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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mary Martino
Kinder Morgan-Colorado Springs
2 North Nevada Avenue
Colorado Springs, CO, 80903

Report Date: August 8, 2016

Work Order: 16080416

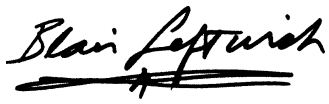
Project Location: Lea County, NM
Project Name: EPNG Line 3031 Spike Test
Project Number: AFE 403828

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
425806	Rupture #4 Contaminated Soil	soil	2016-08-02	10:45	2016-08-04
425807	Rupture #4 Background Soil	soil	2016-08-02	10:45	2016-08-04

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.



Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Johnny Grindstaff, Operations Manager

Report Contents

Case Narrative

Samples for project EPNG Line 3031 Spike Test were received by TraceAnalysis, Inc. on 2016-08-04 and assigned to work order 16080416. Samples for work order 16080416 were received intact at a temperature of 2.4 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	111833	2016-08-07 at 13:00	131966	2016-08-08 at 09:00
TPH DRO	S 8015 D	111788	2016-08-04 at 13:00	131919	2016-08-05 at 09:42
TPH GRO	S 8015 D	111821	2016-08-05 at 16:42	131954	2016-08-05 at 16:42
Volatiles	S 8260 C	111805	2016-08-04 at 12:00	131932	2016-08-04 at 12:00

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 16080416 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 425806 - Rupture #4 Contaminated Soil

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	131966	Date Analyzed:	2016-08-08	Analyzed By:	RL
Prep Batch:	111833	Sample Preparation:	2016-08-07	Prepared By:	RL

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U	1	<250	mg/Kg	5	50.0

Sample: 425806 - Rupture #4 Contaminated Soil

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131919	Date Analyzed:	2016-08-05	Analyzed By:	HJ
Prep Batch:	111788	Sample Preparation:	2016-08-04	Prepared By:	HJ

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			26.2	mg/Kg	1	25.0	105	58.2 - 150

Sample: 425806 - Rupture #4 Contaminated Soil

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131954	Date Analyzed:	2016-08-05	Analyzed By:	MT
Prep Batch:	111821	Sample Preparation:	2016-08-05	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	U	1,2,3	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.26	mg/Kg	1	2.00	113	76.4 - 123

continued ...

sample continued . . .

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			2.12	mg/Kg	1	2.00	106	69.4 - 120

Sample: 425806 - Rupture #4 Contaminated Soil

Laboratory:	Lubbock				
Analysis:	Volatiles	Analytical Method:	S 8260 C	Prep Method:	S 5030B
QC Batch:	131932	Date Analyzed:	2016-08-04	Analyzed By:	KB
Prep Batch:	111805	Sample Preparation:	2016-08-04	Prepared By:	KB

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Bromochloromethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Dichlorodifluoromethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Chloromethane (methyl chloride)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Vinyl Chloride	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Bromomethane (methyl bromide)	U	1,2,3,4	<100	µg/Kg	1	100
Chloroethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Trichlorofluoromethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Acetone	U	1,2,3,4	<200	µg/Kg	1	200
Iodomethane (methyl iodide)	U	1,2,3,4	<100	µg/Kg	1	100
Carbon Disulfide	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Acrylonitrile	U	1,2,3,4	<20.0	µg/Kg	1	20.0
2-Butanone (MEK)	U	1,2,3,4	<100	µg/Kg	1	100
4-Methyl-2-pentanone (MIBK)	Qr,U	1,2,3,4	<100	µg/Kg	1	100
2-Hexanone	U	1,2,3,4	<100	µg/Kg	1	100
trans 1,4-Dichloro-2-butene	Qc,U	1,2,3,4	<200	µg/Kg	1	200
1,1-Dichloroethene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Methylene chloride	B,Jb	1,2,3,4	<100	µg/Kg	1	100
MTBE	U	1,2,3,4	<20.0	µg/Kg	1	20.0
trans-1,2-Dichloroethene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1-Dichloroethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
cis-1,2-Dichloroethene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
2,2-Dichloropropane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2-Dichloroethane (EDC)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Chloroform	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1,1-Trichloroethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1-Dichloropropene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Benzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Carbon Tetrachloride	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2-Dichloropropane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Trichloroethene (TCE)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Dibromomethane (methylene bromide)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Bromodichloromethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0

continued . . .

sample 425806 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
2-Chloroethyl vinyl ether	U	1,2,3,4	<20.0	µg/Kg	1	20.0
cis-1,3-Dichloropropene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
trans-1,3-Dichloropropene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Toluene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1,2-Trichloroethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,3-Dichloropropane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Dibromochloromethane	U	1,3,4	<20.0	µg/Kg	1	20.0
1,2-Dibromoethane (EDB)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Tetrachloroethene (PCE)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Chlorobenzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1,1,2-Tetrachloroethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Ethylbenzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
m,p-Xylene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Bromoform	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Styrene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
o-Xylene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1,2,2-Tetrachloroethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
2-Chlorotoluene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2,3-Trichloropropane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Isopropylbenzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Bromobenzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
n-Propylbenzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,3,5-Trimethylbenzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
tert-Butylbenzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2,4-Trimethylbenzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,4-Dichlorobenzene (para)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
sec-Butylbenzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,3-Dichlorobenzene (meta)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
p-Isopropyltoluene	U	1,2,3	<20.0	µg/Kg	1	20.0
4-Chlorotoluene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2-Dichlorobenzene (ortho)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
n-Butylbenzene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2-Dibromo-3-chloropropane	U	1,3,4	<100	µg/Kg	1	100
1,2,3-Trichlorobenzene	Qr,U	1,2,3,4	<100	µg/Kg	1	100
1,2,4-Trichlorobenzene	Qr,U	1,2,3,4	<100	µg/Kg	1	100
Naphthalene	Qr,U	1,2,3,4	<100	µg/Kg	1	100
Hexachlorobutadiene	U	1,2,3,4	<100	µg/Kg	1	100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		4	845	µg/Kg	1	915	92	78 - 119
Toluene-d8			903	µg/Kg	1	915	99	85 - 116
4-Bromofluorobenzene (4-BFB)			856	µg/Kg	1	915	94	79 - 119

Sample: 425807 - Rupture #4 Background Soil

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	131966	Date Analyzed:	2016-08-08	Analyzed By:	RL
Prep Batch:	111833	Sample Preparation:	2016-08-07	Prepared By:	RL

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U	1	<250	mg/Kg	5	50.0

Sample: 425807 - Rupture #4 Background Soil

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131919	Date Analyzed:	2016-08-05	Analyzed By:	HJ
Prep Batch:	111788	Sample Preparation:	2016-08-04	Prepared By:	HJ

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			24.2	mg/Kg	1	25.0	97	58.2 - 150

Sample: 425807 - Rupture #4 Background Soil

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131954	Date Analyzed:	2016-08-05	Analyzed By:	MT
Prep Batch:	111821	Sample Preparation:	2016-08-05	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	U	1,2,3	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	2.50	mg/Kg	1	2.00	125	76.4 - 123
4-Bromofluorobenzene (4-BFB)			2.26	mg/Kg	1	2.00	113	69.4 - 120

Sample: 425807 - Rupture #4 Background Soil

Laboratory:	Lubbock				
Analysis:	Volatiles	Analytical Method:	S 8260 C	Prep Method:	S 5030B
QC Batch:	131932	Date Analyzed:	2016-08-04	Analyzed By:	KB
Prep Batch:	111805	Sample Preparation:	2016-08-04	Prepared By:	KB

Parameter	Flag	Cert	Result	Units	Dilution	RL
Bromochloromethane	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Dichlorodifluoromethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Chloromethane (methyl chloride)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Vinyl Chloride	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Bromomethane (methyl bromide)	U	1,2,3,4	<100	µg/Kg	1	100
Chloroethane	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Trichlorofluoromethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Acetone	U	1,2,3,4	<200	µg/Kg	1	200
Iodomethane (methyl iodide)	Qs,U	1,2,3,4	<100	µg/Kg	1	100
Carbon Disulfide	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Acrylonitrile	U	1,2,3,4	<20.0	µg/Kg	1	20.0
2-Butanone (MEK)	U	1,2,3,4	<100	µg/Kg	1	100
4-Methyl-2-pentanone (MIBK)	Qr,U	1,2,3,4	<100	µg/Kg	1	100
2-Hexanone	U	1,2,3,4	<100	µg/Kg	1	100
trans 1,4-Dichloro-2-butene	Qc,U	1,2,3,4	<200	µg/Kg	1	200
1,1-Dichloroethene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Methylene chloride	B,Jb,Qs	1,2,3,4	<100	µg/Kg	1	100
MTBE	U	1,2,3,4	<20.0	µg/Kg	1	20.0
trans-1,2-Dichloroethene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1-Dichloroethane	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
cis-1,2-Dichloroethene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
2,2-Dichloropropane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2-Dichloroethane (EDC)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Chloroform	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1,1-Trichloroethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1-Dichloropropene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Benzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Carbon Tetrachloride	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2-Dichloropropane	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Trichloroethene (TCE)	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Dibromomethane (methylene bromide)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Bromodichloromethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
2-Chloroethyl vinyl ether	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
cis-1,3-Dichloropropene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
trans-1,3-Dichloropropene	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Toluene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1,2-Trichloroethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,3-Dichloropropane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Dibromochloromethane	U	1,3,4	<20.0	µg/Kg	1	20.0

continued . . .

