

Limited Subsurface Investigation

**40-46 Frazee Street
Auburn, New York**

CHA Project Number: 25810

Prepared for:

*The City of Auburn
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LIST OF ACRONYMS & ABBREVIATIONS

ACM	Asbestos Containing Material
AECC	Asbestos & Environmental Consulting Corporation
BGS	Below Ground Surface
CHA	CHA Consulting Inc.
ELAP	Environmental Laboratory Approval Program
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
NYSDEC	New York State Department of Environmental Conservation
PCB	Polychlorinated Biphenyls
PID	Photoionization Detector
PPM	Parts Per Million
QAPP	Quality Assurance Project Plan
REC	Recognized Environmental Condition
SAP	Sampling and Analysis Plan
SCO	Soil Cleanup Objective
SVOC	Semi-Volatile Organic Compound
VOC	Volatile Organic Compound

1.0 INTRODUCTION

The Property consists of a 1.7 acre parcel (Tax ID 155.41-1-1) with an address of 40-46 Frazee Street, in the City of Auburn, Cayuga County, New York. The Property is bounded to the west by Canoga Street, to the north by Frazee Street, and to the south by Wadsworth Street. The site is surrounded by residential development with the exception of the area immediately east of the Property which is occupied by the Auburn Foundry. The Property is currently a vacant lot and there are no existing structures. A fenced gravel parking area is located in the northeast corner of the Property.

According to a Phase I Environmental Site Assessment (ESA) of the Property (CHA, March 2012), the Property appears to have been historically occupied by a junk yard, and portions of the A&R Paper and Metal Corporation. This ESA also indicates that the Auburn Foundry site, located immediately east of the Property, reportedly has residual petroleum contamination. The Phase I ESA recommended that a subsurface investigation be conducted on the site in an effort to further characterize the subsurface materials and address the potential for residual contamination on the Property. As a result, a limited subsurface investigation was conducted on May 14, 2013 in accordance with the November 2012 Sampling and Analysis Plan (SAP), prepared by Asbestos & Environmental Consulting Corporation (AECC), as detailed below.

2.0 FIELD ACTIVITIES

As specified in the November 25, 2012 SAP, a limited subsurface investigation was completed on the Property on May 14, 2013. A series of five (5) test pits were installed on the Property and soil samples were installed by Paragon Environmental Inc. located in Brewerton, New York using a Kobelco excavator. A CHA scientist provided oversight during the subsurface investigation.

Each test pit was advanced to a maximum depth of twelve (12) feet below ground surface (bgs). Soils were screened continuously for visual, olfactory, and photoionic evidence of contamination using a Minirae 3000 photoionization detector (PID). Observations including soil descriptions, texture, color, moisture content and stratigraphic changes were documented by the field scientist on subsurface field logs. Copies of the subsurface field logs are provided in Appendix A.

Based on the field screening results, one (1) soil sample from each test pit was selected for laboratory analysis. Soil samples were submitted following appropriate chain of custody procedures to Chemtech laboratories located in Mountainside, New Jersey (New York State Laboratory Certification No. 20012) for laboratory analysis of volatile organic compounds (VOCs) via EPA method 8260, semi-volatile organic compounds (SVOCs) via EPA method 8270, metals via EPA method 6010, mercury via EPA method 7471, and polychlorinated biphenyls (PCBs) via EPA method 8082. CHA notes that as specified in the SAP, no groundwater sampling was conducted.

After the collection of the soil samples, each test pit was backfilled with soil generated during field activities and tamped into place using the excavator bucket.

3.0 FINDINGS & CONCLUSIONS

3.1 TEST PIT INSTALLATION

During test pit installation activities, site soils were primarily fine to medium sand with silt and fill material including brick, glass, ash and what appeared to be foundry sand. A native layer consisting of clay/silt/sand was observed at approximately 7-9 feet bgs. Copies of the field logs are included in Appendix A.

During the course of the test pit installation, CHA noted petroleum odors and staining in test pit TP-2, at a depth of approximately 6 feet bgs. PID readings of this material were noted to be 268 parts per million (ppm).

During the installation of TP-4, pockets of what appeared to be agricultural lime (calcium carbonate) were observed. Test Pit TP-4 was terminated at approximately 3.5 feet bgs due to encountering a concrete slab and additional foundation material which extended out from the test pit location, based on multiple attempts to install TP-4. No odors or photoionic evidence of contamination were identified during installation of this test pit.

Perched groundwater was encountered at approximately 11 feet bgs in TP-5.

No visual, olfactory, or photoionic evidence of soil contamination (other than fill material) were identified in any of the remaining on-site excavations.

3.2 ANALYTICAL RESULTS

Table 1 summarizes the soil results (detected parameters only) as compared to the New York State Department of Environmental Conservation's (NYSDEC's) Part 375 Unrestricted Soil Cleanup Objectives (SCOs). As shown in Table 1, VOCs and/or metals exceeded the unrestricted SCOs in each of the test pits with the exception of TP-5. A full table showing analytical results is attached as Table 2.

