M60050.001208

M60050.001208
MCAS EL TORO
SSIC # 5090.3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105-3901

28 December 1992

Andy Piszkin
Remedial Project Manager
Naval Facilities Engineering Command
Southwest Division
Code 1811
1220 Pacific Highway
San Diego, California 92132-5181

Subject: Evaluation of Analytical Data from the EPA Audit of the MCAS El Toro RI/FS Sampling

Dear Mr. Piszkin:

This letter transmits EPA's evaluation of Data obtained for the sampling audit EPA conducted at the MCAS El Toro in July of 1992. Attached are summaries of the evaluation results.

If you have any questions regarding the attached comments or if you wish to discuss other matters related to the RI/FS, please contact me at (415) 744-2391.

Sincerely,

John Hamill
Remedial Project Manager

Attachment

cc: Lt. Commander Larry Serafini, USMCAS El Toro
Manny Alonzo, DTSC
John Broderick, RWQCB

Printed on Recycled Paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105

DEC 24 1992

MEMORANDUM

SUBJECT: Evaluation of Data Obtained for El Toro Marine Corps Air Station

FROM: Roseanne Sakamoto, Environmental Scientist
Quality Assurance Management Section (P-3-2)

THRU: Kent Kitchingman, Chief
Quality Assurance Management Section (P-3-2)

TO: John Hamill, Remedial Project Manager
Federal Enforcement Section II (H-9-2)

The following data validation reports were reviewed for the El Toro Marine Corps Air Station.

SOIL SAMPLES for *RAS Metals, Volatiles, Semi-volatiles and Pesticides/PCB's

18546	Memo #1	September 29, 1992
18546	Memo #2	October 1, 1992

* Routine Analytical Services

The data was reviewed to evaluate laboratory performance and usability of the data. Until "action criteria" are established where we can specifically address the objectives of the project, our suggestions are limited. Significant analytical issues are indented within the attached comments. If you have any questions, please call me at (415) 744-1536.

Attachment

Printed on Recycled Paper

Comments and Assessment of Data Obtained from Sample Analyses for El Toro

These additional comments are provided to augment the data validation reports by discussing in further detail problems associated with analyses and interpretation of the data obtained.

It is noted that water samples were not collected. Was there a reason for this?

GENERAL COMMENTS FOR ALL REPORTS

Although the data has been flagged with a "J" qualifier (results are estimated and the data are valid for limited purposes), this does not necessarily indicate the lab performed poorly or that the data cannot be used. It does mean there is a limitation on the use of the data especially if your "action criteria" are based on detecting concentrations at the Contract Required Quantitation Limit (CRQL) or Contract Required Detection Limit (CRDL) level. A closer review of the concentration in question, the analytical deficiency which occurred, and the needs of the project is warranted at that time.

All **soils** analyses for volatiles, semivolatiles and metals experienced quantitation problems (comment A in all reports) when concentrations fell below the CRQL (organics analyses) or CRDL (inorganics analyses). Quantitation problems are inherent to the method and instruments and do not reflect poorly on the lab.

Table 2 of these reports lists the compounds or analytes analyzed for and their quantitation limits (volatiles, semivolatiles, and pesticides/PCB's). Table 1A lists the analytes and limits for metals.

Case 18546, Memo #1

RAS Volatiles, Semivolatiles, and Pesticides Analyses

Comment B, the samples for volatiles and semivolatiles contained lab and blank contamination with the following compounds: methylene chloride, acetone, diethylphthalate, di-n-butylphthalate, bis(2-ethylhexyl)phthalate; the compounds noted are common lab contaminants.

> Comment C (semivolatiles) discussed large percent differences between 31.1 and 86.8% for 4-chloroaniline, 3-nitroaniline, 4-nitroaniline, pentachlorophenol and 3,3'- dichlorobenzidine in the continuing calibrations. As the percent difference goes higher, it diminishes the instruments capability to determine accurately the concentrations present in your sample.
>
> > Note: If these compounds are "suspect" contaminants, it may be possible to request a reanalyses be performed (if hold times have not been exceeded). Otherwise you may want to

consider another round of sampling and analyses be performed.