sample 425807 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
1,2-Dibromoethane (EDB)	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Tetrachloroethene (PCE)	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Chlorobenzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1,1,2-Tetrachloroethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Ethylbenzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
m,p-Xylene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Bromoform	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Styrene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
o-Xylene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,1,2,2-Tetrachloroethane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
2-Chlorotoluene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2,3-Trichloropropane	U	1,2,3,4	<20.0	µg/Kg	1	20.0
Isopropylbenzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
Bromobenzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
n-Propylbenzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,3,5-Trimethylbenzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
tert-Butylbenzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2,4-Trimethylbenzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,4-Dichlorobenzene (para)	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
sec-Butylbenzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,3-Dichlorobenzene (meta)	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
p-Isopropyltoluene	Qs,U	1,2,3	<20.0	µg/Kg	1	20.0
4-Chlorotoluene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2-Dichlorobenzene (ortho)	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
n-Butylbenzene	Qs,U	1,2,3,4	<20.0	µg/Kg	1	20.0
1,2-Dibromo-3-chloropropane	U	1,3,4	<100	µg/Kg	1	100
1,2,3-Trichlorobenzene	Qr,Qs,U	1,2,3,4	<100	µg/Kg	1	100
1,2,4-Trichlorobenzene	Qr,Qs,U	1,2,3,4	<100	µg/Kg	1	100
Naphthalene	Qr,U	1,2,3,4	<100	µg/Kg	1	100
Hexachlorobutadiene	Qs,U	1,2,3,4	<100	µg/Kg	1	100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		4	847	µg/Kg	1	940	90	78 - 119
Toluene-d8			919	µg/Kg	1	940	98	85 - 116
4-Bromofluorobenzene (4-BFB)			856	µg/Kg	1	940	91	79 - 119

Method Blanks

Method Blank (1) QC Batch: 131919

QC Batch: 131919 | Date Analyzed: 2016-08-05 | Analyzed By: HJ
Prep Batch: 111788 | QC Preparation: 2016-08-04 | Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3	<8.47	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.1	mg/Kg	1	25.0	92	58.2 - 150

Method Blank (1) QC Batch: 131932

QC Batch: 131932 | Date Analyzed: 2016-08-04 | Analyzed By: KB
Prep Batch: 111805 | QC Preparation: 2016-08-04 | Prepared By: KB

Parameter	Flag	Cert	MDL Result	Units	RL
Bromochloromethane		1,2,3,4	<9.28	µg/Kg	20
Dichlorodifluoromethane		1,2,3,4	<9.82	µg/Kg	20
Chloromethane (methyl chloride)		1,2,3,4	<11.7	µg/Kg	20
Vinyl Chloride		1,2,3,4	<10.6	µg/Kg	20
Bromomethane (methyl bromide)		1,2,3,4	<13.5	µg/Kg	100
Chloroethane		1,2,3,4	<9.16	µg/Kg	20
Trichlorofluoromethane		1,2,3,4	<12.4	µg/Kg	20
Acetone		1,2,3,4	<7.34	µg/Kg	200
Iodomethane (methyl iodide)		1,2,3,4	<8.64	µg/Kg	100
Carbon Disulfide		1,2,3,4	<9.90	µg/Kg	20
Acrylonitrile		1,2,3,4	<9.14	µg/Kg	20
2-Butanone (MEK)		1,2,3,4	<13.4	µg/Kg	100
4-Methyl-2-pentanone (MIBK)		1,2,3,4	<14.1	µg/Kg	100
2-Hexanone		1,2,3,4	<10.6	µg/Kg	100
trans 1,4-Dichloro-2-butene		1,2,3,4	<8.49	µg/Kg	200
1,1-Dichloroethene		1,2,3,4	<10.4	µg/Kg	20
Methylene chloride	B	B	1,2,3,4	40.7	µg/Kg	100
MTBE		1,2,3,4	<11.4	µg/Kg	20
trans-1,2-Dichloroethene		1,2,3,4	<9.80	µg/Kg	20
1,1-Dichloroethane		1,2,3,4	<9.82	µg/Kg	20

continued . . .

method blank continued ...

Parameter	Flag	Cert	MDL Result	Units	RL
cis-1,2-Dichloroethene		1,2,3,4	<9.58	µg/Kg	20
2,2-Dichloropropane		1,2,3,4	<8.99	µg/Kg	20
1,2-Dichloroethane (EDC)		1,2,3,4	<9.58	µg/Kg	20
Chloroform		1,2,3,4	<9.68	µg/Kg	20
1,1,1-Trichloroethane		1,2,3,4	<10.6	µg/Kg	20
1,1-Dichloropropene		1,2,3,4	<9.74	µg/Kg	20
Benzene		1,2,3,4	<10.3	µg/Kg	20
Carbon Tetrachloride		1,2,3,4	<8.88	µg/Kg	20
1,2-Dichloropropane		1,2,3,4	<9.48	µg/Kg	20
Trichloroethene (TCE)		1,2,3,4	<10.4	µg/Kg	20
Dibromomethane (methylene bromide)		1,2,3,4	<9.65	µg/Kg	20
Bromodichloromethane		1,2,3,4	<9.23	µg/Kg	20
2-Chloroethyl vinyl ether		1,2,3,4	<10.8	µg/Kg	20
cis-1,3-Dichloropropene		1,2,3,4	<9.76	µg/Kg	20
trans-1,3-Dichloropropene		1,2,3,4	<9.24	µg/Kg	20
Toluene		1,2,3,4	<9.74	µg/Kg	20
1,1,2-Trichloroethane		1,2,3,4	<11.1	µg/Kg	20
1,3-Dichloropropane		1,2,3,4	<10.4	µg/Kg	20
Dibromochloromethane		1,3,4	<9.66	µg/Kg	20
1,2-Dibromoethane (EDB)		1,2,3,4	<10.8	µg/Kg	20
Tetrachloroethene (PCE)		1,2,3,4	<6.38	µg/Kg	20
Chlorobenzene		1,2,3,4	<10.5	µg/Kg	20
1,1,1,2-Tetrachloroethane		1,2,3,4	<10.2	µg/Kg	20
Ethylbenzene		1,2,3,4	<10.8	µg/Kg	20
m,p-Xylene		1,2,3,4	<11.0	µg/Kg	20
Bromoform		1,2,3,4	<8.43	µg/Kg	20
Styrene		1,2,3,4	<9.62	µg/Kg	20
o-Xylene		1,2,3,4	<11.0	µg/Kg	20
1,1,2,2-Tetrachloroethane		1,2,3,4	<10.2	µg/Kg	20
2-Chlorotoluene		1,2,3,4	<11.5	µg/Kg	20
1,2,3-Trichloropropane		1,2,3,4	<9.22	µg/Kg	20
Isopropylbenzene		1,2,3,4	<10.2	µg/Kg	20
Bromobenzene		1,2,3,4	<11.2	µg/Kg	20
n-Propylbenzene		1,2,3,4	<10.6	µg/Kg	20
1,3,5-Trimethylbenzene		1,2,3,4	<11.5	µg/Kg	20
tert-Butylbenzene		1,2,3,4	<10.3	µg/Kg	20
1,2,4-Trimethylbenzene		1,2,3,4	<11.0	µg/Kg	20
1,4-Dichlorobenzene (para)		1,2,3,4	<12.0	µg/Kg	20
sec-Butylbenzene		1,2,3,4	<11.3	µg/Kg	20
1,3-Dichlorobenzene (meta)		1,2,3,4	<11.6	µg/Kg	20
p-Isopropyltoluene		1,2,3	<11.1	µg/Kg	20
4-Chlorotoluene		1,2,3,4	<11.7	µg/Kg	20
1,2-Dichlorobenzene (ortho)		1,2,3,4	<12.0	µg/Kg	20
n-Butylbenzene		1,2,3,4	<11.0	µg/Kg	20

continued ...

method blank continued ...

