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Prepared For

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QUALITY CONTROL SUMMARY REPORT
FOR
REMOVAL ACTION CONFIRMATION SAMPLING
AT INSTALLATION RESTORATION SITES 5 AND 14

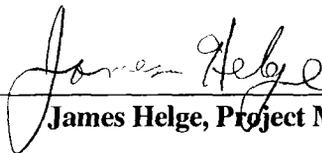
ALAMEDA POINT
ALAMEDA, CALIFORNIA

August 2002

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ACRONYMS AND ABBREVIATIONS

3J	3J Environmental Services
µg/kg	Microgram per kilogram
APCL	Applied Physics and Chemistry Laboratory
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN II	Comprehensive Long-term Environmental Action Navy II
CLP	Contract Laboratory Program
CRDL	Contact-required detection limit
CRQL	Contract-required quantitation limit
CTO	Contract task order
DQO	Data quality objective
EDS	Environmental Data Services, Inc.
EPA	U.S. Environmental Protection Agency
FSP/QAPP	Field sampling plan and quality assurance project plan
ICP	Inductively coupled plasma
IDL	Instrument detection limit
IR	Installation restoration
LCS	Laboratory control sample
LCSD	Laboratory control sample duplicate
MD	Matrix duplicate
mg/kg	Milligram per kilogram
mg/L	Milligram per liter
MS	Matrix spike
MSD	Matrix spike duplicate
PAH	Polynuclear aromatic hydrocarbon
PARCC	Precision, accuracy, representativeness, completeness, and comparability
PCB	Polychlorinated biphenyls
QC	Quality control
QCSR	Quality control summary report
RI/FS	Remedial investigation and feasibility study
RPD	Relative percent difference
SDG	Sample delivery group
Southwest	Southwest Laboratory of Oklahoma
SOW	Statement of work
TCDD	Tetrachlorodibenzo-p-dioxin
TtEMI	Tetra Tech EM Inc.

1.0 INTRODUCTION

Tetra Tech EM Inc. (TtEMI) conducted sampling and analysis activities for the United States Navy under Contract Task Order (CTO) No. 386. The sampling event was designed to fulfill data quality objectives (DQO) in support of soil removal actions at Installation Restoration (IR) sites 5 and 14 at Alameda Point (formerly Naval Air Station Alameda), Alameda, California. The objectives of the confirmation sampling were to determine whether (1) excavation activities performed under the removal actions adequately removed soil containing concentrations of contaminants above established action levels and (2) residual concentrations of contaminants in remaining soil at the sites are below these action levels, thereby minimizing risk to human and ecological receptors. This quality control summary report (QCSR) documents and summarizes the analytical data's support of sampling and analytical objectives for CTO No. 386. The soil and water samples addressed in this report were collected between December 17, 2001, and March 20, 2002. The samples were collected from the two IR sites, which are related to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program at Alameda Point. This QCSR provides a general overview of analytical data quality for this sampling event.

TtEMI developed DQOs that are discussed in Section 2.0 of this QCSR and are described in the field sampling plan and quality assurance project plan (FSP/QAPP) for the confirmation sampling investigation (TtEMI 2001). Methods and techniques required to yield analytical data of acceptable quality and quantity to support DQOs are outlined in the FSP/QAPP also. Acceptability of data, which is evaluated by the parameters of precision, accuracy, representativeness, completeness, and comparability (PARCC), is determined through the process of data validation. Specific PARCC parameters are discussed in Section 3.0 of this QCSR. Results of the data validation process are summarized in Section 4.0 and include a discussion of general quality control (QC) issues. Section 5.0 presents a conclusion of findings regarding data acceptability for the confirmation sampling event.

2.0 DATA QUALITY OBJECTIVES

The DQO process is a series of planning steps designed to ensure that the type, quantity, and quality of environmental data used in decision-making are appropriate for the intended application. DQOs for confirmation sampling at Alameda Point were developed following U.S. Environmental Protection Agency (EPA) guidance for the DQO process (EPA 1994a). DQOs were developed for confirmation sampling at three sites that were to be subject to soil removal actions for remediation of existing contamination. These DQOs are described in detail in the FSP/QAPP (TtEMI 2001). During data gap

sampling, which took place between June and November 2001, it was determined that the existing residual concentrations of lead and polychlorinated biphenyls (PCB) near the wetlands area within IR site 15 were below established action levels, eliminating the need for soil removal and subsequent confirmation sampling at that location. The DQOs developed for post-excavation confirmation soil sampling at sites 5 and 14 remained in effect.

The DQOs for confirmation sampling at sites 5 and 14 within Alameda Point were designed to accomplish the following goals:

1. Verify that the concentration of cadmium remaining in soil near the plating shop at site 5 does not exceed the site-specific action level of 9 milligrams per kilogram (mg/kg), after soil removal actions have been completed.
2. Verify that the concentration of dioxins, as 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD) equivalents, remaining in soil at site 14 near the fire training area does not exceed the site-specific action level of 0.0135 microgram per kilogram ($\mu\text{g}/\text{kg}$), after soil removal actions have been completed.

Details of the sampling design, including the proposed excavation areas and sampling locations, can be found in the FSP/QAPP (TtEMI 2001).

Over a period of 94 days, 6 water samples and 93 soil samples were collected and submitted for analysis. Samples were analyzed by Applied Physics and Chemistry Laboratory (APCL), at its laboratory in Chino, California, and by Southwest Laboratory of Oklahoma (Southwest), at its laboratory in Broken Arrow, Oklahoma. In addition to the originally proposed analyses, some samples from site 5 were analyzed for total chromium, hexavalent chromium, lead, and cyanide, and some samples from site 14 were analyzed for polynuclear aromatic hydrocarbons (PAH). These additional data were generated for potential use in risk assessment activities for these sites.

Definitive data (as defined in the FSP/QAPP) for Alameda Point were generated for the following analytical parameters:

- Dioxins and furans
- Dissolved metals
- Total metals
- Cyanide
- Hexavalent chromium

- PAHs

Soil and groundwater samples were analyzed in batches called sample delivery groups (SDG), containing between 1 and 30 samples each. SDGs are generally limited to 20 samples or less; however, one batch of 30 samples was collected and grouped together with the approval of the TtEMI project chemist.

Analytical results were submitted to TtEMI by SDGs. A list of SDGs, associated samples, and analyses is presented in Table 1. The laboratories followed analytical methods specified in the FSP/QAPP (TtEMI 2001) and the laboratory services statement of work (SOW) for the Comprehensive Long-term Environmental Action Navy II (CLEAN II) contract (TtEMI 1999).

Table 1 lists samples by identification number and the analyses performed on each sample. Table 1 also identifies QC samples. Sampling locations are identified in the FSP/QAPP (TtEMI 2001). Sampling locations also appear in analytical tables provided in Appendix A of this QCSR.

Environmental Data Services, Inc. (EDS), in Concord, New Hampshire, 3J Environmental Services (3J) in Fremont, California, and Quantalex in Lakewood, Colorado, validated analytical data in accordance with procedures outlined in the EPA Contract Laboratory Program's (CLP) functional guidelines for organic data review (EPA 1999a), the EPA CLP functional guidelines for inorganic data review (EPA 1994b), and the data validation SOW for Navy CLEAN II (PRC Environmental Management, Inc. 1997). APCL and Southwest provided the following information required to validate data:

- Raw data
- Instrument calibration information
- Instrument printouts for samples and standards
- Instrument run logs
- Benchsheets
- Standards preparation information
- QC sample results

EPA CLP-like deliverable packages were provided.

A cursory validation was performed on data for all samples. In addition, the FSP/QAPP specified that 10 percent of the samples were to be selected for full validation. Of the 99 total samples that were submitted for analysis, 15, or about 15 percent, were selected for full validation. Table 1 lists those samples that received full validation. Appendix A contains tabulated analytical data, with appropriate

validation qualifiers and comment codes. A description of criteria reviewed for both cursory and full validation is presented in Appendix B. Validation reports for each SDG received from the laboratories are included in Appendix C. Specific data validation qualifiers and comment codes are explained in Appendix D.

Validated analytical results, which meet regulatory and method specifications, provide definitive data, as defined by the DQO process for Superfund (EPA 1994c). Definitive data are suitable for site characterization and risk assessment and, therefore, support project DQOs.

3.0 CRITICAL PARAMETERS

Data were evaluated for acceptable quality and quantity; this evaluation was based on the PARCC critical indicator parameters. PARCC parameters were reviewed for laboratory analytical results and are discussed in the following sections.

3.1 PRECISION

Precision is a measure of the variability associated with the entire sampling and analysis process. It is the comparison among independent measurements as the result of repeated application of the same process under similar conditions. It is determined by analysis of field duplicate pairs, matrix spike duplicate (MSD) pairs, and matrix duplicate (MD) pairs. Precision is expressed as the relative percent difference (RPD) of a pair of values (or results). Acceptance criteria for each analytical methodology are stated in Tables 5a through 5c, of the FSP/QAPP (TtEMI 2001); these tables are included as Attachment A to this QCSR. During the data validation process, MSD and MD results were evaluated for compliance with acceptance criteria for precision for each analytical methodology. RPD evaluations are documented in individual data validation reports for each SDG (see Appendix C).

Field duplicate pairs were not collected for this sampling event. Field duplicates were not collected for soil samples because of the heterogeneous nature of the soil matrix. No groundwater or surface water samples were anticipated for this event; however, groundwater was encountered twice within excavated areas, and six groundwater samples were collected from four locations.

Matrix spikes (MS) were analyzed for each analysis and matrix (water or soil), with the exception of dioxins and furans in water. MSD pairs and MD pairs are listed in Table 1. Frequency criteria for MSD or MD pairs specified in the FSP/QAPP (TtEMI 2001) are 5 percent of the samples or one pair per

analytical batch. In cases where MSs were not analyzed because of insufficient sample volume, laboratory control sample duplicates (LCSD) were analyzed with the sample batch to provide batch precision data. MSD and MD frequency for each method and matrix ranged from 0 to 50 percent, and overall frequency was 13 percent, which meets the established criteria. No precision problems were observed for this sampling event.

3.2 ACCURACY

Accuracy is the degree to which a measurement agrees with its true value and is expressed as percent recovery. Acceptance criteria for each analytical methodology are stated in Tables 5a through 5c of the FSP/QAPP (TtEMI 2001); these tables are included as Attachment A to this QCSR. Accuracy is assessed by comparing the recoveries of MSs, laboratory control samples (LCS), surrogates, and internal standards to associated control limits. Through the process of data validation, MS, LCS, and surrogate recoveries were evaluated for compliance with acceptance criteria for accuracy for each applicable analytical methodology. Evaluations of percent recovery are documented in individual data validation reports for each SDG (see Appendix C).

The frequency of analysis of MS samples met the criteria specified in the FSP/QAPP of 5 percent of the samples (TtEMI 2001), with an overall frequency of about 13 percent for all methods and matrices combined (13 of 99 total field samples were used for MS). MS frequency for each individual method and matrix ranged from 0 to 50 percent. MSs were not performed for dioxin analysis of water samples. In cases where MSs were not analyzed, LCSD pairs were analyzed with the batch to provide QC for accuracy. No accuracy problems related to MS were observed for this sampling event.

LCSs were analyzed for parameters in each SDG. LCS percent recoveries were within QC limits for all analyses, with the following exception: acenaphthene and benzo(a)pyrene recoveries failed to meet LCS control limits for the PAH in soil analysis for SDG AKP06. Associated sample results were qualified as estimated (Jh or UJh).

Surrogate spikes were used in the analyses for dioxins and PAHs. No accuracy problems related to surrogate recovery were observed.

Internal standards were used in the analyses for dioxins. Accuracy problems related to internal standard recovery were observed for dioxins. Affected samples were qualified as estimated (Je or UJe). Of 1,391

individual analytical records, 56, or about 4 percent were affected by unacceptable internal standard recovery.

3.3 REPRESENTATIVENESS

Representativeness is a qualitative parameter defined by the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or a process or environmental condition. Sample results were evaluated for representativeness by examining items related to sample collection, including chain-of-custody documentation, sample labeling, collection dates, and the condition of the samples upon receipt at the laboratory. Laboratory procedures were also examined, including anomalies reported by the laboratory, either upon receipt of the samples at the laboratory or during analytical processes; adherence to recommended holding times of samples prior to analysis; calibration of laboratory instruments; adherence to analytical methods; quantitation limits used for samples; and completeness of data package documentation. Any item that may have adversely affected the representativeness of the sample result is documented in the data validation narratives found in Appendix C.

All samples were analyzed within the holding times specified by the methods, with the following exceptions: three samples for PAH were extracted and analyzed outside the recommended holding times. Detected results for these samples were qualified as estimated (Jh), and non-detected results were qualified as rejected (Rh). Although non-detected results for these samples were qualified as rejected during data validation, it was determined that these data could still be used to evaluate the presence of PAHs at the site because of the extremely persistent nature of PAHs in soil. All water and soil samples were received at the laboratories at the appropriate ice chest receipt temperatures of 2 to 6 degrees centigrade.

Initial and continuing calibrations met QC criteria for all analyses.

Project-required quantitation limits listed in the FSP/QAPP (TtEMI 2001) were met for all analyses. The quantitation limits achieved for all analytes were adequate to satisfy the DQOs.

Laboratory method blank and calibration blank results were evaluated during the data validation process to determine whether laboratory conditions may have affected sample results. Blank contamination indicates the potential for false positive results at low concentrations and the potential for a high bias in

detected results. Results for cadmium in seven samples were qualified as estimated non-detected (UJb), due to calibration blank contamination. Results for octachloro-dibenzo dioxin in five samples were qualified as estimated non-detected (UJb), due to method blank contamination. A discussion of analytical results for the laboratory method blanks is included for each analysis in Section 4.0.

3.4 COMPLETENESS

Completeness is defined as the percentage of measurements judged to be valid. The validity of sample results is determined through the data validation process. All rejected (R) sample results and missing analyses are considered to be incomplete. Data that are qualified as estimated (J) or estimated non-detected (UJ) are considered to be valid and usable. Completeness is calculated and reported for each method and analyte combination. The number of valid results divided by the number of possible individual analyte results, expressed as a percentage, determines the completeness of the data set.

A completeness goal of 90 percent was specified in the FSP/QAPP (TtEMI 2001). For the confirmation sampling investigation, 1,391 individual analytical results were generated, and 48 were rejected, resulting in 96.5 percent completeness for this sampling event. Non-detected results for PAHs in three soil samples were rejected because the extraction holding time was exceeded. Rejected data are summarized in Table 2.

3.5 COMPARABILITY

Comparability of the data is a qualitative parameter that expresses the confidence with which one data set may be compared to another. Comparability of the data is achieved by using standard methods for sampling and analysis, reporting data in standard units, normalizing results to standard conditions, and using standardized reporting formats and data validation procedures.

Elevated reporting limits were assessed during the data validation process to determine if a justifiable reason existed for the raised limits. Reporting limits were frequently raised because of high concentrations of target or interfering compounds. In these cases, sample volumes or extracts were diluted and analyzed, or a smaller aliquot of the original sample was analyzed. Elevated reporting limits for these samples were acceptable.

4.0 DATA VALIDATION SUMMARY

This section summarizes sample data assessment by analytical methodology. Specific details concerning any of the comments for a particular sample or batch of samples may be found in the data validation narrative for the associated SDG (see Appendix C).

4.1 DATA VALIDATION PROCESS

APCL and Southwest submitted analytical reports with laboratory qualifiers, which are defined by either the EPA CLP SOWs (EPA 1995, 1999b) or laboratory standard operating procedures. CLP- and laboratory-defined qualifiers identify such items as non-detected values; values below the contract-required quantitation limits (CRQL), which are considered to be estimated values; and values with analytical anomalies such as holding time violations and QC deficiencies. These laboratory data qualifiers were replaced with functional guideline (EPA 1994b, 1999a) data validation qualifiers during data validation.

During data validation, EDS, 3J, and Quantalex completed worksheets documenting criteria reviewed. These worksheets were used to generate validation narratives (see Appendix C) and are not included in this report. The worksheets are archived with project files. Each worksheet contains a detailed identification of validation requirements listed in Appendix B for each analytical method.

A validation narrative was prepared for each SDG (see Appendix C). Each validation narrative contains a list of the samples in that SDG, analyses performed, the identity of the samples receiving full validation, and results of the validation for each method. As specified in the FSP/QAPP, all samples in each SDG received a cursory validation. The FSP/QAPP additionally specified that 10 percent of the samples to be used for risk assessment should receive a full validation review. Table 1 identifies the samples in each SDG that received full data validation. The 10 percent criterion for full validation was achieved. For each matrix and method, the percentage of samples that received a full validation ranged from 0 to 20 percent, with an overall average of 15 percent.

After the data were reviewed, data validation qualifiers were applied to analytical results. Data validation qualifiers are alphabetic characters placed adjacent to each reported value that correspond to definitions specified in the validation report. In addition to associated qualifiers, the printed tables for the validated laboratory analytical data also include a comment column. The alphabetic letters a through

h, and p, y, and z were used to reference different QC issues that may have affected analytical results. Associated definitions for these comment codes are provided in Appendix D.

Laboratory data were received on an ASCII-formatted diskette and were loaded into a database program created at TtEMI. This database allowed (1) data validation qualifiers to replace original laboratory qualifiers, (2) correction of detected data errors, and (3) tables to be printed with validated results in various formats. Analytical results included in this QCSR have been produced from this TtEMI database. Original laboratory diskettes are archived with the project files.

4.2 SAMPLE DATA ASSESSMENT

APCL reported results for a total of 4 groundwater samples and 44 soil samples in seven SDGs. Samples were analyzed for specifically requested parameters, including dissolved metals, total metals, PAHs, and inorganic and physical analyses, depending on the DQOs associated with each sample. Field QC samples were not collected. Southwest reported results for 2 groundwater samples and 54 soil samples in four SDGs. Samples were analyzed for dioxins. Field QC samples were not collected.

Data validity is discussed according to analytical methodology. The discussion is intended to provide a general summary; specific details may be found in the data validation narratives (see Appendix C).

4.2.1 Dissolved and Total Metals

Analyses for metals were performed on 2 environmental groundwater samples and 39 environmental soil samples. All groundwater samples were filtered and preserved in the field; analysis generated results for dissolved metals.

The 6-month holding time requirements were met for target analyte list metals (cadmium, chromium, and lead).

Initial calibrations were performed, as required, and met QC criteria. Continuing calibrations were performed, as required, and met QC criteria. Contract-required detection limit (CRDL) standards were analyzed, as required, and met QC criteria.

LCSs were performed at appropriate frequencies for all samples, and percent recoveries met QC criteria.

The frequency of analysis of MS samples met the criteria of 5 percent of the samples, as specified in the FSP/QAPP (TtEMI 2001). All MS recoveries were acceptable.

The frequency of analysis of MD samples met the criteria specified in the FSP/QAPP of 5 percent of the samples (TtEMI 2001). All RPDs met QC criteria.

Metals results were qualified as estimated non-detected (UJb) in seven samples because of contamination of initial calibration or continuing calibration blanks. In all cases, results were within a factor of five of the associated blank concentration.

Inductively coupled plasma (ICP) serial dilutions and spectral interference check analyses were performed at required frequencies. One result for cadmium and four results for lead were qualified as estimated (Jh) because of problems with interference check samples. Seven results for cadmium were qualified as estimated (Jh) because a serial dilution result did not meet method criteria.

Analytes that were detected at concentrations greater than the instrument detection limit (IDL), but less than the CRDL, were qualified as estimated (Jg).

4.2.2 Inorganic and Physical Analyses

Inorganic and physical analyses included testing for cyanide, hexavalent chromium, and pH. Cyanide analysis was performed on two environmental water samples. Hexavalent chromium analysis was performed on 20 environmental soil samples and 2 environmental water samples. Analysis for pH was performed on 2 environmental water samples.

The 14-day analysis holding time for cyanide and the 24-hour analysis holding time for hexavalent chromium and pH in water were met for all samples. The holding time of 1 month to extraction and 4 days after extraction for hexavalent chromium in soil was met for all samples.

The frequency of analysis of MS/MSD samples and MD samples met the criteria specified in the FSP/QAPP (TtEMI 2001) of 5 percent of the samples. MS were performed on one water sample for cyanide and on two soil samples and one water sample for hexavalent chromium. An MD was performed on one water sample for pH. All recoveries and RPDs met QC criteria.

LCSs were performed at required frequencies. Percent recoveries met QC criteria.

Method blanks were free of target analyte contamination.

Initial and continuing calibrations were performed, as required, and met QC criteria.

4.2.3 Polynuclear Aromatic Hydrocarbons

Analyses for PAH were performed on five environmental soil samples.

The 14-day extraction holding time and 40-day analysis holding time requirement for PAH in soil was met for all samples, with the following exceptions: detected results were qualified Jh, and non-detected results were qualified Rh for samples 386-S14-018, 386-S14-043, and 386-S14-054 because of exceeded extraction holding times. Due to the extremely persistent nature of PAH in soil, it was determined that these data could still be used to evaluate the presence of PAH in soil at site 14.

Appropriate surrogate compounds were spiked, as required. All surrogate recoveries met the established criteria.

MS/MSD analyses were performed on one environmental sample. Percent recoveries and RPD met QC criteria.

LCSs were analyzed at required frequencies; all recoveries were within QC limits, with the following exception: acenaphthene and benzo(a)pyrene recoveries failed to meet LCS control limits for the PAH in soil analysis for SDG AKP06. Associated sample results were qualified as estimated (Jh or UJh).

No target compound contamination was found in the method blanks.

Initial and continuing calibrations were performed, as required, and met QC criteria.

4.2.4 Dioxins and Furans

Analysis for dioxins and furans was performed on 54 environmental soil samples and 2 environmental water samples.

The 30-day extraction holding time requirement and 45-day analysis holding time requirement for dioxins were met for all samples.

MS/MSDs were performed on three soil samples. Percent recoveries and RPDs for MS results met the QC criteria. Additionally, isotopically labeled analogs of several dioxin and furan isomers are added to every field sample to quantify target analytes and to monitor extraction efficiency and matrix interference. The method QC criteria for recovery of these internal standards were met, with the following exceptions: at least one dioxin or furan compound was qualified as estimated (Je or UJe) in 7 soil samples because of internal standards that did not meet method-specific recovery criteria. Specific details can be found in Appendix C.

LCSs were analyzed at required frequencies; all recoveries were within QC limits.

No target compound contamination was found in the method blanks, with the following exceptions: the results for octachlorodibenzo-p-dioxin were qualified as estimated non-detected (UJb) in five samples because of method blank contamination.

