SOIL MANAGEMENT AND SAMPLING PLAN

DEMOLITION OF ABOVEGROUND STORAGE TANKS

Former DFSP Morro Bay
3300 Panorama Drive
Morro Bay, California

SUBMITTED TO:

County of San Luis Obispo
Public Health Department
Hazardous Materials Section
2191 Johnson Avenue
San Luis Obispo, California 93401

ATTN: Ms. Patricia Atkins, REHS

FOR:

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ATTN: Mr. Chris Mathys

ACG JOB NO. I1612-1202

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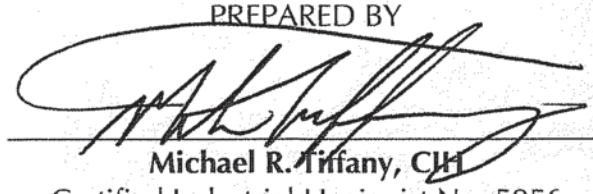
PREPARED BY



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INTRODUCTION

This Soil Management Plan (SMP) has been prepared for Rhine PP and CVI Group, LLC to describe the procedures for handling petroleum-contaminated soils during demolition of the aboveground jet fuel storage tanks and associated piping and equipment at the former U.S. Navy jet fuel storage site located at 3300 Panorama Drive in the City of Morro Bay, California (Project).

The report titled *Environmental Evaluation for Defense Fuel Supply Point – Estero Bay, Morro Bay, California, 1991*, dated September 23, 2016 by ECC, was reviewed for site information. The report was a summary of 7 previous site assessment reports for the site published between 1991 and 1996. Citations below are from the reports referenced in the ECC 2016 report.

The Facility is a former United States Government-owned facility located at 3800 Panorama Drive, Morro Bay, California. The Facility includes a 10-acre former bulk jet fuel (JP-5) tank farm containing two 125,000-barrel above ground storage tanks (ASTs; Tank 5 and Tank 6), one water storage tank, and a pumping station. An offshore mooring station was used to transfer JP-5 in Estero Bay through a pipeline to ASTs located on the Facility. From there, the JP-5 was transferred through 98 miles of pipeline to the LeMoore Naval Air Station (NAS) in LeMoore, California.

The Facility was closed in 1991 and the pipeline from the mooring station to the Facility was removed in March 1992 (GTI, 1994). At that time, the pipeline from the Facility to LeMoore NAS was purged of JP-5 and filled with pressurized nitrogen gas according to requirements of the California Fire Marshall (GTI, 1994).

The current owner intends to demolish the ASTs, remove aboveground and underground piping, remove the pumping equipment, and seek site closure from the County of San Luis Obispo Public Health Department. This project does not include removing any of the three buildings, asphalt or concrete drives or the containment berms.

Demolition of aboveground storage tanks, pipelines, pumps, and associated equipment will be conducted in accordance with the ***Demolition Plan, Defense Fuel Support Point (DFSP), 3300 Panorama Drive, Morro Bay CA***, dated February 2017 by Bedford Demolition & Contracting, Inc. The demolition plan incorporates a **Pre-Demolition Tank and Piping Certification Plan**, **Lead Compliance Plan**, **Asbestos Compliance Plan**, and **Air Monitoring Plan**.

KEY PERSONNEL

Project Manager Responsible for overall management of the project.	Name:	Oliver Reis, Bedford Demolition and Contracting, Inc	
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Project Geologist Responsible for monitoring contractor compliance with the Soil Management Plan .	Name:	Michael Tiffany, PG, CIH	
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Onsite Grading Supervisor and Competent Person Responsible for daily direct supervision of grading subcontractor activities and enforcement of work rules in this HSP.	Name:	Oliver Reis, Bedford Demolition and Contracting, Inc	
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Soil Monitoring Technician Responsible for observing and monitoring contaminated soil and combustible or toxic gases.	Name:	Ben Regester	Yukari Hirayama
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Analytical Laboratory Responsible for analysis of soil samples.	Name:	Allen Aminian, American Analytics	
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EXCAVATION

Excavation of soil will be required to expose buried pipelines for removal, remove concrete foundations, and provide vehicle and equipment access to areas of the site. A hydraulic excavator and/or a rubber-tired loader will be used to excavate, stockpile, and load soil.