Parameter	Flag	Cert	MDL Result	Units	RL
1,2-Dibromo-3-chloropropane		1,3,4	<9.07	µg/Kg	100
1,2,3-Trichlorobenzene		1,2,3,4	<12.6	µg/Kg	100
1,2,4-Trichlorobenzene		1,2,3,4	<12.4	µg/Kg	100
Naphthalene		1,2,3,4	<10.7	µg/Kg	100
Hexachlorobutadiene		1,2,3,4	<17.2	µg/Kg	100

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		4	955	µg/Kg	1	1000	96	78 - 119
Toluene-d8			962	µg/Kg	1	1000	96	85 - 116
4-Bromofluorobenzene (4-BFB)			945	µg/Kg	1	1000	94	79 - 119

Method Blank (1) QC Batch: 131954

QC Batch: 131954 Date Analyzed: 2016-08-05 Analyzed By: MT
Prep Batch: 111821 QC Preparation: 2016-08-05 Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1,2,3	<0.271	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.31	mg/Kg	1	2.00	116	76.4 - 123
4-Bromofluorobenzene (4-BFB)			2.11	mg/Kg	1	2.00	106	69.4 - 120

Method Blank (1) QC Batch: 131966

QC Batch: 131966 Date Analyzed: 2016-08-08 Analyzed By: RL
Prep Batch: 111833 QC Preparation: 2016-08-07 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	<31.4	mg/Kg	50

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 131919 | Date Analyzed: 2016-08-05 | Analyzed By: HJ
Prep Batch: 111788 | QC Preparation: 2016-08-04 | Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3	456	mg/Kg	1	500	<8.47	91	68.5 - 136

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3	450	mg/Kg	1	500	<8.47	90	68.5 - 136	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	26.7	27.0	mg/Kg	1	25.0	107	108	58.2 - 150

Laboratory Control Spike (LCS-1)

QC Batch: 131932 | Date Analyzed: 2016-08-04 | Analyzed By: KB
Prep Batch: 111805 | QC Preparation: 2016-08-04 | Prepared By: KB

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Bromochloromethane		1,2,3,4	1040	µg/Kg	1	1000	<9.28	104	78 - 125
Dichlorodifluoromethane		1,2,3,4	805	µg/Kg	1	1000	<9.82	80	29 - 149
Chloromethane (methyl chloride)		1,2,3,4	889	µg/Kg	1	1000	<11.7	89	50 - 136
Vinyl Chloride		1,2,3,4	979	µg/Kg	1	1000	<10.6	98	56 - 135
Bromomethane (methyl bromide)		1,2,3,4	931	µg/Kg	1	1000	<13.5	93	53 - 143
Chloroethane		1,2,3,4	999	µg/Kg	1	1000	<9.16	100	59 - 139
Trichlorofluoromethane		1,2,3,4	1020	µg/Kg	1	1000	<12.4	102	62 - 140
Acetone		1,2,3,4	683	µg/Kg	1	1000	<7.34	68	36 - 164
Iodomethane (methyl iodide)		1,2,3,4	1040	µg/Kg	1	1000	<8.64	104	71 - 131
Carbon Disulfide		1,2,3,4	1040	µg/Kg	1	1000	<9.90	104	63 - 132
Acrylonitrile		1,2,3,4	879	µg/Kg	1	1000	<9.14	88	65 - 134
2-Butanone (MEK)		1,2,3,4	639	µg/Kg	1	1000	<13.4	64	51 - 148

continued ...

control spikes continued . . .

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
4-Methyl-2-pentanone (MIBK)		1,2,3,4	960	µg/Kg	1	1000	<14.1	96	65 - 135
2-Hexanone		1,2,3,4	754	µg/Kg	1	1000	<10.6	75	53 - 145
trans 1,4-Dichloro-2-butene	Qs	Qs 1,2,3,4	1380	µg/Kg	1	1000	<8.49	138	62 - 136
1,1-Dichloroethene		1,2,3,4	1070	µg/Kg	1	1000	<10.4	107	70 - 131
Methylene chloride		1,2,3,4	956	µg/Kg	1	1000	40.7	92	70 - 128
MTBE		1,2,3,4	931	µg/Kg	1	1000	<11.4	93	73 - 125
trans-1,2-Dichloroethene		1,2,3,4	1020	µg/Kg	1	1000	<9.80	102	74 - 125
1,1-Dichloroethane		1,2,3,4	910	µg/Kg	1	1000	<9.82	91	76 - 125
cis-1,2-Dichloroethene		1,2,3,4	986	µg/Kg	1	1000	<9.58	99	77 - 123
2,2-Dichloropropane		1,2,3,4	883	µg/Kg	1	1000	<8.99	88	67 - 133
1,2-Dichloroethane (EDC)		1,2,3,4	820	µg/Kg	1	1000	<9.58	82	73 - 128
Chloroform		1,2,3,4	922	µg/Kg	1	1000	<9.68	92	78 - 123
1,1,1-Trichloroethane		1,2,3,4	936	µg/Kg	1	1000	<10.6	94	73 - 130
1,1-Dichloropropene		1,2,3,4	940	µg/Kg	1	1000	<9.74	94	76 - 125
Benzene		1,2,3,4	964	µg/Kg	1	1000	<10.3	96	77 - 121
Carbon Tetrachloride		1,2,3,4	913	µg/Kg	1	1000	<8.88	91	80 - 120
1,2-Dichloropropane		1,2,3,4	995	µg/Kg	1	1000	<9.48	100	76 - 123
Trichloroethene (TCE)		1,2,3,4	1000	µg/Kg	1	1000	<10.4	100	77 - 123
Dibromomethane (methylene bromide)		1,2,3,4	913	µg/Kg	1	1000	<9.65	91	78 - 125
Bromodichloromethane		1,2,3,4	935	µg/Kg	1	1000	<9.23	94	75 - 127
2-Chloroethyl vinyl ether		1,2,3,4	954	µg/Kg	1	1000	<10.8	95	43 - 149
cis-1,3-Dichloropropene		1,2,3,4	906	µg/Kg	1	1000	<9.76	91	74 - 126
trans-1,3-Dichloropropene		1,2,3,4	920	µg/Kg	1	1000	<9.24	92	71 - 130
Toluene		1,2,3,4	984	µg/Kg	1	1000	<9.74	98	77 - 121
1,1,2-Trichloroethane		1,2,3,4	865	µg/Kg	1	1000	<11.1	86	78 - 121
1,3-Dichloropropane		1,2,3,4	880	µg/Kg	1	1000	<10.4	88	77 - 121
Dibromochloromethane		1,3,4	943	µg/Kg	1	1000	<9.66	94	74 - 126
1,2-Dibromoethane (EDB)		1,2,3,4	901	µg/Kg	1	1000	<10.8	90	78 - 122
Tetrachloroethene (PCE)		1,2,3,4	893	µg/Kg	1	1000	<6.38	89	73 - 128
Chlorobenzene		1,2,3,4	984	µg/Kg	1	1000	<10.5	98	79 - 120
1,1,1,2-Tetrachloroethane		1,2,3,4	965	µg/Kg	1	1000	<10.2	96	78 - 125
Ethylbenzene		1,2,3,4	932	µg/Kg	1	1000	<10.8	93	76 - 122
m,p-Xylene		1,2,3,4	1880	µg/Kg	1	2000	<11.0	94	77 - 124
Bromoform		1,2,3,4	1040	µg/Kg	1	1000	<8.43	104	67 - 132
Styrene		1,2,3,4	941	µg/Kg	1	1000	<9.62	94	76 - 124
o-Xylene		1,2,3,4	945	µg/Kg	1	1000	<11.0	94	77 - 123
1,1,2,2-Tetrachloroethane		1,2,3,4	846	µg/Kg	1	1000	<10.2	85	70 - 124
2-Chlorotoluene		1,2,3,4	910	µg/Kg	1	1000	<11.5	91	75 - 122
1,2,3-Trichloropropane		1,2,3,4	804	µg/Kg	1	1000	<9.22	80	73 - 125
Isopropylbenzene		1,2,3,4	916	µg/Kg	1	1000	<10.2	92	68 - 134
Bromobenzene		1,2,3,4	899	µg/Kg	1	1000	<11.2	90	78 - 121
n-Propylbenzene		1,2,3,4	908	µg/Kg	1	1000	<10.6	91	73 - 125
1,3,5-Trimethylbenzene		1,2,3,4	936	µg/Kg	1	1000	<11.5	94	73 - 124
tert-Butylbenzene		1,2,3,4	957	µg/Kg	1	1000	<10.3	96	73 - 125

continued . . .

control spikes continued . . .