At least one dioxin or furan compound was qualified as estimated (Jh) in 35 soil samples because of either the presence of interfering chlorinated diphenyl ethers or mass spectral ion ratios that did not meet the theoretical ratios identified in the method. In these cases, the reported results should be considered as estimated, maximum possible concentrations. More details may be found in Appendix C.

Initial and continuing calibrations were performed, as required, and met QC criteria.

5.0 CONCLUSIONS

Analytical results of the confirmation sampling event met project objectives for the quantity and quality of data required to support decisions based on this investigation. Data was rejected for 3.5 percent of all sample records. Data without qualifiers and data qualified as estimated with a (UJ) or (J) qualifier are usable for purposes in supporting project objectives. Validated data for the confirmation sampling investigation at Alameda Point were found to be representative and comparable for all samples. TtEMI exceeded its completeness goal of 90 percent; actual completeness was 96.5 percent for this sampling event.

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TABLES

FINAL QUALITY CONTROL SUMMARY REPORT FOR REMOVAL ACTION CONFIRMATION SAMPLING - SITES 5 AND 14

DATED 30 AUGUST 2000

TABLE 1

**SAMPLE CROSS REFERENCE TABLE
 SAMPLE DELIVERY GROUP AAO01, CTO 386
 ALAMEDA POINT, ALAMEDA, CALIFORNIA**

(Page 1 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses
					D I O X I N S
386-S14-011	Soil	12/17/01		Full	X
386-S14-012	Soil	12/17/01		Full	X
386-S14-013	Soil	12/17/01			X
386-S14-014	Soil	12/17/01			X
386-S14-015	Soil	12/17/01			X
386-S14-016	Soil	12/17/01			X
386-S14-017	Soil	12/17/01			X
386-S14-018	Soil	12/17/01			X
386-S14-019	Soil	12/17/01			X
386-S14-020	Soil	12/17/01			X
386-S14-021	Soil	12/17/01			X
386-S14-022	Soil	12/17/01			X
386-S14-023	Soil	12/17/01			X
386-S14-024	Soil	12/17/01			X
386-S14-025	Soil	12/17/01	Matrix spike and matrix spike duplicate		X
386-S14-026	Soil	12/17/01			X
386-S14-027	Soil	12/17/01			X
386-S14-028	Soil	12/17/01			X
386-S14-029	Soil	12/17/01			X
386-S14-030	Soil	12/17/01			X

Notes:

* Cursory validation performed on all samples
 ID Identification

TABLE 1

**SAMPLE CROSS REFERENCE TABLE
SAMPLE DELIVERY GROUP AAO01, CTO 386 (Continued)
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

(Page 2 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses
					D I O X I N S
386-S14-031	Soil	12/17/01			X
386-S14-032	Soil	12/17/01		Full	X
386-S14-033	Soil	12/17/01			X
386-S14-034	Soil	12/17/01			X
386-S14-035	Soil	12/17/01			X
386-S14-036	Soil	12/17/01			X
386-S14-037	Soil	12/17/01			X
386-S14-038	Water	12/17/01		Full	X
386-S14-039	Water	12/17/01			X
386-S14-040	Soil	12/17/01			X

Notes:

* Cursory validation performed on all samples
ID Identification

TABLE 1

**SAMPLE CROSS REFERENCE TABLE
 SAMPLE DELIVERY GROUP AA002, CTO 386
 ALAMEDA POINT, ALAMEDA, CALIFORNIA**

(Page 3 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses
					D I O X I N S
386-S14-041	Soil	1/17/02		Full	X
386-S14-042	Soil	1/17/02		Full	X
386-S14-043	Soil	1/17/02			X
386-S14-044	Soil	1/17/02			X
386-S14-045	Soil	1/17/02			X
386-S14-046	Soil	1/17/02			X
386-S14-047	Soil	1/17/02			X
386-S14-048	Soil	1/17/02			X
386-S14-049	Soil	1/17/02			X
386-S14-050	Soil	1/17/02			X
386-S14-051	Soil	1/17/02	Matrix spike and matrix spike duplicate		X
386-S14-052	Soil	1/17/02			X
386-S14-053	Soil	1/17/02			X
386-S14-054	Soil	1/17/02			X
386-S14-055	Soil	1/17/02			X
386-S14-056	Soil	1/17/02			X
386-S14-057	Soil	1/17/02			X

Notes:

* Cursory validation performed on all samples
 ID Identification

TABLE 1

**SAMPLE CROSS REFERENCE TABLE
 SAMPLE DELIVERY GROUP AAO03, CTO 386
 ALAMEDA POINT, ALAMEDA, CALIFORNIA**

(Page 4 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses
					D I O X I N S
386-S14-058	Soil	2/22/02		Full	X
386-S14-059	Soil	2/22/02			X
386-S14-060	Soil	2/22/02			X
386-S14-061	Soil	2/22/02			X
386-S14-062	Soil	2/22/02			X
386-S14-063	Soil	2/22/02			X
386-S14-064	Soil	2/22/02	Matrix spike and matrix spike duplicate		X

Notes:

* Cursory validation performed on all samples
 ID Identification

TABLE 1

SAMPLE CROSS REFERENCE TABLE
 SAMPLE DELIVERY GROUP AAO04, CTO 386
 ALAMEDA POINT, ALAMEDA, CALIFORNIA

(Page 5 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses
					D I O X I N S
386-S14-065	Soil	3/20/02			X
386-S14-066	Soil	3/20/02			X

Notes:

* Cursory validation performed on all samples
 ID Identification

TABLE 1

SAMPLE CROSS REFERENCE TABLE
 SAMPLE DELIVERY GROUP AKP01, CTO 386
 ALAMEDA POINT, ALAMEDA, CALIFORNIA

(Page 6 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses			
					C A D M I U M	C H R O M I U M	L E A D	C R V I
386-S05-001	Soil	12/26/01	Matrix spike and matrix duplicate**	Full	X**	X**	X**	X
386-S05-002	Soil	12/26/01		Full	X	X	X	X
386-S05-003	Soil	12/26/01	Matrix spike and matrix duplicate**		X	X	X	X**
386-S05-004	Soil	12/21/01			X	X	X	X
386-S05-005	Soil	12/21/01			X	X	X	X
386-S05-006	Soil	12/21/01			X	X	X	X
386-S05-007	Soil	12/21/01			X	X	X	X
386-S05-008	Soil	12/21/01			X	X	X	X
386-S05-009	Soil	12/21/01			X	X	X	X
386-S05-010	Soil	12/21/01			X	X	X	X
386-S05-011	Soil	12/21/01			X	X	X	X
386-S05-012	Soil	12/21/01			X	X	X	X
386-S05-013	Soil	12/26/01			X	X	X	X
386-S05-014	Soil	12/26/01			X	X	X	X
386-S05-015	Soil	12/26/01			X	X	X	X
386-S05-016	Soil	12/21/01			X	X	X	X
386-S05-017	Soil	12/21/01		Full	X	X	X	X
386-S05-018	Soil	12/21/01		Full	X	X	X	X
386-S05-019	Soil	12/21/01			X	X	X	X
386-S05-020	Soil	12/26/01			X	X	X	X

Notes:

* Cursory validation performed on all samples

** Matrix spike/matrix duplicate performed on indicated parameters only

CRVI
ID

Hexavalent chromium
Identification

TABLE 1

SAMPLE CROSS REFERENCE TABLE
 SAMPLE DELIVERY GROUP AKP02, CTO 386
 ALAMEDA POINT, ALAMEDA, CALIFORNIA

(Page 7 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses
					C A D M I U M
386-S05-021	Soil	1/21/02	Matrix spike and matrix duplicate	Full	X
386-S05-022	Soil	1/21/02		Full	X
386-S05-023	Soil	1/21/02			X
386-S05-024	Soil	1/21/02			X
386-S05-025	Soil	1/21/02			X
386-S05-026	Soil	1/21/02			X
386-S05-027	Soil	1/21/02			X

Notes:

* Cursory validation performed on all samples
 ID Identification

TABLE 1

**SAMPLE CROSS REFERENCE TABLE
 SAMPLE DELIVERY GROUP AKP03, CTO 386
 ALAMEDA POINT, ALAMEDA, CALIFORNIA**

(Page 8 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses
					C A D M I U M
386-S05-028	Soil	2/22/02	Matrix spike and matrix duplicate		X
386-S05-030	Soil	2/22/02			X
386-S05-031	Soil	2/25/02		Full	X
386-S05-034	Soil	2/25/02			X
386-S05-036	Soil	2/26/02			X
386-S05-037	Soil	2/26/02			X
386-S05-039	Soil	2/26/02			X
386-S05-040	Soil	2/26/02			X

Notes:

* Cursory validation performed on all samples
 ID Identification

TABLE 1

**SAMPLE CROSS REFERENCE TABLE
SAMPLE DELIVERY GROUP AKP04, CTO 386
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

(Page 9 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses
					C A D M I U M
386-S05-038	Soil	2/26/02	Matrix spike and matrix duplicate		X

Notes:

* Cursory validation performed on all samples
ID Identification

TABLE 1

SAMPLE CROSS REFERENCE TABLE
 SAMPLE DELIVERY GROUP AKP05, CTO 386
 ALAMEDA POINT, ALAMEDA, CALIFORNIA

(Page 10 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses				
					C A D M I U M	C H R O M I U M	C R V I	C Y A N I D E	P H
386-S05-041	Soil	3/20/02	Matrix spike/matrix duplicate		X				
386-S05-042	Soil	3/20/02			X				
386-S05-043	Soil	3/20/02			X				
386-S05-044	Water	3/20/02	Matrix spike/matrix spike duplicate/matrix duplicate**		X**	X**	X**		X
386-S05-045	Water	3/20/02	Matrix spike/matrix duplicate				X		
386-S05-046	Water	3/20/02	Matrix duplicate**		X	X	X		X**
386-S05-047	Water	3/20/02					X		

Notes:

* Cursory validation performed on all samples

** Matrix spike/matrix spike duplicate/matrix duplicate performed on indicated parameters only

CRVI Hexavalent chromium

ID Identification

TABLE 1

**SAMPLE CROSS REFERENCE TABLE
SAMPLE DELIVERY GROUP AKP06, CTO 386
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

(Page 11 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses
					P A H
386-S14-043	Soil	1/18/02			X
386-S14-054	Soil	1/18/02	Matrix spike/matrix spike duplicate		X
386-S14-065	Soil	3/20/02		Full	X
386-S14-066	Soil	3/20/02			X

Notes:

- * Cursory validation performed on all samples
- ID Identification
- PAH Polynuclear aromatic hydrocarbons

TABLE 1

**SAMPLE CROSS REFERENCE TABLE
SAMPLE DELIVERY GROUP AKP07, CTO 386
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

(Page 12 of 12)

Sample ID	Matrix	Date Collected	Quality Control ID	Validation Criteria*	Analyses
					P A H
386-S14-018	Soil	12/17/01			X

Notes:

- * Cursory validation performed on all samples
- ID Identification
- PAH Polynuclear aromatic hydrocarbons

TABLE 2
REJECTED DATA, CTO 386
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 1)

Sample	SDG Number	Parameter	Reason for Rejected Data
386-S14-043 386-S14-054	AKP06	All non-detected PAH compounds	Rejected due to holding time violation
386-S14-018	AKP07	All non-detected PAH compounds	Rejected due to holding time violation

Notes:

PAH Polynuclear aromatic hydrocarbon
SDG Sample delivery group

APPENDIX A
VALIDATED ANALYTICAL DATA FOR ALAMEDA POINT
ALAMEDA, CALIFORNIA

(43 Pages)

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : SOIL

Page: 1
 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-011 (NG/KG)			386-S14-012 (NG/KG)			386-S14-013 (NG/KG)			386-S14-014 (NG/KG)			386-S14-015 (NG/KG)		
Sample Location	S14-EXC-A-N			S14-EXC-A-S			S14-EXC-A-E			S14-EXC-A-W			S14-EXC-A-B1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01														
Date Extracted / Analyzed	01/05/02 01/11/02			12/22/01 12/28/01			12/22/01 12/28/01			01/05/02 01/11/02			12/22/01 12/28/01		
Analyte	Result	Val	Com												
1,2,3,4,6,7,8-HPCDD	3.570	UJ	b	25.94			133.3			24.66			50.22		
1,2,3,4,6,7,8-HPCDF	0.694	J	h	3.978			21.28			3.810			1.858	U	
1,2,3,4,7,8,9-HPCDF	0.221	U		0.988	U		1.477	U		0.549	U		2.244	U	
1,2,3,4,7,8-HXCDD	0.182	U		1.274	U		1.770	U		0.429	U		2.740	U	
1,2,3,4,7,8-HXCDF	0.150	U		1.048	U		1.100	U		0.222	U		0.957	U	
1,2,3,6,7,8-HXCDD	0.154	U		1.180	U		1.639	U		0.363	U		2.537	U	
1,2,3,6,7,8-HXCDF	0.526	J	h	4.916	J	h	7.456	J	h	3.833	J	h	0.933	U	
1,2,3,7,8,9-HXCDD	0.151	U		1.128	U		1.567	U		0.356	U		2.427	U	
1,2,3,7,8,9-HXCDF	0.197	U		1.208	U		1.268	U		0.292	U		1.103	U	
1,2,3,7,8-PECDD	0.134	U		1.565	U		2.124	U		0.255	U		2.549	U	
1,2,3,7,8-PECDF	0.173	U		1.795	U		2.408	U		0.330	U		2.129	U	
2,3,4,6,7,8-HXCDF	0.179	U		1.114	U		1.169	U		0.265	U		1.017	U	
2,3,4,7,8-PECDF	0.186	U		1.830	U		2.455	U		0.356	U		2.170	U	
2,3,7,8-TCDD	0.130	U		1.048	U		1.341	U		0.197	U		1.872	U	
2,3,7,8-TCDF	0.163	U		1.683	U		1.803	U		0.284	U		2.241	U	
OCDD	23.94	UJ	b	225.2			1127			218.7	J	e	411.6		
OCDF	1.874	UJ	b	5.717			50.09			5.195	UJ	b	3.731	U	
TOTAL HPCDD	6.873			25.94			273.1			52.05			100.6		
TOTAL HPCDF	0.160	U		3.978			52.41			11.35			1.858	U	
TOTAL HXCDD	0.151	U		1.128	U		15.09			3.770			2.427	U	
TOTAL HXCDF	1.794			4.916			7.456			18.31			0.933	U	
TOTAL PECDD	0.134	U		1.565	U		2.124	U		0.255	U		2.549	U	
TOTAL PECDF	5.376			1.795	U		2.408	U		28.09			2.129	U	
TOTAL TCDD	0.130	U		1.048	U		1.341	U		0.197	U		1.872	U	
TOTAL TCDF	0.520			1.683	U		10.30			4.823			2.241	U	

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : SOIL

Page: 2
 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-016 (NG/KG)			386-S14-017 (NG/KG)			386-S14-018 (NG/KG)			386-S14-019 (NG/KG)			386-S14-020 (NG/KG)		
Sample Location	S14-EXC-A-B2			S14-EXC-B-N			S14-EXC-B-S			S14-EXC-B-E			S14-EXC-B-W		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01														
Date Extracted / Analyzed	01/05/02 01/11/02			01/09/02 01/14/02			01/09/02 01/14/02			01/05/02 01/11/02			01/05/02 01/11/02		
Analyte	Result	Val	Com												
1,2,3,4,6,7,8-HPCDD	31.70			0.174	U		0.532			1.818	UJ	b	0.913	UJ	b
1,2,3,4,6,7,8-HPCDF	2.314			0.117	U		0.163			1.103	J	h	0.125	U	
1,2,3,4,7,8,9-HPCDF	0.297	U		0.161	U		0.063	U		0.415	U		0.173	U	
1,2,3,4,7,8-HXCDD	0.299	U		0.133	U		0.058	U		0.232	U		0.151	U	
1,2,3,4,7,8-HXCDF	0.170	U		0.113	U		0.050	U		0.195	U		0.090	U	
1,2,3,6,7,8-HXCDD	1.139			0.113	U		0.049	U		0.196	U		0.128	U	
1,2,3,6,7,8-HXCDF	1.056	J	h	0.114	U		0.050	U		2.151	J	h	0.091	U	
1,2,3,7,8,9-HXCDD	1.196			0.111	U		0.048	U		0.193	U		0.125	U	
1,2,3,7,8,9-HXCDF	0.223	U		0.148	U		0.066	U		0.256	U		0.118	U	
1,2,3,7,8-PECDD	0.155	U		0.078	U		0.044	U		0.177	U		0.092	U	
1,2,3,7,8-PECDF	0.212	U		0.095	U		0.041	U		0.202	U		0.102	U	
2,3,4,6,7,8-HXCDF	0.203	U		0.135	U		0.059	U		0.627	U		0.107	U	
2,3,4,7,8-PECDF	0.229	U		0.103	U		0.045	U		0.787			0.111	U	
2,3,7,8-TCDD	0.147	U		0.083	U		0.046	U		0.131	U		0.083	U	
2,3,7,8-TCDF	0.189	U		0.096	U		0.049	U		0.715	U		0.126	U	
OCDD	267.7			2.243	UJ	b	3.944	UJ	b	11.39	UJ	b	5.581	UJ	b
OCDF	3.311	UJ	b	0.317	U		0.106	U		0.664	U		0.290	U	
TOTAL HPCDD	60.19			0.174	U		0.958			3.666	UJ	b	0.913	UJ	b
TOTAL HPCDF	2.314			0.117	U		0.402			1.213			0.125	U	
TOTAL HXCDD	6.212			0.111	U		0.048	U		0.193	U		0.125	U	
TOTAL HXCDF	3.163			0.113	U		0.478			28.70			0.877		
TOTAL PECDD	0.155	U		0.078	U		0.044	U		0.177	U		0.092	U	
TOTAL PECDF	4.040			0.095	U		1.742			87.72			4.452		
TOTAL TCDD	0.147	U		0.083	U		0.046	U		0.263			0.083	U	
TOTAL TCDF	1.182			0.096	U		0.049	U		77.28			0.396		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems

- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : SOIL

Page: 3
 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-021 (NG/KG)			386-S14-022 (NG/KG)			386-S14-023 (NG/KG)			386-S14-024 (NG/KG)			386-S14-025 (NG/KG)		
Sample Location	S14-EXC-B-B1			S14-EXC-B-B2			S14-EXC-C-N-BERM			S14-EXC-C-NW			S14-EXC-C-W		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01														
Date Extracted / Analyzed	12/22/01 12/28/01			12/22/01 12/28/01			01/05/02 01/11/02			12/22/01 12/28/01			01/05/02 01/11/02		
Analyte	Result	Val	Com												
1,2,3,4,6,7,8-HPCDD	50.78			11.98	U		991.6			335.4			167.0	J	c
1,2,3,4,6,7,8-HPCDF	9.197			7.133	U		113.7			39.51			12.50		
1,2,3,4,7,8,9-HPCDF	1.394	U		8.614	U		6.557			1.371	U		0.654	U	
1,2,3,4,7,8-HXCDD	2.274	U		13.79	U		18.43			2.198	U		2.466		
1,2,3,4,7,8-HXCDF	1.432	U		7.034	U		19.34			4.207			1.472		
1,2,3,6,7,8-HXCDD	2.105	U		12.77	U		50.45			10.52			5.407		
1,2,3,6,7,8-HXCDF	1.397	U		6.861	U		69.54			7.848	J	h	1.148		
1,2,3,7,8,9-HXCDD	2.014	U		12.21	U		42.34			10.50			4.800		
1,2,3,7,8,9-HXCDF	1.651	U		8.109	U		7.505			1.284	U		0.480	U	
1,2,3,7,8-PECDD	1.951	U		11.32	U		10.36			2.435	U		0.281	U	
1,2,3,7,8-PECDF	1.964	U		8.685	U		7.449	J	h	1.750	U		0.343	U	
2,3,4,6,7,8-HXCDF	1.523	U		7.479	U		53.04			1.184	U		1.097		
2,3,4,7,8-PECDF	2.002	U		8.855	U		30.22			1.784	U		0.990	J	h
2,3,7,8-TCDD	1.393	U		7.375	U		3.953	J	e	0.765	U		0.193	U	
2,3,7,8-TCDF	1.591	U		8.073	U		11.46			1.726	U		1.243		
OCDD	370.4			92.77	UJ	b	5326			2790			1141	J	c
OCDF	31.04			19.58	U		81.88			135.4			19.13		
TOTAL HPCDD	119.5			11.98	U		991.6			712.9			343.7		
TOTAL HPCDF	30.33			7.133	U		120.3			128.0			12.50		
TOTAL HXCDD	2.014	U		12.21	U		111.2			21.02			34.14		
TOTAL HXCDF	1.397	U		6.861	U		149.4			64.29			29.41		
TOTAL PECDD	1.951	U		11.32	U		10.36			2.435	U		1.275		
TOTAL PECDF	1.964	U		8.685	U		37.67			43.65			8.891		
TOTAL TCDD	1.393	U		7.375	U		0.170	U		0.765	U		0.515		
TOTAL TCDF	1.591	U		8.073	U		11.46			1.726	U		1.980		

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : SOIL

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TtEMI Sample ID / Units	386-S14-026 (NG/KG)			386-S14-027 (NG/KG)			386-S14-028 (NG/KG)			386-S14-029 (NG/KG)			386-S14-030 (NG/KG)		
Sample Location	S14-EXC-C-WNW			S14-EXC-C-B1			S14-EXC-C-B2			S14-EXC-C-B3			S14-EXC-C-B4		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01														
Date Extracted / Analyzed	12/22/01 12/28/01			12/22/01 12/28/01			01/05/02 01/11/02			12/22/01 12/28/01			12/22/01 12/28/01		
Analyte	Result	Val	Com												
1,2,3,4,6,7,8-HPCDD	1221			6349			33.02			730.0			1205		
1,2,3,4,6,7,8-HPCDF	85.35			563.9			3.552			58.35			87.19		
1,2,3,4,7,8,9-HPCDF	8.924			85.71			0.240	U		6.017			8.639		
1,2,3,4,7,8-HXCDD	16.09			96.46			0.310	J	h	12.42			15.89		
1,2,3,4,7,8-HXCDF	12.94			70.22	J	h	0.157	U		9.829			11.10		
1,2,3,6,7,8-HXCDD	34.27			256.1			1.056			22.93			33.73		
1,2,3,6,7,8-HXCDF	21.59	J	h	304.9	J	h	0.159	U		16.40	J	h	20.11	J	h
1,2,3,7,8,9-HXCDD	34.24			187.2			0.749	J	h	22.27			34.32		
1,2,3,7,8,9-HXCDF	1.243	U		8.145			0.206	U		1.093	U		1.420	U	
1,2,3,7,8-PECDD	6.741			46.52			0.164	U		4.479			7.716		
1,2,3,7,8-PECDF	2.053			18.37			0.150	U		1.742	J	h	2.470		
2,3,4,6,7,8-HXCDF	4.917			35.31			0.187	U		3.966	J	h	6.235		
2,3,4,7,8-PECDF	2.478			12.73			0.162	U		2.140			2.501		
2,3,7,8-TCDD	7.484	J	h	48.55	J	h	0.115	U		3.411	J	h	20.96	J	h
2,3,7,8-TCDF	2.710			11.65			0.284			2.527			2.733		
OCDD	7866			48640			245.9			5632			9528		
OCDF	139.2			479.9			9.163			62.65			184.9		
TOTAL HPCDD	2447			13490			65.68			1421			2435		
TOTAL HPCDF	268.3			1979			3.552			158.1			311.2		
TOTAL HXCDD	353.9			2283			3.723			219.1			230.0		
TOTAL HXCDF	185.0			1773			0.481			134.5			191.3		
TOTAL PECDD	6.741			53.66			0.164	U		4.479			7.716		
TOTAL PECDF	31.57			761.0			0.150	U		64.97			101.6		
TOTAL TCDD	0.754	U		16.22			0.115	U		0.653	U		0.687	U	
TOTAL TCDF	15.50			151.7			0.644			14.23			23.63		

