O = Data have no problems or problems that do not affect data quality.
X = Data are qualified due to minor problems.
M = Data are qualified due to major problems.
Z = Data are unacceptable.
N/A = Not Applicable

TPO ACTION:

None.

TPO ATTENTION:

(1) The detected results for several target analytes are qualified as non-detected and estimated (U,J) due to contamination in method blank B3K0009-BLK1. (2) Several results are estimated (J) due to calibration problems.

AREAS OF CONCERN:

None.

DATA VALIDATION WORKSHEETS

Data Validation Worksheet
Gas Chromatography/Mass Spectrometry

Project Name: Alhambra
Project Number: R04S07
Analysis: Volatile Organic Compounds
Method Number: 524.2
Laboratory Name: USEPA Region 9 Laboratory

Performed by/Date: EJN 1/3/06

Reviewed by/Date: APJ 2/17/06

Qualified Data? NO____ YES__X__, see page(s) 24, 25

SDG Number	Date Sampled	#Samples/Matrix	Validation Level
03309A	04-Nov-03 thru 07-Nov-03	18 Waters	IV

Data review was performed using the following documents as guidelines (check all that are applicable):

- [ ] USEPA CLP National Functional Guidelines for Organic Data Review (NFG Org.), October 1999
- [X] USEPA CLP National Functional Guidelines for Low Concentration Organic Data Review (NFG LL Org.), June 2001
- [X] Project guidance document(s): **EPA Region IX Laboratory SOP #354r5**
- [ ] Analysis method

- [ ] **Validated using QuikVal** (See attached QuikVal sheets for Holding Time, Surrogate, LCS and MS/MSD evaluation)

ITEMS CHECKED - LEVEL III
(Where Applicable)
Sample Receiving
Electronic Data Deliverables
Case Narrative
Holding Times
Instrument Run Logs
Initial Instrument Calibration
Continuing Instrument Calibration
Method Blanks
Surrogates
Laboratory Control Samples
Matrix Spikes/Matrix Spike Duplicates
Field Duplicates
Field QC Blanks
Reporting Limits

ITEMS CHECKED - LEVEL IV
(Where Applicable)
Sample Receiving
Electronic Data Deliverables
Case Narrative
Holding Times
Instrument Run Logs
GC/MS Instrument Performance
Initial Instrument Calibration
Continuing Instrument Calibration
Method Blanks
Surrogates
Laboratory Control Samples
Matrix Spikes/Matrix Spike Duplicates
Field Duplicates
Field QC Blanks

ITEMS CHECKED - LEVEL IV continued
(Where Applicable)
Reporting Limits
Internal Standards
Raw Data
Re-calculation of reported results
Extraction Logs
Tentatively Identified Compounds
System Performance

SAMPLE RECEIVING

	YES	NO	N/A
All COC forms relinquished and received with signature/date?	X		
Reported sample IDs match those listed on COC?	X		
Reported analyses/methods match those listed on COC?	X		
Lab report includes results for every sample/analysis as listed on COC?	X		
Cooler Receipt form present?	X		
Cooler Receipt form filled in completely and signed?	X		
Temperature recorded from:	Not noted		
Recorded temperature between 2C and 6C?	X		
Bubbles present in VOAs?	None noted		

List of Anomalies/Recommended Actions

X No action required

ELECTRONIC DATA DELIVERABLES

	YES	NO	N/A
Are EDDs included with the data package?	X		
Does client require EDD check against hardcopy?		X	
Were all EDDs verified against hardcopy results?			X
Did all EDD results match reported results?			X
Were anomalies noted?			X
Was the project office/lab notified?			X

List of Anomalies/Recommended Actions

No action required

CLIENT NOTIFICATION

Add Memo Items of Missing Info./Corrections Below	Response Received? YES	NO
X There were no memo items for this project.		

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CASE NARRATIVES/LABORATORY REPORT FOOTNOTES

	YES	NO	N/A
Case Narrative present in data package?		X	
Are anomalies noted in the CN? (If yes, place an 'X' below)			X
Are anomalies noted in report footnotes? (If yes, place an 'X' below)	X		

THE FOLLOWING ANOMALIES WERE NOTED IN CASE NARRATIVES/LABORATORY REPORT FOOTNOTES:

Sample Delivery Group (SDG) Number:	**03309A**
Missed extraction/analysis holding time	
Surrogate failure	
Method blank contamination	
Instrument blank contamination	
LCS and/or LCS RPD failure	X
MS/MSD and/or MS/MSD RPD failure	
Laboratory duplicate failure	
Compound identification anomaly	
Elevated RSD in the ICAL	X
Other ICAL anomalies	
Elevated %D in the CCV	X
Other CCV anomalies	
Internal standard failure	
Value exceeding the linear range of the instrument	
Co-elution	
Result reported below the quantition limit	
Other notations (list below)	X(1)

List of Anomalies

☐ **No anomalies were noted in the case narrative(s)/laboratory report footnotes included with this project.**

(1)QUANTITATION LIMIT STANDARD DID NOT MEET CRITERIA.