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
1,2,4-Trimethylbenzene		1,2,3,4	947	µg/Kg	1	1000	<11.0	95	75 - 123
1,4-Dichlorobenzene (para)		1,2,3,4	1020	µg/Kg	1	1000	<12.0	102	75 - 120
sec-Butylbenzene		1,2,3,4	950	µg/Kg	1	1000	<11.3	95	73 - 126
1,3-Dichlorobenzene (meta)		1,2,3,4	1020	µg/Kg	1	1000	<11.6	102	77 - 121
p-Isopropyltoluene		1,2,3	971	µg/Kg	1	1000	<11.1	97	73 - 127
4-Chlorotoluene		1,2,3,4	895	µg/Kg	1	1000	<11.7	90	72 - 124
1,2-Dichlorobenzene (ortho)		1,2,3,4	988	µg/Kg	1	1000	<12.0	99	78 - 121
n-Butylbenzene		1,2,3,4	948	µg/Kg	1	1000	<11.0	95	70 - 128
1,2-Dibromo-3-chloropropane		1,3,4	949	µg/Kg	1	1000	<9.07	95	61 - 132
1,2,3-Trichlorobenzene		1,2,3,4	1170	µg/Kg	1	1000	<12.6	117	66 - 130
1,2,4-Trichlorobenzene		1,2,3,4	1110	µg/Kg	1	1000	<12.4	111	67 - 129
Naphthalene		1,2,3,4	1140	µg/Kg	1	1000	<10.7	114	62 - 129
Hexachlorobutadiene		1,2,3,4	1030	µg/Kg	1	1000	<17.2	103	31 - 135

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Bromochloromethane		1,2,3,4	1060	µg/Kg	1	1000	<9.28	106	78 - 125	2	20
Dichlorodifluoromethane		1,2,3,4	749	µg/Kg	1	1000	<9.82	75	29 - 149	7	20
Chloromethane (methyl chloride)		1,2,3,4	881	µg/Kg	1	1000	<11.7	88	50 - 136	1	20
Vinyl Chloride		1,2,3,4	979	µg/Kg	1	1000	<10.6	98	56 - 135	0	20
Bromomethane (methyl bromide)		1,2,3,4	883	µg/Kg	1	1000	<13.5	88	53 - 143	5	20
Chloroethane		1,2,3,4	899	µg/Kg	1	1000	<9.16	90	59 - 139	10	20
Trichlorofluoromethane		1,2,3,4	879	µg/Kg	1	1000	<12.4	88	62 - 140	15	20
Acetone		1,2,3,4	705	µg/Kg	1	1000	<7.34	70	36 - 164	3	20
Iodomethane (methyl iodide)		1,2,3,4	1020	µg/Kg	1	1000	<8.64	102	71 - 131	2	20
Carbon Disulfide		1,2,3,4	1020	µg/Kg	1	1000	<9.90	102	63 - 132	2	20
Acrylonitrile		1,2,3,4	904	µg/Kg	1	1000	<9.14	90	65 - 134	3	20
2-Butanone (MEK)		1,2,3,4	756	µg/Kg	1	1000	<13.4	76	51 - 148	17	20
4-Methyl-2-pentanone (MIBK)		1,2,3,4	859	µg/Kg	1	1000	<14.1	86	65 - 135	11	20
2-Hexanone		1,2,3,4	836	µg/Kg	1	1000	<10.6	84	53 - 145	10	20
trans 1,4-Dichloro-2-butene	Qs Qs	1,2,3,4	1450	µg/Kg	1	1000	<8.49	145	62 - 136	5	20
1,1-Dichloroethene		1,2,3,4	1040	µg/Kg	1	1000	<10.4	104	70 - 131	3	20
Methylene chloride		1,2,3,4	965	µg/Kg	1	1000	40.7	92	70 - 128	1	20
MTBE		1,2,3,4	976	µg/Kg	1	1000	<11.4	98	73 - 125	5	20
trans-1,2-Dichloroethene		1,2,3,4	1050	µg/Kg	1	1000	<9.80	105	74 - 125	3	20
1,1-Dichloroethane		1,2,3,4	967	µg/Kg	1	1000	<9.82	97	76 - 125	6	20
cis-1,2-Dichloroethene		1,2,3,4	1030	µg/Kg	1	1000	<9.58	103	77 - 123	4	20
2,2-Dichloropropane		1,2,3,4	945	µg/Kg	1	1000	<8.99	94	67 - 133	7	20
1,2-Dichloroethane (EDC)		1,2,3,4	921	µg/Kg	1	1000	<9.58	92	73 - 128	12	20
Chloroform		1,2,3,4	986	µg/Kg	1	1000	<9.68	99	78 - 123	7	20
1,1,1-Trichloroethane		1,2,3,4	974	µg/Kg	1	1000	<10.6	97	73 - 130	4	20
1,1-Dichloropropene		1,2,3,4	1000	µg/Kg	1	1000	<9.74	100	76 - 125	6	20
Benzene		1,2,3,4	1020	µg/Kg	1	1000	<10.3	102	77 - 121	6	20

continued . . .

control spikes continued . . .

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Carbon Tetrachloride		1,2,3,4	976	µg/Kg	1	1000	<8.88	98	80 - 120	7	20
1,2-Dichloropropane		1,2,3,4	1100	µg/Kg	1	1000	<9.48	110	76 - 123	10	20
Trichloroethene (TCE)		1,2,3,4	1020	µg/Kg	1	1000	<10.4	102	77 - 123	2	20
Dibromomethane (methylene bromide)		1,2,3,4	1010	µg/Kg	1	1000	<9.65	101	78 - 125	10	20
Bromodichloromethane		1,2,3,4	1050	µg/Kg	1	1000	<9.23	105	75 - 127	12	20
2-Chloroethyl vinyl ether		1,2,3,4	1090	µg/Kg	1	1000	<10.8	109	43 - 149	13	20
cis-1,3-Dichloropropene		1,2,3,4	1010	µg/Kg	1	1000	<9.76	101	74 - 126	11	20
trans-1,3-Dichloropropene		1,2,3,4	995	µg/Kg	1	1000	<9.24	100	71 - 130	8	20
Toluene		1,2,3,4	1040	µg/Kg	1	1000	<9.74	104	77 - 121	6	20
1,1,2-Trichloroethane		1,2,3,4	970	µg/Kg	1	1000	<11.1	97	78 - 121	11	20
1,3-Dichloropropane		1,2,3,4	992	µg/Kg	1	1000	<10.4	99	77 - 121	12	20
Dibromochloromethane		1,3,4	1040	µg/Kg	1	1000	<9.66	104	74 - 126	10	20
1,2-Dibromoethane (EDB)		1,2,3,4	980	µg/Kg	1	1000	<10.8	98	78 - 122	8	20
Tetrachloroethene (PCE)		1,2,3,4	934	µg/Kg	1	1000	<6.38	93	73 - 128	4	20
Chlorobenzene		1,2,3,4	1060	µg/Kg	1	1000	<10.5	106	79 - 120	7	20
1,1,1,2-Tetrachloroethane		1,2,3,4	1050	µg/Kg	1	1000	<10.2	105	78 - 125	8	20
Ethylbenzene		1,2,3,4	1030	µg/Kg	1	1000	<10.8	103	76 - 122	10	20
m,p-Xylene		1,2,3,4	2080	µg/Kg	1	2000	<11.0	104	77 - 124	10	20
Bromoform		1,2,3,4	1100	µg/Kg	1	1000	<8.43	110	67 - 132	6	20
Styrene		1,2,3,4	1010	µg/Kg	1	1000	<9.62	101	76 - 124	7	20
o-Xylene		1,2,3,4	1060	µg/Kg	1	1000	<11.0	106	77 - 123	12	20
1,1,2,2-Tetrachloroethane		1,2,3,4	930	µg/Kg	1	1000	<10.2	93	70 - 124	9	20
2-Chlorotoluene		1,2,3,4	1020	µg/Kg	1	1000	<11.5	102	75 - 122	11	20
1,2,3-Trichloropropane		1,2,3,4	941	µg/Kg	1	1000	<9.22	94	73 - 125	16	20
Isopropylbenzene		1,2,3,4	1010	µg/Kg	1	1000	<10.2	101	68 - 134	10	20
Bromobenzene		1,2,3,4	1030	µg/Kg	1	1000	<11.2	103	78 - 121	14	20
n-Propylbenzene		1,2,3,4	1020	µg/Kg	1	1000	<10.6	102	73 - 125	12	20
1,3,5-Trimethylbenzene		1,2,3,4	1030	µg/Kg	1	1000	<11.5	103	73 - 124	10	20
tert-Butylbenzene		1,2,3,4	1030	µg/Kg	1	1000	<10.3	103	73 - 125	7	20
1,2,4-Trimethylbenzene		1,2,3,4	1030	µg/Kg	1	1000	<11.0	103	75 - 123	8	20
1,4-Dichlorobenzene (para)		1,2,3,4	1060	µg/Kg	1	1000	<12.0	106	75 - 120	4	20
sec-Butylbenzene		1,2,3,4	1040	µg/Kg	1	1000	<11.3	104	73 - 126	9	20
1,3-Dichlorobenzene (meta)		1,2,3,4	1050	µg/Kg	1	1000	<11.6	105	77 - 121	3	20
p-Isopropyltoluene		1,2,3	1050	µg/Kg	1	1000	<11.1	105	73 - 127	8	20
4-Chlorotoluene		1,2,3,4	1000	µg/Kg	1	1000	<11.7	100	72 - 124	11	20
1,2-Dichlorobenzene (ortho)		1,2,3,4	1050	µg/Kg	1	1000	<12.0	105	78 - 121	6	20
n-Butylbenzene		1,2,3,4	1020	µg/Kg	1	1000	<11.0	102	70 - 128	7	20
1,2-Dibromo-3-chloropropane		1,3,4	981	µg/Kg	1	1000	<9.07	98	61 - 132	3	20
1,2,3-Trichlorobenzene		1,2,3,4	1260	µg/Kg	1	1000	<12.6	126	66 - 130	7	20
1,2,4-Trichlorobenzene		1,2,3,4	1220	µg/Kg	1	1000	<12.4	122	67 - 129	9	20
Naphthalene		1,2,3,4	1220	µg/Kg	1	1000	<10.7	122	62 - 129	7	20
Hexachlorobutadiene		1,2,3,4	1100	µg/Kg	1	1000	<17.2	110	31 - 135	7	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Dibromofluoromethane	4	975	967	µg/Kg	1	1000	98	97	78 - 119
Toluene-d8		955	971	µg/Kg	1	1000	96	97	85 - 116
4-Bromofluorobenzene (4-BFB)		934	982	µg/Kg	1	1000	93	98	79 - 119

