

Soil Analysis and Sampling Workplan

Newhall Land and Farming Company



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Acronyms

CalEPA	California Environmental Protection Agency
CHHSL	California Human Health Screening Levels
COC	Chain-of-Custody
COPC	Chemicals of Potential Concern
HASP	Health and Safety Plan
DTSC	Department of Toxic Substance Control
OCP	Organochlorine Pesticides
PEA	Preliminary Endangerment Assessment
PPE	Personal Protective Equipment
RMDP	Newhall Ranch Resource Management and Development Plan
QA/QC	Quality Assurance/Quality Control

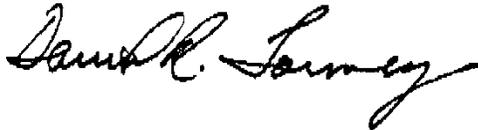
Professional Certification

NEWHALL LAND SOIL ANALYSIS AND SAMPLING WORKPLAN

LOS ANGELES COUNTY, CA

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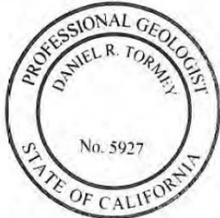


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1 Introduction

The Newhall Ranch Resource Management and Development Plan (RMDP) will create residential, mixed-use and non-residential facilities (Figure 1). The Development Plan consists of five (5) villages, or individual development areas. As part of Newhall Land's environmental review process, Newhall Land retains a qualified environmental consulting firm to conduct a Phase I site assessment according to applicable ASTM standards. In RMDP areas that either presently, or historically have been, used for agricultural activities, the tasks performed in the Phase I site assessment are expanded to include soil analysis and sampling for pesticides and herbicides. The pesticide sampling includes Organochlorine pesticides (OCP), including DDT and degradation products, by EPA Method 8081; Organophosphate pesticides (OPP) by EPA Method 8141; and Chlorinated herbicides (CH) by EPA Method 8151.

Phase I assessments, expanded to include this pesticide-related soil sampling and analysis, have been conducted for the Landmark Village, Mission Village, and Homestead development areas. To date, no samples exceed either U.S. EPA Preliminary Remediation Goals (PRGs) or California Human Health Screening Levels (CHHSLs). The sampling and analysis conducted in these Phase 1 assessments is consistent with the August 7, 2008 guidance issued by the Department of Toxic Substances Control (DTSC) titled Interim Guidance for Sampling Agricultural Properties (Third Revision), and no pesticides have been detected above the current CHHSLs. Therefore, this Workplan applies to areas that, in the future, would be developed.

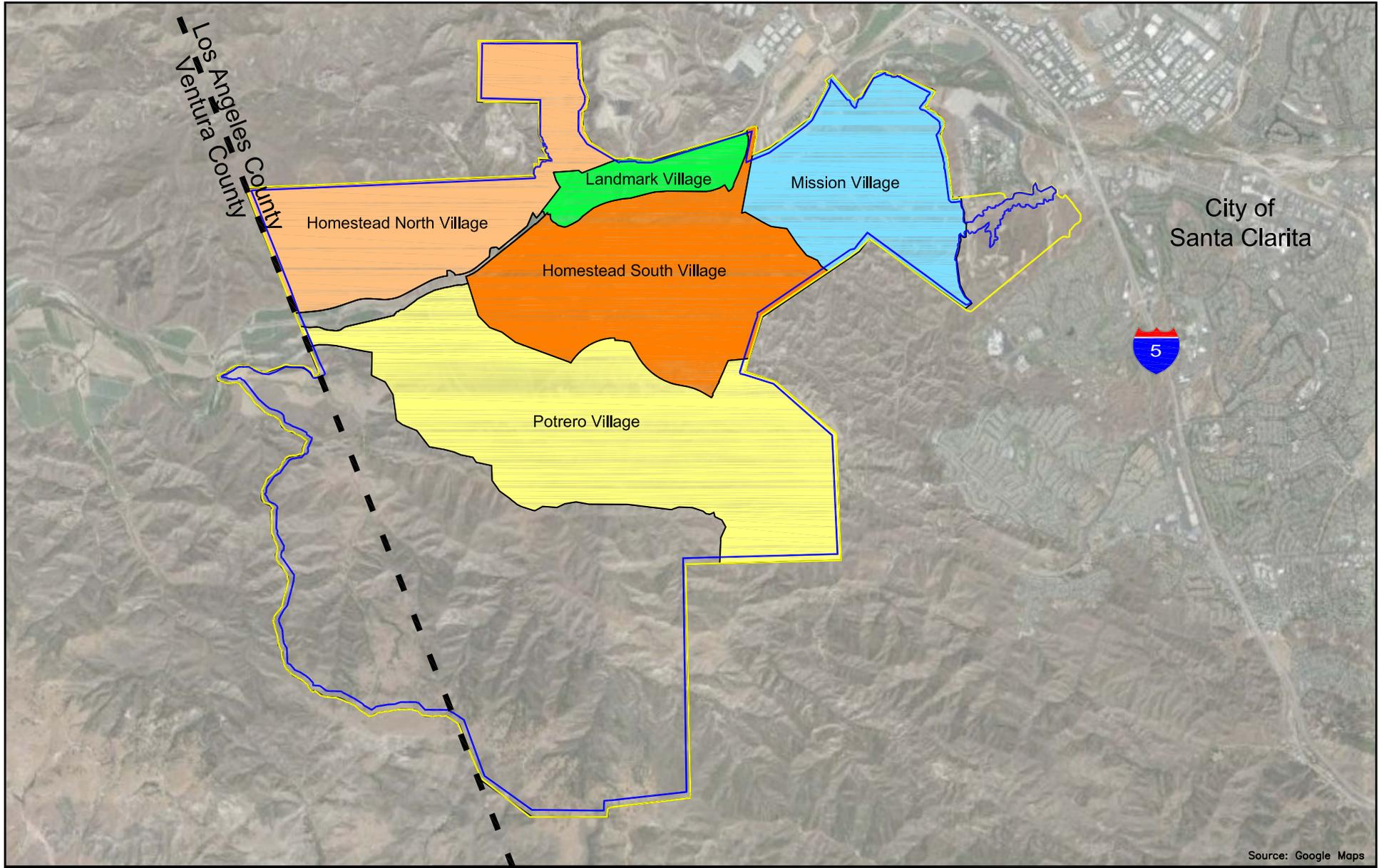
Prior to development of other areas within the RMDP that presently, or historically have been, used for agricultural activities, soil sampling and analysis will be conducted according to the methodology described in this Workplan.