Pipelines will be excavated to the depth necessary to safely tap, drain, test, certify, cut, and remove. Pipeline depths may vary; however, the general procedure for excavation will be to excavate a trench above the pipeline. All excavation and trenching activities will be performed in accordance with Cal-OSHA trenching and excavation regulations (Title 8, California Code of Regulations, Sections 1539-1543). The trench sidewalls will be sloped away from the center of the excavation for access and safety

considerations. Sloping will be based on the depth of the trench and type of soil in accordance with OSHA standards. The area of disturbance will be limited to pipeline trenches, the tank foundations, and a cut through the central berm. Pipeline and foundation trenches will be backfilled with site soils and compacted adequately for safety. Importation of backfill material will not be required. The project site will not be re-graded during this project.

The excavated overburden soil will be placed adjacent to the trench no closer than three feet from the edge of the slope. The overburden soil will be field-screened or chemically analyzed to determine if hydrocarbon impacts are present. Overburden exhibiting hydrocarbon impacts will be moved to the contaminated-soil stockpile.

Soils within the trench or below the removed pipelines that are observed by the field monitor to have visual and/or olfactory indications of hydrocarbon impacts will be sampled, documented, and left in place. Grossly impacted soils (i.e. visual, free-flowing non-aqueous phase hydrocarbon, strong hydrocarbon odor as observed by the field monitor during the piping or structure removal, or VOC emissions exceeding 50 ppmv as hexane) will be removed to prevent further contamination, nuisance odors, and fugitive emissions. The field monitor will determine, based on field observations and measurements, when the grossly impacted material has been removed. Prior to backfill, soil samples will be collected from the base of the excavation to characterize and delineate impacts for future remediation.

In the event that a pipeline cannot be removed, the following procedure will be followed to abandon the pipe in place. The City of Morro Bay and San Luis Obispo County will be notified of the abandonment. Additionally, a memorandum will be prepared to document the reasons for the abandonment, provide details of the pipe and environmental conditions, photographic documentation, and location data. Upon approval from the above-mentioned agencies, the abandonment process will proceed as follows. The pipeline will be evacuated and flushed of all contents using the procedures described in the Pre-Demolition Tank and Piping Certification Plan. Following flushing, the pipeline will be grouted with a cement-bentonite slurry and the excavation backfilled using non-impacted overburden derived from the excavation. Compaction will be completed to achieve a minimum of 90% of the maximum dry density, with moisture content at or above the optimum level as determined by ASTM Method D-1557.

FIELD MONITORING FOR CONTAMINATED MATERIALS

Monitoring of the pipeline and structure excavations for contaminated soils will be conducted by a trained and experienced field monitor under the direction of a State of California Professional Geologist. The onsite field monitor will observe the excavation activities for visual and olfactory indications of hydrocarbon-containing soil. The field monitor will conduct field screening of suspect soils to identify and segregate the petroleum hydrocarbon-affected materials.

Periodic monitoring for volatile organic compounds (VOCs) will be performed each day using a handheld photoionization detector (PID) such as a RAE Systems MiniRAE 3000 or MultiRAE Plus calibrated to hexane gas at 50 parts per million by volume (ppmv). Calibration checks of monitoring equipment will be performed, at a minimum, at the beginning and end of each work day. The calibrated PID will be used to monitor the excavation and soil stockpiles. VOC readings will be recorded on the attached **Soil Monitoring Record** form every 15 minutes when excavation is occurring. The field monitor will periodically monitor the ambient air near the project boundary to document concentrations

of VOCs in accordance with the **Air Monitoring Plan**. Periodic monitoring will alert onsite personnel to the presence of elevated (above background) levels of VOCs at the work site. The objective is to control emissions so that VOC concentrations are within acceptable levels.

The action level for VOCs during excavation of contaminated soil is 50 ppmv (as hexane) measured at 3 inches from the soil surface. If VOC concentrations exceed the action level, vapor suppression procedures will be implemented, and excavated VOC soil will be segregated into a separate stockpile. Misting with water containing a wetting agent will be used to suppress vapors at the working face and excavator bucket. Stockpiles containing VOC soil will be covered by 20-mil polyethylene sheeting within 1 hour of excavation. The plastic sheeting will be overlapped and weighted, and the stockpile will be marked as VOC soil. The working face will be covered with plastic sheeting or a soil binder will be applied within 1 hour of excavation.