Laboratory Control Spike (LCS-1)

QC Batch: 131954 | Date Analyzed: 2016-08-05 | Analyzed By: MT
Prep Batch: 111821 | QC Preparation: 2016-08-05 | Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1,2,3	18.2	mg/Kg	1	20.0	<0.271	91	64.2 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1,2,3	18.1	mg/Kg	1	20.0	<0.271	90	64.2 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.10	2.11	mg/Kg	1	2.00	105	106	76.4 - 123
4-Bromofluorobenzene (4-BFB)	2.29	2.26	mg/Kg	1	2.00	114	113	69.4 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 131966 | Date Analyzed: 2016-08-08 | Analyzed By: RL
Prep Batch: 111833 | QC Preparation: 2016-08-07 | Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	2490	mg/Kg	5	2500	<157	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	2540	mg/Kg	5	2500	<157	102	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

Matrix Spike (xMS-1) Spiked Sample: 425785

QC Batch: 131919 | Date Analyzed: 2016-08-05 | Analyzed By: HJ
Prep Batch: 111788 | QC Preparation: 2016-08-04 | Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3	430	mg/Kg	1	500	20.8	82	49.3 - 138

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3	438	mg/Kg	1	500	20.8	83	49.3 - 138	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	54.3	51.6	mg/Kg	1	50	109	103	58.2 - 150

Matrix Spike (MS-1) Spiked Sample: 425807

QC Batch: 131932 | Date Analyzed: 2016-08-04 | Analyzed By: KB
Prep Batch: 111805 | QC Preparation: 2016-08-04 | Prepared By: KB

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Bromochloromethane		1,2,3,4	1070	µg/Kg	1	965	<9.28	111	78 - 125
Dichlorodifluoromethane		1,2,3,4	878	µg/Kg	1	965	<9.82	91	29 - 149
Chloromethane (methyl chloride)		1,2,3,4	912	µg/Kg	1	965	<11.7	94	50 - 136
Vinyl Chloride		1,2,3,4	996	µg/Kg	1	965	<10.6	103	56 - 135
Bromomethane (methyl bromide)		1,2,3,4	664	µg/Kg	1	965	<13.5	69	53 - 143
Chloroethane	Qs	Qs	1,2,3,4	471	µg/Kg	1	965	<9.16	49	59 - 139
Trichlorofluoromethane			1,2,3,4	958	µg/Kg	1	965	<12.4	99	62 - 140
Acetone			1,2,3,4	612	µg/Kg	1	965	<7.34	63	36 - 164
Iodomethane (methyl iodide)			1,2,3,4	1100	µg/Kg	1	965	<8.64	114	71 - 131
Carbon Disulfide			1,2,3,4	1080	µg/Kg	1	965	<9.90	112	63 - 132
Acrylonitrile			1,2,3,4	975	µg/Kg	1	965	<9.14	101	65 - 134
2-Butanone (MEK)			1,2,3,4	680	µg/Kg	1	965	<13.4	70	51 - 148

continued ...

matrix spikes continued . . .

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
4-Methyl-2-pentanone (MIBK)		1,2,3,4	768	µg/Kg	1	965	<14.1	80	65 - 135
2-Hexanone		1,2,3,4	680	µg/Kg	1	965	<10.6	70	53 - 145
trans 1,4-Dichloro-2-butene		1,2,3,4	932	µg/Kg	1	965	<8.49	96	62 - 136
1,1-Dichloroethene		1,2,3,4	1140	µg/Kg	1	965	<10.4	118	70 - 131
Methylene chloride		1,2,3,4	1060	µg/Kg	1	965	32.3	106	70 - 128
MTBE		1,2,3,4	1010	µg/Kg	1	965	<11.4	105	73 - 125
trans-1,2-Dichloroethene		1,2,3,4	1120	µg/Kg	1	965	<9.80	116	74 - 125
1,1-Dichloroethane		1,2,3,4	1080	µg/Kg	1	965	<9.82	112	76 - 125
cis-1,2-Dichloroethene		1,2,3,4	1090	µg/Kg	1	965	<9.58	113	77 - 123
2,2-Dichloropropane		1,2,3,4	861	µg/Kg	1	965	<8.99	89	67 - 133
1,2-Dichloroethane (EDC)		1,2,3,4	979	µg/Kg	1	965	<9.58	101	73 - 128
Chloroform		1,2,3,4	1090	µg/Kg	1	965	<9.68	113	78 - 123
1,1,1-Trichloroethane		1,2,3,4	942	µg/Kg	1	965	<10.6	98	73 - 130
1,1-Dichloropropene		1,2,3,4	1120	µg/Kg	1	965	<9.74	116	76 - 125
Benzene		1,2,3,4	1090	µg/Kg	1	965	<10.3	113	77 - 121
Carbon Tetrachloride	Qs	Qs 1,2,3,4	715	µg/Kg	1	965	<8.88	74	80 - 120
1,2-Dichloropropane		1,2,3,4	1120	µg/Kg	1	965	<9.48	116	76 - 123
Trichloroethene (TCE)		1,2,3,4	1120	µg/Kg	1	965	<10.4	116	77 - 123
Dibromomethane (methylene bromide)		1,2,3,4	946	µg/Kg	1	965	<9.65	98	78 - 125
Bromodichloromethane		1,2,3,4	880	µg/Kg	1	965	<9.23	91	75 - 127
2-Chloroethyl vinyl ether		1,2,3,4	1320	µg/Kg	1	965	<10.8	137	43 - 149
cis-1,3-Dichloropropene		1,2,3,4	927	µg/Kg	1	965	<9.76	96	74 - 126
trans-1,3-Dichloropropene		1,2,3,4	879	µg/Kg	1	965	<9.24	91	71 - 130
Toluene		1,2,3,4	1120	µg/Kg	1	965	<9.74	116	77 - 121
1,1,2-Trichloroethane		1,2,3,4	949	µg/Kg	1	965	<11.1	98	78 - 121
1,3-Dichloropropane		1,2,3,4	980	µg/Kg	1	965	<10.4	102	77 - 121
Dibromochloromethane		1,3,4	732	µg/Kg	1	965	<9.66	76	74 - 126
1,2-Dibromoethane (EDB)		1,2,3,4	956	µg/Kg	1	965	<10.8	99	78 - 122
Tetrachloroethene (PCE)		1,2,3,4	1180	µg/Kg	1	965	<6.38	122	73 - 128
Chlorobenzene		1,2,3,4	1140	µg/Kg	1	965	<10.5	118	79 - 120
1,1,1,2-Tetrachloroethane		1,2,3,4	920	µg/Kg	1	965	<10.2	95	78 - 125
Ethylbenzene		1,2,3,4	1160	µg/Kg	1	965	<10.8	120	76 - 122
m,p-Xylene		1,2,3,4	2380	µg/Kg	1	1930	<11.0	123	77 - 124
Bromoform	Qs	Qs 1,2,3,4	583	µg/Kg	1	965	<8.43	60	67 - 132
Styrene		1,2,3,4	1090	µg/Kg	1	965	<9.62	113	76 - 124
o-Xylene	Qs	Qs 1,2,3,4	1190	µg/Kg	1	965	<11.0	123	77 - 123
1,1,2,2-Tetrachloroethane		1,2,3,4	795	µg/Kg	1	965	<10.2	82	70 - 124
2-Chlorotoluene		1,2,3,4	1100	µg/Kg	1	965	<11.5	114	75 - 122
1,2,3-Trichloropropane		1,2,3,4	846	µg/Kg	1	965	<9.22	88	73 - 125
Isopropylbenzene		1,2,3,4	1120	µg/Kg	1	965	<10.2	116	68 - 134
Bromobenzene		1,2,3,4	985	µg/Kg	1	965	<11.2	102	78 - 121
n-Propylbenzene		1,2,3,4	1160	µg/Kg	1	965	<10.6	120	73 - 125
1,3,5-Trimethylbenzene		1,2,3,4	1170	µg/Kg	1	965	<11.5	121	73 - 124
tert-Butylbenzene	Qs	Qs 1,2,3,4	1220	µg/Kg	1	965	<10.3	126	73 - 125

continued . . .

matrix spikes continued . . .