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : SOIL

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TtEMI Sample ID / Units	386-S14-031 (NG/KG)			386-S14-032 (NG/KG)			386-S14-033 (NG/KG)			386-S14-034 (NG/KG)			386-S14-035 (NG/KG)		
Sample Location	S14-EXC-C-BS			S14-EXC-C-BERM			S14-EXC-C-SW			S14-EXC-C-S			S14-EXC-C-N		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01														
Date Extracted / Analyzed	12/22/01 12/28/01			12/22/01 12/28/01			12/22/01 12/28/01			12/22/01 12/28/01			12/22/01 12/28/01		
Analyte	Result	Val	Com												
1,2,3,4,6,7,8-HPCDD	480.8			2735			839.8			198.9			0.606	U	
1,2,3,4,6,7,8-HPCDF	33.41			146.9			80.14			24.30			472.1		
1,2,3,4,7,8,9-HPCDF	4.482			17.69			10.30			0.785	U		83.60		
1,2,3,4,7,8-HXCDD	9.290			43.61			12.37			2.921			414.6		
1,2,3,4,7,8-HXCDF	10.32			35.99			10.59			3.451			247.9	J	h
1,2,3,6,7,8-HXCDD	15.13			77.24			23.89			6.103			968.2		
1,2,3,6,7,8-HXCDF	10.29	J	h	33.53	J	h	15.32	J	h	5.376	J	h	38.12	J	h
1,2,3,7,8,9-HXCDD	16.80			89.65			24.32			6.097			1201		
1,2,3,7,8,9-HXCDF	1.196	U		1.450	U		1.342	U		0.922	U		0.909	U	
1,2,3,7,8-PECDD	4.056			14.48			5.282	J	h	0.826	U		171.6		
1,2,3,7,8-PECDF	3.174	J	h	0.504	U		0.644	U		0.431	U		27.11		
2,3,4,6,7,8-HXCDF	3.557			11.56			4.179	J	h	0.828	U		39.60		
2,3,4,7,8-PECDF	4.461			4.169			2.146	J	h	0.460	U		17.95		
2,3,7,8-TCDD	2.863	J	h	8.571	J	h	8.930	J	h	6.280	J	h	24.92		
2,3,7,8-TCDF	9.371			3.315			2.206			0.506	U		7.584		
OCDD	3039			18800			6537			1451			21520		
OCDF	21.21			213.7			192.4			60.64			394.7		
TOTAL HPCDD	909.3			5463			1680			425.8			9340		
TOTAL HPCDF	94.26			472.6			280.1			89.20			1501		
TOTAL HXCDD	143.5			789.6			132.2			40.51			8283		
TOTAL HXCDF	83.72			331.9			143.0			47.48			39.60		
TOTAL PECDD	9.852			39.64			0.918	U		0.826	U		798.8		
TOTAL PECDF	24.86			71.56			62.18			31.59			631.3		
TOTAL TCDD	1.890			3.712			0.698	U		0.481	U		134.3		
TOTAL TCDF	46.29			29.43			11.11			5.744			11.91		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems

- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : SOIL

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 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-036 (NG/KG)			386-S14-037 (NG/KG)			386-S14-040 (NG/KG)		
Sample Location	S14-EXC-C-ENW			S14-EXC-C-E			S14-EXC-C-SE		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01			12/17/01 AAO01			12/17/01 AAO01		
Date Extracted / Analyzed	12/22/01 12/28/01			12/22/01 12/28/01			01/05/02 01/11/02		
Analyte	Result	Val	Com	Result	Val	Com	Result	Val	Com
1,2,3,4,6,7,8-HPCDD	5797			104.9			943.2		
1,2,3,4,6,7,8-HPCDF	229.4			10.94			51.75		
1,2,3,4,7,8,9-HPCDF	33.69			4.047	U		4.438		
1,2,3,4,7,8-HXCDD	84.34			7.806	U		9.561		
1,2,3,4,7,8-HXCDF	37.28	J	h	3.216	U		0.649	U	
1,2,3,6,7,8-HXCDD	173.4			4.874	U		27.19		
1,2,3,6,7,8-HXCDF	65.28	J	h	2.887	U		4.014		
1,2,3,7,8,9-HXCDD	185.4			5.702	U		20.91		
1,2,3,7,8,9-HXCDF	1.564	U		4.315	U		0.852	U	
1,2,3,7,8-PECDD	35.44			6.088	U		3.642		
1,2,3,7,8-PECDF	1.119	U		2.992	U		3.744		
2,3,4,6,7,8-HXCDF	9.948	J	h	3.875	U		4.548	J	h
2,3,4,7,8-PECDF	3.239			3.191	U		5.356		
2,3,7,8-TCDD	14.23			4.853	U		0.919		
2,3,7,8-TCDF	1.440	U		4.611	U		7.705	J	h
OCDD	40160			754.9			6683		
OCDF	175.0			13.56			52.65		
TOTAL HPCDD	10470			206.3			1864		
TOTAL HPCDF	806.6			30.25			147.6		
TOTAL HXCDD	1510			4.874	U		223.6		
TOTAL HXCDF	506.9			14.98			4.014		
TOTAL PECDD	120.2			6.088	U		6.583		
TOTAL PECDF	45.85			2.992	U		152.0		
TOTAL TCDD	19.53			4.853	U		7.724		
TOTAL TCDF	5.561			4.611	U		11.58		

Validity (Val):

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Applicable Comments (Com):

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- b - Blank contamination problems
- c - Matrix spike recovery problems
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- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
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- p - >25%D between columns
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PERCENT MOISTURE FOR OTHER RESULTS ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : SOIL

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TtEMI Sample ID / Units	386-S14-011 (%)			386-S14-012 (%)			386-S14-013 (%)			386-S14-014 (%)			386-S14-015 (%)		
Sample Location	S14-EXC-A-N			S14-EXC-A-S			S14-EXC-A-E			S14-EXC-A-W			S14-EXC-A-B1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01														
Date Extracted / Analyzed	/ / 12/21/01			/ / 12/21/01			/ / 12/21/01			/ / 12/21/01			/ / 12/21/01		
Analyte	Result	Val	Com												
PERCENT MOISTURE	21.600			8.800			11.400			8.300			29.700		

TtEMI Sample ID / Units	386-S14-016 (%)			386-S14-017 (%)			386-S14-018 (%)			386-S14-020 (%)			386-S14-021 (%)		
Sample Location	S14-EXC-A-B2			S14-EXC-B-N			S14-EXC-B-S			S14-EXC-B-W			S14-EXC-B-B1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01														
Date Extracted / Analyzed	/ / 12/21/01			/ / 12/21/01			/ / 12/21/01			/ / 12/21/01			/ / 12/21/01		
Analyte	Result	Val	Com												
PERCENT MOISTURE	23.500			8.300			12.000			16.100			16.600		

Validity (Val):

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- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
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PERCENT MOISTURE FOR OTHER RESULTS ANALYSIS

Matrix : SOIL

TtEMI Sample ID / Units	386-S14-022 (%)			386-S14-023 (%)			386-S14-024 (%)			386-S14-025 (%)			386-S14-026 (%)		
Sample Location	S14-EXC-B-B2			S14-EXC-C-N-BERM			S14-EXC-C-NW			S14-EXC-C-W			S14-EXC-C-WNW		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01			12/17/01 AAO01			12/17/01 AAO01			12/17/01 AAO01			12/17/01 AAO01		
Date Extracted / Analyzed	/ / 12/21/01			/ / 12/21/01			/ / 12/21/01			/ / 12/21/01			/ / 12/21/01		
Analyte	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
PERCENT MOISTURE	20.800			10.600			18.400			13.300			11.200		

TtEMI Sample ID / Units	386-S14-027 (%)			386-S14-028 (%)			386-S14-029 (%)			386-S14-030 (%)			386-S14-031 (%)		
Sample Location	S14-EXC-C-B1			S14-EXC-C-B2			S14-EXC-C-B3			S14-EXC-C-B4			S14-EXC-C-BS		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01														
Date Extracted / Analyzed	/ / 12/21/01			/ / 12/21/01			/ / 12/21/01			/ / 12/21/01			/ / 12/21/01		
Analyte	Result	Val	Com												
PERCENT MOISTURE	22.300			21.700			14.700			17.100			21.400		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
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- y - Resembles a fuel pattern but does not match the standard
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PERCENT MOISTURE FOR OTHER RESULTS ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : SOIL

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TtEMI Sample ID / Units	386-S14-032 (%)			386-S14-033 (%)			386-S14-034 (%)			386-S14-035 (%)			386-S14-036 (%)		
Sample Location	S14-EXC-C-BERM			S14-EXC-C-SW			S14-EXC-C-S			S14-EXC-C-N			S14-EXC-C-ENW		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01														
Date Extracted / Analyzed	/ / 12/21/01			/ / 12/21/01			/ / 12/21/01			/ / 12/21/01			/ / 12/21/01		
Analyte	Result	Val	Com												
PERCENT MOISTURE	5.600			10.400			14.600			16.100			22.600		

TtEMI Sample ID / Units	386-S14-037 (%)			386-S14-040 (%)		
Sample Location	S14-EXC-C-E			S14-EXC-C-SE		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01			12/17/01 AAO01		
Date Extracted / Analyzed	/ / 12/21/01			/ / 12/21/01		
Analyte	Result	Val	Com	Result	Val	Com
PERCENT MOISTURE	22.600			18.100		

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):
 a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
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 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
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 z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : WATER

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 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-038 (PG/L)			386-S14-039 (PG/L)		
Sample Location	S14-EXC-A-WAT			S14-EXC-B-WAT		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AAO01			12/17/01 AAO01		
Date Extracted / Analyzed	12/22/01 12/26/01			12/22/01 12/26/01		
Analyte	Result	Val	Com	Result	Val	Com
1,2,3,4,6,7,8-HPCDD	17.08	UJ	e	6.971	UJ	e
1,2,3,4,6,7,8-HPCDF	9.489	UJ	e	5.237	UJ	e
1,2,3,4,7,8,9-HPCDF	11.46	UJ	e	6.325	UJ	e
1,2,3,4,7,8-HXCDD	22.33	UJ	e	9.806	UJ	e
1,2,3,4,7,8-HXCDF	9.291	UJ	e	4.606	UJ	e
1,2,3,6,7,8-HXCDD	20.68	UJ	e	9.081	UJ	e
1,2,3,6,7,8-HXCDF	9.062	UJ	e	4.492	UJ	e
1,2,3,7,8,9-HXCDD	19.78	UJ	e	8.686	UJ	e
1,2,3,7,8,9-HXCDF	10.71	UJ	e	5.310	UJ	e
1,2,3,7,8-PECDD	16.03	UJ	e	7.441	UJ	e
1,2,3,7,8-PECDF	11.53	UJ	e	6.431	UJ	e
2,3,4,6,7,8-HXCDF	9.878	UJ	e	4.897	UJ	e
2,3,4,7,8-PECDF	11.76	UJ	e	6.556	UJ	e
2,3,7,8-TCDD	14.09	UJ	e	7.352	UJ	e
2,3,7,8-TCDF	26.44	UJ	e	10.88	UJ	e
OCDD	74.62	UJ	b,e	84.45	UJ	b,e
OCDF	21.71	UJ	e	13.34	UJ	e
TOTAL HPCDD	17.08	UJ	e	6.971	UJ	e
TOTAL HPCDF	9.489	UJ	e	5.237	UJ	e
TOTAL HXCDD	19.78	UJ	e	8.686	UJ	e
TOTAL HXCDF	9.062	UJ	e	4.492	UJ	e
TOTAL PECDD	16.03	UJ	e	7.441	UJ	e
TOTAL PECDF	11.53	UJ	e	6.431	UJ	e
TOTAL TCDD	14.09	UJ	e	7.352	UJ	e
TOTAL TCDF	26.44	UJ	e	10.88	UJ	e

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems

- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratory of Oklahoma, Inc.

Matrix : SOIL

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 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-041 (NG/KG)			386-S14-042 (NG/KG)			386-S14-043 (NG/KG)			386-S14-044 (NG/KG)			386-S14-045 (NG/KG)		
Sample Location	S14-EXC-D-B1			S14-EXC-D-B2			S14-EXC-D-NW			S14-EXC-D-N			S14-EXC-D-5		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	01/17/02 AAO02														
Date Extracted / Analyzed	01/30/02 02/07/02			01/30/02 02/07/02			01/30/02 02/07/02			01/30/02 02/07/02			01/30/02 02/07/02		
Analyte	Result	Val	Com												
1,2,3,4,6,7,8-HPCDD	331.2			1.362			44.07			849.7			1.413		
1,2,3,4,6,7,8-HPCDF	26.71			0.247	U		5.435			85.35			0.454		
1,2,3,4,7,8,9-HPCDF	1.214	U		0.341	U		0.529	U		12.66			0.251	U	
1,2,3,4,7,8-HXCDD	6.436			0.342	U		0.996	J	h	14.65			0.266	U	
1,2,3,4,7,8-HXCDF	7.130			0.315	U		2.017			22.59			0.202	U	
1,2,3,6,7,8-HXCDD	15.57			0.290	U		2.547			43.65			0.226	U	
1,2,3,6,7,8-HXCDF	12.47			0.319	U		14.90			46.47			0.428		
1,2,3,7,8,9-HXCDD	13.07			0.284	U		1.494			29.76			0.221	U	
1,2,3,7,8,9-HXCDF	0.918	U		0.413	U		0.375	U		0.496	U		0.266	U	
1,2,3,7,8-PECDD	2.874			0.201	U		0.337	U		7.567			0.154	U	
1,2,3,7,8-PECDF	1.689			0.178	U		1.252			3.336			0.129	U	
2,3,4,6,7,8-HXCDF	2.169	J	h	0.375	U		1.303			6.954			0.241	U	
2,3,4,7,8-PECDF	1.809			0.192	U		2.259			2.705			0.140	U	
2,3,7,8-TCDD	1.940	J	h	0.084	U		0.672	J	h	2.738			0.083	U	
2,3,7,8-TCDF	2.307			0.113	U		0.959			2.758			0.112	U	
OCDD	2456	J	e	14.10	UJ	b	424.0	J	e	6095			19.86	UJ	b
OCDF	30.57			0.901	U		9.382			77.94			1.233		
TOTAL HPCDD	675.7			1.362			88.89			1791			3.855		
TOTAL HPCDF	72.68			0.247	U		15.68			261.6			0.454		
TOTAL HXCDD	91.81			0.284	U		13.50			356.0			0.221	U	
TOTAL HXCDF	95.88			0.315	U		59.51			327.4			2.710		
TOTAL PECDD	2.874			0.201	U		0.337	U		29.04			0.154	U	
TOTAL PECDF	65.86			1.702			61.24			132.0			0.682		
TOTAL TCDD	0.854			0.084	U		1.282			3.552			0.083	U	
TOTAL TCDF	22.74			0.113	U		21.88			28.55			0.326		

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratory of Oklahoma, Inc.

Matrix : SOIL

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TEMI Sample ID / Units	386-S14-046 (NG/KG)			386-S14-047 (NG/KG)			386-S14-048 (NG/KG)			386-S14-049 (NG/KG)			386-S14-050 (NG/KG)		
Sample Location	S14-EXC-D-SE			S14-EXC-C-B1-1			S14-EXC-C-B3-1			S14-EXC-C-B4-1			S14-EXC-C-B5-1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	01/17/02 AAO02														
Date Extracted / Analyzed	01/30/02 02/07/02			01/30/02 02/06/02			01/30/02 02/07/02			01/30/02 02/05/02			01/30/02 02/05/02		
Analyte	Result	Val	Com												
1,2,3,4,6,7,8-HPCDD	116.2			184.7			742.7			1731			142.7		
1,2,3,4,6,7,8-HPCDF	9.690			17.27			41.85			110.9			7.311		
1,2,3,4,7,8,9-HPCDF	0.360 U			1.330 U			6.325			11.53			0.271 U		
1,2,3,4,7,8-HXCDD	1.197			3.298			10.14			18.25			1.911		
1,2,3,4,7,8-HXCDF	1.630			3.141			8.270			12.76			2.326		
1,2,3,6,7,8-HXCDD	4.638			6.568			31.76			62.63			6.280		
1,2,3,6,7,8-HXCDF	5.800			5.191 J	h		28.48			49.68 J	h		4.113 J	h	
1,2,3,7,8,9-HXCDD	2.702			6.015			23.65			45.55			5.247		
1,2,3,7,8,9-HXCDF	0.186 U			0.773 U			0.436 U			0.428 U			0.394 U		
1,2,3,7,8-PECDD	0.603			0.523 U			6.484			7.593			1.004		
1,2,3,7,8-PECDF	0.159 U			0.586 U			1.323			2.007			0.407 J	h	
2,3,4,6,7,8-HXCDF	0.169 U			0.701 U			2.252			4.623			0.984		
2,3,4,7,8-PECDF	0.171 U			0.634 U			1.279			1.477			0.254 U		
2,3,7,8-TCDD	0.325 J	h		0.238 U			3.960 J	h		3.177			0.558		
2,3,7,8-TCDF	0.116 U			0.924			0.901			1.592			1.015 J	h	
OCDD	1255			1287 J	e		5104			8362 J	e		890.4		
OCDF	10.52			52.98			44.58			107.8			6.929		
TOTAL HPCDD	252.0			411.6			1481			3361			267.1		
TOTAL HPCDF	36.37			61.46			171.3			479.4			21.16		
TOTAL HXCDD	34.65			41.07			177.0			514.4			46.61		
TOTAL HXCDF	28.86			39.56			150.7			302.5			24.11		
TOTAL PECDD	0.603			1.561			26.50			11.00			2.911		
TOTAL PECDF	7.414			10.26			48.52			28.98			0.602		
TOTAL TCDD	0.104 U			0.238 U			9.532			5.541			0.558		
TOTAL TCDF	1.712			5.009			10.40			9.567			2.512		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratory of Oklahoma, Inc.

Matrix : SOIL

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 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-051 (NG/KG)			386-S14-052 (NG/KG)			386-S14-053 (NG/KG)			386-S14-054 (NG/KG)			386-S14-055 (NG/KG)		
Sample Location	S14-EXC-C-B6			S14-EXC-C-SW-1			S14-EXC-C-SW-1A			S14-EXC-C-WNW-1			S14-EXC-N-1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	01/17/02 AAO02														
Date Extracted / Analyzed	01/30/02 02/06/02			01/30/02 02/06/02			01/30/02 02/06/02			01/30/02 02/07/02			01/30/02 02/06/02		
Analyte	Result	Val	Com												
1,2,3,4,6,7,8-HPCDD	3.701			15.35			64.29			13.98			205.1		
1,2,3,4,6,7,8-HPCDF	0.606	J	h	1.539			7.515			1.584			75.91		
1,2,3,4,7,8,9-HPCDF	0.414	U		0.294	U		0.583	U		0.359	U		4.125		
1,2,3,4,7,8-HXCDD	0.430	U		0.337	U		1.155			0.321	U		5.799		
1,2,3,4,7,8-HXCDF	0.314	U		0.484			1.265			0.250	U		32.85		
1,2,3,6,7,8-HXCDD	0.364	U		0.853	U		2.621			0.726	J	h	9.935		
1,2,3,6,7,8-HXCDF	0.318	U		1.664	J	h	2.707	J	h	1.983			16.55	J	h
1,2,3,7,8,9-HXCDD	0.357	U		0.280	U		2.533			0.413	J	h	10.52		
1,2,3,7,8,9-HXCDF	0.412	U		0.307	U		0.414	U		0.328	U		1.858		
1,2,3,7,8-PECDD	0.239	U		0.143	U		0.225	U		0.219	U		3.275		
1,2,3,7,8-PECDF	0.185	U		0.121	U		0.183	U		0.194	U		6.975		
2,3,4,6,7,8-HXCDF	0.374	U		0.278	U		0.893	J	h	0.297	U		10.14		
2,3,4,7,8-PECDF	0.200	U		0.353	U		0.533	J	h	0.210	U		9.037		
2,3,7,8-TCDD	0.175	U		0.109	U		0.144	U		0.258	J	h	1.147		
2,3,7,8-TCDF	0.185	U		0.117	U		0.582			0.122	U		20.82		
OCDD	34.27			148.3			479.7			111.6			1156		
OCDF	2.920			3.826			21.46			3.872			33.01		
TOTAL HPCDD	6.809			15.35			135.5			27.47			386.3		
TOTAL HPCDF	0.300	U		4.848			22.89			1.584			106.7		
TOTAL HXCDD	0.357	U		3.131			15.13			2.207			82.07		
TOTAL HXCDF	0.314	U		6.225			12.87			10.18			154.8		
TOTAL PECDD	0.239	U		0.143	U		0.225	U		0.219	U		19.59		
TOTAL PECDF	0.185	U		2.014			14.35			7.577			124.2		
TOTAL TCDD	0.175	U		0.109	U		0.144	U		0.091	U		20.34		
TOTAL TCDF	0.185	U		1.445			3.494			1.311			156.3		

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):
 a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
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DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratory of Oklahoma, Inc.