HOLDING TIMES

Enter Date as mo/day/year
DBE and DBA is calculated automatically

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received	Preservation & Temp	Extraction Date	Analysis Date	DBE	DBA	Comments
AH03201 (FD1)	0311002-01	Water	4-Nov-03	5-Nov-03	HCl, 3C	NA	7-Nov-03	NA	2	
AH03202 (FD1)	0311002-02	Water	4-Nov-03	5-Nov-03	HCl, 3C	NA	7-Nov-03	NA	2	
AH03203 (FB)	0311002-03	Water	4-Nov-03	5-Nov-03	HCl, 3C	NA	6-Nov-03	NA	1	
AH03204	0311007-01	Water	5-Nov-03	6-Nov-03	HCl, 4C/5C	NA	7-Nov-03	NA	2	
AH03205 (FB)	0311007-02	Water	5-Nov-03	6-Nov-03	HCl, 4C/5C	NA	6-Nov-03	NA	1	
AH03206	0311007-03	Water	5-Nov-03	6-Nov-03	HCl, 4C/5C	NA	6-Nov-03	NA	0	
AH03207	0311010-01	Water	6-Nov-03	7-Nov-03	HCl, 5C	NA	7-Nov-03	NA	1	
AH03208	0311010-02	Water	6-Nov-03	7-Nov-03	HCl, 5C	NA	7-Nov-03	NA	0	
AH03209 (EB)	0311010-03	Water	6-Nov-03	7-Nov-03	HCl, 5C	NA	7-Nov-03	NA	0	
AH03211	0311010-04	Water	6-Nov-03	7-Nov-03	HCl, 5C	NA	7-Nov-03	NA	0	
AH03210	0311016-01	Water	7-Nov-03	10-Nov-03	HCl, 4C	NA	10-Nov-03	NA	3	
AH03212	0311016-03	Water	7-Nov-03	10-Nov-03	HCl, 4C	NA	10-Nov-03	NA	2	
AH03213	0311016-04	Water	7-Nov-03	10-Nov-03	HCl, 4C	NA	10-Nov-03	NA	2	
AH03214	0311016-05	Water	7-Nov-03	10-Nov-03	HCl, 4C	NA	10-Nov-03	NA	2	
AH03215	0311016-06	Water	7-Nov-03	10-Nov-03	HCl, 4C	NA	10-Nov-03	NA	2	
AH03216 (EB)	0311016-07	Water	7-Nov-03	10-Nov-03	HCl, 4C	NA	10-Nov-03	NA	2	
AH03217	0311016-08	Water	7-Nov-03	10-Nov-03	HCl, 4C	NA	11-Nov-03	NA	3	
AH03218	0311016-09	Water	7-Nov-03	10-Nov-03	HCl, 4C	NA	10-Nov-03	NA	2	

DBE = Days before extraction (extraction date - collection date)
DBA = Days before analysis (analysis date - extraction date)

ACCEPTANCE CRITERIA:

	Aqueous
DBA - Volatiles	14
DBE - Semi-volatiles	7
DBA - Semi-volatiles	40

	Solid
DBA - Volatiles	14
DBE - Semi-volatiles	14
DBA - Semi-volatiles	40

Recommended Actions

X **No action required**

WHEN ANALYTES WERE REPORTED FROM MORE THAN ONE DAY, THE LAST DAY OF ANALYSIS WAS ENTERED ABOVE.

SURROGATE RECOVERIES

	YES	NO	N/A
Form Present?	Form I		
All samples listed?	X		
Results agree with raw data? (Level IV)	X		
Did laboratory spike project required surrogate(s)?	X		

ACCEPTANCE CRITERIA REFERENCE: EPA Region IX Laboratory SOP #354r5

ACCEPTANCE LIMITS:
(LIST SURROGATES SPIKED)

1,2-DCA-d4	70-130
Toluene-d8	70-130
Bromofluorobenzene	70-130
1,2-Dichlorobenzene-d4	70-130

LIST ALL RECOVERIES OUTSIDE PROJECT LIMITS

Sample ID	Laboratory ID	Surrogate	Original Recovery	Re-run/ Re-ext'd Recovery	Sample DF*	Comments
						None

List of Anomalies/Recommended Actions

X **No action required**

*If sample DF > or = 5X, no qualification is required.

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SURROGATE RECOVERIES - AVERAGE RESPONSE FACTOR

CALCULATIONS:
ug/L=Ax*Is**Vt*DF*GPC/Ais*RRF*Vo*Vi
ug/Kg=Ax*Is*Vt*Df*GPC/Ais*RRF*Vi*Ws*D

Sample ID: AH03201
Laboratory ID: 0311002-01

	Surrogate: DCA-d4		Surrogate: Toluene-d8		Surrogate: BFB		Surrogate: 1,2-Dichlorobenzene-d4		
Ax=	192399	**5.0682095**	840505	**5.04611903**	176408	**4.68759799**	208053	**4.64832743**	Area cmpd in sample
Is=	125		125		125		125		Amt IS, in ng
Vt=	1		1		1		1		Volume of extract, in uL
Df=	1		1		1		1		Dilution factor
GPC=	1		1		1		1		1 if GPC not done, 2 if GPC done
Ais=	921406		556700		556700		556700		Area IS
RRF=	0.206		1.496		0.338		0.402		RRF (average from curve)
Vi=	1		1		1		1		Volume of extract injected, in uL
Ws=	25		25		25		25		Volume of sample, in mL (or Wt in g)
D=	1		1		1		1		Dry-weight (1 if not taken into acct)
%Recovery		**101**		**101**		**94**		**93**	

CALCULATED VALUES MATCH REPORTED VALUES?	YES	NO
	X	

METHOD BLANK ANALYSES

	YES	NO	N/A
Performed for each matrix?	X		
Performed for each GCMS system?	X		
Performed for each extraction batch?			X
Performed for each analysis batch?	X		
Form Present?	X		
Did laboratory take appropriate corrective action for blank contamination greater than project acceptance criteria?			X