Nickel was detected in test pit TP-1 at a concentration of 31.7 ppm which slightly exceeds the unrestricted SCO of 30 ppm.

Acetone, a known laboratory contaminant, was detected at a concentration exceeding the unrestricted SCO in test pit TP-2. In addition, two metals (arsenic and mercury) were detected in test pit TP-2 at concentrations exceeding the unrestricted SCOs. As previously indicated, this test pit showed evidence of petroleum contamination during installation.

Cadmium and nickel were detected in test pit TP-3 at concentrations of 26.7 and 138 ppm, which exceed the unrestricted SCOs of 2.5 and 30 ppm, respectively.

Six metals including cadmium, copper, lead, mercury, nickel and zinc were detected in test pit TP-4 at concentrations exceeding the unrestricted SCOs. During installation, this test pit appeared to contain pockets of lime mixed with the soil. The analytical data report is included in Appendix B.

In addition to the five (5) soil samples collected from the test pits, one duplicate sample (CHA-1) was collected from TP-3. The results from CHA-1 are consistent with those of TP-3.

Table 1: Soil Analytical Results - Detected Compounds Only

Parameter	CAS-RN	Part 375 Unrestricted SCO	Unit	Location	TP-1	TP-2	TP-3	TP-4	TP-5
				Date	5/14/2013	5/14/2013	5/14/2013	5/14/2013	5/14/2013
SW8260C									
2-Butanone	78-93-3	120	ug/kg		ND	32.7 J	ND	ND	13.5 J
Acetone	67-64-1	50	ug/kg		ND	59.5	ND	ND	28.5 J
Methylcyclohexane	108-87-2		ug/kg		ND	1.6 J	ND	ND	ND
Methylene Chloride	75-09-2	50	ug/kg		4 J	4.1 J	4 J	2.8 J	3.9 J
SW8270D									
2-Methylnaphthalene	91-57-6		ug/kg		ND	2,000	ND	ND	ND
Dimethylphthalate	131-11-3		ug/kg		180 J	ND	170 J	ND	190 J
Fluoranthene	206-44-0	100,000	ug/kg		200 J	ND	ND	2,200 J	ND
Phenanthrene	85-01-8	100,000	ug/kg		ND	ND	ND	2,000 J	ND
Pyrene	129-00-0	100,000	ug/kg		170 J	1,000 J	ND	1,600 J	ND
SW6010B									
Aluminum (Fume Or Dust)	7429-90-5		mg/kg		10,200	4,570	1,670	4,220	1,730
Arsenic	7440-38-2	13	mg/kg		3.79	17	9.91	8.62	3.34
Barium	7440-39-3	350	mg/kg		67	57.2	32.7	118	58.9
Cadmium	7440-43-9	2.5	mg/kg		ND	ND	26.7	4.1	1.96
Calcium	7440-70-2		mg/kg		39,400	3,920	13,700	105,000	1,770
Chromium	7440-47-3		mg/kg		12.9 R	11.8 R	76.9 R	26.7 R	6.47 R
Cobalt	7440-48-4		mg/kg		12.2	5.44	25.3	8.82	2.99
Copper	7440-50-8	50	mg/kg		ND	1.28	20.7	385	3.09
Iron	7439-89-6		mg/kg		24,900	23,300	370,000 D	40,200	13,700
Lead	7439-92-1	63	mg/kg		10.8	26.8	57.3	421	14.7
Magnesium	7439-95-4		mg/kg		18,800	1,950	1,620	11,900	191
Manganese	7439-96-5	1,600	mg/kg		329	97.4	1,250	377	33.6
Nickel	7440-02-0	30	mg/kg		31.7 R	17.4 R	138 R	48.2 R	12.3 R
Potassium	7440-09-7		mg/kg		1,430	888	283	625	165
Silver	7440-22-4	2	mg/kg		0.99	0.33	ND	1.14	0.12 J
Sodium	7440-23-5		mg/kg		ND	ND	ND	ND	59.7
Thallium	7440-28-0		mg/kg		0.68 J	0.71 J	8.52	1.93	ND
Vanadium (Fume Or Dust)	7440-62-2		mg/kg		12.4	12.4	0.53 J	6.44	9.37
Zinc	7440-66-6	109	mg/kg		41.7	35.5	14.9	730	13
SW7471A									
Mercury	7439-97-6	0.18	mg/kg		0.035	0.437	0.021	0.684 D	0.036
SW8082									
Aroclor 1254	11097-69-1	1,000	ug/kg		ND	ND	ND	370	ND

Notes: ND- Not Detected, D- Dilution, R- rejected data, J- estimated concentration

3.3 DATA VALIDATION

Upon receipt of analytical results, data validation and usability was evaluated by Nancy Potak located in Greensboro, Vermont. All data was identified as usable with the exception of the following items:

- Total chromium and nickel data were flagged with the “R” qualifier and technically rejected since the recovery for chromium in the matrix spike/matrix spike duplicate samples were greater than 200%.
- SVOCs (including 4,6-dinitro-2-methylphenol, 3,3'-dichlorobenzidine, fluoranthene and phenanthrene) which had recoveries less than 10% in the matrix spike/matrix spike duplicate samples were flagged with the “R” qualifier and technically rejected when the compounds were not detected in a sample.