SOIL SAMPLE COLLECTION

Soil samples will be collected for chemical analysis from the pipeline excavation trenches after the pipelines have been removed and before backfilling. Samples will be collected at a frequency of approximately one every 50 feet of excavated trench and where hydrocarbon impacts have been identified by field screening. Discrete soil samples will be collected directly from the trench floor or lower portion of the trench sidewall. All sample locations will be documented by the field monitor and located on a site plan. Additionally, soil samples will be collected from stockpiled soil at a frequency of one discrete soil sample for every 500 cubic yards.

Soil samples will be collected from excavations and stockpiles using a hand-driven barrel sampler with stainless-steel sample liners. In-situ soil samples from excavations will be sub-sampled in accordance with the EPA Method 5035 field extraction method, using a disposable soil syringe to extract 5-gram aliquots of soil and eject them into pre-weighed VOA vials with sodium bisulfite solution. The sample liner will then be capped with teflon film and polyethylene caps. The 5035 sample vials and the capped liner will be labeled and placed in a chilled ice chest for transport to the laboratory under chain of custody.

LABORATORY ANALYSES

Laboratory analyses will be conducted by American Analytics of Chatsworth, California. The laboratory is accredited by the California Environmental Laboratory Accreditation Program.

Soil and groundwater samples collected during the project will be chemically analyzed for:

- Total Petroleum Hydrocarbons (TPH) as JP-5 by EPA Method 8015(modified).
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260C.

Selected soil samples will also be chemically analyzed for the presence of the following constituents:

- Full-list of VOCs and fuel oxygenates by USEPA Method 8260B.
- Polynuclear aromatic hydrocarbons (PAH) by EPA Method 8270C.
- California Title 22 metals (CAM-17) by USEPA Methods 6010B/7471B.

Additional analyses may be required by the disposal facility for waste characterization of exported soil.

MANAGEMENT OF IMPACTED SOILS

STOCKPILE MANAGEMENT

Petroleum contaminated soils that may be encountered during excavation activities will be stockpiled separately on site prior to disposal at an approved waste disposal facility. VOC soils (>50 ppmv VOC at 3 inches from the soil surface) will be stockpiled separately from non-VOC soils. In the event that the stockpiling of petroleum contaminated soil does become necessary, the stockpiles will be assessed for hydrocarbon content using the sampling and analysis procedures described above.

Excavated soils that are visibly stained, have a noticeable hydrocarbon odor, or have PID readings exceeding 50 ppmv will be segregated and stockpiled on Site pending characterization. All stockpiled soil will be placed on and covered by 20-mil plastic sheeting. The entire stockpile will be covered and the edges of the coverings weighted to prevent wind from disrupting the coverings. In addition, berms will be constructed around the stockpile to control runoff from potential precipitation. Covered stockpiles will be visually inspected and screened with a PID daily to verify that the stockpile is completed covered and vapors are not emitted from the soil.

Stockpiles shall not be placed in such a way that runoff would flow off the site. Stockpiles will be placed and maintained in accordance with the Construction SWPPP for the site. Berms to contain soil and liquid within the stockpile area will be constructed of clean soil and covered with plastic sheeting.

DUST AND EROSION CONTROL

Since the soil on-site is potentially contaminated, fugitive dust generated during on-site grading/excavation activities should be controlled in order to minimize both on-site and off-site impacts. Dust can be generated via various actions, including but not limited to, grading/excavation, vehicle traffic, ambient wind traversing soil stockpiles and exposed site surface, and vehicle loading. Community exposure to dust generated from potentially impacted soil and transportation of impacted dust and nuisance dust off site will be minimized through use of various dust control measures including:

- Earth-moving or dust generating activities will be suspended during periods of high wind or if dust control measures cannot control visible plumes.
- Misting or spraying water on surface soils while performing grading/excavation activities and loading transportation vehicles.
- Controlling excavation activities to minimize the generation of dust.
- Limiting vehicle speeds on the Site to 5 miles per hour or less.
- Minimizing drop heights during vehicle loading.
- All waste loads will be tarped before trucks leave the site.
- Vehicle tires will be cleaned prior to leaving the Site.
- Clean up any track-outs at the end of each work day.
- Covering exposed soil stockpiles generated as a result of excavating contaminated soils with plastic sheeting.
- Covers on storage piles will be maintained in place at all times in areas not actively involved in soil addition or removal.