ACCEPTANCE CRITERIA REFERENCE: Client

ACCEPTANCE LEVEL FOR CONTAMINATION: <RL

LIST CONTAMINANTS DETECTED IN METHOD BLANKS

Blank ID	Matrix	Compound	Concen-tration	Units	5X (or 10X)	Comments
						None

LIST ALL METHOD BLANKS AND THEIR ASSOCIATED SAMPLES

Blank ID	Matrix	Associated Samples
B3K0011-BLK1	Water	AH03201, AH03202, AH03203, AH03205 and AH03206
B3K0013-BLK1	Water	AH03201 (TCE only), AH03202 (TCE only), AH03204, AH03207, AH03208, AH03209 and AH03211
B3K0016-BLK1	Water	AH03210, AH03212, AH03213, AH03214, AH03215, AH03216, AH03217 and AH03218
B3K0019-BLK1	Water	AH03217 (PCE only)
VHBLK1028 & VHBLK1110	Water	AH03201, AH03202, AH03203, AH03204, AH03205, AH03206, AH03207, AH03208, AH03209, AH03211, AH03210, AH03212, AH03213, AH03214, AH03215, AH03216, AH03217 and AH03218

List of Anomalies/Recommended Actions

X **No action required**

- Methylene chloride, acetone, and 2-butanone are considered common volatile laboratory contaminants (use 10X rule).
- Phthalates are considered common semi-volatile laboratory contaminants (use 10X rule).

(1) Sample results greater than 5X (or 10X) blank amount.
(2) Sample results non-detect.
(3) No associated samples.

FIELD QC BLANK ANALYSES

TRIP BLANK ANALYSES

	YES	NO	N/A
Trip Blank analyzed?		X	
Form Present?			X

FIELD BLANK ANALYSES

	YES	NO	N/A
Field Blank analyzed?	X		
Form Present?	X		

EQUIPMENT BLANK ANALYSES

	YES	NO	N/A
Equipment/Rinse Blank analyzed?	X		
Form Present?	X		

LIST CONTAMINANTS DETECTED IN TRIP, FIELD, AND EQUIPMENT BLANKS

Blank ID	Laboratory ID	Matrix	Compound	Concen-tration	Units	5X (or 10X)	Comments
AH03203 (FB)	0311002-03	Water	Chloromethane	0.6	ug/L	3	(2)
AH03203 (FB)	0311002-03	Water	Acetone	7.8	ug/L	78	U 002
AH03203 (FB)	0311002-03	Water	2-Butanone	38	ug/L	380	U 002
AH03203 (FB)	0311002-03	Water	1,2-Dichloroethane	0.3	ug/L	1.5	U 002
AH03205 (FB)	0311007-02	Water	Chloromethane	7.6	ug/L	38	(2)
AH03205 (FB)	0311007-02	Water	Chloroethane	1.4	ug/L	7	(2)
AH03205 (FB)	0311007-02	Water	Acetone	9.3	ug/L	93	U 002
AH03205 (FB)	0311007-02	Water	Dichloromethane	0.5	ug/L	5	(2)
AH03205 (FB)	0311007-02	Water	2-Butanone	39	ug/L	390	(2)
AH03205 (FB)	0311007-02	Water	1,2-Dichloroethane	2.1	ug/L	10.5	U 002
AH03209 (EB)	0311010-03	Water	Acetone	4.9	ug/L	49	(2)
AH03209 (EB)	0311010-03	Water	2-Butanone	37	ug/L	370	(2)
AH03216 (EB)	0311016-07	Water	Acetone	5.4	ug/L	54	(2)
AH03216 (EB)	0311016-07	Water	2-Butanone	80	ug/L	800	(2)

List of Anomalies/Recommended Actions

☐ **No action required**

- Methylene chloride, acetone, and 2-butanone are considered common volatile laboratory contaminants (use 10X rule).
- Phthalates are considered common semi-volatile laboratory contaminants (use 10X rule).

(1) Sample results greater than 5X (or 10X) blank amount.
(2) Sample results non-detect.
(3) No associated samples.

QUALIFY ACETONE AND 1,2-DCA U 002 FOR SAMPLES 0311002-01, -02. QUALIFY 2-BUTANONE U 002 FOR SAMPLE 0311002-02.

QUALIFY ACETONE U 002 FOR SAMPLE 0311007-03. QUALIFY 1,2-DCA U 002 FOR SAMPLE 0311007-01.

LABORATORY CONTROL SAMPLES (LCS/LCSD)

	YES	NO	NA
Form Present?	X		
%R and RPD within limits?		X	
Spike list match project required list?	X		
Results agree with raw data? (Level IV only)	X		

% RECOVERY AND RPD CALCULATION CHECK
Enter analysis date (mo/day/year), spike amount, LCS result, and LCSD result.
% Recoveries and RPD are automatically calculated.

Analysis Date	Spike Compound	Spike Conc	LCS Result	LCSD Results	LCS %R	LCSD %R	RPD	Agree with lab?	QC Batch Number
6-Nov-03	1,1-DCE	5	5.2	NA	104.0%	NA	NA	YES	B3K0011
7-Nov-03	TCE	5	6.4	NA	128.0%	NA	NA	YES	B3K0013
10-Nov-03	Chlorobenzene	5	5	NA	100.0%	NA	NA	YES	B3K0016
11-Nov-03	Toluene	5	5.7	NA	114.0%	NA	NA	YES	B3K0019

ACCEPTANCE CRITERIA REFERENCE: EPA Region IX Laboratory SOP #354r5

ACCEPTANCE LIMITS:

%R	RPD	
70-130	NA	Regulated compounds (see SOP for list)
60-140	NA	Non-regulated compounds

LIST ALL RECOVERIES OUTSIDE PROJECT LIMITS

LCS ID	Spike Compound	% Recovery	RPD	Comments
B3K0011-BS1	Acetone	165	NA	**J+ 009**
B3K0013-BS1	Acetone	155	NA	**J+ 009**
B3K0019-BS1	Dichlorodifluoromethane	148	NA	**Compound not reported from run**
B3K0019-BS1	Bromoform	134	NA	**Compound not reported from run**

Recommended Actions

☐ **No action required**

QUALIFY ACETONE J+ 009 FOR SAMPLES 0311002-01 THRU -03, 0311007-02, -03 AND 0311010-03.