This Soil Analysis/Sampling Workplan has been developed in accordance with Condition 28 of the Waste Discharge Requirements for the Resource Management and development Plan and Spineflower Conservation Plan issued by the Los Angeles Regional Water Quality Control Board on September 14, 2012. Specifically, the requirements of Condition 28 are as follows:

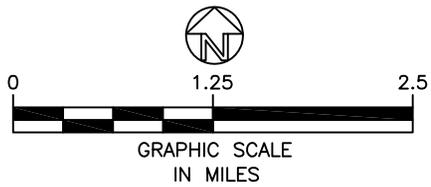
Soil Analysis. Within six months of the adoption of this Order, Newhall Land or its designee shall submit a workplan for Executive Officer approval that sets forth soil analysis/sampling criteria to be used in development areas within the RMDP that either presently or historically have been used for agricultural activities. Sampling shall be in accordance with DTSC protocol for residential and school sites and shall use the California Human Health Screening Levels (CHHSLs). Newhall Land or its designee shall implement the approved workplan. If sample results exceed the CHHSL for the applicable land use, then the RMDP Final EIS/EIR Mitigation Measure PH-12 shall be implemented.

The Soil Analysis and Sampling Plan is organized as follows:

- > Chapter 2 describes the soil sampling and analysis methods which complies with the August 7, 2008 guidance issued by the Department of Toxic Substances Control (DTSC) titled *Interim Guidance for Sampling Agricultural Properties (Third Revision)*;
- > Chapter 3 provides data interpretation and reporting; and,
- > Chapter 4 provides a Quality Assurance and Quality Control Plan.



Source: Google Maps



LEGEND

- Resource Management & Development Plan Boundary
- Spinflower Conservation Plan Boundary
- - - Los Angeles/Ventura County Line



Proposed Newhall Ranch Land Developments			
Newhall Ranch			
Scale 1:1.25	PROJECT No. 310901485	Figure No. 1	DATE 3/13
Drawn By: JJD			

2 Soil Sampling and Analysis Methods

The following section provides guidance for evaluating soil that is currently or has been previously, used for agricultural activities where residual agricultural chemicals may pose a threat to human health and the environment within the Newhall Land development project. A pesticide is any substance used to kill crop pests, such as insects, rodents, weeds and fungi. They are inherently toxic and, used improperly, can have adverse effects on human health and the environment. In this Workplan, a pesticide is meant to include herbicides, which focus on plant pests (weeds). None of the pesticides used on land owned by Newhall is hazardous enough to receive a Proposition 65 warning.