ENGINEERING CONTROLS TO LIMIT VAPOR EMISSIONS

When VOC-containing soil is identified by the soil monitoring technician, excavation will cease until vapor control measures are implemented. Vapor monitoring consists of monitoring with a calibrated PID along the exposed face of the excavation or surface soil (3 inches above the exposed soil surface) and monitoring the excavated material as it is produced

Vapor emissions generally are sufficiently suppressed through the spraying of readily available vapor suppressants such water amended with Simple Green or other surfactants. Vapor suppression will be performed when the monitored VOC concentration exceeds the prescribed action level of 50 ppm.

TRANSPORT AND DISPOSAL

Petroleum contaminated soil will be handled and disposed of in accordance with federal and state regulations based on the analytical results of waste characterization samples collected. Waste profiles will be generated by the approved disposal facility utilizing characterization samples and generator knowledge. Prior to waste transport, a waste manifest will be completed and signed by the generator and transporter and will accompany the waste during transport to the approved disposal facility.

Petroleum contaminated soil to be disposed off-site at a Class II or III landfill will be loaded from the stockpiles into end-dump trucks using an excavator or a rubber-tired loader. Each truckload will be manifested on a non-hazardous waste data form signed by the generator, transporter, and receiving facility.

The designated facilities for non-hazardous petroleum-impacted soil are:

Waste Management
Kettleman Hills Facility
35251 Old Skyline Road
Kettleman City, CA 93239

Clean Harbors
Buttonwillow Landfill Facility
2500 West Lokern Road
Buttonwillow, CA 93206

SPILL PREVENTION & CLEANUP PLAN

Spill prevention during truck loading and preparing for travel to the disposal location will be handled by the personnel performing the loading, under the supervision of the Onsite Supervisor. This will consist primarily of cleaning up spilled material with brooms and shovels and placing the material into the loader bucket. Loading material into the trucks will be performed carefully to avoid dropping or spilling material or creating significant amounts of dust.

DOCUMENTATION AND QUALITY ASSURANCE

This section describes the field documentation, chain-of-custody, and quality assurance procedures that will be exercised during the course of the project.

FIELD DOCUMENTATION AND LOGGING

Field observations are critical to the verification and interpretation of the laboratory data. Field observations made during this investigation will be recorded in the field log book or on other appropriate forms as needed. The following information will be recorded, in indelible ink, where appropriate:

- Date and name of observer.
- Weather conditions.
- Sampling location and time of sampling.
- Surveyed coordinates of sampling location (if required).
- Sampling site condition upon arrival (concrete cover, standing water, erosion, etc.).
- Soil characteristics and texture in general accordance with United States Geological Survey (USGS) Classification.
- Soil observations, including discoloration, staining, moisture content, etc.
- Deviations from or clarifications of sampling procedures.
- Miscellaneous conditions that the sampling team finds noteworthy.
- Odor qualities (sweet, sulfurous, strong, etc.) will also be recorded if casually noticed; however, field crews will be cautioned against unnecessary exposure to volatile constituents. PID measurements are intended to measure VOCs that might also be detected as odor.

CUSTODY PROCEDURES

This section outlines the procedures to maintain custody of the samples from sample collection through laboratory analyses including archiving of the laboratory results and reports within the final evidence files. A sample or evidence file is in one's custody if it is:

- In one's physical possession.
- In one's view, after being in one's possession.
- In one's physical possession and placed in a secured location.
- In a secured area restricted to authorized personnel only.

As few people as practical will have custody of the samples to reduce the chance of mishandling.