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSIS(MS/MSD)

	YES	NO	NA
Form Present?	X		
%R and RPD within limits?	X		
Spike list match project required list?	X		
Results agree with raw data? (Level IV only)	X		

% RECOVERY AND RPD CALCULATION CHECK
Enter analysis date (mo/day/year), spike amount, sample result, MS result, and MSD result
IF sample result is ND, enter "0". % Recoveries and RPD are automatically calculated.

Analysis Date	Spiked Sample	Spike Compound	Spike Conc	Sample Results	MS Result	MSD Results	MS %R	MSD %R	RPD	Agree with lab?	QC Batch Number
7-Nov-03	0311007-01	Benzene	5	0	6.3	6.3	126.00%	126.00%	0.00%	YES	B3K0013
							#DIV/0!	#DIV/0!	#DIV/0!		

ACCEPTANCE CRITERIA REFERENCE: EPA Region IX Laboratory SOP #354r5

	%R	RPD
ACCEPTANCE LIMITS:	70-130	20%

LIST ALL RECOVERIES OUTSIDE PROJECT LIMITS

Sample ID	Laboratory ID	Spike Compound	% Recovery	RPD	Mx DF > or = 5X?	4X Rule Applies?	Comments
							None

Recommended Actions

X	**No action required**
	Laboratory reported RPDs based on % recoveries; appropriate method is to calculate RPDs based on concentrations.
	Spike levels differed for MS and MSD.
X	**No action is taken on MS/MSD data alone unless specified in project plan.**
	Qualify only the parent sample unless project plan states otherwise.

(1) 4X Rule.
(2) Dilution factor ≥ 5X.
(3) The parent sample was associated with an unrelated site.

FIELD DUPLICATES

	YES	NO
Are original/field duplicate pairs identifiable?	X	
%RPD within project acceptance limits?	X	

RPD CALCULATION CHECK

IF sample result is ND, enter "0". RPD is automatically calculated

Original Sample ID	Original Lab ID	Matrix	Compound	Orig. Results	Duplicate Sample ID	Duplicate Lab ID	Dup. Results	RPD	Absolute Difference	RL	Meets Criteria?
AH03201	0311002-01	Water	1,1-Dichloroethene	2.1	AH03202	0311002-02	2.4	-13.3%	0.3		YES
AH03201	0311002-01	Water	Acetone	6.1	AH03202	0311002-02	7.2	-16.5%	1.1		YES
AH03201	0311002-01	Water	cis-1,2-Dichloroethene	3.5	AH03202	0311002-02	4.1	-15.8%	0.6		YES
AH03201	0311002-01	Water	2-Butanone	ND< 4.0	AH03202	0311002-02	2	NC	NC	4	YES
AH03201	0311002-01	Water	Chloroform	0.6	AH03202	0311002-02	0.7	-15.4%	0.1		YES
AH03201	0311002-01	Water	1,2-Dichloroethane	0.8	AH03202	0311002-02	1.1	-31.6%	0.3	0.5	YES
AH03201	0311002-01	Water	Carbon tetrachloride	0.9	AH03202	0311002-02	0.9	0.0%	0		YES
AH03201	0311002-01	Water	Trichloroethene	220	AH03202	0311002-02	230	-4.4%	10		YES
AH03201	0311002-01	Water	Tetrachloroethene	5.7	AH03202	0311002-02	6.4	-11.6%	0.7		YES
AH03201	0311002-01	Water	All other VOCs	ND	AH03202	0311002-02		NA	NA		YES

ACCEPTANCE CRITERIA REFERENCE: EPA Region IX Laboratory SOP #354r5

ACCEPTANCE LIMITS:

	20%
CRITERIA FOR AQUEOUS RESULTS AT OR NEAR THE RL	+/- 1 X RL
CRITERIA FOR SOIL RESULTS AT OR NEAR THE RL	+/- 2 X RL

LIST ALL RPD OUTSIDE PROJECT LIMITS (DO NOT INCLUDE VALUES < RL)

Original Sample ID	Original Lab ID	Compound	RPD	Comments
				None

Recommended Actions

X **No action required**

NC: Not calculated. The absolute difference between the sample result and the duplicate sample result is less than the reporting limit.
N/A: Not analyzed
NA: Not applicable. Calculation of the relative percent difference between the sample result and the duplicate sample result is not applicable.

REPORTING LIMITS

	YES	NO
Are the project-specified reporting limits (RLs) met for all project samples?	X	
Are the RLs for all soil samples raised by dry weight correction?	NA	
Are the RLs raised due to sample dilutions?	X	
Was dilution required due to high levels of NON-TARGET analytes?		X
Was dilution required due to high levels of TARGET analytes?	X	
Are any samples non-detect at a raised RL? (if so, list below)		X

REPORTING LIMITS REFERENCE: EPA Region IX Laboratory SOP #354r5

If NO, then list:

Compound	Samples Affected	Lab RL	Project RL	Comments
				None

ANALYTE LIST

	YES	NO
Does the reported target analyte list match the project required list?		X

ANALYTE LIST REFERENCE: EPA Region IX Laboratory SOP #354r5

If NO, then list extra or missing compounds:

Compound	Missing?	Extra?	Comments
Freon 113		X	
Acetone		X	
2-Butanone		X	
Carbon disulfide		X	
tert-Butyl alcohol		X	

TENTATIVELY IDENTIFIED COMPOUNDS

	YES	NO
All appropriate peaks searched and reported?	X	
Any TICs found in both samples and blanks?	X	
Reasonable identifications reported?	X	
Any TCL compounds reported as TICs?		X

Recommended Actions

X **No action required**

Artifacts, unknowns, and siloxanes are not included above.