Matrix : SOIL

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 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-056 (NG/KG)			386-S14-057 (NG/KG)		
Sample Location	S14-EXC-C-ENW-1			S14-EXC-C-SE-1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	01/17/02 AAO02			01/17/02 AAO02		
Date Extracted / Analyzed	01/30/02 02/06/02			01/30/02 02/05/02		
Analyte	Result	Val	Com	Result	Val	Com
1,2,3,4,6,7,8-HPCDD	50.77			811.8		
1,2,3,4,6,7,8-HPCDF	36.04			55.29		
1,2,3,4,7,8,9-HPCDF	1.944			5.027		
1,2,3,4,7,8-HXCDD	1.928			10.51		
1,2,3,4,7,8-HXCDF	19.63			11.73		
1,2,3,6,7,8-HXCDD	3.983			28.63		
1,2,3,6,7,8-HXCDF	10.85	J	h	13.40	J	h
1,2,3,7,8,9-HXCDD	4.501			23.04		
1,2,3,7,8,9-HXCDF	0.620			0.441	U	
1,2,3,7,8-PECDD	1.465			3.925		
1,2,3,7,8-PECDF	5.425			1.951		
2,3,4,6,7,8-HXCDF	8.616	J	h	3.863		
2,3,4,7,8-PECDF	8.911			2.221		
2,3,7,8-TCDD	0.618			1.276		
2,3,7,8-TCDF	25.21			3.471		
OCDD	257.9			5291		
OCDF	12.27			86.80		
TOTAL HPCDD	96.75			1571		
TOTAL HPCDF	49.72			167.3		
TOTAL HXCDD	30.27			253.2		
TOTAL HXCDF	87.95			120.3		
TOTAL PECDD	10.19			12.30		
TOTAL PECDF	92.27			33.80		
TOTAL TCDD	16.02			5.938		
TOTAL TCDF	141.4			13.69		

Validity (Val):
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 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):
 a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

PERCENT MOISTURE FOR OTHER RESULTS ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratory of Oklahoma, Inc.

Matrix : SOIL

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 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-041 (%)			386-S14-042 (%)			386-S14-043 (%)			386-S14-044 (%)			386-S14-045 (%)		
Sample Location	S14-EXC-D-B1			S14-EXC-D-B2			S14-EXC-D-NW			S14-EXC-D-N			S14-EXC-D-5		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	01/17/02 AAO02														
Date Extracted / Analyzed	/ / 01/24/02			/ / 01/24/02			/ / 01/24/02			/ / 01/24/02			/ / 01/24/02		
Analyte	Result	Val	Com												
PERCENT MOISTURE	13.2			12.2			7.5			13.2			11.8		

TtEMI Sample ID / Units	386-S14-046 (%)			386-S14-047 (%)			386-S14-048 (%)			386-S14-049 (%)			386-S14-050 (%)		
Sample Location	S14-EXC-D-SE			S14-EXC-C-B1-1			S14-EXC-C-B3-1			S14-EXC-C-B4-1			S14-EXC-C-B5-1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	01/17/02 AAO02														
Date Extracted / Analyzed	/ / 01/24/02			/ / 01/24/02			/ / 01/24/02			/ / 01/24/02			/ / 01/24/02		
Analyte	Result	Val	Com												
PERCENT MOISTURE	11.8			16.8			13.8			17			20.8		

Validity (Val):
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 UJ - Non-detected estimated
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 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
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PERCENT MOISTURE FOR OTHER RESULTS ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratory of Oklahoma, Inc.

Matrix : SOIL

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 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-051 (%)			386-S14-052 (%)			386-S14-053 (%)			386-S14-054 (%)			386-S14-055 (%)		
Sample Location	S14-EXC-C-B6			S14-EXC-C-SW-1			S14-EXC-C-SW-1A			S14-EXC-C-WNW-1			S14-EXC-N-1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	01/17/02 AAO02														
Date Extracted / Analyzed	/ / 01/24/02			/ / 01/24/02			/ / 01/24/02			/ / 01/24/02			/ / 01/24/02		
Analyte	Result	Val	Com												
PERCENT MOISTURE	21.2			10.8			12.7			7.2			18.8		

TtEMI Sample ID / Units	386-S14-056 (%)			386-S14-057 (%)		
Sample Location	S14-EXC-C-ENW-1			S14-EXC-C-SE-1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	01/17/02 AAO02			01/17/02 AAO02		
Date Extracted / Analyzed	/ / 01/24/02			/ / 01/24/02		
Analyte	Result	Val	Com	Result	Val	Com
PERCENT MOISTURE	20.8			30		

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
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DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratory of Oklahoma, Inc.

Matrix : SOIL

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 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-058 (NG/KG)			386-S14-059 (NG/KG)			386-S14-060 (NG/KG)			386-S14-061 (NG/KG)			386-S14-062 (NG/KG)		
Sample Location	S14-EXC-D-B1-1			S14-EXC-C-B3-2			S14-EXC-C-B4-2			S14-EXC-D-N-1			S14-EXC-C-N-2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	02/22/02 AAO03														
Date Extracted / Analyzed	02/27/02 03/05/02			02/27/02 03/05/02			02/27/02 03/05/02			02/27/02 03/05/02			02/27/02 03/05/02		
Analyte	Result	Val	Com												
1,2,3,4,6,7,8-HPCDD	31.24			2.546	J	h	6.332			4.915			890.9		
1,2,3,4,6,7,8-HPCDF	1.990			0.165	U		0.573	J	h	1.351			45.93		
1,2,3,4,7,8,9-HPCDF	0.315	U		0.227	U		0.224	U		0.296	U		5.166		
1,2,3,4,7,8-HXCDD	0.405	U		0.404	U		0.239	U		0.338	U		14.05		
1,2,3,4,7,8-HXCDF	1.104	J	h	0.404	U		0.282	U		2.101	J	h	28.96	J	h
1,2,3,6,7,8-HXCDD	1.104			0.342	U		0.203	U		0.286	U		35.50		
1,2,3,6,7,8-HXCDF	0.446	U		0.408	U		0.285	U		0.294	U		6.958		
1,2,3,7,8,9-HXCDD	1.151			0.336	U		0.199	U		0.280	U		36.61		
1,2,3,7,8,9-HXCDF	0.578	U		0.530	U		0.370	U		0.381	U		1.117	J	h
1,2,3,7,8-PECDD	0.898	U		0.679	U		0.472	U		0.641	U		7.667		
1,2,3,7,8-PECDF	0.484	U		0.392	U		0.262	U		0.395	U		5.107		
2,3,4,6,7,8-HXCDF	0.525	U		0.481	U		0.336	U		0.346	U		5.900		
2,3,4,7,8-PECDF	0.523	U		0.423	U		0.283	U		0.426	U		6.506		
2,3,7,8-TCDD	1.121	U		0.880	U		0.588	U		0.780	U		2.841		
2,3,7,8-TCDF	1.021	U		0.802	U		0.554	U		0.760	U		10.94		
OCDD	247.4			17.07			33.69			37.76			3833		
OCDF	2.792			1.189	J	h	0.711	U		1.992			26.98		
TOTAL HPCDD	54.87			0.242	U		11.76			9.776			1536		
TOTAL HPCDF	1.990			0.165	U		0.162	U		1.351			54.84		
TOTAL HXCDD	9.388			0.336	U		0.199	U		0.280	U		287.9		
TOTAL HXCDF	3.615			0.404	U		0.282	U		11.12			94.95		
TOTAL PECDD	0.898	U		0.679	U		0.472	U		0.641	U		29.20		
TOTAL PECDF	4.536			0.392	U		0.262	U		16.96			112.3		
TOTAL TCDD	1.121	U		0.880	U		0.588	U		0.780	U		4.587		
TOTAL TCDF	1.021	U		0.802	U		0.554	U		0.760	U		42.63		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratory of Oklahoma, Inc.

Matrix : SOIL

Page: 2
 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-063 (NG/KG)			386-S14-064 (NG/KG)		
Sample Location	S14-EXC-C-ENW-2			S14-EXC-C-SE-2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	02/22/02 AAO03			02/22/02 AAO03		
Date Extracted / Analyzed	02/27/02 03/05/02			02/27/02 03/06/02		
Analyte	Result	Val	Com	Result	Val	Com
1,2,3,4,6,7,8-HPCDD	36.65			865.8		
1,2,3,4,6,7,8-HPCDF	2.921			47.46		
1,2,3,4,7,8,9-HPCDF	0.523	U		5.253		
1,2,3,4,7,8-HXCDD	0.326	U		11.16		
1,2,3,4,7,8-HXCDF	2.799	J	h	22.82	J	h
1,2,3,6,7,8-HXCDD	1.555	J	h	28.97		
1,2,3,6,7,8-HXCDF	0.408	U		3.687		
1,2,3,7,8,9-HXCDD	1.451	J	h	26.82		
1,2,3,7,8,9-HXCDF	0.530	U		0.411	U	
1,2,3,7,8-PECDD	0.451	U		3.901		
1,2,3,7,8-PECDF	0.276	U		1.462		
2,3,4,6,7,8-HXCDF	0.754	J	h	3.746		
2,3,4,7,8-PECDF	0.674	J	h	1.520		
2,3,7,8-TCDD	0.223	U		1.278		
2,3,7,8-TCDF	0.637			1.154		
OCDD	299.4			6265		
OCDF	4.551			66.46		
TOTAL HPCDD	70.89			1630		
TOTAL HPCDF	2.921			52.71		
TOTAL HXCDD	4.786			240.3		
TOTAL HXCDF	18.12			140.2		
TOTAL PECDD	0.451	U		9.934		
TOTAL PECDF	21.16			70.22		
TOTAL TCDD	0.223	U		2.475		
TOTAL TCDF	8.622			15.17		

Validity (Val):

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- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems

- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

PERCENT MOISTURE FOR OTHER RESULTS ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratory of Oklahoma, Inc.

Matrix : SOIL

Page: 3
 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-058 (%)			386-S14-059 (%)			386-S14-060 (%)			386-S14-061 (%)			386-S14-062 (%)		
Sample Location	S14-EXC-D-B1-1			S14-EXC-C-B3-2			S14-EXC-C-B4-2			S14-EXC-D-N-1			S14-EXC-C-N-2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	02/22/02 AAO03														
Date Extracted / Analyzed	/ / 02/28/02			/ / 02/28/02			/ / 02/28/02			/ / 02/28/02			/ / 02/28/02		
Analyte	Result	Val	Com												
PERCENT MOISTURE	20.00			19.70			19.30			12.20			25.50		

TtEMI Sample ID / Units	386-S14-063 (%)			386-S14-064 (%)		
Sample Location	S14-EXC-C-ENW-2			S14-EXC-C-SE-2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	02/22/02 AAO03			02/22/02 AAO03		
Date Extracted / Analyzed	/ / 02/28/02			/ / 02/28/02		
Analyte	Result	Val	Com	Result	Val	Com
PERCENT MOISTURE	17.10			14.90		

Validity (Val):

- U - Non-detected
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NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems

- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

DIOXIN/FURAN ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : SOIL

Page: 1
 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-065 (NG/KG)			386-S14-066 (NG/KG)		
Sample Location	S14-EXC-C-N-3			S14-EXC-C-SE-3		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	03/20/02 AA004			03/20/02 AA004		
Date Extracted / Analyzed	03/25/02 03/28/02			03/25/02 03/28/02		
Analyte	Result	Val	Com	Result	Val	Com
1,2,3,4,6,7,8-HPCDD	5.886			178.6		
1,2,3,4,6,7,8-HPCDF	2.056			11.27		
1,2,3,4,7,8,9-HPCDF	0.207	U		1.282		
1,2,3,4,7,8-HXCDD	0.175	U		1.607		
1,2,3,4,7,8-HXCDF	1.584	J	h	6.090	J	h
1,2,3,6,7,8-HXCDD	0.138	U		5.297		
1,2,3,6,7,8-HXCDF	0.220	J	h	0.817		
1,2,3,7,8,9-HXCDD	0.133	U		3.441		
1,2,3,7,8,9-HXCDF	0.095	U		0.102	U	
1,2,3,7,8-PECDD	0.115	U		0.573		
1,2,3,7,8-PECDF	0.233	J	h	0.325		
2,3,4,6,7,8-HXCDF	0.396	J	h	0.732		
2,3,4,7,8-PECDF	0.328	J	h	0.339		
2,3,7,8-TCDD	0.112	U		0.095	U	
2,3,7,8-TCDF	0.345			0.466		
OCDD	58.42	J	e	1166		
OCDF	2.787	J	e	11.65		
TOTAL HPCDD	12.04			327.9		
TOTAL HPCDF	4.431			12.55		
TOTAL HXCDD	0.774			39.46		
TOTAL HXCDF	8.400			26.87		
TOTAL PECDD	0.115	U		1.570		
TOTAL PECDF	10.53			5.310		
TOTAL TCDD	0.217			0.095	U	
TOTAL TCDF	1.727			2.858		

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

PERCENT MOISTURE FOR OTHER RESULTS ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Southwest Laboratories

Matrix : SOIL

Page: 2
 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-065 (%)			386-S14-066 (%)		
Sample Location	S14-EXC-C-N-3			S14-EXC-C-SE-3		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	03/20/02 AAO04			03/20/02 AAO04		
Date Extracted / Analyzed	/ / 03/23/02			/ / 03/23/02		
Analyte	Result	Val	Com	Result	Val	Com
PERCENT MOISTURE	17.40			18.70		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems

- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
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Note :

HEXAVALENT CHROMIUM ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

Matrix : SOIL

Page: 1
 Date: 07/05/02

TtEMI Sample ID / Units	386-S05-001 (MG/KG)			386-S05-002 (MG/KG)			386-S05-003 (MG/KG)			386-S05-004 (MG/KG)			386-S05-005 (MG/KG)		
Sample Location	S05-EXC-X1Y1			S05-EXC-X1Y2			S05-EXC-X1Y3			S05-EXC-X2Y1			S05-EXC-X2Y2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			4.00 - 0.00			4.00 - 0.00		
Date Sampled / SDG Number	12/26/01 AKP01			12/26/01 AKP01			12/26/01 AKP01			12/21/01 AKP01			12/21/01 AKP01		
Date Extracted / Analyzed	12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01		
Analyte	Result	Val	Com												
CHROMIUM (VI)	0.19			0.45			0.11			0.11			0.78		

TtEMI Sample ID / Units	386-S05-006 (MG/KG)			386-S05-007 (MG/KG)			386-S05-008 (MG/KG)			386-S05-009 (MG/KG)			386-S05-010 (MG/KG)		
Sample Location	S05-EXC-X2Y3			S05-EXC-X3Y1			S05-EXC-X3Y2			S05-EXC-X3Y3			S05-EXC-X4Y1		
Sample Depth (ft)	4.00 - 0.00			4.00 - 0.00			4.00 - 0.00			4.00 - 0.00			4.00 - 0.00		
Date Sampled / SDG Number	12/21/01 AKP01														
Date Extracted / Analyzed	12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01		
Analyte	Result	Val	Com												
CHROMIUM (VI)	0.43			0.064			0.059			0.080			0.060		

Validity (Val):

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- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

HEXAVALENT CHROMIUM ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

Matrix : SOIL

Page: 2
 Date: 07/05/02

TtEMI Sample ID / Units	386-S05-011 (MG/KG)			386-S05-012 (MG/KG)			386-S05-013 (MG/KG)			386-S05-014 (MG/KG)			386-S05-015 (MG/KG)		
Sample Location	S05-EXC-X4Y2			S05-EXC-X4Y3			S05-EXC-SWN1			S05-EXC-SWN2			S05-EXC-SWE1		
Sample Depth (ft)	4.00 - 0.00			4.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/21/01 AKP01			12/21/01 AKP01			12/26/01 AKP01			12/26/01 AKP01			12/26/01 AKP01		
Date Extracted / Analyzed	12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01		
Analyte	Result	Val	Com												
CHROMIUM (VI)	0.059			0.40			0.065			0.050			0.051		

TtEMI Sample ID / Units	386-S05-016 (MG/KG)			386-S05-017 (MG/KG)			386-S05-018 (MG/KG)			386-S05-019 (MG/KG)			386-S05-020 (MG/KG)		
Sample Location	S05-EXC-SWC2			S05-EXC-SWS1			S05-EXC-SWS2			S05-EXC-SWW1			S05-EXC-SWW2		
Sample Depth (ft)	2.00 - 0.00			2.00 - 0.00			4.00 - 0.00			2.00 - 2.50			0.00 - 0.00		
Date Sampled / SDG Number	12/21/01 AKP01			12/26/01 AKP01											
Date Extracted / Analyzed	12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01			12/31/01 12/31/01		
Analyte	Result	Val	Com												
CHROMIUM (VI)	0.39			0.099			0.055			0.060			0.051		

Validity (Val):

- U - Non-detected
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- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

PERCENT MOISTURE ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

Matrix : SOIL

Page: 3
 Date: 07/05/02

TtEMI Sample ID / Units	386-S05-001 (%MST)			386-S05-002 (%MST)			386-S05-003 (%MST)			386-S05-004 (%MST)			386-S05-005 (%MST)		
Sample Location	S05-EXC-X1Y1			S05-EXC-X1Y2			S05-EXC-X1Y3			S05-EXC-X2Y1			S05-EXC-X2Y2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			4.00 - 0.00			4.00 - 0.00		
Date Sampled / SDG Number	12/26/01 AKP01			12/26/01 AKP01			12/26/01 AKP01			12/21/01 AKP01			12/21/01 AKP01		
Date Extracted / Analyzed	12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01		
Analyte	Result	Val	Com												
MOISTURE	7.8			10.8			10.3			17.1			13.4		

TtEMI Sample ID / Units	386-S05-006 (%MST)			386-S05-007 (%MST)			386-S05-008 (%MST)			386-S05-009 (%MST)			386-S05-010 (%MST)		
Sample Location	S05-EXC-X2Y3			S05-EXC-X3Y1			S05-EXC-X3Y2			S05-EXC-X3Y3			S05-EXC-X4Y1		
Sample Depth (ft)	4.00 - 0.00			4.00 - 0.00			4.00 - 0.00			4.00 - 0.00			4.00 - 0.00		
Date Sampled / SDG Number	12/21/01 AKP01														
Date Extracted / Analyzed	12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01		
Analyte	Result	Val	Com												
MOISTURE	5.8			22.2			15.4			13.9			16.2		

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems
 g - Quantification below reporting limit
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PERCENT MOISTURE ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

Matrix : SOIL

Page: 4
 Date: 07/05/02

TtEMI Sample ID / Units	386-S05-011 (%MST)			386-S05-012 (%MST)			386-S05-013 (%MST)			386-S05-014 (%MST)			386-S05-015 (%MST)		
Sample Location	S05-EXC-X4Y2			S05-EXC-X4Y3			S05-EXC-SWN1			S05-EXC-SWN2			S05-EXC-SWE1		
Sample Depth (ft)	4.00 - 0.00			4.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/21/01 AKP01			12/21/01 AKP01			12/26/01 AKP01			12/26/01 AKP01			12/26/01 AKP01		
Date Extracted / Analyzed	12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01		
Analyte	Result	Val	Com												
MOISTURE	15.8			20.8			2.7			0.28			2.3		

TtEMI Sample ID / Units	386-S05-016 (%MST)			386-S05-017 (%MST)			386-S05-018 (%MST)			386-S05-019 (%MST)			386-S05-020 (%MST)		
Sample Location	S05-EXC-SWC2			S05-EXC-SWS1			S05-EXC-SWS2			S05-EXC-SWW1			S05-EXC-SWW2		
Sample Depth (ft)	2.00 - 0.00			2.00 - 0.00			4.00 - 0.00			2.00 - 2.50			0.00 - 0.00		
Date Sampled / SDG Number	12/21/01 AKP01			12/26/01 AKP01											
Date Extracted / Analyzed	12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01			12/28/01 12/28/01		
Analyte	Result	Val	Com												
MOISTURE	5.5			11.6			7.5			17.2			1.8		

Validity (Val):

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- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
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METALS (TOTAL) ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

Matrix : SOIL

Page: 5
 Date: 07/05/02

TtEMI Sample ID / Units	386-S05-001 (MG/KG)			386-S05-002 (MG/KG)			386-S05-003 (MG/KG)			386-S05-004 (MG/KG)			386-S05-005 (MG/KG)		
Sample Location	S05-EXC-X1Y1			S05-EXC-X1Y2			S05-EXC-X1Y3			S05-EXC-X2Y1			S05-EXC-X2Y2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			4.00 - 0.00			4.00 - 0.00		
Date Sampled / SDG Number	12/26/01 AKP01			12/26/01 AKP01			12/26/01 AKP01			12/21/01 AKP01			12/21/01 AKP01		
Analyte	Result	Val	Com												
CADMIUM	0.13	UJ	b,h	0.61			0.097	UJ	b	0.75			6.6		
CHROMIUM	34.8			37.8			57.9			106			295		
LEAD	2.2	J	h	3.0	J	h	2.9			2.2			3.3		

TtEMI Sample ID / Units	386-S05-006 (MG/KG)			386-S05-007 (MG/KG)			386-S05-008 (MG/KG)			386-S05-009 (MG/KG)			386-S05-010 (MG/KG)		
Sample Location	S05-EXC-X2Y3			S05-EXC-X3Y1			S05-EXC-X3Y2			S05-EXC-X3Y3			S05-EXC-X4Y1		
Sample Depth (ft)	4.00 - 0.00			4.00 - 0.00			4.00 - 0.00			4.00 - 0.00			4.00 - 0.00		
Date Sampled / SDG Number	12/21/01 AKP01														
Analyte	Result	Val	Com												
CADMIUM	2.2			0.57			5.7			1.9			4.1		
CHROMIUM	38.4			82.2			220			186			144		
LEAD	4.4			1.6			3.6			3.2			3.6		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

METALS (TOTAL) ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

Matrix : SOIL

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TtEMI Sample ID / Units	386-S05-011 (MG/KG)			386-S05-012 (MG/KG)			386-S05-013 (MG/KG)			386-S05-014 (MG/KG)			386-S05-015 (MG/KG)		
Sample Location	S05-EXC-X4Y2			S05-EXC-X4Y3			S05-EXC-SWN1			S05-EXC-SWN2			S05-EXC-SWE1		
Sample Depth (ft)	4.00 - 0.00			4.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	12/21/01 AKP01			12/21/01 AKP01			12/26/01 AKP01			12/26/01 AKP01			12/26/01 AKP01		
Analyte	Result	Val	Com												
CADMIUM	31.2			2.9			0.014	U		0.014	U		0.014	U	
CHROMIUM	89.3			183			28.4			30.2			27.9		
LEAD	2.3			2.3			1.9			2.1			1.7		

TtEMI Sample ID / Units	386-S05-016 (MG/KG)			386-S05-017 (MG/KG)			386-S05-018 (MG/KG)			386-S05-019 (MG/KG)			386-S05-020 (MG/KG)		
Sample Location	S05-EXC-SWC2			S05-EXC-SWS1			S05-EXC-SWS2			S05-EXC-SWW1			S05-EXC-SWW2		
Sample Depth (ft)	2.00 - 0.00			2.00 - 0.00			4.00 - 0.00			2.00 - 2.50			0.00 - 0.00		
Date Sampled / SDG Number	12/21/01 AKP01			12/26/01 AKP01											
Analyte	Result	Val	Com												
CADMIUM	7.5			11.7			16.1			5.2			0.061	UJ	b
CHROMIUM	42.4			132			45.9			72.8			28.4		
LEAD	14.2			2.1	J	h	2.8	J	h	2.1			1.7		