When pesticides and herbicides are used on agricultural fields, the fields receive an approximately even distribution of such pesticides and herbicides, according to standard agricultural practices. Therefore, to respond to this concern, the soil sampling focuses on soils within the upper two feet of the soil column, within the zone of tilling and disking of soil in order to determine whether the potential exists for relic pesticides and herbicides that exceed state standards.

In this section, soil sampling and analysis methods that comply with the August 2008 DTSC guidance Interim Guidance for Sampling Agricultural Properties (Third Revision) are described first, and constitute the Workplan for future sampling and analysis. This is followed by a description of past soil sampling and analysis conducted by Newhall in order to address concerns related to relict pesticides and herbicides that may be in land that was formerly used for agricultural purposes.

2.1 Sampling Requirements

In June 2000, DTSC issued Interim Guidance for Sampling Agricultural Soils to provide a uniform approach for evaluating former agricultural properties where pesticides have been applied, and DTSC issued the revised Version 2 in August 2002. DTSC has reviewed several hundred former agricultural properties across California under this guidance. DTSC revised the guidance in 2008, incorporating and refining the sampling and risk assessment approach. DTSC states that the guidance is intended to supplement the DTSC Preliminary Endangerment Assessment (PEA) Guidance Manual, CalEPA 1994 (Second Printing, June 1999).

2.1.1 Sampling Frequency

Per DTSC guidance, the number of samples required is dependent on the size of the applicable parcel and whether the crop was uniform or varied. Where differing crops were produced on different areas of the site, each area should be addressed separately. Table 1 provides recommended number of samples based on acreage.

Table 1. Recommended Sample Size

Land Size	Suggested Minimum Sampling Locations
One (1) to two (2) acres	Discrete samples taken on ¼ acre centers
Greater than two (2) up to four (4) acres	Discrete samples taken from eight (8) locations evenly spaced across the site
Greater than four (4) up to twenty (20) Acres	Eight (8) composite samples from discrete samples taken on half-acre centers
Twenty-one (21) to sixty (50) acres	Fifteen (15) composite samples from discrete samples taken on one (1) acre centers

Source: DTSC Interim Guidance for Sampling Agricultural Fields, August 2008

2.1.2 Sample Location

In fields where rows remain, approximately half the samples will be gathered from furrows and half from beds in an alternating pattern. Orchards sampling locations will be placed at the current drip line for the trees, under the canopy, between the tree rows, and between the trees within a row. For sites with slopes, swales, or other uneven topography, sampling from centers will be modified to include samples from those areas where surface water is expected to flow.

In fields that do not have clear evidence of the areas described in the previous paragraph, sample locations will be collected over the entire area to encompass the range of potential areas of concern.

2.1.3 Sampling Depth

DTSC's specification of sampling depth has changed with the revisions. DTSC initially required sampling at each location to include one surface sample (0 to 6 inches) and one subsurface sample (2 to 3 foot range). For screening-level purposes, the 2008 guidance recommends the collection of only surface samples (0-6 inches), with subsurface samples if warranted. Based upon the past usage in the RMDP area, this Workplan prefers the collection of subsurface samples in the 1 to 3 foot range. This range includes the tilling and disking depth, and better reflects both current and past pesticide use. As such, samples would be collected both from the surface (to comply with the current DTSC Guidance) and from the subsurface (to reflect site conditions).

2.1.4 Sample Collection

Since the DTSC guidance assumes a relatively even distribution of chemicals across the agricultural field portion of a site, they recommend compositing of discrete samples, which allows for increased sampling coverage for a site, while not significantly increasing the number of analytical samples. The number of samples provided in Table 1 represents the number of composite samples. For this Workplan, composite samples will be made up of four discrete samples (4 to 1: four discrete samples composited to one) from adjacent sampling locations. Surface samples will be composited using the 4:1 sampling ratio. Subsurface samples will also be composited using the 4:1 ratio. Each discrete sample will be the same in terms of volume or weight and thoroughly homogenized prior to compositing. Compositing may occur in the field or at the laboratory. In cases where two crops were grown on the site, only discrete samples from within the same crop area may be composited.

For arsenic, DTSC recommends discrete rather than composite samples. A minimum of four discrete on-site surface samples will be analyzed for arsenic. When samples are composited for OCP analysis, one discrete sample from each composite must be analyzed for arsenic. When more than four composite samples are analyzed for OCPs, the total number of discrete samples analyzed for arsenic does not need to be greater than the number of total composite samples used for OCP analysis.

Field duplicates should be collected at a rate of 10 percent (or a minimum of one). For arsenic, a discrete co-located sample should be collected and analyzed for every 10 arsenic samples collected. For OCPs where composite samples will be prepared and analyzed, every 10th composite sample should be prepared (independently) in duplicate and analyzed.