Comment D (pesticides) discussed large percent differences in the calculated target analyte concentration between the primary column and confirmation column for 4,4'-DDT, methoxychlor, endolsulfan sulfate, endrin, 4,4'-DDD, endrin aldehyde and gamma-chlordane.

The problem identified is either a lab or instrument deficiency, and maybe both. When reviewing Table 4, samples YL360 and YL361, detected several compounds over the CRQL but concentration percent differences greater than 50% occurred between the primary the secondary column. Sample YL356 did not detect these compounds at or above CRQL but was affected with the same problem. The usefulness of this data is expressed in the last paragraph provided for comment D.

Note: If these compounds are "suspect" contaminants, it may be possible to request a reanalyses be performed (if hold times have not been exceeded). Otherwise it is suggested another round of sampling and analyses be performed.

<u>Case 18546, Memo #2</u>
RAS Metals analyses
There were considerable amounts of inorganic analytes found in the analyses. Significant concentrations (greater than 1000 mg/kg) were found for aluminum, calcium, iron, magnesium, and potassium.

Comment B and E indicated an accuracy problem where matrix spike recoveries for antimony and selenium were less than 50% for all samples. Low antimony and selenium recoveries are common due to matrix and sample interferences. The low recoveries in the pre-digest samples indicate low biases or false negatives may exist.

Comment C found correlation coefficients of less than 0.995 criteria while performing the Method of Standard Additions for selenium. The lack of linearity indicates that selenium, though detected, cannot be quantified accurately; this again may be due to matrix and sample interferences.

Note: For Comment B, C, and E, if one is interested in determining accurately the concentration of selenium and antimony, it is suggested a method specific to these elements be requested so the matrix interferences are eliminated. Reanalyses or resampling are options to consider.

Comment D found ICP serial dilution problems with sodium. The dilution of the samples should have removed any matrix interferences to accurately determine the concentration of sodium. Matrix interferences can either enhance or diminish sodium detection.

Comment F on mercury should be noted as a lab deficiency. A standard to check the linearity near the CRDL was not performed. A CRDL check standard should indicate whether a lab is able to quantifiably detect concentrations near the CRDL.

> Note: If mercury is a "suspect" contaminant, it may be possible to request a reanalyses be performed (if hold times have not been exceeded). Otherwise you may want to consider another round of sampling and analyses be performed.
>
> (The State of California, Title 22, Total Threshhold Limit Concentration Values for total mercury is 20 mg/kg {much higher than what was detected}).

Comment G is a lab deficiency and the noted suggestion provided for Comment F should be reviewed.

160 Spear Street, Suite 1380
San Francisco, California
94105-1535

415/957-0110

ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: John Hamill, Remedial Project Manager
Federal Enforcement Section II, (H-9-2)

THROUGH: for Kent Kitchingman, Chief by HJF
Quality Assurance Management Section (P-3-2)

FROM: Susan Sanders, Senior Investigation Coordinator
DRT David R. Taylor, Ph.D., Senior Investigation Coordinator
Environmental Services Assistance Team (ESAT)

DATE: August 7, 1992

SUBJECT: Summary of Field Events and Changes During El Toro Split Soil Sampling and Analysis Operation; Amendment to July 24, 1992 Field Sampling Plan

As scheduled, split soil sampling was conducted by ESAT on the El Toro Marine Corps Air Station (MCAS El Toro) between July 27-30, 1992. Site conditions required changes in the originally planned sampling points proposed by ESAT. The reasons for the changes are described below. This memorandum should be incorporated as an amendment to the original field sampling plan (FSP).

Split samples were originally scheduled for collection at borehole locations 6D, 7A, 7B, 19B, 28, 35, 40, 41, 53, and 62, for a total of 11 subsurface samples. Analytical samples were collected at locations 6D and 19B prior to ESAT's arrival, so no split sampling was possible at these locations. Mechanical problems and restrictions on site access precluded sampling at the other scheduled locations. This included a cease operations order from MCAS El Toro base command to abandon efforts near the flight line because of the anticipated arrival of President Bush.