The above items account for less than ten percent (10%) of the collected data and therefore the data as a whole is considered usable per the QAPP and SAP. Data technically rejected will not be used to evaluate site conditions. The complete data validation report is included in Appendix C.

3.4 CONCLUSIONS

Acetone and several metals, including mercury, were detected in four (4) of the five (5) test pits installed on the Property at concentrations exceeding the unrestricted SCOs. CHA understands that the end use for the Property has not been identified. Given this uncertainty, CHA recommends that once an end use has been determined that the Phase II data be re-evaluated. Part 375 Unrestricted SCOs, which are the most stringent criteria, were used for comparison as specified in the SAP. However, a more applicable SCO may be applied dependent on the future use and subsequent soil exposure.

4.0 RESOURCE SUMMARY

In compiling the report summarizing this investigation, the following resources were utilized.

- *Phase I ESA 40-46 Frazee Street*, prepared by CHA Inc., March 2, 2012
- *Auburn Brownfield Investigation Grant Limited Phase II Environmental Site Assessment Sampling and Analysis Plan. Site Location: 40-46 Frazee Street, Auburn, New York 13021*
Prepared by Asbestos & Environmental Consulting Corporation, November 25, 2012
- *Auburn EPA Brownfield Assessment Grant Program Generic QAPP*. Prepared by Asbestos & Environmental Consulting Corporation, April 9, 2013

FIGURE 1



SOURCE: NYS Orthos Online



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441 South Salina Street, Syracuse, NY 13202-4712
www.chacompanies.com

MAP NOT TO SCALE

DATE: June 2013

FIGURE 1
Sampling Location Plan
40-46 Frazee Street
CITY OF AUBURN
COUNTY OF CAYUGA, STATE OF NEW YORK

\\cha-ftp.com\proj\Projects\AN\K3\25810\Reports\Frazee SV\Figure 1 - Location Plan Frazee.doc

APPENDIX A

FIELD LOGS



Test Pit Log

Test Pit No.: TP-01

Project Name: Auburn Brownfields

Test Pit Location: See figure 1

Project Location: 40-46 Frazee Street

Logged By: K. Flood

Project Number: 25810

Date: 5/14/14 Start: 0940 Finish: 1005

Excavation Contractor: Paragon Environmental

Equipment: Kobelco SK 150 LC

General Information:

Length: 12'

Width: 4'

Max. Depth: 8'

Groundwater in Pit: Yes No

If yes, what depth: _____

Location Marked: Yes No

With: Stake, flagging

Pictures Taken: Yes No

Sampling Information:

Sampling Method: grab

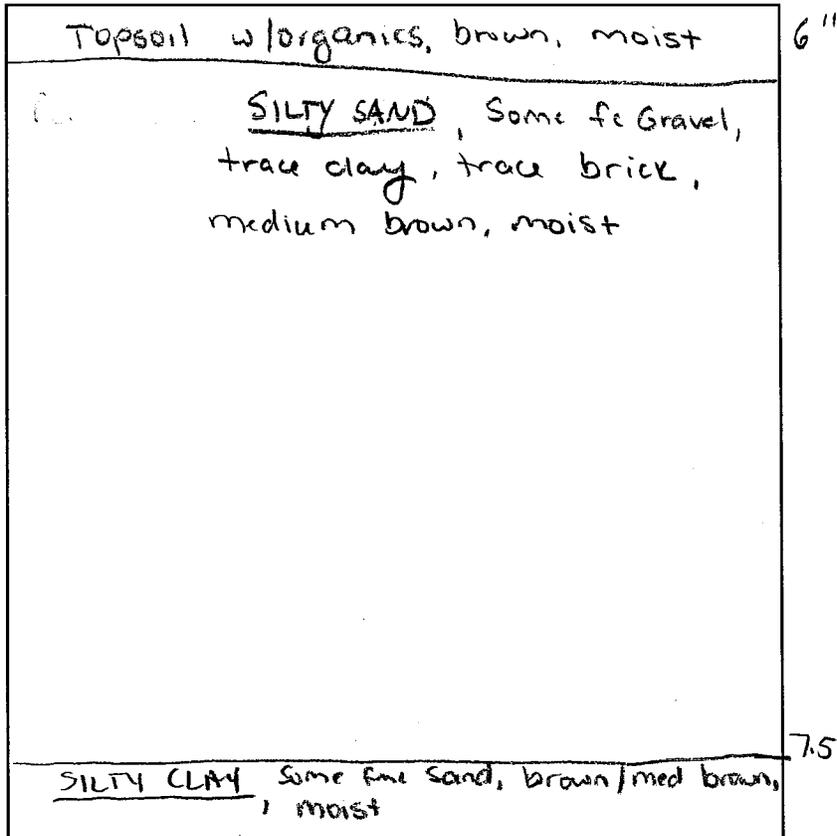
Sample Collected: Yes No

Sampling Time: 0950 @ 2' BGS

Sample Analyses: VOCs, SVOCs, Metals, Mercury, PCBs

No. of Bottles: 5

Test Pit Profile



PID Readings/Test Pit Notes:

No PID readings at this location

No evidence of contamination noted at this location

Sampled @ ~ 2' BGS in SE corner of TP-01, near an area of a higher concentration of brick fill (closer to the foundry)

Presumed native layer at ~ 7.5' BGS



Test Pit Log

Test Pit No.: TP-02

Project Name: Auburn Brownfields

Test Pit Location: See figure 1

Project Location: 40-46 Frazee Street

Logged By: K. Flood

Project Number: 25810

Date: 5/14/13 Start: 1020 Finish:

Excavation Contractor: Paragon Environmental

Equipment: Kobelco SK 150 LC

General Information:

Length: 11

Width: 4'

Max. Depth: 8'

Groundwater in Pit: Yes No

If yes, what depth: _____

Location Marked: Yes No

With: Stake and flagging

Pictures Taken: Yes No

Sampling Information:

Sampling Method: Grab

Sample Collected: Yes No

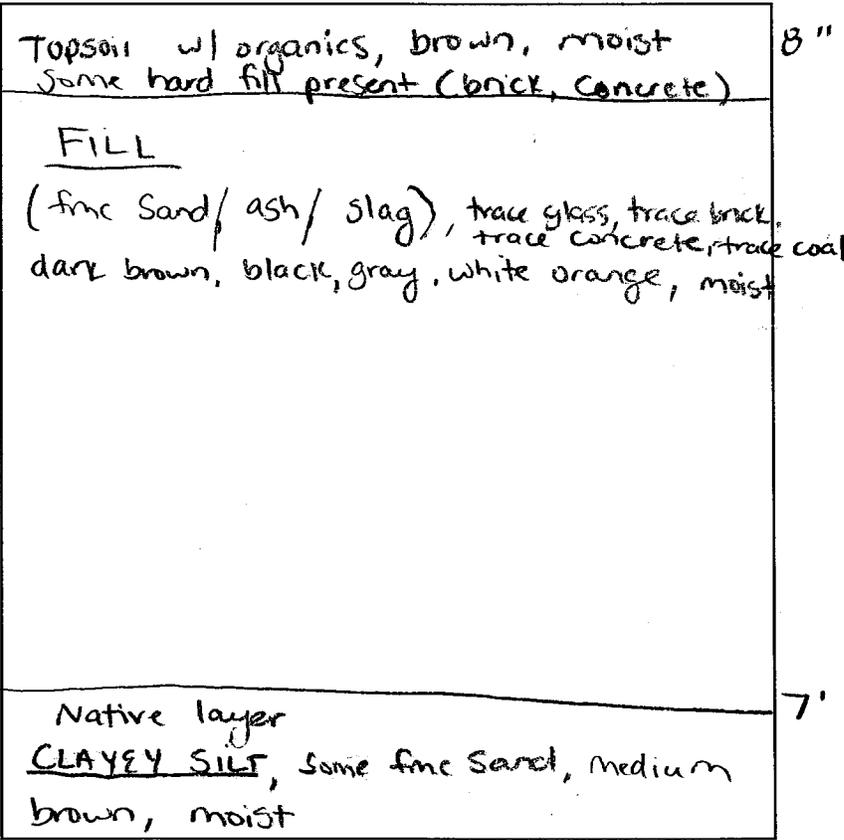
Sampling Time: 1035 @ 6' BGS

Sample Analyses: VOCs, SVOCs, PCBs, Metals, Mercury

No. of Bottles: 5

Test Pit Profile

PID Readings/Test Pit Notes:



Concrete slab along south side of TP-02 @ 4' BGS

5-6.5' BGS encountered dk br/ black layer w/ moderate petroleum odor
PID = 268 ppm.
Trace coal in this layer. Somewhat saturated w/ potential product.
Sample collected of this material, 120 ppm.



Test Pit Log

Test Pit No.: TP-03

Project Name: Auburn Brownfields

Test Pit Location:

Project Location: 40-46 Frazee Street

Logged By: K. Flood

Project Number: 25810

Date: 5/14/13 Start: 1435 Finish: 1455

Excavation Contractor: Paragon Environmental

Equipment: Kobelco SK 150 LC

General Information:

Length: 10'

Width: 4'

Max. Depth: 7.5'

Groundwater in Pit: Yes No

If yes, what depth: _____

Location Marked: Yes No

With: stake and flagging

Pictures Taken: Yes No

Sampling Information:

Sampling Method: Grab

Sample Collected: Yes No

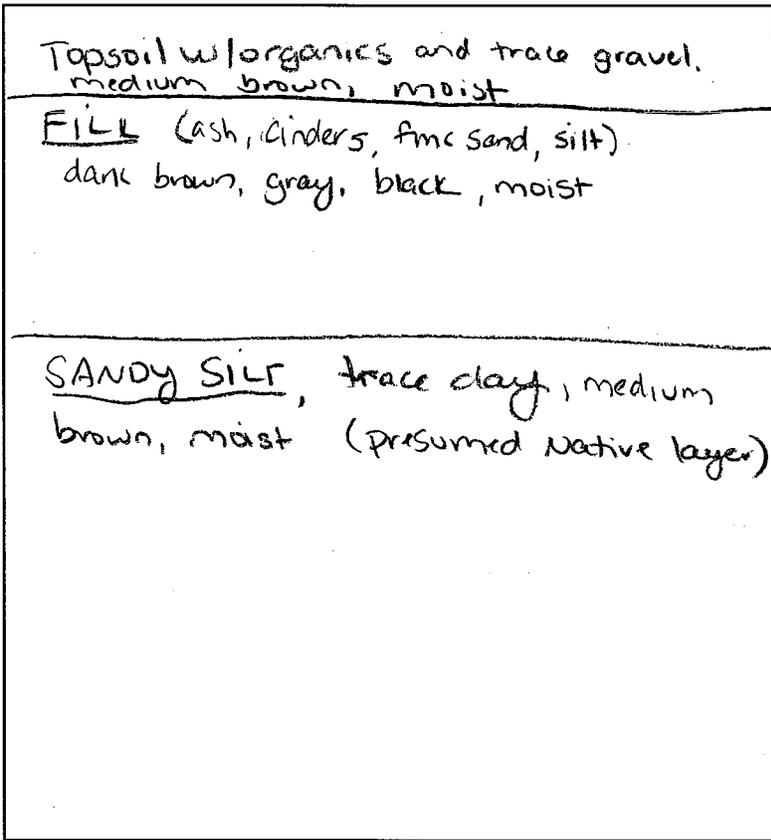
Sampling Time: 14:50

Sample Analyses: VOCs, SVOCs, PCBs, Metals, Mercury

No. of Bottles: 10

Test Pit Profile

PID Readings/Test Pit Notes:



CHA-1 field duplicate taken here.

PID = 0 ppm

No PID or olfactory evidence of contamination

visually there is charred material.



Test Pit Log

Test Pit No.: TP-4

Project Name: Auburn Brownfields

Test Pit Location: See figure 1

Project Location: 40-46 Frazee Street

Logged By: K. Flood

Project Number: 25810

Date: 5/14/13 Start: 15:10 Finish: 15:55

Excavation Contractor: Paragon Environmental

Equipment: Kobelco SK 150 LC

General Information:

Length: 10'

Width: 4'

Max. Depth: 3.5'

Groundwater in Pit: Yes No

If yes, what depth: _____

Location Marked: Yes No

With: Stake and flagging

Pictures Taken: Yes No

Sampling Information:

MS/MSD collected here

Sampling Method: Grab

Sample Collected: Yes No

Sampling Time: 15:45

Sample Analyses: VOCs, SVOCs, PCBs, metals, Mercury

No. of Bottles: 15

Test Pit Profile

PID Readings/Test Pit Notes:

Topsoil w/organics, brown, moist

FILL (silty sand, brick, concrete, pockets of suspected lime, metal) white, brown, orange, black, green flecks, moist

3"

TP-4 was 3rd attempt to install a test pit in the proposed location. First 2 attempts encountered concrete slabs @ ~1 foot BGS.

PID readings = 0 ppm

Test pit terminated at ~3.5' BGS due to concrete slab.

3.5'
BGS



Test Pit Log

Test Pit No.: TP-05

Project Name: Auburn Brownfields

Test Pit Location: See figure 1

Project Location: 40-46 Frazee Street

Logged By: K. Flood

Project Number: 25810

Date: 5/14/13 Start: 1600 Finish: 1635

Excavation Contractor: Paragon Environmental

Equipment: Kobelco SK 150 LC

General Information:

Length: 8'

Width: 4'

Max. Depth: 12'

Groundwater in Pit: Yes No

If yes, what depth: 11' BGS

Location Marked: Yes No

With: Stake and flagging

Pictures Taken: Yes No

Sampling Information:

Sampling Method: Grab

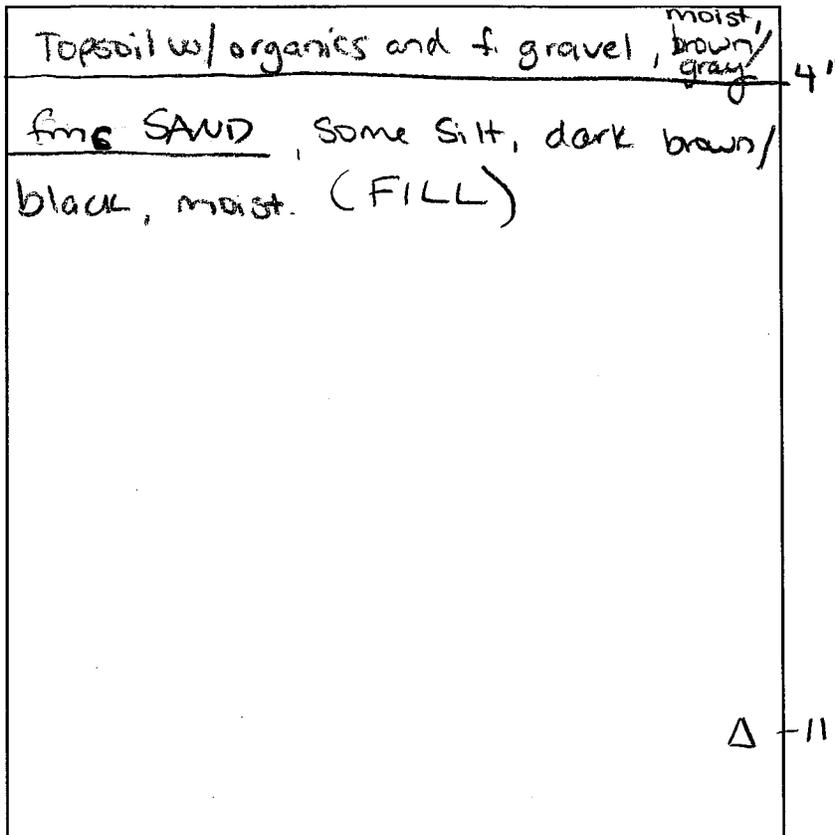
Sample Collected: Yes No

Sampling Time: 1635

Sample Analyses: VOCs, SVOCs, PCBs, Metals, Mercury

No. of Bottles: 5

Test Pit Profile



PID Readings/Test Pit Notes:

PID = 0 ppm
No evidence of contamination. Subsurface material consists of sandy fill.

Groundwater encountered @ ~11' BGS. Appeared to be perched GW.

APPENDIX B

LABORATORY DATA PACKAGE

Included on Disc

APPENDIX C

DATA VALIDATION REPORT

DATA USABILITY SUMMARY REPORT
40-46 Frazee Street, Auburn, NY

Soil and Water Volatile Organic Analyses by Method SW846 8260B

Samples Collected: May 14, 2013

Samples Received at Chemtech on May 15, 2013

Sample Delivery Group: E2228

Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix
E2228-01	EB-1	Water
E2228-02	TP-1	Soil
E2228-03	TP-2	Soil
E2228-04	TRIPBLANK	Water
E2228-05	TP-3	Soil
E2228-06	TP-4	Soil
E2228-07	E2228-06MS	Soil
E2228-08	E2228-06MSD	Soil
E2228-09	TP-5	Soil
E2228-10	CHA-1	Soil

Soil and water samples were validated for analyses of volatile organics by the US EPA Region II data validation SOP (HW-24, Revision 2, 2008). Data were reviewed for usability according to the following criteria:

- * - Data Completeness
- * - GC/MS Tuning
- * - Holding Times
- Calibrations
- * - Laboratory Blanks
- * - Trip Blank
- * - Surrogate Compound Recoveries
- Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate
- Laboratory Control Samples
- * - Compound Identification
- * - Compound Quantitation

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The problems with the laboratory control samples, internal standards, calibrations and the extensive problems with the matrix spike should be noted.

These are discussed in detail below.

Holding Times

All samples were analyzed within 14 days of collection.

Tunes

No problems were detected with the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the quality assurance limits.

Calibrations

All of the %RSDs in the soil initial calibration were less than 20% with the exceptions of 1,2,4-trichlorobenzene (63%) and 1,2,3-trichlorobenzene (64%).

All of the %RSDs in the water initial calibration were less than 20% with the exceptions of 1,2-dibromo-3-chloropropane (38%), chloroethane (46%) and methylene chloride (26%).

None of these compounds were detected in any of the samples and the high %RSDs do not affect the use of the data.

All of the percent differences in the continuing calibration associated with the soil samples were less than 20% with the following exceptions:

Compound	%D
1,2,4-TRICHLOROBENZENE	22%
1,2-DIBROMO-3-CHLOROPROPANE	21%
2-HEXANONE	33%
METHYL ACETATE	23%
4-METHYL-2-PENTANONE	23%

The data for these compounds were flagged with the "J" qualifier and are estimated values.

All of the percent differences in the continuing calibration associated with the water samples were less than 20%.

All of the relative response factors (rrfs) were greater than 0.05.

Matrix Spike

The laboratory's in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits. The RPD of the matrix spike and matrix spike duplicate was 30% during the validation.