Soil samples selected for analytical testing will be collected into clean, 4-ounce glass jars. Sample containers will be labeled using a waterproof marker, and sample labels will include the sampler's initials, location identification, and time. All samples will be placed in individual Ziploc®-type bags, sealed, and stored in coolers on ice to maintain samples at 4°C prior to and during shipment to the analytical laboratory. Ice will be sealed in double plastic bags. A chain-of-custody manifest will be completed on-site and will accompany the samples to the lab. The samples will be transferred to the laboratory within 24 hours of sampling. If needed, a mobile laboratory may be utilized on-site to assist with the volume of samples generated during the sampling activities.

2.1.5 Soil Analysis

Based on the past assessments conducted by Newhall for pesticides, will include the following:

- > Organochlorine pesticides (OCP), including DDT and degradation products by EPA Method 8081;
- > Organophosphate pesticides (OPP) by EPA Method 8141; and,
- > Chlorinated herbicides (CH) by EPA Method 8151).

Based on the extensive experience reflected in DTSC's 2008 revision of the guidance, arsenic is the only metal required for sampling and analysis. Arsenic will be analyzed using EPA method 6000/7000 series. Arsenic is known to be relatively high in the soils of Southern California, and as such background samples may be selected if the screening-level sample result exceeds the CHSSL.

2.2 Past Sampling Methods and Results

During the Los Angeles County environmental review process for each Newhall Ranch subdivision map, Newhall retains a qualified environmental consulting firm to conduct a Phase 1 site assessment according to ASTM Practice E 1527-00, or the ASTM standard current at the time of the Phase 1. Additional tasks are also performed, including:

1. Review of maps and visual assessment for wetlands;
2. Visual Asbestos survey;
3. Visual Lead Based Paint survey;
4. Radon survey; and,
5. Soil sampling and analysis for pesticides (Organochlorine pesticides (OCP), including DDT and degradation products by EPA Method 8081; Organophosphate pesticides (OPP) by EPA Method 8141, and Chlorinated herbicides (CH) by EPA Method 8151).

Such studies have been conducted for the Landmark, Mission Village, and Homestead development areas. The sampling involves setting up a grid pattern over the site to ensure that a statistically representative sample set is collected, and collection and analysis of soil samples. Samples are collected from depths between one and two feet. Samples are composited, with less than four samples per composite analyzed. In the assessments that have been conducted to date, no sample results on any of the parcels have exceeded the Preliminary Remediation Goals (PRGs), which was the standard at the time of this work (2004/05). Comparison to current California Human Health Screening Levels (CHHSLs) indicate that none of the results exceed these standards.

These past sampling and analysis of pesticides on Landmark, Mission Village, and Homestead are consistent with the provisions of this Workplan, and have never detected a compound above a PRG or CHSSL. As such, the Workplan is only intended to be applied to assessments conducted in the future.

3 Data Screening and Reporting

3.1 Data Screening

All detected pesticides and any onsite metals above background levels will be evaluated by comparison to the relevant CHSSL value. If no compounds exceed the CHSSL, then no further action would be required.

In the event that a sample result exceeds the CHSSL, then the RMDP Final EIS/EIR Mitigation Measure PH-12 will be implemented, as follows:

- > *PH-12*: A Soil Management Plan for the residential development envelopes and recreational construction areas shall be developed and implemented, as appropriate. The objective of the Soil Management Plan is to provide guidance for the proper handling, on-site management, and disposal of impacted soil that may be encountered during construction activities (i.e., excavation and grading). The plan shall include practices that are consistent with the California Division of Occupational Safety and Health regulations, California Code of Regulations, title 8, as well as Certified Unified Program Agency remediation standards that are protective of the planned use. Appropriately trained professionals will be on site during preparation, grading, and related earthwork activities to monitor soil conditions encountered.

3.2 Reporting

Prior to each phase of grading during development, a report will be prepared for submittal to the LARWQCB. The report will include the objectives, methods, and results of this work. The report will also provide a conclusion whether or not condition PH-12 is triggered by the results.

4 Quality Control/Quality Control Plan

4.1 Objectives

The primary objective of the Quality Assurance/Quality Control (QA/QC) Plan is to provide procedures to obtain representative data, which can be used to meet the project goals. In general, quality and representation of the data are assured by adherence to formalized and standardized field and laboratory procedures performed by trained, qualified personnel.

