



**LABORATORY DATA CONSULTANTS, INC.**

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Northgate Environmental Management, Inc.  
1100 Quail Street Ste. 102  
Newport Beach, CA 92660  
ATTN: Ms. Cindy Arnold

February 17, 2010

SUBJECT: Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada  
Data Validation

Dear Ms. Arnold,

Enclosed is the revised data validation report for the fraction listed below. The data validation was performed under Stage 2B/4 guidelines.

**LDC Project # 21494:**

<b><u>SDG #</u></b>	<b><u>Fraction</u></b>
8304609	Organophosphorus Pesticides

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto  
Operations Manager/Senior Chemist

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Tronox LLC Facility, 2009 Phase B Investigation,  
Henderson, Nevada

**Collection Date:** June 29, 2009

**LDC Report Date:** February 17, 2010

**Matrix:** Water

**Parameters:** Organophosphorus Pesticides

**\*Validation Level:** Stage 2B & 4

**Laboratory:** TestAmerica, Inc.

**Sample Delivery Group (SDG):** 8304609

### Sample Identification

M-111AB\*\*  
EB062909-GW

\*\*Indicates sample underwent Stage 4 review

\*Changed Validation Level from Stage 2B to Stage 4 for noted sample

## Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8141A for Organophosphorus Pesticides.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent Stage 4 review. Stage 2B review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Stage 2B criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UU Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

## II. Calibration

### a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by this method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990 .

Retention time windows were evaluated and considered technically acceptable for samples on which Stage 4 review was performed. Raw data were not evaluated for the samples on which Stage 2B review was performed.

### b. Calibration Verification

Calibration verification was performed at the required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were less than or equal to 20.0% with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
7/7/09	004F0401	1	Naled	44.4	All samples in SDG 8304609	J+ (all detects)	A
7/7/09	004F0401	2	Naled	24.0	All samples in SDG 8304609	J+ (all detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
6/26/09	010F1001	1	Naled Disulfoton	40.1 20.6	All samples in SDG 8304609	J- (all detects) UJ (all non-detects) J- (all detects) UJ (all non-detects)	P
6/26/09	010F1001	2	Naled Malathion	47.6 23.2	All samples in SDG 8304609	J- (all detects) UJ (all non-detects) J- (all detects) UJ (all non-detects)	P

Retention time windows were evaluated and considered technically acceptable for samples on which Stage 4 review was performed. Raw data were not evaluated for the samples on which Stage 2B review was performed.

### III. Blanks

Method blanks were reviewed for each matrix as applicable. No organophosphorus pesticide contaminants were found in the method blanks.

Sample EB062909-GW was identified as an equipment blank. No organophosphorus pesticide contaminants were found in this blank.

### IV. Accuracy and Precision Data

#### a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. The percent recoveries (%R) were within QC limits.

#### b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there was insufficient sample volume for analysis of the matrix spike and matrix spike duplicate.

#### c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

### V. Target Compound Identification

All target compound identifications were within validation criteria for samples on which Stage 4 review was performed. Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

## VI. Project Quantitation Limit

All project quantitation limits were within validation criteria for samples on which Stage 4 review was performed.

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG 8304609	All compounds reported below the PQL.	J (all detects)	A

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

## VII. System Performance

The system performance was acceptable for samples on which Stage 4 review was performed. Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

## VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

## IX. Field Duplicates

No field duplicates were identified in this SDG.

**Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada  
Organophosphorus Pesticides - Data Qualification Summary - SDG 8304609**

SDG	Sample	Compound	Flag	A or P	Reason (Code)
8304609	M-111AB EB062909-GW	Naled	J+ (all detects)	A	Continuing calibration (%D) (c)
8304609	M-111AB EB062909-GW	Naled Disulfoton Malathion	J- (all detects) UJ (all non-detects)	P	Continuing calibration (ICV %D) (c)
8304609	M-111AB EB062909-GW	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (PQL) (sp)

**Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada  
Organophosphorus Pesticides - Laboratory Blank Data Qualification Summary - SDG 8304609**