Validity (Val):

U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems
 g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

PERCENT MOISTURE ANALYSIS

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TtEMI Sample ID / Units	386-S05-021 (%)			386-S05-022 (%)			386-S05-023 (%)			386-S05-024 (%)			386-S05-025 (%)		
Sample Location	S05-EXC-SWW-3			S05-EXC-SWE-3			S05-EXC-SWS1-1			S05-EXC-SWS2-1			S05-EXC-X5Y1		
Sample Depth (ft)	2.00 - 0.00			2.00 - 0.00			2.00 - 0.00			2.00 - 0.00			4.00 - 0.00		
Date Sampled / SDG Number	01/21/02 AKP02														
Date Extracted / Analyzed	01/25/02 01/25/02			01/25/02 01/25/02			01/25/02 01/25/02			01/25/02 01/25/02			01/25/02 01/25/02		
Analyte	Result	Val	Com												
PERCENT MOISTURE	8.2			3.0			6.0			4.9			23.7		

TtEMI Sample ID / Units	386-S05-026 (%)			386-S05-027 (%)		
Sample Location	S05-EXC-X5Y2			S05-EXC-X5Y3		
Sample Depth (ft)	4.00 - 0.00			4.00 - 0.00		
Date Sampled / SDG Number	01/21/02 AKP02			01/21/02 AKP02		
Date Extracted / Analyzed	01/25/02 01/25/02			01/25/02 01/25/02		
Analyte	Result	Val	Com	Result	Val	Com
PERCENT MOISTURE	20.1			18.5		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems

- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

METALS (TOTAL) ANALYSIS

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TtEMI Sample ID / Units	386-S05-021 (MG/KG)			386-S05-022 (MG/KG)			386-S05-023 (MG/KG)			386-S05-024 (MG/KG)			386-S05-025 (MG/KG)		
Sample Location	S05-EXC-SWW-3			S05-EXC-SWE-3			S05-EXC-SWS1-1			S05-EXC-SWS2-1			S05-EXC-X5Y1		
Sample Depth (ft)	2.00 - 0.00			2.00 - 0.00			2.00 - 0.00			2.00 - 0.00			4.00 - 0.00		
Date Sampled / SDG Number	01/21/02 AKP02														
Analyte	Result	Val	Com												
CADMIUM	1.5	J	h	38.0	J	h	25.1	J	h	5.8	J	h	1.9	J	h

TtEMI Sample ID / Units	386-S05-026 (MG/KG)			386-S05-027 (MG/KG)		
Sample Location	S05-EXC-X5Y2			S05-EXC-X5Y3		
Sample Depth (ft)	4.00 - 0.00			4.00 - 0.00		
Date Sampled / SDG Number	01/21/02 AKP02			01/21/02 AKP02		
Analyte	Result	Val	Com	Result	Val	Com
CADMIUM	62.6	J	h	83.8	J	h

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):
 a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

PERCENT MOISTURE ANALYSIS

Project : ALAMEDA CTO 386
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TtEMI Sample ID / Units	386-S05-028 (%MST)			386-S05-030 (%MST)			386-S05-031 (%MST)			386-S05-034 (%MST)			386-S05-036 (%MST)		
Sample Location	S05-EXC-X5Y4			S05-EXC-X6Y3			S05-EXC-SW-B2			S05-EXC-SW-B1			S05-EXC-X4Y2-1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	02/22/02 AKP03			02/22/02 AKP03			02/25/02 AKP03			02/25/02 AKP03			02/26/02 AKP03		
Date Extracted / Analyzed	03/01/02 03/01/02			03/01/02 03/01/02			03/01/02 03/01/02			03/01/02 03/01/02			03/01/02 03/01/02		
Analyte	Result	Val	Com												
MOISTURE	23.3			17.2			22.1			22.1			21.8		

TtEMI Sample ID / Units	386-S05-037 (%MST)			386-S05-039 (%MST)			386-S05-040 (%MST)		
Sample Location	S05-EXC-X5Y2-1			S05-EXC-SWS1-2			S05-EXC-X6Y2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	02/26/02 AKP03			02/26/02 AKP03			02/26/02 AKP03		
Date Extracted / Analyzed	03/01/02 03/01/02			03/01/02 03/01/02			03/01/02 03/01/02		
Analyte	Result	Val	Com	Result	Val	Com	Result	Val	Com
MOISTURE	21.9			5.2			5.8		

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

METALS (TOTAL) ANALYSIS

Project : ALAMEDA CTO 386
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TtEMI Sample ID / Units	386-S05-028 (MG/KG)			386-S05-030 (MG/KG)			386-S05-031 (MG/KG)			386-S05-034 (MG/KG)			386-S05-036 (MG/KG)		
Sample Location	S05-EXC-X5Y4			S05-EXC-X6Y3			S05-EXC-SW-B2			S05-EXC-SW-B1			S05-EXC-X4Y2-1		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	02/22/02 AKP03			02/22/02 AKP03			02/25/02 AKP03			02/25/02 AKP03			02/26/02 AKP03		
Analyte	Result	Val	Com												
CADMIUM	0.12	UJ	b	0.034	U		11.0			39.9			32.3		

TtEMI Sample ID / Units	386-S05-037 (MG/KG)			386-S05-039 (MG/KG)			386-S05-040 (MG/KG)		
Sample Location	S05-EXC-X5Y2-1			S05-EXC-SWS1-2			S05-EXC-X6Y2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	02/26/02 AKP03			02/26/02 AKP03			02/26/02 AKP03		
Analyte	Result	Val	Com	Result	Val	Com	Result	Val	Com
CADMIUM	4.1			0.10	UJ	b	0.064	UJ	b

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):
 a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

PERCENT MOISTURE ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

Matrix : SOIL

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TtEMI Sample ID / Units	386-S05-038 (%MST)		
Sample Location	S05-EXC-X5Y3-1		
Sample Depth (ft)	0.00 - 0.00		
Date Sampled / SDG Number	02/26/02 AKP04		
Date Extracted / Analyzed	03/07/02 03/07/02		
Analyte	Result	Val	Com
MOISTURE	16.8		

Validity (Val):

U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

Note :

METALS (TOTAL) ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

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TtEMI Sample ID / Units	386-S05-038 (MG/KG)		
Sample Location	S05-EXC-X5Y3-1		
Sample Depth (ft)	0.00 - 0.00		
Date Sampled / SDG Number	02/26/02 AKP04		
Analyte	Result	Val	Com
CADMIUM	0.99	UJ	b

Validity (Val):

U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems
 g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

Note :

PERCENT MOISTURE ANALYSIS

Project : ALAMEDA CTO 386
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TtEMI Sample ID / Units	386-S05-041 (%MST)			386-S05-042 (%MST)			386-S05-043 (%MST)		
Sample Location	S05-EXC-SW-B1-1			S05-EXC-SW-B2-2			S05-EXC-X4Y2-2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	03/20/02 AKP05			03/20/02 AKP05			03/20/02 AKP05		
Date Extracted / Analyzed	03/22/02 03/22/02			03/22/02 03/22/02			03/22/02 03/22/02		
Analyte	Result	Val	Com	Result	Val	Com	Result	Val	Com
MOISTURE	22.9			18.4			21.1		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

Note :

METALS (TOTAL) ANALYSIS

Project : ALAMEDA CTO 386
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TtEMI Sample ID / Units	386-S05-041 (MG/KG)			386-S05-042 (MG/KG)			386-S05-043 (MG/KG)		
Sample Location	S05-EXC-SW-B1-1			S05-EXC-SW-B2-2			S05-EXC-X4Y2-2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	03/20/02 AKP05			03/20/02 AKP05			03/20/02 AKP05		
Analyte	Result	Val	Com	Result	Val	Com	Result	Val	Com
CADMIUM	9.6			5.6			8.4		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

Note :

HEXAVALENT CHROMIUM ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

Matrix : WATER

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TtEMI Sample ID / Units	386-S05-044 (MG/L)			386-S05-046 (MG/L)		
Sample Location	S05-EXC-GW-1			S05-EXC-GW-2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	03/20/02 AKP05			03/20/02 AKP05		
Date Extracted / Analyzed	03/21/02 03/21/02			03/21/02 03/21/02		
Analyte	Result	Val	Com	Result	Val	Com
CHROMIUM VI	0.097			0.01	U	

Validity (Val):
 U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

Note :

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CYANIDE ANALYSIS

Matrix : WATER

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TtEMI Sample ID / Units	386-S05-045 (UG/L)			386-S05-047 (UG/L)		
Sample Location	S05-EXC-GW-1			S05-EXC-GW-2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	03/20/02 AKP05			03/20/02 AKP05		
Date Extracted / Analyzed	03/26/02 03/26/02			03/26/02 03/26/02		
Analyte	Result	Val	Com	Result	Val	Com
TOTAL CYANIDE	426			1390		

Validity (Val):

U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

Note :

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 Laboratory : Applied Physics & Chemistry Laboratory

PH ANALYSIS
 Matrix : WATER

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TtEMI Sample ID / Units	386-S05-044 ()			386-S05-046 ()		
Sample Location	S05-EXC-GW-1			S05-EXC-GW-2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	03/20/02 AKP05			03/20/02 AKP05		
Date Extracted / Analyzed	03/21/02 03/21/02			03/21/02 03/21/02		
Analyte	Result	Val	Com	Result	Val	Com
PH	7.96			9.02		

Validity (Val):

U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

Note :

METALS (TOTAL) ANALYSIS

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TtEMI Sample ID / Units	386-S05-044 (UG/L)			386-S05-046 (UG/L)		
Sample Location	S05-EXC-GW-1			S05-EXC-GW-2		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	03/20/02 AKP05			03/20/02 AKP05		
Analyte	Result	Val	Com	Result	Val	Com
CADMIUM	13.8			224		
CHROMIUM	116			416		

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems

- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

Note :

PAH ANALYSIS

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 Laboratory : Applied Physics & Chemistry Laboratory

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TtEMI Sample ID / Units	386-S14-043 (UG/KG)			386-S14-054 (UG/KG)			386-S14-065 (UG/KG)			386-S14-066 (UG/KG)		
Sample Location	S14-EXC-D-NW			S14-EXC-C-WNW-1			S14-EXC-C-N-3			S14-EXC-C-SE-3		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	01/18/02 AKP06			01/18/02 AKP06			03/20/02 AKP06			03/20/02 AKP06		
Date Extracted / Analyzed	04/02/02 04/04/02			04/02/02 04/04/02			04/02/02 04/04/02			04/02/02 04/04/02		
Analyte	Result	Val	Com									
2-METHYLNAPHTHALENE	110	R	h	27	R	h	110	U		28	U	
ACENAPHTHENE	110	R	h	27	R	h	110	UJ	h	28	UJ	h
ACENAPHTHYLENE	110	R	h	27	R	h	110	U		28	U	
ANTHRACENE	110	R	h	27	R	h	110	U		28	U	
BENZ (A) ANTHRACENE	110	R	h	27	R	h	77	J	g	28	U	
BENZO (A) PYRENE	43	R	h	11	R	h	95	J	h	14	J	h
BENZO (B) FLUORANTHENE	110	R	h	27	R	h	84	J	g	28	U	
BENZO (G, H, I) PERYLENE	110	R	h	27	R	h	110	U		28	J	g
BENZO (K) FLUORANTHENE	110	R	h	27	R	h	79	J	g	17	J	g
CHRYSENE	110	R	h	27	R	h	120			21	J	g
DIBENZ (A, H) ANTHRACENE	43	R	h	11	R	h	45	U		11	U	
FLUORANTHENE	110	R	h	27	R	h	110	U		28	U	
FLUORENE	110	R	h	27	R	h	110	U		28	U	
INDENO (1, 2, 3-CD) PYRENE	110	R	h	27	R	h	110	U		17	J	g
NAPHTHALENE	110	R	h	27	R	h	110	U		28	U	
PHENANTHRENE	110	R	h	27	R	h	110	U		28	U	
PYRENE	110	R	h	27	R	h	120			15	J	g

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems

- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

PERCENT MOISTURE ANALYSIS

Project : ALAMEDA CTO 386
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 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-043 (%MST)			386-S14-054 (%MST)			386-S14-065 (%MST)			386-S14-066 (%MST)		
Sample Location	S14-EXC-D-NW			S14-EXC-C-WNW-1			S14-EXC-C-N-3			S14-EXC-C-SE-3		
Sample Depth (ft)	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Date Sampled / SDG Number	01/18/02 AKP06			01/18/02 AKP06			03/20/02 AKP06			03/20/02 AKP06		
Date Extracted / Analyzed	04/02/02 04/02/02			04/02/02 04/02/02			04/02/02 04/02/02			04/02/02 04/02/02		
Analyte	Result	Val	Com									
MOISTURE	7.3			7.1			10.5			11.4		

Validity (Val):

U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems

g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

Note :

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

PAH ANALYSIS

Matrix : SOIL

Page: 1
 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-018 (UG/KG)		
Sample Location	S14-EXC-B-S		
Sample Depth (ft)	0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AKP07		
Date Extracted / Analyzed	04/02/02 04/04/02		
Analyte	Result	Val	Com
2-METHYLNAPHTHALENE	28 R		h
ACENAPHTHENE	28 R		h
ACENAPHTHYLENE	28 R		h
ANTHRACENE	28 R		h
BENZ (A) ANTHRACENE	28 R		h
BENZO (A) PYRENE	28 R		h
BENZO (B) FLUORANTHENE	28 R		h
BENZO (G, H, I) PERYLENE	28 R		h
BENZO (K) FLUORANTHENE	28 R		h
CHRYSENE	28 R		h
DIBENZ (A, H) ANTHRACENE	28 R		h
FLUORANTHENE	28 R		h
FLUORENE	29 J		h
INDENO (1, 2, 3-CD) PYRENE	28 R		h
NAPHTHALENE	28 R		h
PHENANTHRENE	23 J		g, h
PYRENE	18 J		g, h

Validity (Val):

- U - Non-detected
- UJ - Non-detected estimated
- R - Rejected
- J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

- a - Surrogate recovery problem
- b - Blank contamination problems
- c - Matrix spike recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems

- g - Quantification below reporting limit
- h - Other problems, refer to data validation narrative
- k - Holding time exceeded
- p - >25%D between columns
- y - Resembles a fuel pattern but does not match the standard
- z - Unknown peaks, not a fuel pattern

PERCENT MOISTURE ANALYSIS

Project : ALAMEDA CTO 386
 Laboratory : Applied Physics & Chemistry Laboratory

Matrix : SOIL

Page: 2
 Date: 07/05/02

TtEMI Sample ID / Units	386-S14-018 (%MST)		
Sample Location	S14-EXC-B-S		
Sample Depth (ft)	0.00 - 0.00		
Date Sampled / SDG Number	12/17/01 AKP07		
Date Extracted / Analyzed	04/02/02 04/02/02		
Analyte	Result	Val	Com
MOISTURE	12.1		

Validity (Val):

U - Non-detected
 UJ - Non-detected estimated
 R - Rejected
 J - Estimated concentration

NA - Not Analyzed

Applicable Comments (Com):

a - Surrogate recovery problem
 b - Blank contamination problems
 c - Matrix spike recovery problems
 d - Duplicate (precision) problems
 e - Internal standard problems
 f - Calibration problems
 g - Quantification below reporting limit
 h - Other problems, refer to data validation narrative
 k - Holding time exceeded
 p - >25%D between columns
 y - Resembles a fuel pattern but does not match the standard
 z - Unknown peaks, not a fuel pattern

Note :

APPENDIX B

**DATA VALIDATION REQUIREMENTS FOR ALAMEDA POINT
ALAMEDA, CALIFORNIA**

(One Page)

All items listed are evaluated in a full validation review. Cursory review items are indicated by a single asterisk (*).

Contract Laboratory Program (CLP) Inorganic Compounds (EPA 1994b)

- * Holding times
- * Calibration (initial and continuing)
- * Blanks (method, instrument, and preparation)
Inductively coupled plasma (ICP) interference check sample
- * Laboratory control sample (LCS)
- * Duplicate sample analysis
- * Matrix spike (MS) sample analysis
Graphite furnace atomic absorption quality control (QC)
- * ICP serial dilution
Sample result verification
- * Field duplicate samples
- * Overall assessment of data

CLP Organic Compounds (EPA 1999a)

- * Holding times
Gas chromatography/mass spectrometry tuning
- * Calibration (initial and continuing)
- * Blanks (method, instrument, and preparation blanks)
Compound quantitation
Contract required-quantitation limits
- * LCS
- * Surrogate recovery
- * MS and matrix spike duplicate (MSD)
- * Field duplicate samples
- * Internal standard performance
Target compound identification
Tentatively identified compounds
System performance
- * Overall assessment of data

Non-CLP Organic and Inorganic Parameters

- * Method compliance
- * Holding times
- * Calibration (initial and continuing)
- * Blanks (method, instrument, and preparation blanks)
- * Surrogate recovery
- * Sample duplicates, MSs, MSDs, and blank spikes
- * Other laboratory QC specified by the method
- * Field duplicate samples
- * Detection limits
Compound identification
Compound quantitation
Sample result verification
- * Overall assessment of data

APPENDIX C

**DATA VALIDATION NARRATIVES FOR ALAMEDA POINT
ALAMEDA, CALIFORNIA**

(102 Pages)

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AAO01**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 7/2/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Southwest Laboratory of Oklahoma, Inc., Broken Arrow, Oklahoma

Data Validation Firm: Environmental Data Services, Inc.

Dioxin/Furan Analysis

1. The validation firm used the set of validation qualifier codes specified in the Tetra Tech EM Inc. Laboratory Statement of Work. For CTO 386, the validation qualifier code definitions specified in the Quality Assurance Project Plan (QAPP) for confirmation sampling should be applied. Therefore, the “e” qualifier code from the validation report (indicating a matrix spike problem) for sample 386-S14-025 has been changed to “c” to correspond to the qualifier code definitions described in the QAPP. Also, the “e” qualifier comment codes for sample 386-S14-036 (indicating a laboratory control sample problem) have been changed to “h” codes.

2. A number of sample results were qualified as estimated (“J”) without a comment code, for either ion ratios that exceeded the acceptance criteria, or for the presence of interfering ether compounds. The “h” comment code has been attached to these qualified results.

There were no other modifications to the validation report.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point
Contract Task Order (CTO) No.: CTO-386
Laboratory: Southwest Laboratory of Oklahoma, Broken Arrow, OK
Data Reviewer: Nancy Weaver, Environmental Data Services, Inc.
Review Date: March 6, 2002

Sample Delivery Group (SDG) No.: AAO01

Sample Nos.:	386-S14-011*	383-S14-012*	386-S14-013	386-S14-014
	386-S14-015	386-S14-016	386-S14-017	386-S14-018
	386-S14-019	386-S14-020	386-S14-021	386-S14-022
	386-S14-023	386-S14-024	386-S14-025	386-S14-026
	386-S14-027	386-S14-028	386-S14-029	386-S14-030
	386-S14-031	386-S14-032*	386-S14-033	386-S14-034
	386-S14-035	386-S14-036	386-S14-037	386-S14-038*
	386-S14-039	386-S14-040		

* Full Validation Sample

Matrix: Water and Soil

Collection Date(s): December 17, 2001

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (February 1994). In addition, the PRC documents "Data Validation Guidelines for CLP Organic Analyses," "Data Validation Guidelines for Non-CLP Organic Analyses," and the document entitled "PRC Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (June 1995) were used along with other specified criteria in EPA methods. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. Cursory validation parameters are indicated by an asterisk (*).

CLP Organic Parameters

- * Holding times
- GC/MS instrument performance check
- * Initial and continuing calibrations
- * Blanks
- * Surrogate recovery
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Internal standard performance
- Target compound identification
- Tentatively identified compounds
- Compound quantitation
- Reported detection limits
- System performance
- * Overall assessment of data for the SDG

CLP Inorganic Parameters

- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- ICP interference check sample
- GFAA quality control
- * ICP serial dilution
- Sample result verification
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

Non-CLP Organic and Inorganic Parameters

- * Method compliance
- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- * Surrogate recovery
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result
- NJ** Tentatively Identified Compound (TIC)

Data Validation Qualifier Codes

- a** Surrogate recovery exceedance
- b** Laboratory method blank and common blank contamination
- c** Calibration exceedance
- d** Duplicate precision exceedance
- e** Matrix spike/laboratory control sample (LCS) recovery exceedance
- f** Field blank contamination
- g** Quantification below reporting limit
- h** Holding time exceedance
- i** Internal standard exceedance
- j** Other qualifications

**TABLE 1
CURSORY DATA VALIDATION SUMMARY**

Analysis	Holding Times	Surrogates	MS/MSD	Matrix Duplicates	LCS	Blanks	Calibrations	Labeled Compounds	Field Duplicates	Other
Dioxin/Furan	✓	NA	Pg. 6	NA	Pg. 6	Pg. 7	✓	Pg. 7	NA	Pg. 9

Notes:

✓ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.

N/A indicates the parameter is not applicable to an analysis.

If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.

The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers are described in the text.

TABLE 2
FULL DATA VALIDATION SUMMARY
Sample(s) 386-S14-011, 386-S14-012, 386-S14-032, 386-S14-038

Analysis	GC/MS Tuning	Target Compound List Identification	Compound or Analyte Quantification	Reported Detection Limits	Tentatively Identified Compounds	System Performance	Interference Check Sample	Graphite Furnace Quality Control
Dioxin/Furan	✓	✓	✓	✓	NA	✓	NA	NA

Notes:

✓ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.

N/A indicates the parameter is not applicable to an analysis.

If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.

The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers found are described below.

DATA ASSESSMENT
DIOXIN/FURAN ANALYSIS

I. Holding Times

A. All criteria were met.

II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A. Due to accuracy problems in the MS/MSD analysis, the following detected results are qualified as estimated (Je).

- OCDD in sample 386-S14-025.
- OCDD and 1234678-HpCDD in sample 386-S14-025RE.

The recoveries outside the QC limits are listed below.

<u>Sample ID</u>	<u>Compound</u>	<u>%R</u>	<u>QC Limits</u>
386-S14-025	OCDD	187%/170%	40 - 135%
386-S14-025RE	OCDD	428%/764%	40 - 135%
	1234678-HpCDD	145%/253%	40 - 135%

This outlier affected only the spiked sample. Spike recoveries above the QC limit indicate that detects may be biased high.