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
1,2,4-Trimethylbenzene			1,2,3,4	1180	µg/Kg	1	965	<11.0	122	75 - 123
1,4-Dichlorobenzene (para)			1,2,3,4	1140	µg/Kg	1	965	<12.0	118	75 - 120
sec-Butylbenzene	Qs	Qs	1,2,3,4	1260	µg/Kg	1	965	<11.3	130	73 - 126
1,3-Dichlorobenzene (meta)			1,2,3,4	1160	µg/Kg	1	965	<11.6	120	77 - 121
p-Isopropyltoluene	Qs	Qs	1,2,3	1290	µg/Kg	1	965	<11.1	134	73 - 127
4-Chlorotoluene			1,2,3,4	1090	µg/Kg	1	965	<11.7	113	72 - 124
1,2-Dichlorobenzene (ortho)			1,2,3,4	1070	µg/Kg	1	965	<12.0	111	78 - 121
n-Butylbenzene	Qs	Qs	1,2,3,4	1310	µg/Kg	1	965	<11.0	136	70 - 128
1,2-Dibromo-3-chloropropane			1,3,4	654	µg/Kg	1	965	<9.07	68	61 - 132
1,2,3-Trichlorobenzene			1,2,3,4	981	µg/Kg	1	965	<12.6	102	66 - 130
1,2,4-Trichlorobenzene			1,2,3,4	1210	µg/Kg	1	965	<12.4	125	67 - 129
Naphthalene			1,2,3,4	803	µg/Kg	1	965	<10.7	83	62 - 129
Hexachlorobutadiene	Qs	Qs	1,2,3,4	1380	µg/Kg	1	965	<17.2	143	31 - 135

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Bromochloromethane	Qs	Qs	1,2,3,4	1260	µg/Kg	1	880	<9.28	143	78 - 125	16	20
Dichlorodifluoromethane			1,2,3,4	860	µg/Kg	1	880	<9.82	98	29 - 149	2	20
Chloromethane (methyl chloride)			1,2,3,4	1020	µg/Kg	1	880	<11.7	116	50 - 136	11	20
Vinyl Chloride			1,2,3,4	1100	µg/Kg	1	880	<10.6	125	56 - 135	10	20
Bromomethane (methyl bromide)			1,2,3,4	648	µg/Kg	1	880	<13.5	74	53 - 143	2	20
Chloroethane	Qs	Qs	1,2,3,4	484	µg/Kg	1	880	<9.16	55	59 - 139	3	20
Trichlorofluoromethane			1,2,3,4	985	µg/Kg	1	880	<12.4	112	62 - 140	3	20
Acetone			1,2,3,4	645	µg/Kg	1	880	<7.34	73	36 - 164	5	20
Iodomethane (methyl iodide)	Qs	Qs	1,2,3,4	1310	µg/Kg	1	880	<8.64	149	71 - 131	17	20
Carbon Disulfide	Qs	Qs	1,2,3,4	1240	µg/Kg	1	880	<9.90	141	63 - 132	14	20
Acrylonitrile			1,2,3,4	996	µg/Kg	1	880	<9.14	113	65 - 134	2	20
2-Butanone (MEK)			1,2,3,4	786	µg/Kg	1	880	<13.4	89	51 - 148	14	20
4-Methyl-2-pentanone (MIBK)	Qr	Qr	1,2,3,4	961	µg/Kg	1	880	<14.1	109	65 - 135	22	20
2-Hexanone			1,2,3,4	709	µg/Kg	1	880	<10.6	80	53 - 145	4	20
trans 1,4-Dichloro-2-butene			1,2,3,4	1090	µg/Kg	1	880	<8.49	124	62 - 136	16	20
1,1-Dichloroethene	Qs	Qs	1,2,3,4	1290	µg/Kg	1	880	<10.4	146	70 - 131	12	20
Methylene chloride	Qs	Qs	1,2,3,4	1200	µg/Kg	1	880	32.3	133	70 - 128	12	20
MTBE			1,2,3,4	1050	µg/Kg	1	880	<11.4	119	73 - 125	4	20
trans-1,2-Dichloroethene	Qs	Qs	1,2,3,4	1300	µg/Kg	1	880	<9.80	148	74 - 125	15	20
1,1-Dichloroethane	Qs	Qs	1,2,3,4	1130	µg/Kg	1	880	<9.82	128	76 - 125	4	20
cis-1,2-Dichloroethene	Qs	Qs	1,2,3,4	1260	µg/Kg	1	880	<9.58	143	77 - 123	14	20
2,2-Dichloropropane			1,2,3,4	884	µg/Kg	1	880	<8.99	100	67 - 133	3	20
1,2-Dichloroethane (EDC)			1,2,3,4	942	µg/Kg	1	880	<9.58	107	73 - 128	4	20
Chloroform	Qs	Qs	1,2,3,4	1100	µg/Kg	1	880	<9.68	125	78 - 123	1	20
1,1,1-Trichloroethane			1,2,3,4	999	µg/Kg	1	880	<10.6	114	73 - 130	6	20
1,1-Dichloropropene	Qs	Qs	1,2,3,4	1180	µg/Kg	1	880	<9.74	134	76 - 125	5	20
Benzene	Qs	Qs	1,2,3,4	1220	µg/Kg	1	880	<10.3	139	77 - 121	11	20

continued . . .

matrix spikes continued ...