This QA/QC Plan addresses the QA procedures to be followed during field investigations and the subsequent evaluation and reporting of data. Analytical laboratories utilized during the course of this investigation will have appropriate State of California certifications, which require adherence to their own specific QA/QC procedures. It shall be verified that the selected laboratories follow appropriate procedures to ensure that acceptable levels of accuracy, precision, representativeness, completeness, and comparability are maintained for each data set.

4.2 Project Organization

The sampling will be performed by qualified personnel under the direction of the Project Manager and by a California Registered Geologist, as appropriate. All personnel involved with this project will be aware of their individual responsibilities, as described in the following subsections, and understand that QA must be applied throughout the entire duration of the project.

4.2.1 Project Manager

The Project Manager will be responsible for adherence to project schedules, project coordination, maintaining project documentation, and management of technical, financial, and administrative aspects of the project. The Project Manager is the primary contact between Newhall Land, contractors, and subcontractors.

4.2.2 QA Director

The QA Director for the project is responsible for implementing the QA/QC Plan to ensure that sampling and analysis procedures are properly followed. The QA Director coordinates the necessary report preparation, reviews and provides QA audits. For this project, the QA Director and Project Manager roles are combined.

4.2.3 Health and Safety Officer

The responsibilities of the Health and Safety Officer include implementing the Health and Safety Plan (HASP), documenting all health and safety related activities, and ensuring that health and safety equipment is calibrated and maintained. The existing HASP will be present at all times on the Site.

4.2.4 Field Geologist/Scientist

The Field Geologist/Scientist ensures that field activities are properly executed in accordance with QA procedures. The Field Geologist/Scientist has the authority to:

- > Stop any sampling that is not following acceptable protocols.
- > Discard any sample that is not correctly collected, preserved, or transported.
- > Invalidate any data obtained from an improperly collected sample.

- > Invalidate any data if the proper sample handling and documentation procedures have not been followed.

4.3 Sample Quality Control

Sampling will be conducted using procedures that protect the physical and chemical integrity of the sample. Representative data will be obtained by adhering to specific sampling and analysis procedures. Sample QC procedures at the analytical laboratory will be in accordance with their accredited plan. Each sample is tracked from the time of collection by extensive field documentation, which is completed during sampling.

A Chain-of-Custody form is designed to create an accurate record, which can be used to trace the possession and handling of samples from the moment of collection through analysis. The Chain-of-Custody is filled out by the field sampling team at the time a sample is collected. The Chain-of-Custody will accompany the sample through all transportation until it is received by the laboratory, where it is filed. Whenever a sample is transferred from one party to another, both parties will sign and date the Chain-of-Custody at the time of transfer.

Quality control procedures specified in method SW-846 must be followed in compliance with DTSC. The laboratory data package must include a summary of the quality control sample results: blanks, matrix spike/matrix spike duplicate, surrogate recoveries, laboratory control samples, etc., as specified by the method. The laboratory should provide a signed narrative stating whether the QC was met and listing any discrepancies.

4.4 Data Reduction, Validation and Reporting

Data from the analytical laboratory will be reviewed by internal laboratory management before being submitted to the Project Manager/QA Director. Analytical data from the laboratory must include the data report, and all related QA/QC data.

The Project Manager/QA Director will be responsible for evaluation of the data, including tabulating all laboratory data and completing a QA/QC review.

4.5 Corrective Action

During the course of the sampling, it will be the responsibility of the Project Manager to ensure that all of the specified sampling procedures are followed and that data meet prescribed acceptance criteria. The field and analytical procedures will be reviewed if QA/QC problems or deficiencies requiring corrective action occur. If a problem is discovered, prompt and prescribed action will be taken to correct the problem. Corrective action may be initiated based upon QC data or audit results.

4.6 Quality Assurance Reports

The Project Manager and QA Director will rely on written reports and memoranda documenting data assessment activities, audits, nonconformance, and corrective actions to verify that QA requirements are being met. QA/QC activities will be documented. All information received from an outside source or developed during the project will be stored in project files. The Project Manager will identify which field documents will be designated as QA records for the project file. The Project Manager will also ensure that QA records are properly stored and retrievable upon completion of the project.

5 References

- California EPA. 2005. The Use of California Human Health Screening Levels (CHHSLs) in Evaluations of Contaminated Properties. <http://www.calepa.ca.gov/brownfields/documents/2005/CHHSLsGuide.pdf>
- Department of Toxic Substances Control (DTSC). 2008. Interim Guidance for Sampling Agricultural Properties (Third Revision). <http://www.dtsc.ca.gov/Schools/upload/Ag-Guidance-Rev-3-August-7-2008-2.pdf>
- Environmental Protection Agency, Hazardous Waste Test Method SW-846. <http://www.epa.gov/osw/hazard/testmethods/sw846/online/>