FIELD CUSTODY PROCEDURES

Field chain-of-custody will be maintained through the use of field logbooks, sediment, soil, surface water, and groundwater sampling forms, sample labels, chain-of-custody/sample analysis request forms, and custody seals. The project manager will be responsible for the successful implementation of these procedures.

Field logbooks will be bound field survey books and assigned to field personnel and/or project field binders.

Each sample container will be identified with a label. The information which will appear on the sample container label includes:

- Sample identification number
- Place of collection (or project number)
- Date and time of collection
- Personnel collecting the sample
- Preservative
- Analyses requested
- Any special information, such as an estimate of the level of contamination

All samples will be accompanied by completed chain-of-custody/sample analysis request forms. The project manager will keep a copy of these completed forms. The chain-of-custody part of the form provides documentation necessary to trace sample possession continuously from the time of collection until the time of receipt in the laboratory, and the condition of the samples and sample container upon receipt. The sample analysis request part of the form documents the analyses to be performed by the laboratory in addition to any special handling or preservation techniques carried out by the field personnel.

The laboratory personnel receiving the coolers will note the condition of the sample containers on the chain-of-custody/sample analysis request form.

QUALITY ASSURANCE

The quality assurance objective for this project is to develop and implement procedures for sampling, chain-of-custody, laboratory analyses, and reporting that will provide results that are representative of actual site conditions. Specific objectives of the QA/QC program are to:

- Verify that all procedures are documented, including any changes from the protocols established in this work plan
- Verify that all sampling and analytical procedures are conducted according to sound scientific principles
- Evaluate the quality of the analytical data through a system of quantitative and qualitative criteria
- Verify that data and observations are properly recorded and archived

PRECISION

Precision is the measure of variability of sample measurements. Measurements of data precision are necessary to demonstrate the reproducibility of the analytical data. Evaluation of precision is accomplished using the relative percent difference (RPD). The RPD is defined as the difference between the primary and duplicate samples divided by the mean and expressed as a percentage.

FIELD PRECISION OBJECTIVES

Field precision is determined by a comparison of field duplicate sample results. One primary and one duplicate sample will be collected consecutively using identical sampling techniques. Every attempt will be made to fill the sample containers with an equal volume of the media to be sampled using identical methods. Field duplicate RPD limits differ between matrices. The RPD limits for water samples are 0-30%, air samples are 0-25%, and soil samples are 0-50% (EPA 1996).

LABORATORY PRECISION OBJECTIVES

Precision in the laboratory is assessed through the calculation of relative percent differences between laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), matrix spikes and matrix spike duplicates (MS/MSDs), and sample laboratory duplicates and their parent samples. The laboratory RPD limits reference published or laboratory control charted limits.

ACCURACY

Accuracy is the relationship of the reported data to the accepted or "true" value. Accuracy is a measure of sampling and analysis bias. Biased results generally arise from personnel, instrument, or analytical method influences. Accuracy is determined by analyzing a reference material of known concentration, or reanalyzing a sample which has been spiked with a known concentration of an analyte. Accuracy is expressed as a percent recovery (%R). Quality control recovery limits are established based on statistical evaluation of previous laboratory analytical results for organic and inorganic analyses.

FIELD ACCURACY OBJECTIVES

Accuracy in the field is assessed through the use of field and trip blanks and through the adherence to all protocols and requirements for sample handling, preservation, and holding time. Accuracy for field measurements will be maintained through adherence of the calibration procedures for the field instruments.

LABORATORY ACCURACY OBJECTIVES

For liquid and solid matrices, analytical accuracy is expressed as the percent recovery of a spiked constituent reported in the surrogate, LCS, or MS/MSD. Comparisons of results from LCSs in conjunction with the MS/MSD pairs can be used to provide evidence that the laboratory methods were completed within acceptance criteria and, if applicable, the extent of matrix interference. Quality control recovery limits are established based on statistical evaluation of previous laboratory analytical results for organic and inorganic analyses.

Accuracy is determined by measuring the recovery of a known amount of a constituent spiked into a clean matrix. Quality control recovery limits are established based on statistical evaluation of previous laboratory analytical results for organic and inorganic analyses.