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Carbon Tetrachloride			1,2,3,4	815	µg/Kg	1	880	<8.88	93	80 - 120	13	20
1,2-Dichloropropane	Qs	Qs	1,2,3,4	1240	µg/Kg	1	880	<9.48	141	76 - 123	10	20
Trichloroethene (TCE)	Qs	Qs	1,2,3,4	1320	µg/Kg	1	880	<10.4	150	77 - 123	16	20
Dibromomethane (methylene bromide)			1,2,3,4	1030	µg/Kg	1	880	<9.65	117	78 - 125	8	20
Bromodichloromethane			1,2,3,4	947	µg/Kg	1	880	<9.23	108	75 - 127	7	20
2-Chloroethyl vinyl ether	Qs	Qs	1,2,3,4	1330	µg/Kg	1	880	<10.8	151	43 - 149	1	20
cis-1,3-Dichloropropene			1,2,3,4	1040	µg/Kg	1	880	<9.76	118	74 - 126	12	20
trans-1,3-Dichloropropene			1,2,3,4	962	µg/Kg	1	880	<9.24	109	71 - 130	9	20
Toluene	Qs	Qs	1,2,3,4	1270	µg/Kg	1	880	<9.74	144	77 - 121	13	20
1,1,2-Trichloroethane			1,2,3,4	1000	µg/Kg	1	880	<11.1	114	78 - 121	5	20
1,3-Dichloropropane			1,2,3,4	1020	µg/Kg	1	880	<10.4	116	77 - 121	4	20
Dibromochloromethane			1,3,4	826	µg/Kg	1	880	<9.66	94	74 - 126	12	20
1,2-Dibromoethane (EDB)			1,2,3,4	1020	µg/Kg	1	880	<10.8	116	78 - 122	6	20
Tetrachloroethene (PCE)	Qs	Qs	1,2,3,4	1270	µg/Kg	1	880	<6.38	144	73 - 128	7	20
Chlorobenzene	Qs	Qs	1,2,3,4	1270	µg/Kg	1	880	<10.5	144	79 - 120	11	20
1,1,1,2-Tetrachloroethane			1,2,3,4	1040	µg/Kg	1	880	<10.2	118	78 - 125	12	20
Ethylbenzene	Qs	Qs	1,2,3,4	1250	µg/Kg	1	880	<10.8	142	76 - 122	8	20
m,p-Xylene	Qs	Qs	1,2,3,4	2510	µg/Kg	1	1760	<11.0	143	77 - 124	5	20
Bromoform			1,2,3,4	704	µg/Kg	1	880	<8.43	80	67 - 132	19	20
Styrene	Qs	Qs	1,2,3,4	1210	µg/Kg	1	880	<9.62	138	76 - 124	10	20
o-Xylene	Qs	Qs	1,2,3,4	1240	µg/Kg	1	880	<11.0	141	77 - 123	4	20
1,1,2,2-Tetrachloroethane			1,2,3,4	874	µg/Kg	1	880	<10.2	99	70 - 124	10	20
2-Chlorotoluene	Qs	Qs	1,2,3,4	1250	µg/Kg	1	880	<11.5	142	75 - 122	13	20
1,2,3-Trichloropropane			1,2,3,4	929	µg/Kg	1	880	<9.22	106	73 - 125	9	20
Isopropylbenzene	Qs	Qs	1,2,3,4	1280	µg/Kg	1	880	<10.2	145	68 - 134	13	20
Bromobenzene	Qs	Qs	1,2,3,4	1130	µg/Kg	1	880	<11.2	128	78 - 121	14	20
n-Propylbenzene	Qs	Qs	1,2,3,4	1320	µg/Kg	1	880	<10.6	150	73 - 125	13	20
1,3,5-Trimethylbenzene	Qs	Qs	1,2,3,4	1330	µg/Kg	1	880	<11.5	151	73 - 124	13	20
tert-Butylbenzene	Qs	Qs	1,2,3,4	1360	µg/Kg	1	880	<10.3	154	73 - 125	11	20
1,2,4-Trimethylbenzene	Qs	Qs	1,2,3,4	1330	µg/Kg	1	880	<11.0	151	75 - 123	12	20
1,4-Dichlorobenzene (para)	Qs	Qs	1,2,3,4	1320	µg/Kg	1	880	<12.0	150	75 - 120	15	20
sec-Butylbenzene	Qs	Qs	1,2,3,4	1430	µg/Kg	1	880	<11.3	162	73 - 126	13	20
1,3-Dichlorobenzene (meta)	Qs	Qs	1,2,3,4	1340	µg/Kg	1	880	<11.6	152	77 - 121	14	20
p-Isopropyltoluene	Qs	Qs	1,2,3	1460	µg/Kg	1	880	<11.1	166	73 - 127	12	20
4-Chlorotoluene	Qs	Qs	1,2,3,4	1220	µg/Kg	1	880	<11.7	139	72 - 124	11	20
1,2-Dichlorobenzene (ortho)	Qs	Qs	1,2,3,4	1240	µg/Kg	1	880	<12.0	141	78 - 121	15	20
n-Butylbenzene	Qs	Qs	1,2,3,4	1500	µg/Kg	1	880	<11.0	170	70 - 128	14	20
1,2-Dibromo-3-chloropropane			1,3,4	772	µg/Kg	1	880	<9.07	88	61 - 132	16	20
1,2,3-Trichlorobenzene	Qr,Qs	Qr,Qs	1,2,3,4	1360	µg/Kg	1	880	<12.6	154	66 - 130	32	20
1,2,4-Trichlorobenzene	Qr,Qs	Qr,Qs	1,2,3,4	1480	µg/Kg	1	880	<12.4	168	67 - 129	20	20
Naphthalene	Qr	Qr	1,2,3,4	1110	µg/Kg	1	880	<10.7	126	62 - 129	32	20
Hexachlorobutadiene	Qs	Qs	1,2,3,4	1590	µg/Kg	1	880	<17.2	181	31 - 135	14	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Dibromofluoromethane	4	916	801	µg/Kg	1	965	95	91	78 - 119
Toluene-d8		972	825	µg/Kg	1	965	101	94	85 - 116
4-Bromofluorobenzene (4-BFB)		957	807	µg/Kg	1	965	99	92	79 - 119

Matrix Spike (MS-1) Spiked Sample: 425807

QC Batch: 131954 | Date Analyzed: 2016-08-05 | Analyzed By: MT
Prep Batch: 111821 | QC Preparation: 2016-08-05 | Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1,2,3	15.4	mg/Kg	1	20.0	<0.271	77	35.3 - 129

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1,2,3	17.4	mg/Kg	1	20.0	<0.271	87	35.3 - 129	12	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.10	2.10	mg/Kg	1	2	105	105	76.4 - 123
4-Bromofluorobenzene (4-BFB)	2.18	2.30	mg/Kg	1	2	109	115	69.4 - 120

Matrix Spike (MS-1) Spiked Sample: 425807

QC Batch: 131966 | Date Analyzed: 2016-08-08 | Analyzed By: RL
Prep Batch: 111833 | QC Preparation: 2016-08-07 | Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	2690	mg/Kg	5	2500	<157	104	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	2730	mg/Kg	5	2500	<157	105	80 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (CCV-1)

QC Batch: 131919 | Date Analyzed: 2016-08-05 | Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3	mg/Kg	500	448	90	80 - 120	2016-08-05

Standard (CCV-2)

QC Batch: 131919 | Date Analyzed: 2016-08-05 | Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3	mg/Kg	500	433	87	80 - 120	2016-08-05

Standard (CCV-1)

QC Batch: 131932 | Date Analyzed: 2016-08-04 | Analyzed By: KB

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromochloromethane		1,2,3,4	µg/Kg	50.0	50.0	100	80 - 120	2016-08-04
Dichlorodifluoromethane		1,2,3,4	µg/Kg	50.0	50.1	100	80 - 120	2016-08-04
Chloromethane (methyl chloride)		1,2,3,4	µg/Kg	50.0	43.7	87	80 - 120	2016-08-04
Vinyl Chloride		1,2,3,4	µg/Kg	50.0	50.0	100	80 - 120	2016-08-04
Bromomethane (methyl bromide)		1,2,3,4	µg/Kg	50.0	44.6	89	80 - 120	2016-08-04
Chloroethane		1,2,3,4	µg/Kg	50.0	46.6	93	80 - 120	2016-08-04
Trichlorofluoromethane		1,2,3,4	µg/Kg	50.0	51.3	103	80 - 120	2016-08-04
Acetone		1,2,3,4	µg/Kg	50.0	41.2	82	80 - 120	2016-08-04
Iodomethane (methyl iodide)		1,2,3,4	µg/Kg	50.0	49.1	98	80 - 120	2016-08-04
Carbon Disulfide		1,2,3,4	µg/Kg	50.0	48.6	97	80 - 120	2016-08-04
Acrylonitrile		1,2,3,4	µg/Kg	50.0	43.3	87	80 - 120	2016-08-04
2-Butanone (MEK)		1,2,3,4	µg/Kg	50.0	44.9	90	80 - 120	2016-08-04
4-Methyl-2-pentanone (MIBK)		1,2,3,4	µg/Kg	50.0	41.1	82	80 - 120	2016-08-04

continued . . .

standard continued . . .