Two split samples were collected at one original location, site 41, for Routine Analytical Services (RAS) analysis and laboratory blind duplicate analysis. Two split samples were collected at borehole location 39 for RAS analysis and laboratory quality control (QC) analysis. Surface soil sample location 3AWC3 was added in the field for split RAS analyses. Samples from this location were collected at the surface depth of 0-6" for RAS inorganic analyses and at the subsurface depth of 18-24" for RAS volatile, semivolatile, pesticide, PCB, and inorganic analyses. Samples were collocated for split analyses and collected with a trowel at the shallow depth and collected with a hand auger at the subsurface depth. CH2M Hill personnel collected all samples in the presence of ESAT personnel, relinquishing custody immediately after sample collection. Subsequent to the collection of these samples, all rigs

were restricted to placement of monitoring well materials and to new well development until processes were completed. These procedures prevented the collection of any more soil samples.

A total of 5 samples were collected over a period of 4 days for RAS analyses. Two laboratories were procured, one for analysis of the organic analytes and another for the inorganic analytes. For each subsurface sample, separate 3" stainless steel sleeves were filled for shipment to each laboratory. Separate 4-ounce amber glass bottles were filled for shipment to each laboratory for the surface soil samples. A single amber bottle was collected at the 0-6" depth for shipment to the inorganic laboratory only. A sample was not collected at the shallow surface location for volatile organic compounds since MCAS El Toro was not collecting a sample for this parameter at this depth.

ESAT will conduct a second phase of split sampling upon completion of all wells at MCAS El Toro, when the first round of groundwater monitoring sampling begins.

Any questions regarding this effort should be directed to Jerry Manuell of ESAT at (415) 882-3068. A copy of all field documentation supporting these changes will be retained in ESAT files.

cc: Hedy Ficklin, QAMS Task Monitor (P-3-2)

160 Spear Street, Suite 1380
San Francisco, California
94105-1535

415/957-0110

ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: John Hamill, Remedial Project Manager
Federal Enforcement Section II (H-9-2)

THROUGH: for Kent Kitchingman, Chief by H. Fickling
Quality Assurance Management Section (P-3-2)

FROM: Susan M. Sanders, SMS for SMS Sr. Investigation Coordinator
Environmental Services Assistance Team

DATE: August 10, 1992

SUBJECT: Findings of Field Review of Soil Drilling and Sampling Activities Conducted at El Toro Marine Corps. Air Station (MCAS El Toro), July 27-30, 1992

A Field Review of drilling and soil sampling activities performed at MCAS El Toro was conducted during July 27 through 30, 1992 by ICF Kaiser Engineers' Environmental Services Assistance Team (ESAT). Split soil samples were also collected for the Environmental Protection Agency (EPA) by ESAT, which has been discussed in a separate report. This report describes the findings of the observations of the field activities in detail.

Personnel present during all or part of the audit included the following:

ICF Kaiser Engineers: Gerald P, Manuell, Sampler
Susan M. Sanders, Auditor

CH2M Hill: Larry Andersen, Sample Manager and Coordinator
Gennaro W. Avolio, Subsurface Explorations Manager
Ken Baxter, Geologist, Sampler
Susan Diehl, Hydrogeologist, Sampler
Keith J. Gally, Geotechnical Engineer, Sampler
Kevin Leary, Sampler
Joan Little, Geologist, Sampler
John Lovenburg, Hydrogeologist, Sampler
Timothy MacGillivray, Sampler
John McHugh, Sampler
John E. Murnane, Environmental Geologist, Sampler
Brian D. Oberg, Nuclear Engineer, Sampler
Aaron Petri, Sampler
Sylvia Ross, Field Scheduling Coordinator
Dan Tiffany, Field Technician, Sampler
Coy D. Webb, Hazardous Waste Engineer, Sampler

FIELD OBSERVATIONS

A. Preparations

CH2M Hill is under contract by MCAS El Toro to perform remediation of the base. The Field Remediation Area consists of five trailers designated as follows: Administration Office, where scheduling is conducted; Sample Management, where samples are stored, packaged, tracked and shipped to appropriate laboratories; Equipment Check-out, two trailers which house all field equipment; and Health Coordination Office to the Manager of Site Health and Safety for all projects.

