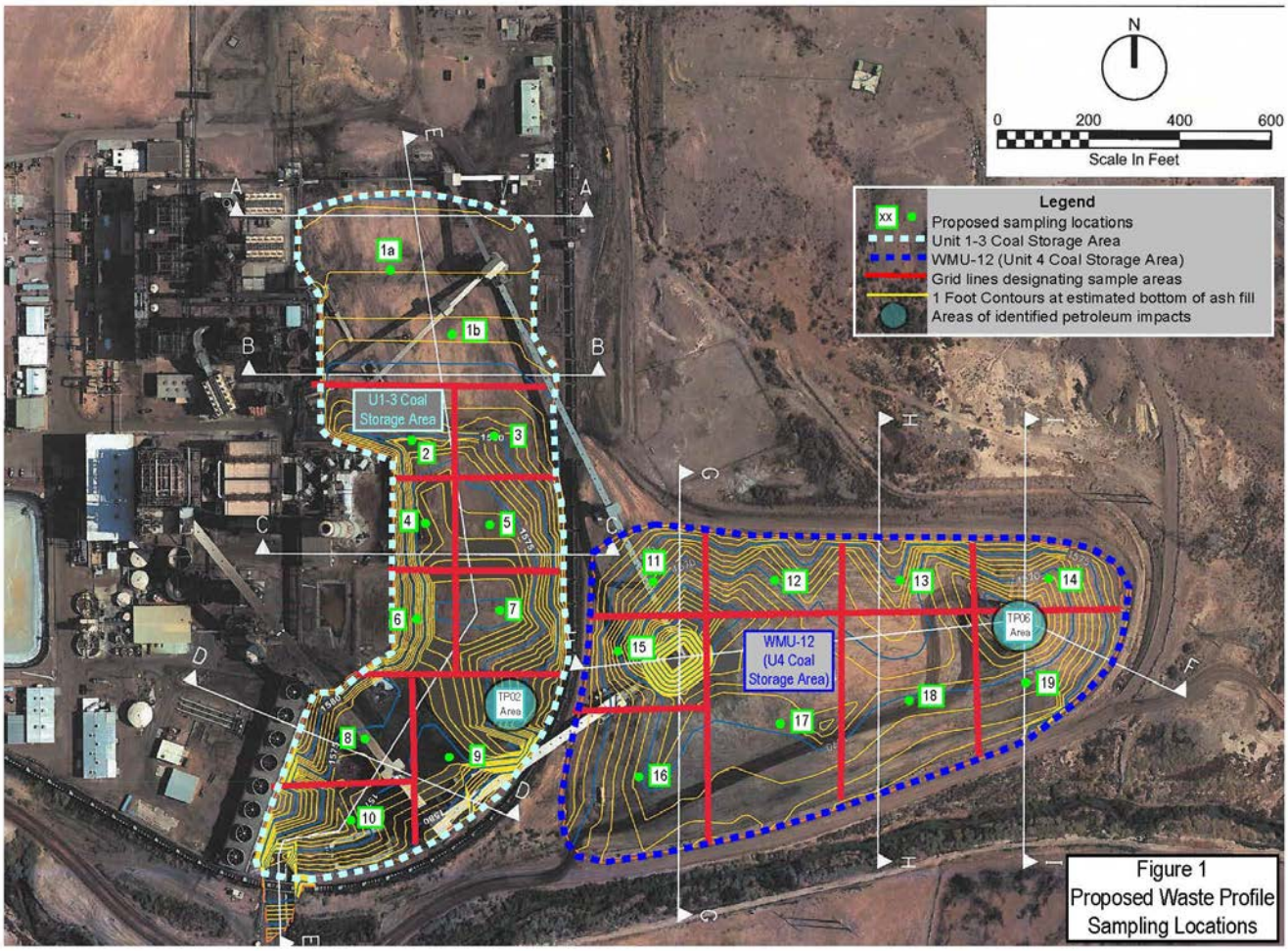


Figure 1
Proposed Waste Profile Sampling Locations

Sections