COMPLETENESS

Completeness is a measure of the percentage of analytical data and field measurements that meet all acceptance criteria. Completeness is the overall ratio of the number of samples planned versus the

number of samples with valid results. The percent completeness (%C) is a measure of the number of valid data points divided by the total number of measured data points expressed as a percentage.

FIELD COMPLETENESS OBJECTIVES

Field completeness is a measure of the amount of valid data obtained from all planned field measurements. Field measurements may consist of air monitoring measurements (H_2S, CO, LEL, O_2, and VOCs) and soil screening measurements (VOCs). The field completeness objective for this project is 90 percent.

LABORATORY COMPLETENESS OBJECTIVES

The laboratory shall provide data that meet quality control acceptance criteria for 90 percent or more of the requested analyses. The ability to meet or exceed a completeness objective is dependent on the nature of samples submitted for analyses. Completeness goals can still be achieved if the data requires qualification as estimated above or below laboratory reporting limits (i.e., data of known quality, even if not flawless, can be suitable for specific project goals).

REPRESENTATIVENESS

Representativeness expresses the degree to which data accurately and precisely represent the media and conditions being measured. The representativeness of the data from the sampling site will depend on the sampling procedures employed. Samples will be homogenized, if required, as part of the laboratory sample preparation process.

MEASURES TO DOCUMENT REPRESENTATIVENESS OF FIELD DATA

Representativeness is dependent upon the proper design of the sampling program. Representativeness of the field measurements and collected samples will be satisfied by ensuring that the procedures presented in this work plan are followed and that proper sampling techniques are used. Representativeness of sample collection techniques will be evaluated by reviewing sampling forms, chain-of-custody, and field notes, as well as analysis of the trip and equipment blanks.

MEASURES TO ENSURE REPRESENTATIVENESS OF LABORATORY DATA

Representativeness in the laboratory is ensured by using proper analytical procedures for the appropriate target analyte and sample matrix. Analytical method performance is determined by monitoring the results of quality control criteria such as method detection limits, LCSs, MS/MSDs, continuing calibrations, and laboratory blanks.

COMPARABILITY

Comparability is an expression of the confidence with which one data set can be compared with another.

MEASURES TO DOCUMENT COMPARABILITY OF FIELD DATA

Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the procedures referenced in this work plan are followed.

MEASURES TO DOCUMENT COMPARABILITY OF LABORATORY DATA

Analytical data will be comparable when similar sampling and analytical methods are used as documented in this work plan. Comparability is also dependent on similar quality assurance objectives.

DATA QUALITY ELEMENTS

The data quality elements that may be evaluated throughout the course of the corrective measures implementation may include:

Duplicate Samples: Blind duplicate (field replicate) samples may be collected to evaluate precision associated with the reproducibility of sampling techniques and the homogeneity of sample matrices (if applicable). Duplicate samples may be collected for each matrix at a frequency of 10 percent or 1 per every 10 samples collected and submitted for laboratory analyses. If less than 10 samples are collected during a particular sampling event, one blind duplicate sample may be collected.

Trip Blanks: One trip blank will be submitted for VOC analyses with each cooler containing aqueous samples requiring VOC analyses. Trip blanks are supplied by the laboratory with the sampling containers at the start of field activities and accompany the sample containers throughout the project. Trip blanks will also be analyzed for soil/sediment samples, if using laboratory prepared preservatives, in accordance with the most recent SW-846 methods for VOC analysis in solid matrices. The preservative solution(s) will be prepared by the laboratory and accompany the sample containers to the laboratory.

Equipment Blanks: Equipment blanks will be prepared and submitted for laboratory analysis to determine if cross-contamination has occurred during sampling, and to verify that equipment decontamination procedures are effective. Equipment blanks are submitted for analysis of the same constituent list required for the associated field samples. Equipment blanks will be preserved in the same manner as the associated samples. Equipment blanks will be shipped with the field sample containers. Equipment blanks will be collected and analyzed at a frequency of one per every 20 primary samples collected and analyzed by the laboratory.

Method Blanks: Method blanks are "clean" matrix similar samples prepared and analyzed by the laboratory. Analysis of the method blank is used to identify laboratory derived contaminants introduced during sample preparation, extraction, and analysis. Method blanks will be analyzed at a frequency of one per sample batch or 12-hour period by the laboratory.