Behind the CH2M Hill's offices are situated the large equipment bay and subcontractor administration trailers. In this area drill rigs and related equipment are stored and steam decontaminated; contaminated soil roll-off bins and drums are also stored temporarily. Contaminated contents are transferred from bins and drums in another area to chemical waste treatment trucks for proper treatment and disposal. The decontamination and storage areas are isolated with caution tape. The storage areas are concrete lined and bermed; drums are labelled with contents and dates, and are set upon wooden pallets before contents are transferred.

At each drill site, the rigs and sampling exclusion zones were roped off with caution tape and the decontamination area and sample logging table "clean zone" were situated at the entrance/exit of each exclusion zone. Necessary sample screening equipment was available at the sample logging table. The entire ground area within the exclusion zone was covered with yards of clean plastic sheeting, upon which all drilling and sampling equipment was placed. The drill rig was carefully backed onto the plastic sheeting to avoid contamination of clean surface soils by dredged drilling spoils.

B. Field Procedures

B.1 Sample Collection

Samples were collected at intervals of 10, 20 or 40 feet for field screening utilizing both Organic Vapor Analyzer (OVA) and HNu photoinization detectors. Analytical sampling varied with the location of the site investigation. For example, landfill or burn pit areas were sampled every 5 feet to 25 feet for analytical sampling, and thereafter only field screening samples were collected until the water table was encountered. At the water table interval, another analytical sample was collected. This procedure was in keeping with the Site Sampling and Analysis Plan. Other site areas were sampled for field screening purposes only until the water table was encountered, as indicated in the plan.

Samples were logged for lithologic description by rig supervising geologists. Each drill rig was supervised by a team of two or three personnel. One team member recorded field investigation observations and

lithologic descriptions into bound field notebooks and standardized field forms. Another member supervised all site health and safety procedures, and frequently monitored site ambient air conditions, and sample headspace analyses from grab samples.

Samples were collected into three-inch stainless steel sleeves as collocated groups, and divided upon opening of the split spoon with a decontaminated spatula. Teflon sheeting was immediately placed across each of the tube ends, which were then covered by plastic end caps taped with electrician's tape. Samples were immediately labeled with black waterproof markers and logged onto appropriate chain of custody forms. Grab samples were collected from each split spoon for headspace analysis. These samples were extruded from the sleeves into plastic Ziplock bags, marked for identification, and closed for at least 15 minutes before screened.

B.2 Equipment Decontamination

Sampling equipment was decontaminated with Alconox detergent, deionized water, hexane rinse and final rinses with deionized water. Three-inch stainless steel sleeves were utilized to collect analytical samples, and were decontaminated by CH2M Hill personnel prior to use in sampling. Samples were collected with a California Modified Split Spoon sampler, which was decontaminated after each use. Decontaminated equipment was air dried onto clean plastic sheeting.

B.3 Sample Packaging and Shipment

Samples were transferred by each field crew at the end of each day to the Sample Management trailer and placed in to large refrigerators. The refrigerators were locked each evening if samples were not shipped. Samples were held on site not longer than 48 hours from collection.

The sample management trailer was used to store extra ice for field cooling and sample shipment, computerized data tracking equipment and hard copies of sample chain-of-custody forms. All samples are inventoried against the chain-of-custody forms by the Sample Manager before final packaging. Bubble wrap is used for packaging of glass containers. All samples are packaged in plastic bags and placed into coolers which are lined with plastic garbage bags filled with vermiculite to guard against leakage in case of spills during shipment.

A computerized database is updated daily with chain-of-custody details and hard copies are kept available for inspection. Documentation is clear, concise and complete. Shipping and packaging equipment is readily available in a clean and supervised environment. Samples are retrieved daily or on an as-need basis by Federal Express couriers, or may be hand carried to the air shipment office as needed.

CONCLUSIONS AND RECOMMENDATIONS

In general, Remedial Investigation (RI) sampling operations at MCAS El Toro appear focused, organized and adequate for collection of high quality representative samples, useful in providing data usable by the base for remedial design purposes. Health and safety operations appear equally adequate to ensure worker safety of both CH2M Hill personnel and subcontractors.

It was noted, however, that decontamination procedures of sampling equipment did not include a separate process for the cleansing of residual metals from the equipment. The Target Analyte List (TAL) of inorganic elements is one parameter of investigative concern at the base. The Environmental Protection Agency recommends the use of a 0.1 Normal (0.1 N) nitric acid (HNO_3) solution rinsate, following the hexane rinse, and previous to final rinses with distilled water.