No Sample Data Qualified in this SDG

**Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada  
Organophosphorus Pesticides - Field Blank Data Qualification Summary - SDG 8304609**

No Sample Data Qualified in this SDG



Tronox Northgate Henderson

LDC #: 21494117  
 SDG #: 8304609  
 Laboratory: Test America

VALIDATION COMPLETENESS WORKSHEET

Stage 2B/4

Date: 9/1/09  
 Page: 1 of 1  
 Reviewer: JVG  
 2nd Reviewer: J

METHOD: GC Organophosphorus Pesticides (EPA SW 846 Method 8141A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/29/09
IIa.	Initial calibration	A	2 RSD $\leq 20\%$ ✓
IIb.	Calibration verification/ICV	(N)	CV/ICV $\leq 20\%$
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	Client spec (insufficient sample)
IVc.	Laboratory control samples	A	LCS 1p
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	EB = 2

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet  
 ND = No compounds detected  
 R = Rinsate  
 FB = Field blank  
 D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

Validated Samples:  
 \* \* Stage 4 Water

1	M-111AB **	11		21		31	
2	EB062909-GW	12		22		32	
3	9182412 MB	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

LDC #: 21499 I 17  
 SDG #: See Com

**VALIDATION FINDINGS CHECKLIST**

Page: 1 of 2  
 Reviewer: Ng  
 2nd Reviewer: h

Method: GC HPLC

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cooler temperature criteria was met.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a curve fit used for evaluation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did the initial calibration meet the curve fit acceptance criteria of > 0.990?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the RT windows properly established?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration analyzed daily?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 20%.0 or percent recoveries 80-120%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all the retention times within the acceptance windows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>V. Blanks</b>				
Was a method blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a method blank analyzed for each matrix and concentration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Surrogate spikes</b>				
Were all surrogate %R within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Was a MS/MSD analyzed every 20 samples of each matrix?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was an LCS analyzed per extraction batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IX. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were the performance evaluation (PE) samples within the acceptance limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

LDC #: 27 494 I 17  
 SDG #: See Cover

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: ML  
 2nd Reviewer: J

Validation Area	Yes	No	NA	Findings/Comments
<b>X. Target compound identification</b>				
Were the retention times of reported detects within the RT windows?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Compound quantitation/CRQLs</b>				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field duplicates.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>XV. Field blanks</b>				
Field blanks were identified in this SDG.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field blanks.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

VALIDATION FINDINGS WORKSHEET

METHOD: / GC HPLC

8310	8330	8151	8141	8141(Cont)	8021B
A. Acenaphthene	A. HMX	A. 2,4-D	A. Dichlorvos	V. Fenulfotolion	V. Benzene
B. Acenaphthylene	B. RDX	B. 2,4-DB	B. Mevinphos	W. Bolstar	CC. Toluene
C. Anthracene	C. 1,3,5-Trinitrobenzene	C. 2,4,5-T	C. Demeton-O	X. EPN	EE. Ethyl Benzene
D. Benzo(a)anthracene	D. 1,3-Dinitrobenzene	D. 2,4,5-TP	D. Demeton-S	Y. Azinphos-methyl	SSS. O-Xylene
E. Benzo(a)pyrene	E. Tetyl	E. Dinoseb	E. Ethoprop	Z. Coumaphos	RRR. MP-Xylene
F. Benzo(b)fluoranthene	F. Nitrobenzene	F. Dichlorprop	F. Naled	AA. Parathion	GG. Total Xylene
G. Benzo(g,h)perylene	G. 2,4,6-Trinitrotoluene	G. Dicamba	G. Sulfatep	BB. Trichloropate	
H. Benzo(k)fluoranthene	H. 4-Amino-2,6-dinitrotoluene	H. Dalapon	H. Phorate	CC. Trichlorinate	
I. Chrysene	I. 2-Amino-4,6-dinitrotoluene	I. MCPP	I. Dimethate	DD. Trifluralin	
J. Dibenz(a,h)anthracene	J. 2,4-Dinitrotoluene	J. MCPA	J. Diazhon	EE. Def	
K. Fluoranthene	K. 2,6-Dinitrotoluene	K. Pentachlorophenol	K. Disulfoton	FF. Prowl	
L. Fluorene	L. 2-Nitrotoluene	L. 2,4,5-TP (silvex)	L. Parathion-methyl	GG. Ethion	
M. Indeno(1,2,3-cd)pyrene	M. 3-Mitrotoluene	M. Silvex	M. Ronnel	HH. Tetrachlorvinphos	
N. Naphthalene	N. 4-Nitrotoluene		N. Melathion	II. Sulprofos	
O. Phenanthrene	O.		O. Chlorpyrifos	JJ. Thionazin	
P. Pyrene	P.		P. Fenithion	KK. Phosmet	
Q.	Q		Q. Parathion-ethyl	LL. O,O,O'-Triethylphosphorothioate	
R.			R. Trichloronate	MM. Famphur	
S.			S. Merphos	NN. Carbofenethion	
			T. Stirofos	OO. Carbofenethion - methyl	
			U. Tokuthion		