III. Blank Spike or Laboratory Control Sample (LCS)

A. Due to a problem in the LCS analysis, the following detected results are qualified as estimated (Je).

- 234678-HxCDF in samples 386-S14-035 and 386-S14-036.
- 123789-HxCDF in sample 386-S14-035.

The result obtained in the analysis of the LCS was not within the control limits as shown below.

<u>LCS ID</u>	<u>Compound</u>	<u>%R</u>	<u>QC Limits</u>
LC1222SC	234678-HxCDF	145%	40 - 135%
	123789-HxCDF	136%	40 - 135%

The results reported for 234678-HxCDF and 123789-HxCDF in the samples listed above may be biased high.

IV. Blank Contamination

A. Due to method blank contamination, the following results are considered nondetected (UJb).

- OCDD in samples 386-S14-019, 386-S14-022, 386-S14-038, 386-S14-039, 386-S14-011RE, 386-S14-019RE, 386-S14-020RE, 386-S14-017RE and 386-S14-018RE.
- 1234678-HpCDD in samples 386-S14-011RE, 386-S14-019RE and 386-S14-020RE.
- OCDF in samples 386-S14-011RE, 386-S14-014RE and 386-S14-016RE.
- Total HpCDD in samples 386-S14-019RE and 386-S14-020RE.

The following compounds were detected in the associated method blanks at the concentrations noted below.

<u>Compound</u>	<u>Blank ID</u>	<u>Concentration, ng/kg</u>
OCDD	DFBLK4	13.95
OCDD	DFBLK7	64.68
1234678-HpCDD	DFBLK8	0.861
OCDD	DFBLK8	4.105
OCDF	DFBLK8	1.131
OCDD	DFBLK10	0.464

Detected results less than 10x the blank contamination were qualified.

V. Calibrations

A. All criteria were met.

VI. Labeled Compound Recoveries

A. Due to labeled compound recovery problems, the following detected and nondetected results are qualified as estimated (Ji/UJi).

- All compounds in sample 386-S14-011.
- 2378-TCDF and 12378-PeCDF in sample 386-S14-014.
- OCDD in sample 386-S14-014RE.
- 2378-TCDF and 12378-PeCDF in sample 386-S14-016.
- 2378-TCDF, 12378-PeCDF and 2378-TCDD in sample 386-S14-017.
- 2378-TCDF and 12378-PeCDF in sample 386-S14-018.
- 2378-TCDF in sample 386-S14-019.
- 2378-TCDF and 12378-PeCDF in sample 386-S14-020.
- 2378-TCDF, 12378-PeCDF, 12378-PeCDD, 1234678-HpCDF, 1234678-HpCDD and OCDD in sample 386-S14-023.
- 2378-TCDF and 12378-PeCDF in sample 386-S14-025.
- 2378-TCDF, 12378-PeCDF and 12378-PeCDD in sample 386-S14-028.
- 2378-TCDF and 12378-PeCDF in sample 386-S14-035.
- All compounds in sample 386-S14-038.
- All compounds in sample 386-S14-039.

- 2378-TCDF and 12378-PeCDF in sample 386-S14-040.

The labeled compound recoveries in the samples listed above were less than the QC limits and are listed below.

<u>Sample</u>	<u>Labeled Compound</u>	<u>%R</u>	<u>QC Limits</u>
386-S14-011	All Compounds	Low	40 - 135%
386-S14-014	2378-TCDF	29%	40 - 135%
	12378-PeCDF	36%	40 - 135%
386-S14-014RE	OCDD	35%	40 - 135%
386-S14-016	2378-TCDF	25%	40 - 135%
	12378-PeCDF	35%	40 - 135%
386-S14-017	2378-TCDF	23%	40 - 135%
	12378-PeCDF	29%	40 - 135%
	2378-TCDD	24%	40 - 135%
386-S14-018	2378-TCDF	25%	40 - 135%
	12378-PeCDF	29%	40 - 135%
386-S14-019	2378-TCDF	39%	40 - 135%
386-S14-020	2378-TCDF	28%	40 - 135%
	12378-PeCDF	35%	40 - 135%
386-S14-023	2378-TCDF	25%	40 - 135%
	12378-PeCDF	24%	40 - 135%
	12378-PeCDD	35%	40 - 135%
	1234678-HpCDF	36%	40 - 135%
	1234678-HpCDD	35%	40 - 135%
	OCDD	37%	40 - 135%
386-S14-025	2378-TCDF	27%	40 - 135%
	12378-PeCDF	31%	40 - 135%
386-S14-028	2378-TCDF	24%	40 - 135%
	12378-PeCDF	27%	40 - 135%
	12378-PeCDD	36%	40 - 135%
386-S14-035	2378-TCDF	32%	40 - 135%
	12378-PeCDF	37%	40 - 135%
386-S14-038	All Compounds	Low	40 - 135%
386-S14-039	All Compounds	Low	40 - 135%
386-S14-040	2378-TCDF	25%	40 - 135%
	12378-PeCDF	34%	40 - 135%

Labeled compounds recoveries of less than 40% may indicate a loss of instrument sensitivity.

B. Due to labeled compound recovery problems, the following detected results are qualified as estimated (Ji).

- 2378-TCDD in sample 386-S14-023RE.

The labeled compound recoveries in the samples listed above were greater than QC limits and are listed below.

<u>Sample</u>	<u>Labeled Compound</u>	<u>%R</u>	<u>QC Limits</u>
---------------	-------------------------	-----------	------------------

386-S14-023RE 2378-TCDD 183% 40 - 135%

Labeled compound recoveries of greater than 135% may indicate a low bias in detected results.

VII. Field Duplicate

- A. None.

VIII. Other Qualifications

- A. Several samples exhibited results with an (X) flag indicating that the ion ratio failed and the value is an estimated maximum possible concentration. The reviewer further qualified these results as estimated (J) to indicate a possible high bias.
- B. Several samples exhibited results with an (I) flag indicating ether interference for furans. The reviewer further qualified these results as estimated (J) to indicate a possible high or low bias.

Full Validation Criteria for Samples 386-S14-011, 386-S14-012, 386-S14-032 and 386-S14-038

IX. Target Compound List (TCL) Identification

- A. The relative retention times, mass spectra, and peak identifications of the samples were evaluated. Target compound identification was considered to be correct.

X. Compound Quantitation and Reported Detection Limits

- A. Sample results were recalculated, with the proper dilution factors, weights, volumes, and percent moisture used to calculate the sample results. The samples were found to be correctly quantitated. The reported detection limits were consistent with the contract required report limits and reflect any dilutions, weights, volumes, and percent moisture.

XI. System Performance

- A. The samples were evaluated for reconstructed ion chromatogram (RIC) baseline shifts, extraneous peaks, loss of resolution, and peak tailing. No system degradation was noted.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

- A. All analyses were conducted within all specifications of the requested methods.

II. Usability

- A. Due to MS/MSD recovery problems in the dioxin/furan analysis, one or two compounds were qualified as estimated in the two MS/MSD samples.
- B. Due to high LCS recovery problems in the dioxin/furan analysis, one or two compounds were qualified as estimated in two samples.
- C. Due to method blank contamination in the dioxin/furan analysis, several compounds were qualified as nondetected in several samples.
- D. Due to labeled compound recovery problems in the dioxin/furan analysis, several compounds were qualified as estimated in several samples.
- E. Due to ion ratio failure in the dioxin/furan analysis, several compounds were qualified as estimated in several samples.
- F. Due to ether interference in the dioxin/furan analysis, several compounds were qualified as estimated in several samples.
- G. The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the cursory and full data validation all other results are considered valid and usable for all purposes. In general, the absence of rejected data and the small number of qualifiers added to the data indicate high usability.

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AAO02**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 7/3/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Southwest Laboratory of Oklahoma, Inc., Broken Arrow, Oklahoma

Data Validation Firm: Environmental Data Services, Inc.

Dioxin/Furan Analysis

1. The validation firm used the set of validation qualifier codes specified in the Tetra Tech EM Inc. Laboratory Statement of Work. For CTO 386, the validation qualifier code definitions specified in the Quality Assurance Project Plan (QAPP) for confirmation sampling should be applied. Therefore, the “i” qualifier codes from the validation report (indicating an internal standard problem) have been changed to “e” to correspond to the qualifier code definitions described in the QAPP.

2. A number of sample results were qualified as estimated (“J”) without a comment code, for either ion ratios that exceeded the acceptance criteria, or for the presence of interfering ether compounds. The “h” comment code has been attached to these qualified results.

There were no other modifications to the validation report.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point
Contract Task Order (CTO) No.: CTO-386
Laboratory: Southwest Laboratory of Oklahoma, Broken Arrow, OK
Data Reviewer: Nancy Weaver, Environmental Data Services, Inc.
Review Date: March 18, 2002

Sample Delivery Group (SDG) No.: AAO02

Sample Nos.:	386-S14-041*	383-S14-042*	386-S14-043	386-S14-044
	386-S14-045	386-S14-046	386-S14-047	386-S14-048
	386-S14-049	386-S14-050	386-S14-051	386-S14-052
	386-S14-053	386-S14-054	386-S14-055	386-S14-056
	386-S14-057			

* Full Validation Sample

Matrix: Soil

Collection Date(s): January 17 and 18, 2002

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (February 1994). In addition, the PRC documents "Data Validation Guidelines for CLP Organic Analyses," "Data Validation Guidelines for Non-CLP Organic Analyses," and the document entitled "PRC Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (June 1995) were used along with other specified criteria in EPA methods. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. Cursory validation parameters are indicated by an asterisk (*).

CLP Organic Parameters

- * Holding times
- GC/MS instrument performance check
- * Initial and continuing calibrations
- * Blanks
- * Surrogate recovery
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Internal standard performance
- Target compound identification
- Tentatively identified compounds
- Compound quantitation
- Reported detection limits
- System performance
- * Overall assessment of data for the SDG

CLP Inorganic Parameters

- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- ICP interference check sample
- GFAA quality control
- * ICP serial dilution
- Sample result verification
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

Non-CLP Organic and Inorganic Parameters

- * Method compliance
- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- * Surrogate recovery
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result
- NJ** Tentatively Identified Compound (TIC)

Data Validation Qualifier Codes

- a** Surrogate recovery exceedance
- b** Laboratory method blank and common blank contamination
- c** Calibration exceedance
- d** Duplicate precision exceedance
- e** Matrix spike/laboratory control sample (LCS) recovery exceedance
- f** Field blank contamination
- g** Quantification below reporting limit
- h** Holding time exceedance
- i** Internal standard exceedance
- j** Other qualifications

**TABLE 1
CURSORY DATA VALIDATION SUMMARY**

Analysis	Holding Times	Surrogates	MS/MSD	Matrix Duplicates	LCS	Blanks	Calibrations	Labeled Compounds	Field Duplicates	Other
Dioxin/Furan	✓	NA	✓	NA	✓	Pg. 6	✓	Pg. 6	NA	Pg. 7

Notes:

✓ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.

N/A indicates the parameter is not applicable to an analysis.

If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.

The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers are described in the text.

TABLE 2
FULL DATA VALIDATION SUMMARY
Sample(s) 386-S14-041, 386-S14-042

Analysis	GC/MS Tuning	Target Compound List Identification	Compound or Analyte Quantification	Reported Detection Limits	Tentatively Identified Compounds	System Performance	Interference Check Sample	Graphite Furnace Quality Control
Dioxin/Furan	✓	✓	✓	✓	NA	✓	NA	NA

Notes:

✓ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.

N/A indicates the parameter is not applicable to an analysis.

If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.

The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers found are described below.

DATA ASSESSMENT
DIOXIN/FURAN ANALYSIS

I. Holding Times

A. All criteria were met.

II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A. All criteria were met.

III. Blank Spike or Laboratory Control Sample (LCS)

A. All criteria were met.

IV. Blank Contamination

A. Due to method blank contamination, the following results are considered nondetected (UJb).

- OCDD in samples 386-S14-042 and 386-S14-045.

The following compounds were detected in the associated method blanks at the concentrations noted below.

<u>Compound</u>	<u>Blank ID</u>	<u>Concentration, ng/kg</u>
OCDD	DFBLK3	5.012

Detected results less than 10x the blank contamination were qualified.

V. Calibrations

A. All criteria were met.

VI. Labeled Compound Recoveries

A. Due to labeled compound recovery problems, the following detected and nondetected results are qualified as estimated (Ji/UJi).

- OCDD in samples 386-S14-041, 386-S14-043 and 386-S14-047.

The labeled compound recoveries in the samples listed above were less than the QC limits and are listed below.

<u>Sample</u>	<u>Labeled Compound</u>	<u>%R</u>	<u>QC Limits</u>
386-S14-041	OCDD	35%	40 - 135%
386-S14-043	OCDD	39%	40 - 135%
386-S14-047	OCDD	38%	40 - 135%

Labeled compounds recoveries of less than 40% may indicate a loss of instrument sensitivity.

B. Due to labeled compound recovery problems, the following detected results are qualified as estimated (Ji).

- OCDD in sample 386-S14-049.

The labeled compound recoveries in the samples listed above were greater than QC limits and are listed below.

<u>Sample</u>	<u>Labeled Compound</u>	<u>%R</u>	<u>QC Limits</u>
386-S14-049	OCDD	139%	40 - 135%

Labeled compound recoveries of greater than 135% may indicate a low bias in detected results.

VII. Field Duplicate

A. None.

VIII. Other Qualifications

- A. Several samples exhibited results with an (X) flag indicating that the ion ratio failed and the value is an estimated maximum possible concentration. The reviewer further qualified these results as estimated (J) to indicate a possible high bias.
- B. Several samples exhibited results with an (I) flag indicating ether interference for furans. The reviewer further qualified these results as estimated (J) to indicate a possible high or low bias.

Full Validation Criteria for Samples 386-S14-041, 386-S14-042

IX. Target Compound List (TCL) Identification

A. The relative retention times, mass spectra, and peak identifications of the samples were evaluated. Target compound identification was considered to be correct.

X. Compound Quantitation and Reported Detection Limits

- A. Sample results were recalculated, with the proper dilution factors, weights, volumes, and percent moisture used to calculate the sample results. The samples were found to be correctly quantitated. The reported detection limits were consistent with the contract required report limits and reflect any dilutions, weights, volumes, and percent moisture.

XI. System Performance

- A. The samples were evaluated for reconstructed ion chromatogram (RIC) baseline shifts, extraneous peaks, loss of resolution, and peak tailing. No system degradation was noted.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

- A. All analyses were conducted within all specifications of the requested methods.

II. Usability

- A. Due to method blank contamination in the dioxin/furan analysis, one compound was qualified as nondetected in two samples.
- B. Due to labeled compound recovery problems in the dioxin/furan analysis, one compound was qualified as estimated in four samples.
- C. Due to ion ratio failure in the dioxin/furan analysis, several compounds were qualified as estimated in several samples.
- D. Due to ether interference in the furan analysis, several compounds were qualified as estimated in several samples.
- E. The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the cursory and full data validation all other results are considered valid and usable for all purposes. In general, the absence of rejected data and the small number of qualifiers added to the data indicate high usability.

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AAO03**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 7/3/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Southwest Laboratory of Oklahoma, Inc., Broken Arrow, Oklahoma

Data Validation Firm: 3J Environmental Services

Dioxin/Furan Analysis

1. The validation firm used the set of validation qualifier codes specified in the Tetra Tech EM Inc. Laboratory Statement of Work. For CTO 386, the validation qualifier code definitions specified in the Quality Assurance Project Plan (QAPP) for confirmation sampling should be applied. Therefore, the “j” qualifier codes from the validation report (referring to the validation report narrative) have been changed to “h” to correspond to the qualifier code definitions described in the QAPP.
2. The “Je” qualifier comment codes for sample 386-S14-064 have been removed. Although the matrix spike recovery limits were not met for two compounds, the native concentration of these compounds in the field sample were more than four times the spike amount.
3. The “N” qualifiers applied as described in the revised validation report have been removed. The “N” qualifier is used in the Tetra Tech EM Inc. database only to indicate compounds that have been tentatively identified through a mass spectral library search. In cases where the qualitative identification of a compound is questionable, the “Jh” or “UJh” qualifier is applied (depending on the opinion of the data reviewer), to indicate that an explanation of the qualification can be found in the data validation narrative.

There were no other modifications to the validation report.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point IR Site 14
Contract Task Order (CTO) No.: 386
Laboratory: Southwest Laboratory of Oklahoma, Inc.
Data Reviewer: Dina David-Bailey, 3J Environmental Services
Review Date: June 19, 2002 (**Revision**)

Sample Delivery Group (SDG) No.: AAO03

Sample Nos.:	386-S14-058*	386-S14-063
	386-S14-059	386-S14-064
	386-S14-060	
	386-S14-061	
	386-S14-062	

* Full Validation Sample

Matrix: Soil

Collection Date(s): February 22, 2002

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999). In addition, the TtEMI document "Data Validation Guidelines for Non-CLP Organic Analyses" and the document entitled "TtEMI Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (May 2000) were used along with other specified criteria in the EPA method. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. An asterisk (*) indicates cursory validation parameters.

Non-CLP Organic Parameters

- * Method compliance
- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- * Labeled Compound
- * Recovery Standard
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result
- NJ** Tentatively identified and estimated

Data Validation Qualifier Codes

- e** Matrix spike/laboratory control sample (LCS) recovery exceedance
- j** Other qualifications

TABLE 2
FULL DATA VALIDATION SUMMARY
Sample 386-S14-058

Analysis	GC Column Performance Check	Target Compound List Identification	Compound or Analyte Quantification	Reported Detection Limits	Tentatively Identified Compounds	System Performance	Interference Check Sample	Graphite Furnace Quality Control
Dioxins/Furans	√	pg. 6	pg. 6	√	N/A	√	N/A	N/A

Notes:

√ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.

N/A indicates the parameter is not applicable to an analysis.

If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.

The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers found are described below.

DATA ASSESSMENT

DIOXINS/FURANS ANALYSIS

I. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A. Due to accuracy problems in the MS/MSD analysis, the following detected results are qualified as estimated (Je).

- 1,2,3,4,6,7,8-HpCDD and OCDD in sample 386-S14-064

The recoveries outside the QC limits are listed below.

<u>Sample ID</u>	<u>Compound</u>	<u>MS/MSD %R</u>	<u>MS/MSD QC Limits</u>
386-S14-064	1,2,3,4,6,7,8-HpCDD	0 / 0	40 – 135%
	OCDD	0 / 0	40 – 135%

The outliers affected only the spiked sample. Detected results for 1,2,3,4,6,7,8-HpCDD and OCDD were biased low.

II. Other Qualifications

A. Due to identification and quantitation problems, the following detected results are considered tentatively identified and estimated (NJj).

- 1,2,3,4,6,7,8-HpCDD and OCDF in sample 386-S14-059
- 1,2,3,4,6,7,8-HpCDF in sample 386-S14-060
- 1,2,3,6,7,8-HxCDD, 2,3,4,6,7,8-HxCDF, and 2,3,4,7,8-PeCDF in sample 386-S14-063
- 1,2,3,4,7,8-HxCDF in samples 386-S14-058 and 386-S14-061 through 386-S14-064
- 1,2,3,7,8,9-HxCDF in sample 386-S14-062

For a peak to be unambiguously identified as a polychlorinated dibenzo-*p*-dioxin (PCDD) or a polychlorinated dibenzofuran (PCDF), it must meet retention time, signal-to-noise, and ion abundance ratio criteria. Also, the two quantitation ions and the M-[COCl]⁺ ion, the confirmation ion, must be present in the selected ion current profile (SICP). Furthermore, the identification of a peak as a PCDF cannot be made if there is a polychlorinated diphenyl ether (PCDPE) at the same retention time.

In the samples listed above, one or more of these criteria for positive identification were not met. The results for the analytes listed above should be considered as the estimated maximum possible concentration (EMPC) at which PCDD or PCDF isomers may be present in the samples. The results for the samples listed above are considered to be both qualitatively and quantitatively questionable.

Full Validation Criteria for Sample 386-S14-058

III. GC Column Performance Check

- A. The sample chromatographic resolution was within the established window. The sample was analyzed within 12 hours of the associated performance check.

IV. Compound Quantitation and Reported Detection Limits

- A. Sample results were recalculated with the proper dilution factors, weights, volumes, and percent moisture used to calculate the sample results. The target analytes in the sample were correctly quantitated. The reported estimated detection limits (EDLs) were consistent with the contract required reporting limits and reflect any dilutions, weights, volumes, and percent moisture.

V. System Performance

- A. The sample was evaluated for baseline shifts, extraneous peaks, loss of resolution, and peak tailing. No system degradation was noted.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

- A. All analyses were conducted within all specifications of the requested method.

II. Usability

- A. Due to accuracy, identification and quantitation problems, several results for dioxins and furans are qualified. Results for 1,2,3,4,6,7,8-HpCDD and OCDD in one sample are biased low due to zero (0) percent recoveries in the matrix spike/matrix spike duplicate analysis. Results for 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 2,3,4,7,8-PeCDF, and OCDF in one sample and 1,2,3,4,7,8-HxCDF in five samples are qualitatively and quantitatively uncertain due to outlying ion abundance ratio or the presence of PCDE interference.
- B. The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. No data were rejected. Estimated sample results (J) are usable only for limited purposes. Based upon the cursory and full data validation, all other results are considered valid and usable for all purposes. In general, the absence of rejected data and the small number of qualifiers added to the data indicate high usability.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point IR Site 14
Contract Task Order (CTO) No.: 386
Laboratory: Southwest Laboratory of Oklahoma, Inc.
Data Reviewer: Dina David-Bailey, 3J Environmental Services
Review Date: March 25, 2002

Sample Delivery Group (SDG) No.: AAO03

Sample Nos.:	386-S14-058*	386-S14-063
	386-S14-059	386-S14-064
	386-S14-060	
	386-S14-061	
	386-S14-062	

* Full Validation Sample

Matrix: Soil

Collection Date(s): February 22, 2002

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999). In addition, the TtEMI document "Data Validation Guidelines for Non-CLP Organic Analyses" and the document entitled "TtEMI Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (May 2000) were used along with other specified criteria in the EPA method. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. An asterisk (*) indicates cursory validation parameters.

Non-CLP Organic Parameters

- * Method compliance
- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- * Labeled Compound
- * Recovery Standard
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result

Data Validation Qualifier Codes

- e** Matrix spike/laboratory control sample (LCS) recovery exceedance
- j** Other qualifications

TABLE 2
FULL DATA VALIDATION SUMMARY
Sample 386-S14-058

Analysis	GC Column Performance Check	Target Compound List Identification	Compound or Analyte Quantification	Reported Detection Limits	Tentatively Identified Compounds	System Performance	Interference Check Sample	Graphite Furnace Quality Control
Dioxins/Furans	✓	✓	pg. 6	✓	N/A	✓	N/A	N/A

Notes:

✓ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.