Questions regarding the above information may be directed to Jerry Manuell at (415) 882-3068. All documents related to this MCAS El Toro audit will be retained in ESAT files for future reference.

cc: Hedy Ficklin, EPA QAMS Task Monitor (P-3-2)

160 Spear Street, Suite 1380
San Francisco, California
94105-1535

415/957-0110

ICF TECHNOLOGY INCORPORATED

OCT 01 1992

MEMORANDUM

TO: John Hamill
Remedial Project Manager
Federal Enforcement Section (H-9-2)

THROUGH: Roseanne Sakamoto
Environmental Protection Specialist
Quality Assurance Management Section, (P-3-2)

FROM: Carolyn Studeny
Senior Organic Data Reviewer
Environmental Services Assistance Team (ESAT)

DATE: September 29, 1992

SUBJECT: Review of Analytical Data

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

SITE:	El Toro
EPA SITE ID NO:	H6
CASE/SAS NO.:	18546 Memo #01
SDG NO.:	YL356
LABORATORY:	Pacific Analytical, Inc. (PACIF)
ANALYSIS:	RAS Volatiles, RAS Semivolatiles and RAS Pesticides/PCBs
SAMPLE NO.:	6 Soil Samples (see Case Summary)
COLLECTION DATE:	July 29, 1992
REVIEWER:	Barbara Gordon ESAT/ICF Technology, Inc.

If there are any questions, please contact Carolyn Studeny at (415) 882-3184.

Attachment

cc: Edward Kantor, EMSL-LV, QAD
Steve Remaley, TPO USEPA Region IX

TPO: [ ]FYI [X]Attention [ ]For Action

ESAT-QA-9A-7054/B18546M1.RPT

Data Validation Report

Case No.: 18546 Memo #01
Site: El Toro
Laboratory: Pacific Analytical, Inc. (PACIF)
Reviewer: Barbara Gordon, ESAT/ICF Technology, Inc.
Date: September 29, 1992

I. Case Summary

SAMPLE INFORMATION:

VOA, BNA and PEST Sample Numbers:	YL356 through YL361
Concentration and Matrix:	Low Level Soils
Analysis:	RAS Volatiles, RAS Semivolatiles and RAS Pesticides/PCBs
SOW:	3/90
Collection Date:	July 29, 1992
Sample Receipt Date:	July 31, 1992
Extraction Date:	August 4 and 5, 1992
Analysis Date:	August 6 through September 2, 1992

FIELD QC:

Trip Blanks (TB):	None
Field Blanks (FB):	None
Equipment Blanks (EB):	None
Background Samples (BG):	None
Field Duplicates (D1):	YL358 and YL359

METHOD BLANKS AND ASSOCIATED SAMPLES:

VBLK97/SBLK02/PBLK42:	YL356 through YL361, YL357MS and YL357MSD

TABLES:

1A:	Analytical Results with Qualifications
1B:	Data Qualifiers
1C:	Tentatively Identified Compounds
2:	Sample Quantitation Limits of Target Compound List (TCL) Analytes
3:	Semivolatiles: Continuing Calibrations
4:	Pesticides: Analyte Concentrations Summary

TPO ATTENTION REQUIRED:

The detected results for several pesticide target analytes were qualified as presumptively identified and estimated in several samples due to the large percent Differences in calculated concentration between the two columns.

ADDITIONAL COMMENTS:

This report was prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (6/91 Revision) and the EPA document, "Laboratory Data Validation Functional Guidelines for Evaluating Organic Analysis," April 11, 1985.