Param		Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
2-Hexanone			1,2,3,4	µg/Kg	50.0	44.3	89	80 - 120	2016-08-04
trans 1,4-Dichloro-2-butene	Qc	Qc	1,2,3,4	µg/Kg	50.0	78.4	157	80 - 120	2016-08-04
1,1-Dichloroethene			1,2,3,4	µg/Kg	50.0	47.8	96	80 - 120	2016-08-04
Methylene chloride			1,2,3,4	µg/Kg	50.0	46.8	94	80 - 120	2016-08-04
MTBE			1,2,3,4	µg/Kg	50.0	47.7	95	80 - 120	2016-08-04
trans-1,2-Dichloroethene			1,2,3,4	µg/Kg	50.0	49.4	99	80 - 120	2016-08-04
1,1-Dichloroethane			1,2,3,4	µg/Kg	50.0	47.4	95	80 - 120	2016-08-04
cis-1,2-Dichloroethene			1,2,3,4	µg/Kg	50.0	47.8	96	80 - 120	2016-08-04
2,2-Dichloropropane			1,2,3,4	µg/Kg	50.0	57.3	115	80 - 120	2016-08-04
1,2-Dichloroethane (EDC)			1,2,3,4	µg/Kg	50.0	47.4	95	80 - 120	2016-08-04
Chloroform			1,2,3,4	µg/Kg	50.0	50.5	101	80 - 120	2016-08-04
1,1,1-Trichloroethane			1,2,3,4	µg/Kg	50.0	50.9	102	80 - 120	2016-08-04
1,1-Dichloropropene			1,2,3,4	µg/Kg	50.0	49.6	99	80 - 120	2016-08-04
Benzene			1,2,3,4	µg/Kg	50.0	47.3	95	80 - 120	2016-08-04
Carbon Tetrachloride			1,2,3,4	µg/Kg	50.0	51.1	102	80 - 120	2016-08-04
1,2-Dichloropropane			1,2,3,4	µg/Kg	50.0	50.6	101	80 - 120	2016-08-04
Trichloroethene (TCE)			1,2,3,4	µg/Kg	50.0	46.2	92	80 - 120	2016-08-04
Dibromomethane (methylene bromide)			1,2,3,4	µg/Kg	50.0	48.1	96	80 - 120	2016-08-04
Bromodichloromethane			1,2,3,4	µg/Kg	50.0	53.8	108	80 - 120	2016-08-04
2-Chloroethyl vinyl ether			1,2,3,4	µg/Kg	50.0	57.8	116	80 - 120	2016-08-04
cis-1,3-Dichloropropene			1,2,3,4	µg/Kg	50.0	48.9	98	80 - 120	2016-08-04
trans-1,3-Dichloropropene			1,2,3,4	µg/Kg	50.0	50.9	102	80 - 120	2016-08-04
Toluene			1,2,3,4	µg/Kg	50.0	49.0	98	80 - 120	2016-08-04
1,1,2-Trichloroethane			1,2,3,4	µg/Kg	50.0	46.6	93	80 - 120	2016-08-04
1,3-Dichloropropane			1,2,3,4	µg/Kg	50.0	48.4	97	80 - 120	2016-08-04
Dibromochloromethane			1,3,4	µg/Kg	50.0	51.1	102	80 - 120	2016-08-04
1,2-Dibromoethane (EDB)			1,2,3,4	µg/Kg	50.0	46.6	93	80 - 120	2016-08-04
Tetrachloroethene (PCE)			1,2,3,4	µg/Kg	50.0	44.3	89	80 - 120	2016-08-04
Chlorobenzene			1,2,3,4	µg/Kg	50.0	49.6	99	80 - 120	2016-08-04
1,1,1,2-Tetrachloroethane			1,2,3,4	µg/Kg	50.0	52.8	106	80 - 120	2016-08-04
Ethylbenzene			1,2,3,4	µg/Kg	50.0	50.1	100	80 - 120	2016-08-04
m,p-Xylene			1,2,3,4	µg/Kg	100	103	103	80 - 120	2016-08-04
Bromoform			1,2,3,4	µg/Kg	50.0	54.4	109	80 - 120	2016-08-04
Styrene			1,2,3,4	µg/Kg	50.0	48.6	97	80 - 120	2016-08-04
o-Xylene			1,2,3,4	µg/Kg	50.0	52.5	105	80 - 120	2016-08-04
1,1,2,2-Tetrachloroethane			1,2,3,4	µg/Kg	50.0	44.7	89	80 - 120	2016-08-04
2-Chlorotoluene			1,2,3,4	µg/Kg	50.0	48.7	97	80 - 120	2016-08-04
1,2,3-Trichloropropane			1,2,3,4	µg/Kg	50.0	44.6	89	80 - 120	2016-08-04
Isopropylbenzene			1,2,3,4	µg/Kg	50.0	46.4	93	80 - 120	2016-08-04
Bromobenzene			1,2,3,4	µg/Kg	50.0	48.1	96	80 - 120	2016-08-04
n-Propylbenzene			1,2,3,4	µg/Kg	50.0	47.7	95	80 - 120	2016-08-04
1,3,5-Trimethylbenzene			1,2,3,4	µg/Kg	50.0	48.4	97	80 - 120	2016-08-04
tert-Butylbenzene			1,2,3,4	µg/Kg	50.0	47.4	95	80 - 120	2016-08-04

continued . . .

standard continued . . .

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
1,2,4-Trimethylbenzene		1,2,3,4	µg/Kg	50.0	50.0	100	80 - 120	2016-08-04
1,4-Dichlorobenzene (para)		1,2,3,4	µg/Kg	50.0	49.1	98	80 - 120	2016-08-04
sec-Butylbenzene		1,2,3,4	µg/Kg	50.0	48.5	97	80 - 120	2016-08-04
1,3-Dichlorobenzene (meta)		1,2,3,4	µg/Kg	50.0	49.4	99	80 - 120	2016-08-04
p-Isopropyltoluene		1,2,3	µg/Kg	50.0	49.4	99	80 - 120	2016-08-04
4-Chlorotoluene		1,2,3,4	µg/Kg	50.0	47.8	96	80 - 120	2016-08-04
1,2-Dichlorobenzene (ortho)		1,2,3,4	µg/Kg	50.0	48.7	97	80 - 120	2016-08-04
n-Butylbenzene		1,2,3,4	µg/Kg	50.0	51.2	102	80 - 120	2016-08-04
1,2-Dibromo-3-chloropropane		1,3,4	µg/Kg	50.0	46.0	92	80 - 120	2016-08-04
1,2,3-Trichlorobenzene		1,2,3,4	µg/Kg	50.0	50.9	102	80 - 120	2016-08-04
1,2,4-Trichlorobenzene		1,2,3,4	µg/Kg	50.0	52.8	106	80 - 120	2016-08-04
Naphthalene		1,2,3,4	µg/Kg	50.0	49.4	99	80 - 120	2016-08-04
Hexachlorobutadiene		1,2,3,4	µg/Kg	50.0	51.8	104	80 - 120	2016-08-04

Standard (CCV-1)

QC Batch: 131954 Date Analyzed: 2016-08-05 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1,2,3	mg/Kg	1.00	1.10	110	80 - 120	2016-08-05

Standard (CCV-2)

QC Batch: 131954 Date Analyzed: 2016-08-05 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1,2,3	mg/Kg	1.00	0.852	85	80 - 120	2016-08-05

Standard (ICV-1)

QC Batch: 131966 Date Analyzed: 2016-08-08 Analyzed By: RL

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/Kg	100	101	101	85 - 115	2016-08-08

Standard (CCV-1)

QC Batch: 131966 Date Analyzed: 2016-08-08 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/Kg	100	99.0	99	85 - 115	2016-08-08

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	NELAP	T104704219-16-12	Lubbock
4		2015-066	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

LAB Order ID # 1608046

Page 1 of 1

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

5002 Basin Street, Suite A1
Midland, Texas 79703
Tel (432) 689-6301
Fax (432) 689-6313

200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750

Brandon & Clark
3403 Industrial Blvd.
Hobbs, NM 88240
Tel (575) 392-7561
Fax (575) 392-4508

Company Name: Kinder Morgan
Phone #: (719) 505-5255
Address: (Street, City, Zip) 2 North Nevada Ave. Colorado Springs, CO 80903
Fax #:
Contact Person: Mary Martino
E-mail: mary_martino@kindermorgan.com
Invoice to: (If different from above)
Project #: AFE 403828
Project Name: EPNG Line 3031 Spike Test
Project Location (including state): Lea County, NM
Sampler Signature: Elisabeth Westcott

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
435806	Rupture#4 contaminated soil	746-768			X								X	08/02/16	10:45am
807	Rupture #4 background soil	746-766			X								X	08/02/16	10:45am
808	Rupture #4 release A	734-832	250mL	X									X	08/02/16	10:45am
809	Rupture #4 release B,C,+D	3	40mL	X				X						08/02/16	10:45am
810	Rupture #4 release E,F,G	3	40mL	X				X						08/02/16	10:45am
811	Rupture #4 release H,I,J	3	40mL	X				X						08/02/16	10:45am

ANALYSIS REQUEST (Circle or Specify Method No.)	Turn Around Time if different from standard	Hold
MTBE 8021 / 602 / 8260 / 624		
BTEX 8021 / 602 / 8260 / 624		
TPH 418.1 / TX1005 / TX1005 Ext(C35)		
TPH 8015 GRO / DRO / TVHC	X	
PAH 8270 / 625		
Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7		
TCLP Metals Ag As Ba Cd Cr Pb Se Hg		
TCLP Volatiles		
TCLP Semi Volatiles		
TCLP Pesticides		
RCI		
GC/MS Vol. 8260 / 624	X	
GC/MS Semi. Vol. 8270 / 625		
PCB's 8082 / 608		
Pesticides 8081 / 608		
BOD, TSS, pH		
Moisture Content	X	
(Cl), F, SO_4, NO_3-N, NO_2-N, PO_4-P, Alkalinity	X	
Na, Ca, Mg, K, TDS, EC	X	

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
Elisabeth Westcott	KMI	08/03/16	7:00am		Brandon Clark	8/3/16	7:03	INST ____ OBS 11 °C COR ____ °C
								INST ____ OBS ____ °C COR ____ °C
				Brenda Ward	FA Lewis	8/4/16	9:15	INST IR 3 OBS 2.0 °C COR 2.4 °C

LAB USE ONLY
Intact Y / N
Headspace Y / N / NA
Log-in-Review

REMARKS:

- ☐ Dry Weight Basis Required
- ☐ TRRP Report Required
- ☐ Check If Special Reporting Limits Are Needed

Carrier # 25 24 008462

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

Revision 1, 09/15/15

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