N/A indicates the parameter is not applicable to an analysis.

If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.

The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers found are described below.

DATA ASSESSMENT

DIOXINS/FURANS ANALYSIS

I. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A. Due to accuracy problems in the MS/MSD analysis, the following detected results are qualified as estimated (Je).

- 1,2,3,4,6,7,8-HpCDD and OCDD in sample 386-S14-064

The recoveries outside the QC limits are listed below.

<u>Sample ID</u>	<u>Compound</u>	<u>MS/MSD %R</u>	<u>MS/MSD QC Limits</u>
386-S14-064	1,2,3,4,6,7,8-HpCDD	0 / 0	40 – 135%
	OCDD	0 / 0	40 – 135%

The outliers affected only the spiked sample. Detected results for 1,2,3,4,6,7,8-HpCDD and OCDD were biased low.

II. Other Qualifications

A. Due to identification and quantitation problems, the following detected results are qualified as estimated (Jj) and are considered as the estimated maximum possible concentrations (EMPC).

- 1,2,3,4,6,7,8-HpCDD and OCDF in sample 386-S14-059
- 1,2,3,4,6,7,8-HpCDF in sample 386-S14-060
- 1,2,3,6,7,8-HxCDD, 2,3,4,6,7,8-HxCDF, and 2,3,4,7,8-PeCDF in sample 386-S14-063
- 1,2,3,4,7,8-HxCDF in samples 386-S14-058 and 386-S14-061 through 386-S14-064
- 1,2,3,7,8,9-HxCDF in sample 386-S14-062

The target analytes in the samples listed above have met all qualitative identification criteria except for the ion abundance ratio or the presence of polychlorinated diphenyl ether (PCDE) interference at the same retention time as the polychlorinated dibenzofuran (PCDF) peak. The presence of interferences that coelute with target compounds may cause the ion abundance ratio to exceed qualitative identification criteria and result in quantitatively uncertain sample concentrations.

Full Validation Criteria for Sample 386-S14-058

III. GC Column Performance Check

A. The sample chromatographic resolution was within the established window. The sample was analyzed within 12 hours of the associated performance check.

IV. Compound Quantitation and Reported Detection Limits

A. Sample results were recalculated with the proper dilution factors, weights, volumes, and percent moisture used to calculate the sample results. The sample was correctly quantitated. The reported estimated detection limits (EDLs) were consistent with the contract required reporting limits and reflect any dilutions, weights, volumes, and percent moisture.

V. System Performance

A. The sample was evaluated for baseline shifts, extraneous peaks, loss of resolution, and peak tailing. No system degradation was noted.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

- A. All analyses were conducted within all specifications of the requested method.

II. Usability

- A. Due to accuracy and quantitation problems, several results for dioxins and furans are qualified as estimated. Results for 1,2,3,4,6,7,8-HpCDD and OCDD in one sample are biased low due to zero (0) percent recoveries in the matrix spike/matrix spike duplicate analysis. Results for 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 2,3,4,7,8-PeCDF, and OCDF in one sample and 1,2,3,4,7,8-HxCDF in five samples are quantitatively uncertain due to outlying ion abundance ratio or the presence of PCDE interference.
- B. The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. No data were rejected. Estimated sample results (J) are usable only for limited purposes. Based upon the cursory and full data validation, all other results are considered valid and usable for all purposes. In general, the absence of rejected data and the small number of qualifiers added to the data indicate high usability.

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AAO04**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 7/3/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Southwest Laboratory of Oklahoma, Inc., Broken Arrow, Oklahoma

Data Validation Firm: Quantalex, Inc.

Dioxin/Furan Analysis

1. The validation firm used the set of validation qualifier codes specified in the Tetra Tech EM Inc. Laboratory Statement of Work. For CTO 386, the validation qualifier code definitions specified in the Quality Assurance Project Plan (QAPP) for confirmation sampling should be applied. Therefore, the “i” qualifier codes from the validation report (indicating an internal standard problem) have been changed to “e” to correspond to the qualifier code definitions described in the QAPP.

2. A number of sample results were qualified as estimated (“I” or “X”) by the laboratory, without a comment code, for either ion ratios that exceeded the acceptance criteria, or for the presence of interfering ether compounds. The laboratory’s qualifiers have been replaced with “Jh” for these results, to correspond to the qualifier code definitions described in the QAPP.

There were no other modifications to the validation report.

DATA VALIDATION REPORT

Report Date: April 19, 2002
CTO No.: SACA003
SDG No.: AAO04
Site: Alameda Point
Laboratory: Southwest Laboratory of Oklahoma
Data Reviewer: Amy Ballow - QuantaLex, Inc.
Matrix/ Parameter: Polychlorinated Dibenzo Dioxin and Furans by Method 8290
2/Soil Samples: 386-S14-065, 386-S14-066

Cursory data validation was performed on samples 386-S14-065 and 386-S14-066.

I certify that all data validation criteria outlined in the referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA ASSESSMENT
POLYCHLORINATED DIBENZODIOXIN/FURANS by METHOD 8290

Report Date: April 17, 2002
CTO No.: SACA003
SDG No.: AAO04
Site: Alameda Point
Parameter: Polychlorinated Dibenzo Dioxin and Furans by Method 8290
Matrix: 2/Soil
Laboratory: Southwest Laboratory of Oklahoma
Collection Date: March 20, 2002
Samples: 386-S14-065, 386-S14-066

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999). In addition, the PRC Environmental Management Inc. (PRC) documents "PRC Data Validation Guidelines" (March 1997) and "Data Validation Statement of Work" (March 1997) were used along with other specified criteria in EPA methods.

Cursory validation was performed on both samples in accordance with Tetra Tech Data Validation Guidelines. The data were evaluated based on the following parameters:

- * Method Compliance
- * Holding times
- Labeled Compound Recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD)
- * Blank Spike or Laboratory Control Sample (LCS)
- * Blank Contamination
- * Calibrations
- Field Duplicate
- Other Qualifications
- Instrument Resolution and Performance (*full validation only*)
- Target Compound List (TCL) Identification (*full validation only*)
- Compound Quantitation & Detection Limits (*full validation only*)
- System Performance (*full validation only*)
- Overall Assessment

- * All criteria were met for this parameter

Method Compliance

Method 8290 was used to analyze the samples for polychlorinated dibenzo dioxin and furans.

Holding Times

Analytical holding times were assessed to determine whether the holding time requirements were met by the laboratory. Both samples were extracted within 30 days of the sample collection and sample extracts were analyzed within 45 days of the extraction date.

Labeled Compound Recoveries

Due to labeled compound problems, the following detected and nondetected results were qualified as estimated (Ji/UJi):

- OCDD and OCDF in sample 386-S14-065

The following labeled compound recovery was below the QC limits:

<u>Sample ID</u>	<u>Labeled Compound</u>	<u>%R</u>	<u>QC Limits</u>
386-S14-065	13C-OCDD	33%	40-135%

Low recoveries indicate that detected and nondetected results may be biased low.

According to the case narrative, sample 386-S14-065 was re-extracted and re-analyzed because of the low labeled compound recovery listed above. The re-analyses reported more labeled compounds outside criteria. As a result, the laboratory only submitted the original analyses in this SDG for the final results.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Matrix spike and matrix spike duplicate (MS/MSD) analyses were not required. The laboratory performed LSD/LSCD analyses and all RPDs were within criteria.

Blank Spike or Laboratory Control Sample (LCS)

Laboratory control samples were analyzed at the required frequency. Additionally, a laboratory control sample duplicate analysis was performed. All LCS results were within laboratory QC limits.

Blank Contamination

Method blanks were analyzed at the required frequency. The method blank associated with the original analyses of both samples reported a detected result for OCDD at 0.33 ng/Kg. No action was necessary, as the associated sample results were greater than five times the blank contamination.

Calibrations

All initial calibration criteria were met. Initial calibration percent relative standard deviations (%RSDs) were less than 20% (30% for the labeled compounds).

All continuing calibration percent differences (%Ds) were less than 20% (30% for the labeled compounds), with the exception of 37-Cl-2,3,7,8-TCDD. This compound was not used in the quantitation of the target compounds and no action was taken.

The following continuing calibrations had percent differences (%Ds) > 20%:

<u>Calibration Date</u>	<u>Compound</u>	<u>%D</u>
03/28/02 (0613)	37-Cl-2,3,7,8-TCDD	99.2

Although isotopic ratios for the calibration standards were provided in the raw data, the QC limits for these ratios were not provided or evaluated for this cursory evaluation.

Field Duplicates

Field duplicate samples were not provided with this SDG.

Other Qualifications

No other qualifications were required because the sample results were either greater than the reporting limit or nondetected.

Instrument Resolution and Performance *(full validation only)*

Full validation was not performed.

Target Compound List (TCL) Identification *(full validation only)*

Full validation was not performed.

Compound Quantitation and Reported Detection Limits *(full validation only)*

Full validation was not performed.

System Performance *(full validation only)*

Full validation was not performed.

Overall Assessment

Due to a low labeled compound recovery, the results for OCDD and OCDF in one sample were qualified as estimated.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were estimated (J) are usable for limited purposes only. Sample results that were found to be rejected (R) are unusable for any purpose. Based upon the full data validation, all other results are considered valid and useable for all purposes.

DATA ASSESSMENT

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated non-detected result
- J** Estimated detected result
- R** Rejected result
- NJ** Tentatively Identified Compound (TIC)

Data Validation Qualifier Codes

- a** Surrogate recovery exceedance
- b** Laboratory method blank and common blank contamination
- c** Calibration exceedance
- d** Duplicate precision exceedance
- e** Matrix spike/ Laboratory Control Sample (LCS) recovery exceedance
- f** Field blank contamination
- g** Quantification below reporting limit
- h** Holding time exceedance
- i** Internal standard exceedance
- j** Other qualifications

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AKP01**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 6/28/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Applied Physics and Chemistry Laboratory, Chino, California

Data Validation Firm: Environmental Data Services, Inc.

CLP Metals Analysis

1. The validation firm used the set of validation qualifier codes specified in the Tetra Tech EM Inc. Laboratory Statement of Work. For CTO 386, the validation qualifier code definitions specified in the Quality Assurance Project Plan (QAPP) for confirmation sampling should be applied. Therefore, the “j” qualifier codes from the validation report (indicating a spectral interference problem) have been changed to “h” to correspond to the qualifier code definitions described in the QAPP.

Hexavalent Chromium Analysis

1. The “Rh” and “Jh” qualifiers for hexavalent chromium have been removed from the validation report. The validator applied these qualifiers to indicate that the holding time for hexavalent chromium in soil had been exceeded, however EPA SW846, Chapter 3, Table 3-1 (December, 1996) identifies a holding time for hexavalent chromium in soil of one month to extraction, and 4 days after extraction. These holding times were met, allowing the data to be reported unqualified.

There were no other modifications to the validation report.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point
Contract Task Order (CTO) No.: CTO-386
Laboratory: Applied Physics & Chemistry Laboratory, Chino, CA
Data Reviewer: Christine Garvey, Environmental Data Services, Inc.
Review Date: January 29, 2002

Sample Delivery Group (SDG) No.: AKP01 (01-7872)

Sample Nos.:	386-S05-001*	386-S05-002*	386-S05-003	386-S05-004
	386-S05-005	386-S05-006	386-S05-007	386-S05-008
	386-S05-009	386-S05-010	386-S05-011	386-S05-012
	386-S05-013	386-S05-014	386-S05-015	386-S05-016
	386-S05-017*	386-S05-018*	386-S05-019	386-S05-020

* Full Validation Sample

Matrix: Soil

Collection Date(s): December 21 and 26, 2001

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review" (February 1994). In addition, the PRC documents "Data Validation Guidelines for CLP Inorganic Analyses," and "Data Validation Guidelines for Non-CLP Organic Analyses," (September 1996), and the document entitled "PRC Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (June 1995) were used along with other specified criteria in EPA methods. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. Cursory validation parameters are indicated by an asterisk (*).

CLP Organic Parameters

- * Holding times
- GC/MS instrument performance check
- * Initial and continuing calibrations
- * Blanks
- * Surrogate recovery
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Internal standard performance
- Target compound identification
- Tentatively identified compounds
- Compound quantitation
- Reported detection limits
- System performance
- * Overall assessment of data for the SDG

CLP Inorganic Parameters

- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- ICP interference check sample
- GFAA quality control
- * ICP serial dilution
- Sample result verification
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

Non-CLP Organic and Inorganic Parameters

- * Method compliance
- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- * Surrogate recovery
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result
- NJ** Tentatively Identified Compound (TIC)

Data Validation Qualifier Codes

- a** Surrogate recovery exceedance
- b** Laboratory method blank and common blank contamination
- c** Calibration exceedance
- d** Duplicate precision exceedance
- e** Matrix spike/laboratory control sample (LCS) recovery exceedance
- f** Field blank contamination
- g** Quantification below reporting limit
- h** Holding time exceedance
- i** Internal standard exceedance
- j** Other qualifications

**TABLE 1
CURSORY DATA VALIDATION SUMMARY**

Analysis	Holding Times	Surrogates	MS/MSD	Matrix Duplicates	LCS	Blanks	Calibrations	Internal Standards	Field Duplicates	Other
Metals	✓	NA	✓	✓	✓	Pg. 6	✓	NA	NA	✓
Hexavalent Chromium	Pg. 8	NA	✓	NA	✓	✓	✓	NA	NA	✓

Notes:

✓ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.

N/A indicates the parameter is not applicable to an analysis.

If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.

The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers are described in the text.

TABLE 2
FULL DATA VALIDATION SUMMARY
Sample(s) 386-S05-001, 386-S05-002, 386-S05-017, 386-S05-018

Analysis	GC/MS Tuning	Target Compound List Identification	Compound or Analyte Quantification	Reported Detection Limits	Tentatively Identified Compounds	System Performance	Interference Check Sample	Graphite Furnace Quality Control
Metals	NA	✓	✓	✓	NA	✓	Pg. 7	NA
Hexavalent Chromium	NA	✓	✓	✓	NA	✓	NA	NA

Notes:

✓ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.

N/A indicates the parameter is not applicable to an analysis.

If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.

The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers found are described below.

DATA ASSESSMENT
METALS ANALYSES (Cr, Cd, Pb)

I. Holding Times

A. All criteria were met.

II. Calibrations

A. All criteria were met.

III. Blank Contamination

A. Due to calibration and method blank contamination, the following results are considered nondetected (UJb).

- Cadmium in samples 386-S05-001, 386-S05-003 and 386-S05-020.

The following metals were detected in the associated calibration and method blanks at the concentrations noted below.

<u>Analyte</u>	<u>Blank ID</u>	<u>Concentration, µg/L</u>
Cadmium	ICB	2.07

Detected results less than 5x the maximum blank contamination were qualified.

IV. Matrix Spike (MS)

A. All criteria were met.

V. Matrix Duplicate

A. All criteria were met.

VI. Laboratory Control Sample (LCS)

A. All criteria were met.

VII. ICP Serial Dilution

A. All criteria were met.

VIII. Field Duplicate

A. None.

IX. Other Qualifications

A. None.

Full Validation Criteria for Samples 386-S05-001, 386-S05-002, 386-S05-017 and 386-S05-018

X. Analyte Quantitation and Reported Detection Limits

A. Sample results were recalculated, with the proper dilution factors, weights, volumes, and percent moisture used to calculate the sample results. The samples were found to be correctly quantitated. The reported detection limits were consistent with the contract required report limits and reflect any dilutions, weights, volumes, and percent moisture.

XI. Graphite Furnace Atomic Absorption (GFAA) Analysis

A. Not applicable.

XII. ICP Interference Check Sample

A. Due to spectral interferences, the following detected results are qualified as estimated (Jj).

- Cadmium and lead in sample 386-S05-001.
- Lead in samples 386-S05-002, 386-S05-017 and 386-S05-018.

Positive results greater than the IDL for analytes that should not be present were detected in the ICSA solution. Further evaluation of the sample indicates that spectral interferences may exist due to a high concentration of iron in the samples.

HEXAVALENT CHROMIUM ANALYSIS

I. Holding Times

A. Due to grossly exceeded holding times, the following detected results are estimated and the nondetected results are rejected (Jh/Rh).

- Hexavalent chromium in samples 386-S05-004, 386-S05-005, 386-S05-006, 386-S05-007, 386-S05-008, 386-S05-009, 386-S05-010, 386-S05-011, 386-S05-012, 386-S05-016, 386-S05-017, 386-S05-018 and 386-S05-019.

The extraction holding time of 3 days was exceeded by 7 days.

B. Due to holding time problems, the following detected and nondetected results are qualified as estimated (Jh/UJh).

- Hexavalent chromium in samples 386-S05-001, 386-S05-002, 386-S05-003, 386-S05-013, 386-S05-014, 386-S05-015 and 386-S05-020.

The extraction holding time of 3 days was exceeded by 2 days.

II. Calibrations

A. All criteria were met.

III. Blank Contamination

A. All criteria were met.

IV. MS/MSD

A. All criteria were met.

V. Laboratory Control Sample (LCS)

A. All criteria were met.

VI. Field Duplicate

A. None.

VII. Other Qualifications

- A. None.

Full Validation Criteria for Samples 386-S05-001, 386-S05-002, 386-S05-017 and 386-S05-018

VIII. Compound Quantitation and Reported Detection Limits

- A. Sample results were recalculated, with the proper dilution factors, weights, volumes, and percent moisture used to calculate the sample results. The samples were found to be correctly quantitated. The reported detection limits were consistent with the contract required report limits and reflect any dilutions, weights, volumes, and percent moisture.

IX. System Performance

- A. The samples were evaluated for baseline shifts, extraneous peaks, loss of resolution, and peak tailing. No system degradation was noted.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

- A. All analyses were conducted within all specifications of the requested methods.

II. Usability

- A. Due to severe holding time problems in the hexavalent chromium analysis, hexavalent chromium was qualified (J/R) in thirteen samples.
- B. Due to blank contamination in the metals analysis, one compound was qualified as nondetected in three samples.
- C. Due to ICP spectral interference in the metals analysis, one or two compounds were qualified as estimated in four samples.
- D. Due to holding time problems in the hexavalent chromium analysis, hexavalent chromium was qualified as estimated in seven samples.
- E. Detected results reported below the CRQL were qualified as estimated.
- F. The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the cursory and full data validation all other results are considered valid and usable for all purposes. In general, the absence of rejected data and the small number of qualifiers added to the data indicate high usability.

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AKP02**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 6/28/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Applied Physics and Chemistry Laboratory, Chino, California

Data Validation Firm: Environmental Data Services, Inc.

CLP Metals Analysis

1. The validation firm used the set of validation qualifier codes specified in the Tetra Tech EM Inc. Laboratory Statement of Work. For CTO 386, the validation qualifier code definitions specified in the Quality Assurance Project Plan (QAPP) for confirmation sampling should be applied. Therefore, the “j” qualifier codes from the validation report (indicating a serial dilution problem) have been changed to “h” to correspond to the qualifier code definitions described in the QAPP.

There were no other modifications to the validation report.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point
Contract Task Order (CTO) No.: CTO-386
Laboratory: Southwest Laboratory of Oklahoma, Broken Arrow, OK
Data Reviewer: Nancy Weaver, Environmental Data Services, Inc.
Review Date: March 7, 2002

Sample Delivery Group (SDG) No.: AKP02

Sample Nos.: 386-S05-021* 386-S05-022* 386-S05-023 386-S05-024
 386-S05-025 386-S05-026 386-S05-027

* Full Validation Sample

Matrix: Soil

Collection Date(s): January 21, 2002

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review" (February 1994). In addition, the PRC document "Data Validation Guidelines for CLP Inorganic Analyses," and the document entitled "PRC Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (June 1995) were used along with other specified criteria in EPA methods. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. Cursory validation parameters are indicated by an asterisk (*).

CLP Organic Parameters

- * Holding times
- GC/MS instrument performance check
- * Initial and continuing calibrations
- * Blanks
- * Surrogate recovery
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Internal standard performance
- Target compound identification
- Tentatively identified compounds
- Compound quantitation
- Reported detection limits
- System performance
- * Overall assessment of data for the SDG

CLP Inorganic Parameters

- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- ICP interference check sample
- GFAA quality control
- * ICP serial dilution
- Sample result verification
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

Non-CLP Organic and Inorganic Parameters

- * Method compliance
- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- * Surrogate recovery
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result
- NJ** Tentatively Identified Compound (TIC)

Data Validation Qualifier Codes

- a** Surrogate recovery exceedance
- b** Laboratory method blank and common blank contamination
- c** Calibration exceedance
- d** Duplicate precision exceedance
- e** Matrix spike/laboratory control sample (LCS) recovery exceedance
- f** Field blank contamination
- g** Quantification below reporting limit
- h** Holding time exceedance
- i** Internal standard exceedance
- j** Other qualifications

**TABLE 1
CURSORY DATA VALIDATION SUMMARY**

Analysis	Holding Times	Surrogates	MS/MSD	Matrix Duplicates	LCS	Blanks	Calibrations	Internal Standards	Field Duplicates	Other
Cadmium	✓	NA	✓	✓	✓	✓	✓	NA	NA	Pg. 6

Notes:

✓ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.

N/A indicates the parameter is not applicable to an analysis.

If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.

The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers are described in the text.

TABLE 2
FULL DATA VALIDATION SUMMARY
Sample(s) 386-S05-021, 386-S05-022

Analysis	GC/MS Tuning	Target Compound List Identification	Compound or Analyte Quantification	Reported Detection Limits	Tentatively Identified Compounds	System Performance	Interference Check Sample	Graphite Furnace Quality Control
Cadmium	NA	✓	✓	✓	NA	✓	✓	NA

Notes:

✓ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.

N/A indicates the parameter is not applicable to an analysis.

If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.

The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers found are described below.

DATA ASSESSMENT

CADMIUM ANALYSIS

I. Holding Times

A. All criteria were met.

II. Calibrations

A. All criteria were met.

III. Blank Contamination

A. All criteria were met.

IV. Matrix Spike (MS)

A. All criteria were met.

V. Matrix Duplicate

A. All criteria were met.

VI. Laboratory Control Sample (LCS)

A. All criteria were met.

VII. ICP Serial Dilution

A. Due to ICP serial dilution problems, the following detected results are qualified as estimated (Jj).

- Cadmium in all samples.

The percent difference between the original sample result and the serial dilution result was outside the QC limits of 10% for analyte concentrations greater than 50x the IDL as shown below.