MS - Matrix Spike; MSD - Matrix Spike Duplicate

II. Validation Summary

	VOA		BNA		PEST	
	Acceptable/Comment		Acceptable/Comment		Acceptable/Comment	
HOLDING TIMES	[Y]	[E]	[Y]	[E]	[Y]	[E]
GC/MS TUNE/GC PERFORMANCE	[Y]	[ ]	[Y]	[ ]	[Y]	[ ]
CALIBRATIONS	[Y]	[ ]	[N]	[C]	[Y]	[ ]
FIELD QC	[Y]	[ ]	[Y]	[ ]	[Y]	[ ]
LABORATORY BLANKS	[N]	[B]	[N]	[B]	[Y]	[ ]
SURROGATES	[Y]	[ ]	[Y]	[ ]	[Y]	[ ]
MATRIX SPIKE/DUPLICATES	[Y]	[ ]	[Y]	[ ]	[Y]	[ ]
INTERNAL STANDARDS	[Y]	[ ]	[Y]	[ ]	[N/A]	[ ]
COMPOUND IDENTIFICATION	[Y]	[ ]	[Y]	[ ]	[N]	[D]
COMPOUND QUANTITATION	[Y]	[ ]	[Y]	[A]	[N]	[A,D]
SYSTEM PERFORMANCE	[Y]	[F]	[Y]	[F]	[Y]	[F]

N/A = Not Applicable

III. Validity and Comments

A. The results reported in Table 1A for the following analytes are considered estimates (J) and usable for limited purposes only:

- All results below the Contract Required Quantitation Limits (denoted with an "L" qualifier)

Results below the Contract Required Quantitation Limits (CRQL) are considered to be qualitatively acceptable, but quantitatively unreliable, due to the uncertainty in analytical precision near the limit of detection.

B. Due to laboratory and blank contamination problems, the results reported in Table 1A for the following analytes are estimates (J) and usable for limited purposes only:

- Methylene chloride in sample numbers YL358, YL359 and YL361
- Acetone, bis(2-ethylhexyl)phthalate and di-n-octylphthalate in all samples

Methylene chloride and acetone, although not found in the method blank, have historically been found as common laboratory contaminants. It is the opinion of the reviewer that the methylene chloride and acetone found in the samples listed above are artifacts. bis(2-Ethylhexyl)phthalate and di-n-octylphthalate were found in method blank SBLK02 at concentrations of 64 and 620 ug/Kg, respectively.

The results for the samples listed above are considered nondetected and estimated (U,J) and the quantitation limits have been increased, where appropriate, according to the blank qualification rules.

C. Due to large percent Differences (%D) in the Continuing Calibrations, the quantitation limits for the following analytes are estimates (J) and usable for limited purposes only (see Table 2):

- 4-Chloroaniline, 3-nitroaniline, 4-nitroaniline, pentachlorophenol and 3,3'-dichlorobenzidine in sample numbers YL358, YL359, YL360, YL361 method blank SBLK02

%Ds exceeding the <±25% QC advisory validation criteria were observed for the analytes listed above in the Continuing Calibration performed September 2, 1992 (see Table 3).

D. Large percent differences (%D) in the calculated pesticide target analyte concentration between the primary (DB-608) column and confirmation (DB-1701) column were reported for several samples (see Table 4).

These %Ds exceeded 25%. The lower concentration has been reported in Table 1A because co-eluting interferences, if present, are likely to increase the concentration of the target analyte. Due to these large %Ds, the detected results for the following analytes are considered presumptively identified and estimated (NJ) usable for limited purposes only (see Table 1A):

- 4,4'-DDT and methoxychlor in sample numbers YL356, YL360 and YL361
- Endosulfan sulfate in sample number YL360
- Endrin, 4,4'-DDD, endrin aldehyde and gamma-chlordane in sample number YL361

It is the opinion of the reviewer that due to the large %Ds between the primary (DB-608) column and the confirmation column, it is questionable whether the second (DB-1701) column can be considered to confirm the identification of the analytes listed above.

The conservative approach would be to assume that the detected analytes are present. The large differences in the reported concentrations between the two columns may be the result of co-elution on one of the columns. And so, the user should note that the results are both quantitatively and qualitatively uncertain.

E. The SW-846 technical holding times were not exceeded for any of the samples analyzed.

F. All other results are considered valid and usable for all purposes. All other quality control criteria have been met and are considered acceptable.