MS/MSD: MS/MSDs are samples in which known spike concentrations of analytes are added to the collected sample prior to extraction and analyses. The recoveries for spiked compounds can be used to assess how well the method for analysis recovers target compounds within the submitted matrix. Evaluation of the MS/MSD is used to evaluate laboratory accuracy and precision, as well as determine any potential matrix related interferences within the analytical results. MS/MSDs will be collected and analyzed at a frequency of one per every 20 primary samples collected and analyzed by the laboratory.

Initial Calibrations: Initial calibration standards containing both target compounds and system monitoring compounds are analyzed at a range of concentrations at the beginning of each analytical sequence or as necessary if the percent difference between the initial calibration and the continuing calibration is not within the method specified limits. Compliance limits specifying the acceptable range

for instrument calibration are established to verify that the analytical instrument is capable of quantifying the target compounds within the reporting requirements.

Continuing Calibration Verification: Continuing calibration verification is performed routinely to ensure that the instrument remains within the initial calibration configuration and to demonstrate quantified data are within reporting limits. Continuing calibration standards consisting of both target compounds and system monitoring compounds are analyzed at the beginning of each 12-hour sample batch following the analysis of the instrument performance check and prior to the analysis of the method blank. The continuing calibration relative response factor will be compared to the method specific limits. The percent difference between the initial calibration and the continuing calibration will be determined and compared to method specified limits.

LCS (Performance Evaluation Samples): LCSs are "clean" matrix similar samples prepared by the laboratory and spiked with a known concentration of constituents prior to extraction and analysis. The LCS is used to evaluate laboratory accuracy and method compliance. The LCS will be prepared and analyzed by the laboratory at a frequency of one per every 20 samples analyzed or one per sample batch.

Surrogate Spiking: Surrogate compounds consist of laboratory derived compounds that are introduced to each sample submitted to and prepared by the laboratory prior to extraction and analysis. The surrogate compounds spiked to each sample are specific to the laboratory analytical method. Quantification of the surrogate compounds allows for determination of matrix effects and laboratory performance on individual samples.

DATA QUALITY ASSURANCE

The primary goal of the data quality assurance is to verify decisions made at the Facility are supported by analytical data of the type and quality required for its intended use. Close adherence to the sampling procedures in the work plan will assure that samples are representative of actual site conditions and are capable of yielding valid and useful data.

The data quality assurance element utilized during this investigation will be tiered to meet specific goals which are relevant to each task, and will be sufficient to provide clear and appropriate level of data validation and usability assurance. This tiered approach will apply data verification and validation on a task-specific basis. Data quality will be assured by following the procedures outlined in work plan/sampling and analysis plan and by subjecting the resulting data to data verification and data validation reviews.

DATA VERIFICATION REVIEW

A data verification review is conducted to evaluate the completeness, correctness, and conformance of a specific data set against the method, procedural, and regulatory requirements specific to that task. The data verification review determines if the quality objectives for a task have been met. The intended products of the data verification review are the verified data and the data verification records. Data verification reviews will be completed by the personnel who have direct involvement with the field sampling events which produced the samples.

DATA VALIDATION REVIEW

Data validation extends the verification process and determines and documents the overall quality of an analytical data set, and when appropriate will qualify or reject analytical data. The data validation process focuses on evaluating the analytical laboratory's performance so that the analytical error associated with a data set can be determined. The main purpose of data validation is to determine data quality in terms of accomplishment of the quality objectives for each task. The data validation review will be performed by a person independent of the field activities associated with a task.

The data validator will be provided with the task specific requirements and quality objectives, and all necessary and relevant field and analytical records required to complete the data validation review. The data validation review will include determinations, where appropriate, of the reasons for any failure to meet the project requirements, and an evaluation of the impact of such a failure on the overall data set. The data validation process will be conducted in a manner which conforms to the requirements set out in Data Validation Functional Guidelines for Evaluating Environmental Analyses (U.S. EPA 1996), and Guidance on Environmental Data Verification and Data Validation (U.S. EPA 2002).