ETHENE, 1,1-DIFLUORO- WAS FOUND IN METHOD BLANK B3K0016-BLK1 AND STORAGE BLANK VHBLK1028; IT WAS ALSO FOUND IN THE FOLLOWING SAMPLE: 0311016-03. THE ANALYST CROSSED OFF THIS COMPOUND FOR SAMPLE 0311016-03, AND NOTED THAT IT WAS ALSO IN THE METHOD BLANK.

SYSTEM PERFORMANCE

	YES	NO
Were standard and sample chromatograms provided for all positive results?	X	
Chromatograms free of abrupt baseline shift?	X	
Chromatograms free of high background?	X	
Chromatograms free of baseline rise?	X	
Chromatograms free of extraneous peaks?	X	
Peak resolution good?	X	
Peaks free of tailing?	X	

Recommended Actions

X **No action required**

GC/MS INSTRUMENT PERFORMANCE CHECK

	YES	NO
Performed for all initial calibrations?	X	
Performed for all continuing calibrations and samples?	X	
Performed every 12 hours?	X	
BFB/DFTPP criteria within method limits?	X	
Concentration of BFB/DFTPP injected:	25 ng	

List of Anomalies/Recommended Actions

X **No action required**

LIST ALL BFB/DFTPP INJECTIONS

Date	GC/MS ID	Injection time	Ratio Check (Level IV only)	Transcript Errors (L IV)	Associated Samples
5-Nov-03	HP5973J	1532	OK	NONE	ICAL
6-Nov-03	HP5973J	0927	OK	NONE	0311002-01 thru -03, 0311007-02, -03
7-Nov-03	HP5973J	0853			0311002-01 (TCE only), 0311002-02 (TCE only), 0311007-01, 0311010-01 thru -04
10-Nov-03	HP5973J	1259			0311016-01, -03 thru -09
11-Nov-03	HP5973J	0731			0311016-08 (PCE only)

LIST ALL BFB/DFTPP OUTSIDE CRITERIA (LEVEL IV ONLY)

Date	GC/MS ID	Injection time	Ion Abund Outside Criteria	Comments
				None

GC/MS INSTRUMENT PERFORMANCE CHECK - BFB

Date:	**5-Nov-03**
Injection Time:	**1532**
Instrument ID:	**HP5973J**

	Enter raw Abund here	Calc Automatic
50=	9205	23.2%
75=	20454	51.6%
95=	39607	
96=	2818	7.1%
173=	0	0.0%
174=	22112	55.8%
175=	1626	7.4%
176=	21431	96.9%
177=	1398	6.5%

Date:	**6-Nov-03**
Injection Time:	**0927**
Instrument ID:	**HP5973J**

	Enter raw Abund here	Calc Automatic
50=	10092	19.6%
75=	24947	48.5%
95=	51387	
96=	3492	6.8%
173=	0	0.0%
174=	36704	71.4%
175=	2731	7.4%
176=	35709	97.3%
177=	2287	6.4%

CALCULATED VALUES MATCH REPORTED VALUES?	YES	NO
	X	

INITIAL CALIBRATION

	YES	NO
Performed before sample analysis?	X	
Calibration for each matrix?	X	
Calibration for each instrument?	X	
Any Mean RRFs below project limits?		X

ACCEPTANCE CRITERIA REFERENCE: NFG LL Org., June 2001

ACCEPTANCE LIMITS:

Mean RRF	0.01	Poor performers*
Mean RRF	0.05	All others

LIST ALL MEAN RRF THAT DO NOT MEET ACCEPTANCE CRITERIA:

Date	GC/MS ID	Compound	Mean RRF	Comments
				None

ACCEPTANCE CRITERIA REFERENCE: NFG LL Org., June 2001

ACCEPTANCE LIMITS:

%RSD	50	Poor performers*
%RSD	30	All others
CORR COEF (r)	0.995	

LIST ALL %RSD AND CORRELATION COEFFICIENTS THAT DO NOT MEET ACCEPTANCE CRITERIA:

Calibration Date	GCMS ID	Matrix	Compound	Corr Coefficient or % RSD	Comments
					None

LIST ALL ICAL AND ASSOCIATED SAMPLES

Calibration Date	GCMS ID	Matrix	Associated Samples
5-Nov-03	HP5973J	Water	0311002-01 thru -03, 0311007-01 thru -03, 0311010-01 thru -04, 0311016-01, -03 thru -09

List of Anomalies/Recommended Actions

X **No action required**

*** Volatile compounds exhibiting poor response: Acetone, 2-Butanone, Carbon disulfide, Chloroethane, Chloromethane, Cyclohexane, Chloroethane-d5 (DMC), 1,2-Dichloropropane, 1,2-Dibromo-3-chloropropane, 4-Methyl-2-pentanone, 2-Hexanone, 1,2-Dichloropropane-d6 (DMC), 2-Hexanone-d5 (DMC), 2-Butanone-d5 (DMC).**