160 Spear Street, Suite 1380
San Francisco, California
94105-1535

415/957-0110

ICF TECHNOLOGY INCORPORATED

OCT 16 1992

MEMORANDUM

TO: John Hamill
Remedial Project Manager
Federal Enforcement Section II (H-9-2)

THROUGH: Roseanne Sakamoto RS
Environmental Protection Specialist
Quality Assurance Management Section (P-3-2)

FROM: Margie D. Weiner MDW
Inorganic Data Reviewer
Environmental Services Assistance Team (ESAT)

DATE: October 1, 1992

SUBJECT: Review of Analytical Data

Attached are comments resulting from ESAT Region IX review of the following analytical data:

SITE:	El Toro
EPA SITE ID NO:	H6
CASE/SAS NO.:	18546 Memo #02
SDG NO.:	MYJ651
LABORATORY:	Skinner & Sherman Labs., Inc. (SKINER)
ANALYSIS:	RAS Total Metals
SAMPLE NO.:	7 Soil Samples (See Case Summary)
COLLECTION DATE:	July 29, 1992
REVIEWER:	Dina David, ESAT/ICF

If there are any questions, please contact Margie D. Weiner (ESAT/ICF) at (415) 882-3061.

Attachment

cc: Edward Kantor, EMSL-LV, QAD
Steve Remaley, USEPA Region IX
Deb Szaro and Moira Lataille, TPOs USEPA Region I

TPO: [ ]FYI [X]For Attention [ ]For Action

ESAT-QA-9A-7183/H18546M2.RPT

Data Validation Report

Case No.: 18546 Memo #02
Site: El Toro
Laboratory: Skinner & Sherman Labs., Inc. (SKINER)
Reviewer: Dina David, ESAT/ICF
Date: October 1, 1992

I. Case Summary

SAMPLE INFORMATION: SAMPLE #: MYJ651, MYJ652, MYJ653, MYJ654, MYJ655, MYJ656 and MYJ657

COLLECTION DATE: July 29, 1992
SAMPLE RECEIPT DATE: July 31, 1992

CONCENTRATION & MATRIX: 7 Low Concentration Soil Samples

FIELD QC: Field Blanks (FB): None
Equipment Blanks (EB): None
Background Samples (BG): None
Duplicates (D1): MYJ653 and MYJ654

LABORATORY QC: Matrix Spike: MYJ651
Duplicates: MYJ651
ICP Serial Dilution: MYJ651

ANALYSIS: RAS Total Metals

Analyte		Sample Preparation and Digestion Date	Analysis Date
ICP Metals		September 2, 1992	September 2, 1992
GFAA:	Arsenic	September 2, 1992	September 4 and 5, 1992
	Lead	September 2, 1992	September 4, 1992
	Selenium	September 2, 1992	September 4 and 8, 1992
	Thallium	September 2, 1992	September 4, 1992
Mercury		August 29, 1992	August 30, 1992
Percent Solids		Not Applicable	September 2, 1992

The analytical results with qualifications are listed in Table 1A. The definitions of the data qualifiers used in Table 1A are listed in Table 1B. This report was prepared in accordance with the EPA Contract Laboratory Program Inorganic Statement of Work for March, 1990, and the EPA Draft Document "Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses," October, 1989.

II. Validation Summary

The data were evaluated based on the following parameters:

Parameter	Acceptable	Comment
1. Data Completeness	Yes	F
2. Sample Holding Times	Yes	G
3. Calibration	Yes	
a. Initial Calibration Verification		
b. Continuing Calibration Verification		
c. Calibration Blank		
4. Blanks	Yes	
a. Laboratory Preparation Blank		
b. Field Blank		
c. Equipment Blank		
5. ICP Interference Check Sample Analysis	Yes	
6. Laboratory Control Sample Analysis	Yes	
7. Spiked Sample Analysis	No	B
8. Laboratory Duplicate Sample Analysis	Yes	
9. Field Duplicate Sample Analysis	Yes	
10. GFAA QC Analysis	No	C,E
a. Duplicate Injections		
b. Analytical Spikes		
11. ICP Serial Dilution Analysis	No	D
12. Sample Quantitation	Yes	A
13. Sample Result Verification	Yes	H

III. Validity and Comments

A. The following results are estimated and are considered usable for limited purposes. The results are flagged "J" in Table 1A.

- All results above the Method Detection Limit but below the Contract Required Detection Limit (denoted with an "L" qualifier)

Results above the Method Detection Limit (MDL) but below the Contract Required Detection Limit (CRDL) are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

B. The following results are estimated and are considered usable for limited purposes because of accuracy problems. The results are flagged "J" in Table 1A.