Notes:

LDC #: 2494 I.17

SDG #: See Copy

METHOD: GC HPLC

# VALIDATION FINDINGS WORKSHEET

## Continuing Calibration

Page: 1 of 1

Reviewer: JLC

2nd Reviewer: S

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

What type of continuing calibration calculation was performed?      %D or      RPD

N N/A      Were continuing calibration standards analyzed at the required frequencies?

N N/A      Did the continuing calibration standards meet the %D / RPD validation criteria of  $\leq 100\%$ ?

Level IV Only      Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/Column	Compound	%D / RPD (Limit $\leq 100$ )	RT (limit)	Associated Samples	Qualifications
	6/26/09	016 F1001 (1002)	Col. 1	C (G)	187.8	( )	All + BIK	<del>JT - MS/P</del> J - MS/P
				F (G)	40.1	( )		J - MS/P
				D (G)	82.7	( )		J - MS/P
				K (G)	20.6	( )		J - MS/P
			Col. 2	G (G)	215.0	( )		J - MS/P
				F (G)	47.6	( )		J - MS/P
				D (G)	85.2	( )		J - MS/P
				N (G)	23.2	( )		J - MS/P
	7/07/09	001 F0401 (50)	Col. 1	F (F)	44.4	( )		JT - MS/A
			Col. 2	F (F)	24.0	( )		
						( )		
						( )		
						( )		
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LDC #: 21494-117

Page: 1 of 2

SDG #: See Cover

Reviewer: JM

2nd Reviewer: R

### VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

METHOD: GC  HPLC

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

- CF = A/C
- average CF = sum of the CF/number of standards
- %RSD =  $100 \cdot (S/X)$
- A = Area of compound.
- C = Concentration of compound,
- S = Standard deviation of the CF
- X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported		Recalculated		Reported		Recalculated	
				CF ( $> 2 \cdot \sigma$ std)	CF ( $> 2 \cdot \sigma$ std)	Average CF (initial)	Average CF (initial)	%RSD	%RSD		
1	1 CAL	6/26/09	Di A (8141-1) ↓	1.76366	1.76369	1.74977	1.74977	7.99554	7.99554	7.99566	7.99566
				1.82370	1.82370	1.81496	1.81496	5.60901	5.60922		
					See rx calc.						
2			A (8141-2) ↓	2.17503	2.17503	2.01995	2.01995	7.32345	7.32345	7.32345	7.32345
				1.69691	1.69691	1.76315	1.76315	8.53946	8.53963		
				1.17724	1.17724	1.20369	1.20369	3.60889	3.60500		
3											
4											

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC # 21464 J17  
 SDG# See Copy

**VALIDATION FINDINGS WORKSHEET**  
Initial Calibration Calculation Verification

Page: 7 of 7  
 Reviewer: ML  
 2nd Reviewer: R

**METHOD:** GC EPA SW 846 Method 8141A

**Parameter:** Malathion

Date	Column	Compound	Y Area ratio	X Conc ratio	X <sup>2</sup>
06/26/2009	(8141A-1)	Malathion	0.14584	0.100	
			0.29331	0.250	
			0.55883	0.500	
			0.89027	1.000	
			1.76202	1.500	
			2.36769	2.000	
			2.77727	2.500	