INITIAL CALIBRATION - AVERAGE RESPONSE FACTOR

RRF = Ax*Is/Ais*STD **Ax = Area of compound; Is = Amount (in ng) of internal standard; Ais= Area of associated internal standard; STD = Amount (in ng) of compound**

Date: **5-Nov-03**
Instrument ID: **HP5973J**
Compound: **2-Butanone**

RF1

A_x=	18406	RRF
I_s=	125	0.839797054
A_{is}=	54793	
STD=	50	

RF2

A_x=	30655	RRF
I_s=	125	0.664425544
A_{is}=	57672	
STD=	100	

RF3

A_x=	59217	RRF
I_s=	125	0.642211088
A_{is}=	57630	
STD=	200	

RF4

A_x=	135752	RRF
I_s=	125	0.631498642
A_{is}=	53742	
STD=	500	

RF5

A_x=	296989	RRF
I_s=	125	0.673970172
A_{is}=	55082	
STD=	1000	

RF6

A_x=	671082	RRF
I_s=	125	0.585739722
A_{is}=	57285	
STD=	2500	

AVG. CF	**0.67294037**
SD	**0.087384638**
%RSD=	**12.98549491**

	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X	

	YES	NO
AMOUNTS INJECTED CONSISTENT THROUGHOUT ANALYTICAL SEQUENCE?	X	

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DAILY CALIBRATION CHECK

RUN LOGS

	YES	NO	N/A
Run logs present in data package?	X		
All samples located on run logs?	X		
All dilutions located on run logs?	X		
Are anomalies noted by the analyst?		X	

PREP LOGS

	YES	NO	N/A
Prep logs present in data package?			X
All samples located on prep logs?			X
All dilutions located on prep logs?			X
Are anomalies noted by the analyst?			X

CONTINUING CALIBRATION

	YES	NO	N/A
Performed before sample analysis?	X		
Performed for each day of analysis?	X		
Performed for each instrument?	X		
Raw data agree with forms? (Level IV only)	X		
Any Daily RRFs below project limits?		X	

ACCEPTANCE CRITERIA REFERENCE: NFG LL Org., June 2001

ACCEPTANCE LIMITS: RRF 0.01 Poor performers*
RRF 0.05 All others

LIST ALL DAILY RRF THAT DO NOT MEET ACCEPTANCE CRITERIA:

Calibration Date	Time	GCMS ID	Compound	RRF	Comments
					None

ACCEPTANCE CRITERIA REFERENCE: NFG LL Org., June 2001

ACCEPTANCE LIMITS: %D 50 Poor performers*
%D 30 All others

LIST ALL %D THAT DO NOT MEET ACCEPTANCE CRITERIA (DO NOT INCLUDE SURROGATE %D FAILURES):

Calibration Date	Time	GCMS ID	Matrix	Compound	%D	CCV Out Low	CCV Out High	Comments
6-Nov-03	1110	HP5973J	Water	Acetone	62		X	J/UJ 006
10-Nov-03	1427	HP5973J	Water	Acetone	76		X	J/UJ 006
10-Nov-03	1427	HP5973J	Water	tert-Butyl alcohol	32	X		J/UJ 006
10-Nov-03	1427	HP5973J	Water	Bromoform	35		X	J/UJ 006
11-Nov-03	0748	HP5973J	Water	tert-Butyl alcohol	40	X		(1)

List of Anomalies/Recommended Actions

☐ No action required

QL STANDARDS WERE ANALYZED NEAR THE BEGINNING OF EACH ANALYTICAL RUN. THE QLSs WERE EVALUATED HEREIN ONLY FOR THE 5 COMPOUNDS THAT WERE REPORTED AT 0.5 ug/L: VINYL CHLORIDE, 1,2-DCA, CARBON TETRACHLORIDE, CIS-1,3- AND TRANS-1,3-DICHLOROPROPENE. THE 5 COMPOUNDS RECOVERED BETWEEN 50% AND 150% IN ALL QL STANDARDS.

QUALIFY ACETONE J/UJ 006 FOR SAMPLES 0311002-01 thru -03, 0311007-02, -03 AND METHOD BLANK B30011-BLK1.
QUALIFY ACETONE, TBA AND BROMOFORM J/UJ 006 FOR SAMPLES 0311016-01, -03 THRU -09 AND METHOD BLANK B3K0016-BLK1.
(1) COMPOUND NOT REPORTED FROM RUN.

CONTINUED

DAILY CALIBRATION CHECK CONTINUED

LIST ALL PRECEEDING CCVs AND ASSOCIATED SAMPLES

Calibration Date	Time	GCMS ID	Matrix	Associated Samples
6-Nov-03	1110	HP5973J	Water	0311002-01 thru -03, 0311007-02, -03
7-Nov-03	0918	HP5973J	Water	0311002-01 (TCE only), 0311002-02 (TCE only), 0311007-01, 0311010-01 thru -04
10-Nov-03	1427	HP5973J	Water	0311016-01, -03 thru -09
11-Nov-03	0748	HP5973J	Water	0311016-08 (PCE only)

CONTINUING CALIBRATION - AVERAGE RESPONSE FACTOR

RRF = Ax*Is/Ais*STD

A_x = Area of compound
I_s = Amount (in ng) of internal standard

A_{is} = Area of associated internal standard
STD = Amount (in ng) of compound

Date:		6-Nov-03
Time:		1110
Instrument ID:		HP5973J
Compound:		TCE
RF-CCC		
A_x=	231473	
I_s=	125	0.252125618
A_{is}=	918086	
STD=	125	
avg RRF		0.258
%D		-2.28%