- Antimony and selenium in all of the samples

The matrix spike recovery results for antimony and selenium in QC sample number MYJ651 did not meet the 75-125% criteria for accuracy. The percent recovery and percent bias for each analyte is presented below and is based on an ideal recovery of 100%.

Analyte	MYJ651 % Recovery	MYJ651 % Bias
Antimony	43.8	-56.2
Selenium	-35.5	-135

Results above the MDL are considered quantitatively uncertain. The results reported for antimony and selenium in all of the samples may be biased low, and where non-detected, false negatives may exist.

A post-digestion spike recovery result of 94.4% was obtained for antimony in QC sample number MYJ651.

C. The following results are estimated and are considered usable for limited purposes because the correlation coefficient was less than 0.995. The results are flagged "J" in Table 1A.

- Selenium in samples MYJ651, MYJ652, MYJ655 and MYJ657

The Method of Standard Addition (MSA) correlation coefficient for selenium in the samples listed above did not meet the greater than or equal to 0.995 criteria for accuracy as shown below.

Sample Number	Analyte	Correlation Coefficient
MYJ651	Selenium	0.988
MYJ652	Selenium	0.973
MYJ655	Selenium	0.847
MYJ657	Selenium	0.988

The results reported for selenium in samples MYJ651, MYJ652, MYJ655 and MYJ657 are considered quantitatively uncertain. The Method of Standard Additions (MSA) is the addition of 3 increments of a standard spike solution to sample aliquots of the same size. Measurements are made on the original sample and on each addition. This technique compensates for a sample constituent that enhances or depresses the analyte signal thus producing a slope different from that of the calibration standard. When this linearity criterium is not met, the results may have an increased variability.

D. The following results are estimated and are considered usable for limited purposes because of a problem with the ICP serial dilution. The results are flagged "J" in Table 1A.

- Sodium in all of the samples

The percent difference of the ICP serial dilution analysis of sample number MYJ651 did not meet the less than 10% criteria for sodium as shown below.

Analyte	MYJ651 % Difference
Sodium	13.6

A five fold dilution of a sample is performed in association with the ICP procedure to indicate whether interference exists due to sample matrix effects. The results reported for sodium in all of the samples are considered quantitatively uncertain. Chemical and physical interferences may exist due to the sample matrix.

E. The following result is estimated and is considered usable for limited purposes because of accuracy problems. The result is flagged "J" in Table 1A.

- Selenium in sample MYJ654

Selenium was analyzed by the Graphite Furnace Atomic Absorption (GFAA) technique, which requires that a post-digestion analytical spike be performed for each sample to establish the accuracy of the individual analytical determination. The analytical spike recovery result for selenium in sample MYJ654 did not meet the 85-115% criteria for accuracy. The percent recovery and percent bias for selenium is presented below and is based on an ideal recovery of 100%.

Analyte	Sample Number	% Recovery	% Bias
Selenium	MYJ654	82.5	-17.5

The post-digestion spike recovery result for selenium in sample MYJ654 shows an analytical deficiency. Results above the MDL are considered quantitatively uncertain. The result reported for selenium in sample MYJ654 may be biased low.

F. A CRDL standard was not analyzed during the analysis of the samples for mercury. The linearity near the CRDL for mercury could therefore not be verified. According to the 3/90 SOW, in order to verify linearity near the CRDL, the laboratory must analyze an AA standard at the CRDL or the IDL, whichever is greater, at the beginning of each sample analysis run, but not before the Initial Calibration Verification (ICV). Sample results near the limit of detection are considered quantitatively uncertain.

G. Due to limited information concerning holding time criteria for soil samples, the 40 CFR 136 (Clean Water Act) holding time criteria for water samples is applied to the soil analyses. The 28-day technical holding time for mercury was exceeded in all of the samples by 4 days. It is the reviewer's opinion that this will not significantly affect the results in the samples.

The 40 CFR 136 (Clean Water Act) technical holding times were not exceeded for the other analytes in all of the samples.

H. All of the other results are considered usable for all purposes. All QC requirements, other than those discussed above, have been met and are considered acceptable.