Soil sample E2228-06 / TP-4 was used for the soil matrix spike and matrix spike duplicate. Many of the recoveries and RPDs were outside of the required limits:

Compound	MS % Rec.	MSD % Rec.	RPD
1,1,2,2-TETRACHLOROETHANE	286%	422%	38%
1,1,2-TRICHLOROETHANE		145%	
1,1-DICHLOROETHENE		66%	
1,2,4-TRICHLOROBENZENE		60%	
1,2-DIBROMO-3-CHLOROPROPANE	245%	361%	36%
1,2-DICHLOROBENZENE		155%	
1,2-DICHLOROPROPANE		144%	
2-HEXANONE		179%	33%
BROMOFORM	133%	211%	45%
CARBON DISULFIDE		54%	40%
CIS-1,2-DICHLOROETHYLENE		66%	
ETHYLBENZENE		145%	
ISOPROPYLBENZENE (CUMENE)	204%	246%	
M,P-XYLENE (SUM OF ISOMERS)		136%	
METHYL ACETATE	153%	211%	
METHYL ETHYL KETONE (2-BUTANONE)		132%	
(4-METHYL-2-PENTANONE)	148%	186%	
O-XYLENE (1,2-DIMETHYLBENZENE)		168%	
TERT-BUTYL METHYL ETHER		132%	
TRANS-1,2-DICHLOROETHENE		58%	32%
TRANS-1,3-DICHLOROPROPENE	65%	61%	
TRICHLOROETHYLENE (TCE)	69%	57%	

Compounds with low recoveries were flagged with the "J" qualifier and are estimated values.

Data for compounds with high recoveries were only qualified when they were detected in a sample. High recoveries do not affect undetected data.

Laboratory Control Sample

The laboratory's in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

All of the laboratory control samples were within the 70% - 130% limits in the 5/15/13 LCS with the exceptions of 1,2,4-trichlorobenzene (63%) and 1,2,3-trichlorobenzene (64%).

This laboratory control sample was associated with the analyses of the soil samples.

The data for these two compounds were flagged with the "J" qualifier and are estimated values.

All of the laboratory control sample recoveries were within the required limits for the two water samples with the exception of the recovery of chloroform (241%) in the laboratory control sample duplicate.

This compound was not detected in either of the two samples and the high recovery does not affect the use of the data.

Method Blanks

No compounds were detected in any of the method blanks.

Trip Blank

No compounds were detected in the trip blank.

Internal Standard Areas and Retention Times

The recoveries of the several internal standards in sample TP-4, its matrix spike and matrix spike duplicate were less the 50% quality control limit .

Sample		IS#3 %Rec.	IS#4 %Rec.
E2228-06	TP-4		44%
E2228-07	E2228-06MS	49.9% (OK)	35%
E2228-08	E2228-06MSD	30%	21%

The data were not directly affected by the low recoveries of the matrix spike and matrix spike duplicate.

The compounds that were quantitated against the fourth internal standard in sample TP-4 were flagged with the "J" qualifier and are estimated values.

The NYS DEC ASP program requires that any sample with internal standard recoveries outside of the quality control limits be reanalyzed. This was not done.

The areas and retention times of all other internal standards were within the required quality control limits.

Sample Results

No other problems were detected with any of the samples.

1,1-DICHLOROETHANE	U		U	U
1,1-DICHLOROETHENE	U		U	U
1,2,3-TRICHLOROBENZENE	U		U	U
1,2,4-TRICHLOROBENZENE	U		U	U
1,2-DIBROMO-3-CHLOROPROPANE	U	38%	U	U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	U		U	U
1,2-DICHLOROBENZENE	U		U	U
1,2-DICHLOROETHANE	U		U	U
1,2-DICHLOROPROPANE	U		U	U
1,3-DICHLOROBENZENE	U		U	U
1,4-DICHLOROBENZENE	U		U	U
1,4-DIOXANE (P-DIOXANE)	U		U	U
2-HEXANONE	U		U	U
ACETONE	U		U	U
BENZENE	U		U	U
BROMOCHLOROMETHANE	UQ		U	U
BROMODICHLOROMETHANE	U		U	U
BROMOFORM	U		U	U
BROMOMETHANE	U		U	U
CARBON DISULFIDE	U		U	U
CARBON TETRACHLORIDE	U		U	U
CHLOROBENZENE	U		U	U
CHLOROETHANE	U	46%	U	U
CHLOROFORM	U	241%	U	U
CHLOROMETHANE	U		U	U
CIS-1,2-DICHLOROETHYLENE	U		U	U
CIS-1,3-DICHLOROPROPENE	U		U	U
CYCLOHEXANE	U		U	U
DIBROMOCHLOROMETHANE	U		U	U
DICHLORODIFLUOROMETHANE	U		U	U
ETHYLBENZENE	U		U	U
ISOPROPYLBENZENE (CUMENE)	U		U	U
M,P-XYLENE (SUM OF ISOMERS)	U		U	U
METHYL ACETATE	U		U	U
METHYL ETHYL KETONE (2-BUTANONE)	U		U	U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	U		U	U
METHYLCYCLOHEXANE	U		U	U
METHYLENE CHLORIDE	U	26%	U	U
O-XYLENE (1,2-DIMETHYLBENZENE)	U		U	U
STYRENE	U		U	U
TERT-BUTYL METHYL ETHER	U		U	U
TETRACHLOROETHYLENE(PCE)	U		U	U
TOLUENE	U		U	U
TRANS-1,2-DICHLOROETHENE	U		U	U