Date:		7-Nov-03
Time:		0918
Instrument ID:		HP5973J
Compound:		1,1-DCE
RF-CCC		
A_x=	222873	
I_s=	125	3.831276215
A_{is}=	58172	
STD=	125	
avg RRF		3.522
%D		8.78%

Date:		10-Nov-03
Time:		1427
Instrument ID:		HP5973J
Compound:		1,2-DCA
RF-CCC		
A_x=	216982	
I_s=	125	0.302211761
A_{is}=	717980	
STD=	125	
avg RRF		0.266
%D		13.61%

Date:		11-Nov-03
Time:		0748
Instrument ID:		HP5973J
Compound:		PCE
RF-CCC		
A_x=	162654	
I_s=	125	0.369008998
A_{is}=	440786	
STD=	125	
avg RRF		0.365
%D		1.10%

CALCULATED VALUES MATCH REPORTED VALUES?	YES	NO
	X	

AMOUNTS INJECTED CONSISTENT THROUGHOUT ANALYTICAL SEQUENCE?	YES	NO
	X	

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INTERNAL STANDARDS

	YES	NO	N/A
Form Present?	X		
All samples listed?	X		
Results agree with raw data? (Level IV only)			X(1)
Did laboratory spike project required internal standards?	X		
Are sample IS retention times within 30 seconds of daily ccal?	X		

ACCEPTANCE CRITERIA REFERENCE: NFG LL Org., June 2001

ACCEPTANCE LIMITS: -40% to +40% (of the response in the daily calibration check)

LIST ALL AREAS OUTSIDE ACCEPTANCE LIMITS

Sample ID	Lab ID	Internal Standard	IS Area	IS Out Low	IS Out High	Comments
						None

LIST ALL PRECEEDING INTERNAL STANDARDS AND ASSOCIATED SAMPLES

Calibration Date	Time	GCMS ID	Matrix	Associated Samples
6-Nov-03	1110	HP5973J	Water	0311002-01 thru -03, 0311007-02, -03
7-Nov-03	0918	HP5973J	Water	0311002-01 (TCE only), 0311002-02 (TCE only), 0311007-01, 0311010-01 thru -04
10-Nov-03	1427	HP5973J	Water	0311016-01, -03 thru -09
11-Nov-03	0748	HP5973J	Water	0311016-08 (PCE only)

ACCEPTANCE LIMITS (LOW LEVEL VOCs):
(LIST INTERNAL STANDARDS SPIKED)

Calibration Date	Time	GCMS ID		Area CCAL	-40%	+40%
					0	0
			Dichloromethane-d2	52086	31251.6	72920.4
			Fluorobenzene	918086	550851.6	1285320.4
6-Nov-03	1110	HP5973J	Chlorobenzene-d5	571583	342949.8	800216.2

List of Anomalies/Recommended Actions

X **No action required**

1) LABORATORY USED THE ICAL MIDPOINT AREAS/RTs TO CALCULATE THE INTERNAL STANDARD AREA AND RETENTION TIME RANGES. THE NFG STATES THAT THE CCAL AREAS/RTs SHOULD BE USED TO GENERATE THE INTERNAL STANDARD AREA AND RETENTION TIME RANGES. BOTH SETS OF CRITERIA WERE MET FOR ALL SAMPLES UNLESS NOTED HEREIN.

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METHOD COMPLIANCE - VOCs

COMPLIANCE CRITERIA REFERENCE: EPA SW-846 METHOD 8260B

INSTRUMENT CALIBRATION

	YES	NO
Is the lowest ICAL standard at or below the DL for each analyte?	X	
Mean RRFs for Chloromethane, 1,1-Dichloroethane and Bromoform ≥ 0.10?	**	
Mean RRFs for Chlorobenzene and 1,1,2,2-Tetrachloroethane ≥ 0.30?	**	
%RSDs for 1,1-Dichloroethene, Chloroform, 1,2-Dichloropropane, Toluene, Ethylbenzene and Vinyl chloride ≤ 30%?	**	
Curve concstructed for all %RSD > 15%?	**	

List of Anomalies/Recommended Actions

X **No action required**

** CRITERIA DOES NOT APPLY FOR METHOD 524.2.

CONTINUING CALIBRATION VERIFICATION

	YES	NO
Is the CCV standard at the midpoint of the ICAL for each analyte?	X	
RRFs for Chloromethane, 1,1-Dichloroethane and Bromoform ≥ 0.10?	**	
RRFs for Chlorobenzene and 1,1,2,2-Tetrachloroethane ≥ 0.30?	**	
%Ds for 1,1-Dichloroethene, Chloroform, 1,2-Dichloropropane, Toluene, Ethylbenzene and Vinyl chloride ≤ 20%?	**	

MDL STUDY

	YES	NO	N/A
MDL values present in the package?		X	
Is MDL study provided?		X	
Study performed within 1 year of sample analysis?			X
MDLs support laboratory reporting limits? (If no, list)			X

Compound	Comments
	RL < 3X MDL
	RL < 3X MDL
	RL < 3X MDL
	RL < 3X MDL

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SAMPLE CALCULATION WORKSHEET - AVERAGE RESPONSE FACTOR

CALCULATION: ug/L=Ax*Is**Vt*DF*GPC/Ais*RRF*Vo*Vi

Sample ID: AH03218
Laboratory ID: 0311016-09
Compound: Trichloroethene **REPORTED VALUE: 3.9 ug/L**