<u>Sample ID</u>	<u>Analyte</u>	<u>Original Concentration</u>	<u>50x IDL</u>	<u>%D</u>
386-S05-021	Cadmium	7.02	5.5	93.5%

VIII. Field Duplicate

A. None.

IX. Other Qualifications

A. None.

Full Validation Criteria for Samples 386-S05-021 and 386-S05-022

X. Analyte Quantitation and Reported Detection Limits

A. Sample results were recalculated, with the proper dilution factors, weights, volumes, and percent moisture used to calculate the sample results. The samples were found to be correctly quantitated. The reported detection limits were consistent with the contract required report limits and reflect any dilutions, weights, volumes, and percent moisture.

XI. Graphite Furnace Atomic Absorption (GFAA) Analysis

A. Not applicable.

XII. ICP Interference Check Sample

A. All criteria were met.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

A. All analyses were conducted within all specifications of the requested methods.

II. Usability

A. Due to an ICP serial dilution problem in the cadmium analysis, cadmium was qualified as estimated in all samples.

B. The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the cursory and full data validation all other results are considered valid and usable for all purposes. In general, the absence of rejected data and the small number of qualifiers added to the data indicate high usability.

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AKP03**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 7/1/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Applied Physics and Chemistry Laboratory, Chino, California

Data Validation Firm: 3J Environmental Services

There were no modifications to the validation report.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point IR Site 5
Contract Task Order (CTO) No.: 386
Laboratory: Applied Physics & Chemistry Laboratory (APCL)
Data Reviewer: Dina David-Bailey, 3J Environmental Services
Review Date: March 20, 2002

Sample Delivery Group (SDG) No.: AKP03

Sample Nos.: 386-S05-028 386-S05-037
 386-S05-030 386-S05-039
 386-S05-031* 386-S05-040
 386-S05-034
 386-S05-036

* Full Validation Sample

Matrix: Soil

Collection Date(s): February 22, 25, and 26, 2002

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review" (February 1994). In addition, the TtEMI document "Data Validation Guidelines for CLP Inorganic Analyses" and the document entitled "TtEMI Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (May 2000) were used along with other specified criteria in the EPA method. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. An asterisk (*) indicates cursory validation parameters.

CLP Inorganic Parameters

- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- ICP interference check sample
- * ICP serial dilution
- Sample result verification
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result

Data Validation Qualifier Codes

- b** Laboratory method blank contamination

DATA ASSESSMENT

INDIVIDUAL METALS (CADMIUM) ANALYSIS

I. Blank Contamination

A. Due to calibration blank contamination, the following results are considered nondetected (UJb).

- Cadmium in samples 386-S05-028, 386-S05-039, and 386-S05-040

The following analyte was detected in the associated calibration blanks at the highest concentration noted below.

<u>Analyte</u>	<u>Blank ID</u>	<u>Concentration</u>
Cadmium	CCB1	0.72 µg/L (0.14 mg/kg)

Detected results less than 5x the maximum blank contamination were qualified.

Full Validation Criteria for Sample 386-S05-031

II. Analyte Quantitation and Reported Detection Limits

A. Sample results were recalculated, with the proper dilution factors, weights, volumes, and percent moisture used to calculate the sample results. The target analyte in the samples was correctly quantitated. The reported detection limits were consistent with the contract required reporting limit and reflect any dilutions, weights, volumes, and percent moisture.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

- A. All analyses were conducted within all specifications of the requested method.

II. Usability

- A. Due to laboratory blank contamination, three results for cadmium were qualified as nondetected and estimated.
- B. The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. No data were rejected. Estimated sample results (J) are usable only for limited purposes. Based upon the cursory and full data validation, all other results are considered valid and usable for all purposes. In general, the absence of rejected data and the small number of qualifiers added to the data indicate high usability.

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AKP04**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 7/1/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Applied Physics and Chemistry Laboratory, Chino, California

Data Validation Firm: 3J Environmental Services

There were no modifications to the validation report.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point IR Site 5
Contract Task Order (CTO) No.: 386
Laboratory: Applied Physics & Chemistry Laboratory (APCL)
Data Reviewer: Dina David-Bailey, 3J Environmental Services
Review Date: March 21, 2002

Sample Delivery Group (SDG) No.: AKP04

Sample No.: 386-S05-038

Matrix: Soil

Collection Date: February 26, 2002

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review" (February 1994). In addition, the TtEMI document "Data Validation Guidelines for CLP Inorganic Analyses" and the document entitled "TtEMI Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (May 2000) were used along with other specified criteria in the EPA method. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. An asterisk (*) indicates cursory validation parameters.

CLP Inorganic Parameters

- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- ICP interference check sample
- * ICP serial dilution
- Sample result verification
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result

Data Validation Qualifier Codes

- b** Laboratory method blank contamination

DATA ASSESSMENT

INDIVIDUAL METALS (CADMIUM) ANALYSIS

I. Blank Contamination

A. Due to calibration blank contamination, the following result is considered nondetected (UJb).

- Cadmium in sample 386-S05-038

The following analyte was detected in the associated calibration blanks at the highest concentration noted below.

<u>Analyte</u>	<u>Blank ID</u>	<u>Concentration</u>
Cadmium	ICB	1.36 µg/L (0.27 mg/kg)

Detected results less than 5x the maximum blank contamination were qualified.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

- A. All analyses were conducted within all specifications of the requested method.
- B. Sample ID 386-S05-038 was incorrectly listed as 385-S05-038 on the chain-of-custody form. The electronic and hardcopy deliverables have been corrected to reflect the change.

II. Usability

- A. Due to laboratory blank contamination, one result for cadmium was qualified as nondetected and estimated.
- B. The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. No data were rejected. Estimated sample results (J) are usable only for limited purposes. In general, the absence of rejected data and the small number of qualifiers added to the data indicate high usability.

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AKP05**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 7/1/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Applied Physics and Chemistry Laboratory, Chino, California

Data Validation Firm: 3J Environmental Services

There were no modifications to the validation report.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point Site 5
Contract Task Order (CTO) No.: 386
Laboratory: Applied Physics & Chemistry Laboratory (APCL)
Data Reviewer: Dina David-Bailey, 3J Environmental Services
Review Date: April 11, 2002

Sample Delivery Group (SDG) No.: AKP05

Sample Nos.: 386-S05-041 386-S05-046
 386-S05-042 386-S05-047
 386-S05-043
 386-S05-044
 386-S05-045

Matrix: Soil and Water

Collection Date(s): March 20, 2002

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review" (February 1994). In addition, the TtEMI documents "Data Validation Guidelines for CLP Inorganic Analyses," "Data Validation Guidelines for Non-CLP Inorganic and Physical Analyses" (August 2001), and the document entitled "TtEMI Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (May 2000) were used along with other specified criteria in the EPA methods. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. An asterisk (*) indicates cursory validation parameters.

CLP Inorganic Parameters

- * Holding times
- * Initial and continuing calibrations
- * Blanks
- * Matrix spike
- * Laboratory control sample or blank spike *
- * Field duplicates
- * Matrix duplicates
- ICP interference check sample
- GFAA quality control
- * ICP serial dilution
- Sample result verification
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

Non-CLP Inorganic Parameters

- * Method compliance
- * Holding times
- * Initial and continuing calibrations
- * Blanks
- Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Matrix duplicates
- * Surrogate recovery
- Analyte quantitation
- Reported detection limits
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result

Data Validation Qualifier Codes

None applied.

**TABLE 1
CURSORY DATA VALIDATION SUMMARY**

Analysis	Holding Times	Surrogates	MS/MSD	Matrix Duplicates	LCS	Blanks	Calibrations	Internal Standards	Field Duplicates	Other
Individual Metals	✓	N/A	✓	✓	✓	✓	✓	N/A	N/A	✓
Cyanide	✓	N/A	✓	N/A	✓	✓	✓	N/A	N/A	✓
Cr ⁺⁶	✓	N/A	✓	N/A	✓	✓	✓	N/A	N/A	✓
pH	✓	N/A	N/A	✓	N/A	N/A	✓	N/A	N/A	✓

Notes:

- ✓ indicates that all quality control criteria were met for the parameter as specified in the prescribed methods and data validation guidelines.
- N/A indicates the parameter is not applicable to an analysis.
- If criteria were not met and the data were qualified, a page number is indicated where the qualification is detailed.
- The data were evaluated for all validation criteria and were found to be in control except where noted. Any outliers are described in the text.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

- A. All analyses were conducted within all specifications of the requested methods.
- B. No matrix spike analysis on the water samples was performed for total chromium.

II. Usability

- A. The quality control criteria reviewed were met and are considered acceptable. Based upon the cursory data validation, all results are considered valid and usable for all purposes.

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AKP06**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 7/1/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Applied Physics and Chemistry Laboratory, Chino, California

Data Validation Firm: 3J Environmental Services

Polynuclear Aromatic Hydrocarbons (PAH) Analysis

1. The validation firm used the set of validation qualifier codes specified in the Tetra Tech EM Inc. Laboratory Statement of Work. For CTO 386, the validation qualifier code definitions specified in the Quality Assurance Project Plan (QAPP) for confirmation sampling should be applied. Therefore, the “e” qualifier codes from the validation report (indicating a laboratory control sample problem) have been changed to “h” to correspond to the qualifier code definitions described in the QAPP.
2. Samples 386-S14-043 and 386-S14-054 were extracted and analyzed past the recommended holding time, at the request of Tetra Tech EM Inc. Although the data for these samples are qualified as rejected due to the holding time issue, the data will be used to evaluate the presence of PAHs at site 14.

There were no other modifications to the validation report.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point Site 14
Contract Task Order (CTO) No.: 386
Laboratory: Applied Physics & Chemistry Laboratory (APCL)
Data Reviewer: Dina David-Bailey, 3J Environmental Services
Review Date: April 29, 2002

Sample Delivery Group (SDG) No.: AKP06

Sample Nos.: 386-S14-043
386-S14-054
386-S14-065*
386-S14-066

* Full Validation Sample

Matrix: Soil

Collection Date(s): January 18, and March 20, 2002

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999). In addition, the TtEMI document "Data Validation Guidelines for Non-CLP Organic Analyses" and the document entitled "TtEMI Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (May 2000) were used along with other specified criteria in the EPA method. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. An asterisk (*) indicates cursory validation parameters.

Non-CLP Organic Parameters

- * Method Compliance
- * Holding times
- GC/MS instrument performance check
- * Initial and continuing calibrations
- * Blanks
- * Surrogate recovery
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Internal standard performance
- Target compound identification
- Compound quantitation
- Reported detection limits
- System performance
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result

Data Validation Qualifier Codes

- e** Matrix spike/laboratory control sample (LCS) recovery exceedance
- h** Holding time exceedance
- g** Quantification below reporting limit

DATA ASSESSMENT

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH) ANALYSIS

I. Holding Times

A. Due to grossly exceeded holding times, the following nondetected results are rejected (Rh).

- All of the PAHs in samples 386-S14-043 and 386-S14-054

The extraction holding time of 14 days was exceeded by 60 days.

II. Blank Spike or Laboratory Control Sample (LCS)

A. Due to a problem in the LCS analysis, the following detected and nondetected results are qualified as estimated (Je/UJe).

- Acenaphthene and benzo(a)pyrene in samples 386-S14-065 and 386-S14-066

The results obtained in the analysis of the LCS were not within the control limits as shown below.

<u>LCS ID</u>	<u>Compound</u>	<u>%R</u>	<u>QC Limits</u>
SBSPK01	Acenaphthene	58/59	60-140%
	Benzo(a)pyrene	57/57	60-140%

Detected results may be biased low and false nondetects may have been reported.

Since the nondetected results for acenaphthene and benzo(a)pyrene in samples 386-S14-043 and 386-S14-054 were previously rejected due to holding time problems, no further qualification due to the LCS problem is warranted.

III. Other Qualifications

A. The following results are qualified as estimated (Jg).

- All PAH detected results reported below the reporting limit (RL)

Detected results reported below the RL are considered to be qualitatively acceptable, but quantitatively unreliable due to the uncertainty in analytical precision near the limit of detection.

Full Validation Criteria for Sample 386-S14-065

IV. GC/MS Tuning

- A. The ion abundance criteria were met for the decafluorotriphenylphosphine (DFTPP) GC/MS performance checks. The sample was analyzed within 12 hours of the associated performance check.

V. Target Compound List (TCL) Identification

- A. The relative retention times, mass spectra, and peak identifications of the samples were evaluated. Target compound identification was considered to be correct.

VI. Compound Quantitation and Reported Detection Limits

- A. Sample results were recalculated, with the proper dilution factors, weights, volumes, and percent moisture used to calculate the sample results. The target analytes in the sample were correctly quantitated. The reported detection limits were consistent with the contract required reporting limits and reflect any dilutions, weights, volumes, and percent moisture.

VII. System Performance

- A. The samples were evaluated for reconstructed ion chromatogram (RIC) baseline shifts, extraneous peaks, loss of resolution, and peak tailing. No system degradation was noted.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

- A. All analyses were conducted within all specifications of the requested method.

II. Usability

- A. Due to holding time problems in the PAH analysis, results for all of the target compounds in samples 386-S14-043 and 386-S14-054 were rejected. Since the extraction holding time was grossly exceeded, false negatives may have been reported.
- B. Due to accuracy problems, several sample results were qualified as estimated in the PAH analysis. Two results for acenaphthene and benzo(a)pyrene were estimated due to low LCS recoveries.
- C. The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Rejected sample results (R) are unusable for all purposes. Estimated sample results (J) are usable only for limited purposes. Based upon the cursory and full data validation, all other results are considered valid and usable for all purposes. In general, the high number of qualifications made to the data limits the usability of the data.

**DATA VALIDATION REPORT ADDENDUM
MODIFICATION TO THE REPORT
AKP07**

Prepared by: John Swanson, Tetra Tech EM, Inc.

Date: 7/1/02

Site Name/CTO Number: Alameda Point/CTO G0069-386.B.01.05.01

Laboratory: Applied Physics and Chemistry Laboratory, Chino, California

Data Validation Firm: 3J Environmental Services

Polynuclear Aromatic Hydrocarbons (PAH) Analysis

1. Sample 386-S14-018 was extracted and analyzed past the recommended holding time, at the request of Tetra Tech EM Inc. Although the data for this sample are qualified as rejected due to the holding time issue, the data will be used to evaluate the presence of PAHs at site 14.

There were no other modifications to the validation report.

Tetra Tech EM Inc.
DATA VALIDATION REPORT

Site: Alameda Point Site 14
Contract Task Order (CTO) No.: 386
Laboratory: Applied Physics & Chemistry Laboratory (APCL)
Data Reviewer: Dina David-Bailey, 3J Environmental Services
Review Date: April 29, 2002

Sample Delivery Group (SDG) No.: AKP07

Sample Nos.: 386-S14-018

Matrix: Soil

Collection Date(s): December 17, 2001

The data were qualified according to the U.S. Environmental Protection Agency (EPA) document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999). In addition, the TtEMI document "Data Validation Guidelines for Non-CLP Organic Analyses" and the document entitled "TtEMI Comprehensive Long-term Environmental Action Navy II Analytical Services Statement of Work" (May 2000) were used along with other specified criteria in the EPA method. Data validation requirements are presented below.

I certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

Certified by

DATA VALIDATION REQUIREMENTS

Full validation includes all parameters listed below. An asterisk (*) indicates cursory validation parameters.

Non-CLP Organic Parameters

- * Method Compliance
- * Holding times
- GC/MS instrument performance check
- * Initial and continuing calibrations
- * Blanks
- * Surrogate recovery
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample or blank spike
- * Field duplicates
- * Internal standard performance
- Target compound identification
- Compound quantitation
- Reported detection limits
- System performance
- * Overall assessment of data for the SDG

DATA VALIDATION QUALIFIERS AND CODES

Data Validation Qualifiers

- UJ** Estimated nondetected result
- J** Estimated detected result
- R** Rejected result

Data Validation Qualifier Codes

- h** Holding time exceedance
- g** Quantification below reporting limit

DATA ASSESSMENT

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH) ANALYSIS

I. Holding Times

A. Due to grossly exceeded holding time, the following detected results are estimated and the nondetected results are rejected (Jh/Rh).

- All of the PAHs in sample 386-S14-018

The extraction holding time of 14 days was exceeded by 92 days.

II. Other Qualifications

A. The following results are qualified as estimated (Jg).

- All PAH detected results reported below the reporting limit (RL)

Detected results reported below the RL are considered to be qualitatively acceptable, but quantitatively unreliable due to the uncertainty in analytical precision near the limit of detection.

III. Laboratory Control Sample (LCS)

A. The results obtained in the analysis of the LCS were not within the control limits as shown below.

<u>LCS ID</u>	<u>Compound</u>	<u>%R</u>	<u>QC Limits</u>
SBSPK01	Acenaphthene	58/59	60-140%
	Benzo(a)pyrene	57/57	60-140%

Since the nondetected results for acenaphthene and benzo(a)pyrene in sample 386-S14-018 were previously rejected due to a holding time problem, no further qualification due to the LCS problem is warranted.

OVERALL ASSESSMENT OF DATA

I. Method Compliance and Additional Comments

- A. All analyses were conducted within all specifications of the requested method.

II. Usability

- A. Due to a holding time problem in the PAH analysis, nondetected results for most of the target compounds in sample 386-S14-018 were rejected. Since the extraction holding time was grossly exceeded, false negatives may have been reported.
- B. Due to a holding time problem in the PAH analysis, detected results for fluorene, phenanthrene, and pyrene in sample 386-S14-018 were estimated. Since the extraction holding time was grossly exceeded, detected results may be considered biased low.
- C. The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Rejected sample results (R) are unusable for all purposes. Estimated sample results (J) are usable only for limited purposes. Based upon the cursory data validation, all other results are considered valid and usable for all purposes. In general, the high number of qualifications applied to the data limits the usability of the data.

APPENDIX D

**GLOSSARY OF DATA QUALIFIERS AND COMMENT CODES FOR ALAMEDA POINT
ALAMEDA, CALIFORNIA**

(One Page)

DATA QUALIFIERS*

- U - Indicates an analysis for the compound, but no detection above the concentration listed. The value listed is the sample quantitation limit.
- J - Indicates an estimated concentration value. The result is considered to be qualitatively acceptable, but quantitatively unreliable.
- UJ - Indicates an estimated quantitation limit. The compound was analyzed, but was considered to be non-detected.
- R - Indicates that data are unusable (the compound may or may not be present). Resampling and reanalysis is necessary for verification.

The absence of a qualifier indicates that data are acceptable both qualitatively and quantitatively.

COMMENT CODES

- a - Surrogate spike recovery problems
- b - Blank contamination problems
- c - MS recovery problems
- d - Duplicate (precision) problems
- e - Internal standard problems
- f - Calibration problems
- g - Quantification below the reporting limit
- h - Other problems, refer to data validation narrative
- p - Greater than 25 percent difference between columns
- y - Resemblance of a fuel pattern but does not match the standards
- z - No fuel pattern resemblance

* U.S. Environmental Protection Agency. 1999a. "Contract Laboratory Program National Functional Guidelines for Organic Data Review."

ATTACHMENT A
LABORATORY ACCURACY AND PRECISION GOALS FOR ALAMEDA POINT
ALAMEDA, CALIFORNIA

(3 Pages)

TABLE 5a

**PRECISION AND ACCURACY FOR
POLYCHLORINATED BIPHENYLS
U. S. ENVIRONMENTAL PROTECTION AGENCY METHOD 8082
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 1)**

Analyte	Water		Soil	
	% Recovery	RPD	% Recovery	RPD
Aroclors 1016/1260	50 to 150	35	50 to 150	35
Tetrachloro-m-xylene	30 to 150 ^a	NA	30 to 150 ^a	NA
Decachlorobiphenyl	30 to 150 ^a	NA	30 to 150 ^a	NA

Notes:

- ^a These limits are advisory only.
- % Percent
- RPD Relative percent difference
- NA Not applicable, analyte is a surrogate.

TABLE 5b

**PRECISION AND ACCURACY FOR
DIOXINS AND FURANS
U. S. ENVIRONMENTAL PROTECTION AGENCY METHOD 8290
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 1)**

Analyte	Water		Soil	
	%Recovery	RPD	%Recovery	RPD
2,3,7,8-Tetrachlorodibenzofuran	60 to 140	20	60 to 140	20
1,2,3,7,8-Pentachlorodibenzofuran	60 to 140	20	60 to 140	20
2,3,4,7,8-Pentachlorodibenzofuran	60 to 140	20	60 to 140	20
1,2,3,4,7,8-Hexachlorodibenzofuran	60 to 140	20	60 to 140	20
1,2,3,6,7,8-Hexachlorodibenzofuran	60 to 140	20	60 to 140	20
1,2,3,7,8,9-Hexachlorodibenzofuran	60 to 140	20	60 to 140	20
2,3,4,6,7,8-Hexachlorodibenzofuran	60 to 140	20	60 to 140	20
1,2,3,4,6,7,8-Heptachlorodibenzofuran	60 to 140	20	60 to 140	20
1,2,3,4,7,8,9-Heptachlorodibenzofuran	60 to 140	20	60 to 140	20
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	60 to 140	20	60 to 140	20
2,3,7,8-Tetrachlorodibenzo-p-dioxin	60 to 140	20	60 to 140	20
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	60 to 140	20	60 to 140	20
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	60 to 140	20	60 to 140	20
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	60 to 140	20	60 to 140	20
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	60 to 140	20	60 to 140	20
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	60 to 140	20	60 to 140	20
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	60 to 140	20	60 to 140	20
¹³ C-2,3,7,8-Tetrachlorodibenzo-p-dioxin	40 to 135	NA	40 to 135	NA
¹³ C-2,3,7,8-Tetrachlorodibenzofuran	40 to 135	NA	40 to 135	NA
¹³ C-1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40 to 135	NA	40 to 135	NA
¹³ C-1,2,3,7,8-Pentachlorodibenzofuran	40 to 135	NA	40 to 135	NA
¹³ C-1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	40 to 135	NA	40 to 135	NA
¹³ C-1,2,3,4,7,8-Hexachlorodibenzofuran	40 to 135	NA	40 to 135	NA
¹³ C-1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	40 to 135	NA	40 to 135	NA
¹³ C-1,2,3,4,6,7,8-Heptachlorodibenzofuran	40 to 135	NA	40 to 135	NA
¹³ C-1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	40 to 135	NA	40 to 135	NA

Notes:

% Percent
NA Not applicable; compound is an internal standard.
RPD Relative percent difference

TABLE 5c

PRECISION AND ACCURACY FOR
CONTRACT LABORATORY PROGRAM METALS
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(Page 1 of 1)

Analyte	Matrices	Method	Acceptable Relative Percent Difference	Acceptable %Recovery
Cadmium	Soil and Water	CLP SOW	20	75 to 125
Lead	Soil and Water	CLP SOW	20	75 to 125

Notes:

% Percent
CLP SOW Contract laboratory program statement of work