Figure 2, Unit 1-3 Coal Pile

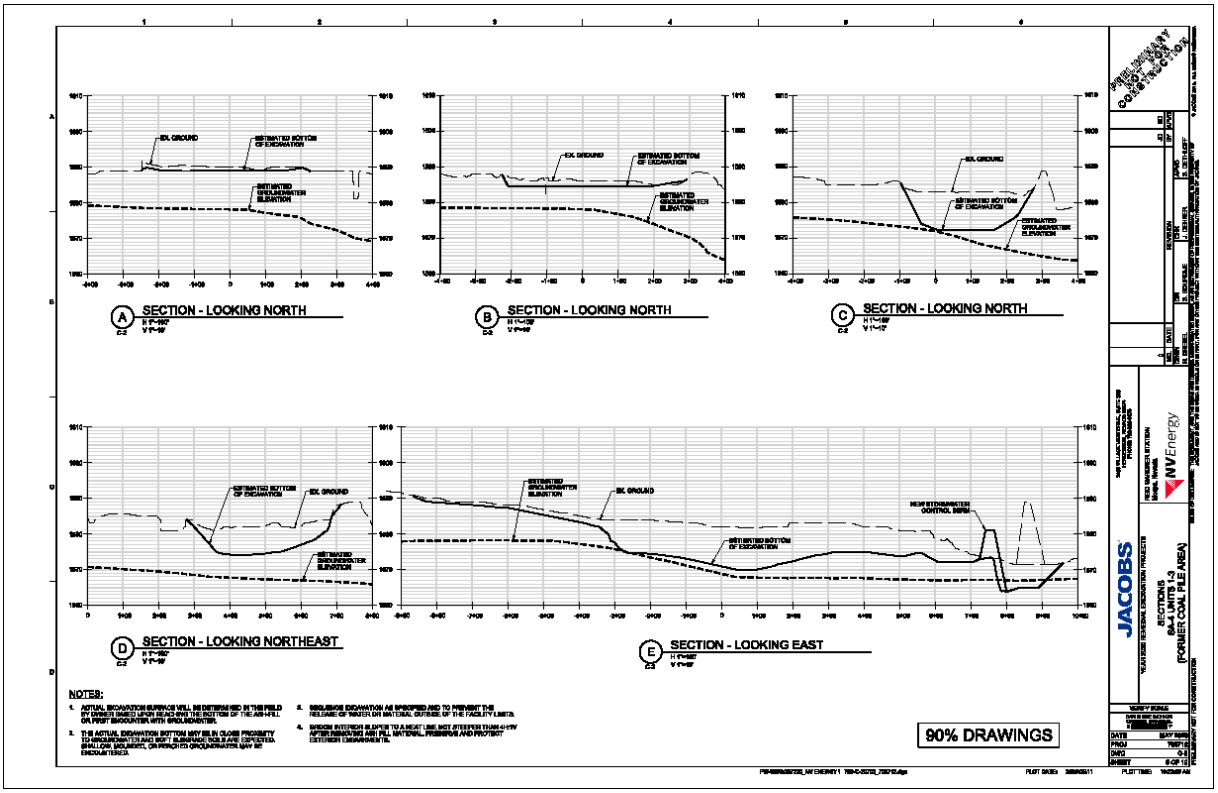
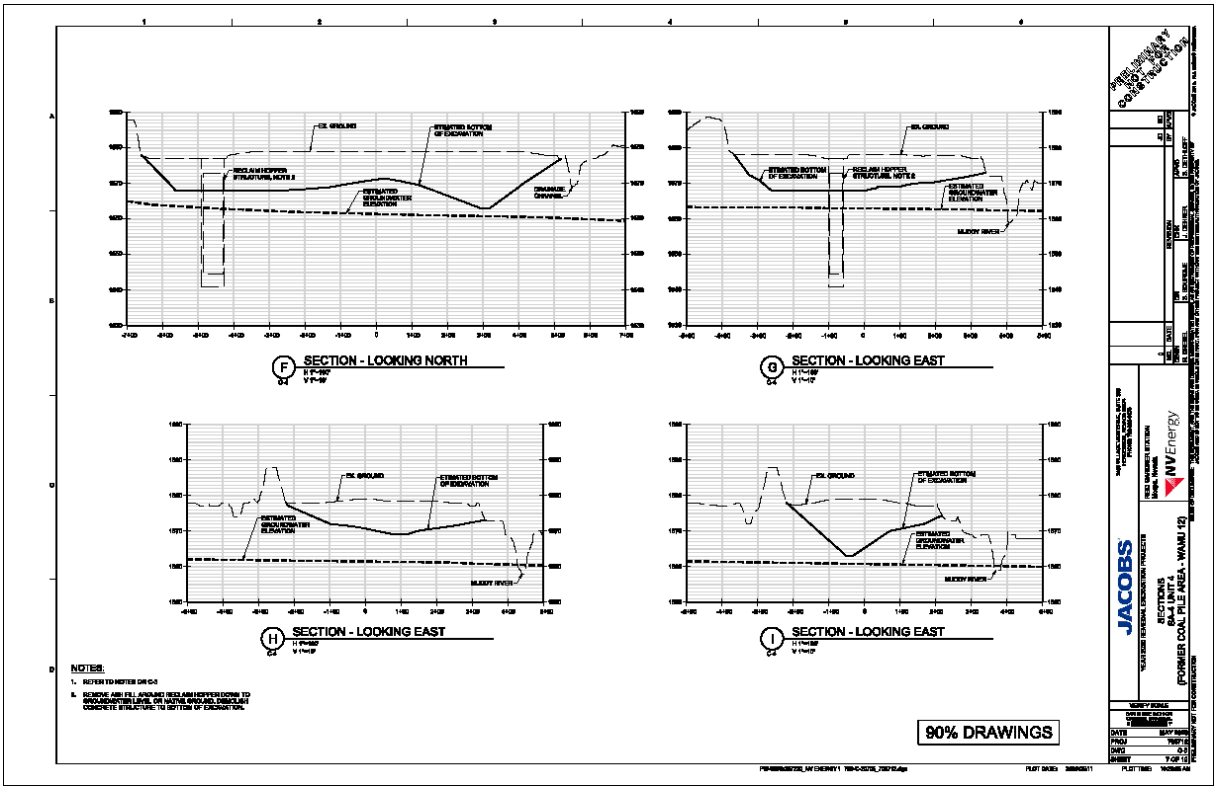