	YES	NO
Compound spectrum matches reference?	X	

Ax=	131202	**3.91304693**	Area cmpd in sample
Is=	125		Amt internal standard, in ng
Vt=	1		Volume of extract, in uL
Df=	1		Dilution factor
GPC=	1		1 if GPC not done, 2 if GPC done
Ais=	649794		Area of internal standard
RRF=	0.258		RRF (average from curve)
Vi=	1		Volume of extract injected, in uL
Ws=	25		Volume of sample, in mL (or Wt in g)
D=	1		Dry-weight (1 if dry-weight not taken into acct)

Compound: Tetrachloroethene **REPORTED VALUE: 2.8 ug/L**

	YES	NO
Compound spectrum matches reference?	X	

Ax=	83218	**2.81840065**	Area cmpd in sample
Is=	125		Amt internal standard, in ng
Vt=	1		Volume of extract, in uL
Df=	1		Dilution factor
GPC=	1		1 if GPC not done, 2 if GPC done
Ais=	404475		Area of internal standard
RRF=	0.365		RRF (average from curve)
Vi=	1		Volume of extract injected, in uL
Ws=	25		Volume of sample, in mL (or Wt in g)
D=	1		Dry-weight (1 if dry-weight not taken into acct)

CALCULATED VALUES MATCH REPORTED VALUES?	YES	NO
	X	

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IDENTIFICATION AND QUANTITATION

For Level IV calculate the results of all detects for project samples, and check RT windows.
Use the worksheets labeled "RT windows" and "calculation."

☐ **Qualifications from QuikVal reports are included herein (reason codes 001, 008, 009 and 010)**
☐ **Qualifications were not indicated in QuikVal reports.**

List all samples requiring qualification here:

Sample ID	Lab ID	Compound	Result	Lab Qualifier	Calc Check	Spectra Match?	RT meets Method Criteria	Qualifier	Reason Code
AH03201	0311002-01	Acetone	6.1		OK	YES	YES	**U / J / J+**	**002 / 006, 009**
AH03201	0311002-01	1,2-Dichloroethane	0.8		OK	YES	YES	**U**	**002**
AH03202	0311002-02	Acetone	7.2		OK	YES	YES	**U / J / J+**	**002 / 006, 009**
AH03202	0311002-02	1,2-Dichloroethane	1.1		OK	YES	YES	**U**	**002**
AH03202	0311002-02	2-Butanone	2.0	J	OK	YES	YES	**U**	**002**
AH03203	0311002-03	Acetone	7.8		OK	YES	YES	**J / J+**	**006, 009**
AH03204	0311007-01	1,2-Dichloroethane	0.4	J	OK	YES	YES	**U**	**002**
AH03205	0311007-02	Acetone	9.3		OK	YES	YES	**J / J+**	**006, 009**
AH03206	0311007-03	Acetone	5.0		OK	YES	YES	**U / J / J+**	**002 / 006, 009**
AH03209	0311010-03	Acetone	4.9		OK	YES	YES	**J+**	**009**
AH03210	0311016-01	Acetone	ND		NA	NA	NA	**UJ**	**006**
AH03210	0311016-01	tert-Butyl alcohol	ND		NA	NA	NA	**UJ**	**006**
AH03210	0311016-01	Bromoform	ND		NA	NA	NA	**UJ**	**006**
AH03212	0311016-03	Acetone	ND		NA	NA	NA	**UJ**	**006**
AH03212	0311016-03	tert-Butyl alcohol	ND		NA	NA	NA	**UJ**	**006**
AH03212	0311016-03	Bromoform	ND		NA	NA	NA	**UJ**	**006**
AH03213	0311016-04	Acetone	ND		NA	NA	NA	**UJ**	**006**
AH03213	0311016-04	tert-Butyl alcohol	ND		NA	NA	NA	**UJ**	**006**
AH03213	0311016-04	Bromoform	ND		NA	NA	NA	**UJ**	**006**
AH03214	0311016-05	Acetone	ND		NA	NA	NA	**UJ**	**006**
AH03214	0311016-05	tert-Butyl alcohol	ND		NA	NA	NA	**UJ**	**006**
AH03214	0311016-05	Bromoform	ND		NA	NA	NA	**UJ**	**006**
AH03215	0311016-06	Acetone	ND		NA	NA	NA	**UJ**	**006**
AH03215	0311016-06	tert-Butyl alcohol	ND		NA	NA	NA	**UJ**	**006**
AH03215	0311016-06	Bromoform	ND		NA	NA	NA	**UJ**	**006**

AH03216	0311016-07	Acetone	5.4		OK	YES	YES	J	006
AH03216	0311016-07	tert-Butyl alcohol	ND		NA	NA	NA	UJ	006
AH03216	0311016-07	Bromoform	ND		NA	NA	NA	UJ	006
AH03217	0311016-08	Acetone	ND		NA	NA	NA	UJ	006
AH03217	0311016-08	tert-Butyl alcohol	ND		NA	NA	NA	UJ	006
AH03217	0311016-08	Bromoform	ND		NA	NA	NA	UJ	006
AH03218	0311016-09	Acetone	ND		NA	NA	NA	UJ	006
AH03218	0311016-09	tert-Butyl alcohol	ND		NA	NA	NA	UJ	006
AH03218	0311016-09	Bromoform	ND		NA	NA	NA	UJ	006
Method Blank	B3K0011-BLK1	Acetone	ND		NA	NA	NA	UJ	006
Method Blank	B3K0016-BLK1	Acetone	ND		NA	NA	NA	UJ	006
Method Blank	B3K0016-BLK1	tert-Butyl alcohol	ND		NA	NA	NA	UJ	006
Method Blank	B3K0016-BLK1	Bromoform	ND		NA	NA	NA	UJ	006

[X] **All Level IV sample results were re-calculated and verified to be correctly reported by the laboratory.**

CONTINUED