Regression Output:		Reported
Constant	-0.02062	c = -0.02066
Std Err of Y Est	0.12319	
R Squared	0.99000	r <sup>2</sup> = 0.99783
No. of Observations	7.00000	
Degrees of Freedom	5.00000	
X Coefficient(s)	1.1388	a
Std Err of Coef.	0.054985	1.14436E+000

IS = TOCP = 2.0ug/mL  
 LAB used weighted linear regression

LDC #: 21494 I17  
 SDG #: Sec Cover

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

Page: 1 of 1  
 Reviewer: JL  
 2nd Reviewer: S

METHOD: GC  HPLC \_\_\_\_\_

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference =  $100 \cdot (\text{ave. CF} - \text{CF}) / \text{ave. CF}$  Where: ave. CF = initial calibration average CF  
 CF = A/C CF = continuing calibration CF  
 A = Area of compound  
 C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF (cal)/ CCV Conc.	Reported		Recalculated	
					CF/Conc. CCV	%D	CF/Conc. CCV	%D
1	004 F0901	7/07/09	A 8141-1 H N	2.500	2.4145 2.5677 2.5578	3.4 2.7 2.3	3.4 2.7 2.3	
2			A 8141-2 H N		2.4117 2.4980 2.4450	3.5 0.1 2.2	3.5 0.1 2.2	
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

(used TCP as IS for an cycle)



LDC #: 21444 I 17

SDG #: See Cover

METHOD: GC HPLC

# VALIDATION FINDINGS WORKSHEET

## Surrogate Results Verification

Page: 1 of 1  
Reviewer: DVG  
2nd reviewer: R

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery:  $SF/SS * 100$

Where: SF = Surrogate Found  
SS = Surrogate Spiked

Sample ID: # 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
TPP		1.0	0.76690	77	77	0
Chloroform		↓	0.60353	60	60	↓

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 21994 I 17

SDG #: See Cover

### VALIDATION FINDINGS WORKSHEET

### Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Page: 1 of 1

Reviewer: JVL

2nd Reviewer: R

METHOD: GC HPLC

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

$$\% \text{ Recovery} = 100 * (\text{SSC}-\text{SC})/\text{SA}$$

$$\text{RPD} = | \text{LCS} - \text{LCSD} | * 2 / (\text{LCS} + \text{LCSD})$$

Where: SSC = Spiked sample concentration  
 SA = Spike added  
 LCS = Laboratory control sample percent recovery  
 SC = Concentration  
 LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 9182412 LCS/D

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Dieldrin (8141)	4.00	4.00	3.64	5.08	91	91	127	127	33	33
Malathion	↓	↓	2.69	3.23	67	67	81	81	18	18

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 21464 I 17  
 SDG #: See Curt

VALIDATION FINDINGS WORKSHEET  
Sample Calculation Verification

Page: 1 of 1  
 Reviewer: JW  
 2nd Reviewer: [Signature]

METHOD:  GC  HPLC

Y N / N/A  
Y N / N/A

Were all reported results recalculated and verified for all level IV samples?  
 Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration =  $\frac{A)(F_v)(D_f)}{(RF)(V_s \text{ or } W_s)(\%S/100)}$  Example: \_\_\_\_\_  
 Sample ID: \_\_\_\_\_ Compound Name: MD  
 Concentration = \_\_\_\_\_

- A= Area or height of the compound to be measured
- Fv= Final Volume of extract
- Df= Dilution Factor
- RF= Average response factor of the compound  
in the initial calibration
- Vs= Initial volume of the sample
- Ws= Initial weight of the sample
- %S= Percent Solid

#	Sample ID	Compound	Reported Concentrations	Recalculated Results Concentrations	Qualifications

Comments: \_\_\_\_\_  
 \_\_\_\_\_