Figure 3, WMU-12 (Unit 4 Coal Pile)



Prior Borehole and Monitoring Well Locations

Figure 4, Unit 1-3 Coal Pile

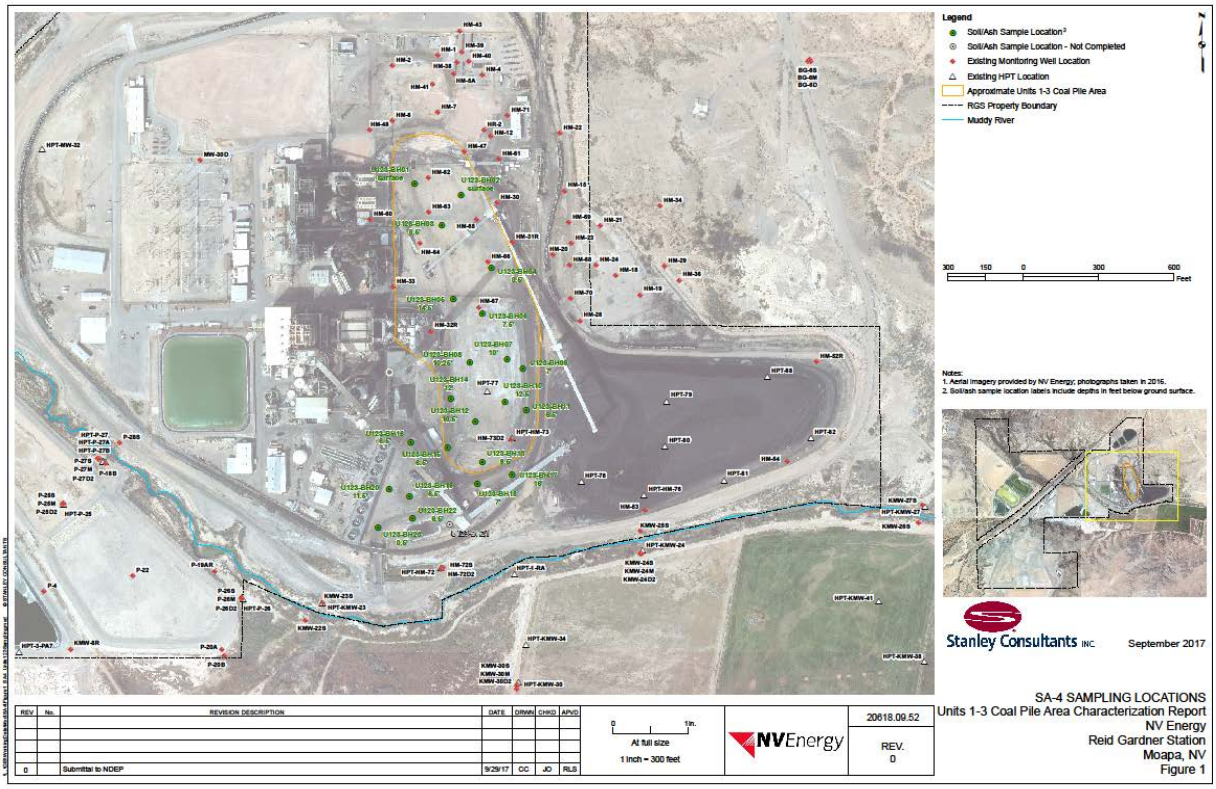


Figure 5, WMU-12 (Unit 4 Coal Pile)