Data will be validated in general accordance with the validation criteria presented in the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review (U.S. EPA 2008) with additional reference to USEPA CLP National Functional Guidelines for Organic Data Review (U.S. EPA 1999) and the USEPA CLP (U.S. EPA 2004). In cases where the validation guidelines do not address matrix specific methods, the quality assurance criteria specified by the analytical method will be used to evaluate the data presented by the laboratory.

Three tiers of validation will be available to assess the quality of the analytical data during implementation of corrective measures as discussed below.

Tier I: The data package is checked to document that the samples in the data set were analyzed according to the project requirements, and that the laboratory analytical report is complete. For Tier I validations, a validation cover letter is produced by the validator. Tier I validations can be performed by any competent person with knowledge of the project requirements.

Tier II: The results of the QC checks, analytical procedures and duplicate sample results are assessed and the data are qualified, if necessary. For Tier II validations, a data validation report is produced. Tier II validations should be performed by an individual who is familiar with the actual laboratory methods

Tier III: In addition to the Tier II validation requirements, a project specified percentage of the raw analytical data is examined in detail to check for correctness of concentration calculations, compound identification, and anomalies in the data. A detailed data validation report, which provides sufficient detail to explain all data qualifiers, and data inadequacies, is produced by the reviewer. The Tier III data validation process should provide sufficient detail for the data user to have an accurate idea of the data quality and reliability, and an understanding of how well the project objectives were met. The Tier III data review should verify that the data are adequately assessed, to allow its use in formal legal proceedings. The Tier III data validation should be performed by a chemist or other trained scientist, who is familiar with contract laboratory procedures.

The level of data validation performed will depend on the anticipated use of the data. All data will receive at least a Tier I validation. Data which is intended to document project closure relative to soil

standards and impacted soil management will receive a Tier II review, and data which may be used for risk assessment purposes will receive a Tier III validation.

DATA VALIDATION REPORTING

The data validation report will include the validated data set and the results of the data validation for both the field data and the analytical data. In some cases the data validation report for the field data may be generated separately from the analytical laboratory data. In certain instances, after reviewing the data the Field Task Leader or Site Manager may request the data validator to re-investigate some of the original analytical documentation to provide additional information regarding specific issues. A focused data validation is a detailed investigation of particular data records identified by the Field Task Leader, Site Manager, or data validator that need special interpretation or review by the data validator. Focused data validations will only be conducted for Tier III level data validation efforts. The data validator will review the data set and provide a report clarifying the issue in question. The report will detail the issue(s) resulting in the focused data validation and resolution to the specific issues. Data validation reports will become part of the complete data validation record for that data set.

REPORTING

COMPLETION REPORT

Following the completion of the project, ACG will submit a report to the following agencies:

- City of Morro Bay
- County of San Luis Obispo Environmental Health Service Department

The final report will include the volumes of contaminated soils removed, results of sampling and laboratory analyses, and the disposition of contaminated soils. Copies of all laboratory analytical reports and waste manifests will be included with the report.

APCD REPORTING MEASURES

Complaints about odors or dust shall be directed to the on-site representative of ACG, who will report complaints and breakdowns to the APCD within four hours of a complaint or event. Equipment or process breakdowns, including the process of minimizing fugitive emissions from the soil excavation or stockpiles shall be reported in writing to the APCD Records will be kept on site during project activities.

SOIL MONITORING RECORD

Company Name	Facility/Site Information
Analytical Consulting Group, Inc.	DFSP Morro Bay, 3300 Panorama Drive, Morro Bay

Monitor Information	Calibration Check	Monitoring Personnel	Excavation Summary	
Model: MultiRAE Plus MiniRAE 3000	Cal Gas: 50ppm Hexane	Name:	Total cy this page:	
SN:	Reading:	Company:	Total cy to date:	
Detector: PID 10.6eV	Date: Time:	Phone:	Removed from site to date:	

Time	VOC, ppm	Location	Depth	Stain	Odor	Comment

I certify that the information contained in the above document is true and correct. I further certify that the above listed hydrocarbon monitor was operated in a manner consistent with the manufacturer's specifications and the conditions specified within this plan. In addition, I certify that the above readings represent the actual measurements I observed and recorded during the excavation process.

SIGNATURE ______________________________ DATE: ______________

ACg