TRANS-1,3-DICHLOROPROPENE	U	U
TRICHLOROETHYLENE (TCE)	U	U
TRICHLOROFLUOROMETHANE	U	U
VINYL CHLORIDE	U	U

TP-3-20130514
E2228-05

5.71 G

%S =
91.1

Parameter	Conc ug/kg	Lab Qual	DV Conc.	MB	TB	Surr	MS	LCS	IC	CC	IS	DV Qual	Comb. Qual
1,1,1-TRICHLOROETHANE		U										U	U
1,1,2,2-TETRACHLOROETHANE		U					422%					U	U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		U										U	U
1,1,2-TRICHLOROETHANE		U					145%					U	U
1,1-DICHLOROETHANE		U										U	U
1,1-DICHLOROETHENE		U					66%					UJ	UJ
1,2,3-TRICHLOROBENZENE		UQ						64%	61%			UJ	UJ
1,2,4-TRICHLOROBENZENE		UQ					60%	63%	58%	22%		UJ	UJ
1,2-DIBROMO-3-CHLOROPROPANE		U					361%			21%		UJ	UJ
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)		U										U	U
1,2-DICHLOROBENZENE		U					155%					U	U
1,2-DICHLOROETHANE		U										U	U
1,2-DICHLOROPROPANE		U					144%					U	U
1,3-DICHLOROBENZENE		U										U	U
1,4-DICHLOROBENZENE		U										U	U
1,4-DIOXANE (P-DIOXANE)		U										U	U
2-HEXANONE		U					179%			33%		UJ	UJ
ACETONE		U										U	U
BENZENE		U										U	U
BROMOCHLOROMETHANE		U										U	U
BROMODICHLOROMETHANE		U										U	U
BROMOFORM		U					211%					U	U
BROMOMETHANE		U										U	U
CARBON DISULFIDE		U					54%					UJ	UJ
CARBON TETRACHLORIDE		U										U	U
CHLOROBENZENE		U										U	U
CHLOROETHANE		U										U	U
CHLOROFORM		U										U	U
CHLOROMETHANE		U										U	U
CIS-1,2-DICHLOROETHYLENE		U					66%					UJ	UJ
CIS-1,3-DICHLOROPROPENE		U										U	U
CYCLOHEXANE		U										U	U
DIBROMOCHLOROMETHANE		U										U	U
DICHLORODIFLUOROMETHANE		U										U	U
ETHYLBENZENE		U					145%					U	U
ISOPROPYLBENZENE (CUMENE)		U					246%					U	U

M,P-XYLENE (SUM OF ISOMERS)	U			136%									U	U
METHYL ACETATE	U			211%						23%			UJ	UJ
METHYL ETHYL KETONE (2-BUTANONE)	U			132%									U	U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	U			186%						23%			UJ	UJ
METHYLCYCLOHEXANE	U												U	U
METHYLENE CHLORIDE	4	J	4.008220216										J	J
O-XYLENE (1,2-DIMETHYLBENZENE)	U			168%									U	U
STYRENE	U												U	U
TERT-BUTYL METHYL ETHER	U			132%									U	U
TETRACHLOROETHYLENE(PCE)	U												U	U
TOLUENE	U												U	U
TRANS-1,2-DICHLOROETHENE	U			58%									UJ	UJ
TRANS-1,3-DICHLOROPROPENE	U			61%									UJ	UJ
TRICHLOROETHYLENE (TCE)	U			57%									UJ	UJ
TRICHLOROFLUOROMETHANE	U												U	U
VINYL CHLORIDE	U												U	U

TP-4-20130514

E2228-06

5.84 G

%S =

88.4

Parameter	Conc ug/kg	Lab Qual	DV Conc.	MB	TB	Surr	MS	LCS	IC	CC	IS	DV Qual	Comb. Qual
1,1,1-TRICHLOROETHANE		U										U	U
1,1,2,2-TETRACHLOROETHANE		U					422%				44%	UJ	UJ
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		U										U	U
1,1,2-TRICHLOROETHANE		U					145%					U	U
1,1-DICHLOROETHANE		U										U	U
1,1-DICHLOROETHENE		U					66%					UJ	UJ
1,2,3-TRICHLOROBENZENE		UQ						64%	61%		44%	UJ	UJ
1,2,4-TRICHLOROBENZENE		UQ					60%	63%	58%	22%	44%	UJ	UJ
1,2-DIBROMO-3-CHLOROPROPANE		U					361%			21%	44%	UJ	UJ
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)		U										U	U
1,2-DICHLOROBENZENE		U					155%				44%	UJ	UJ
1,2-DICHLOROETHANE		U										U	U
1,2-DICHLOROPROPANE		U					144%					U	U
1,3-DICHLOROBENZENE		U									44%	UJ	UJ
1,4-DICHLOROBENZENE		U									44%	UJ	UJ
1,4-DIOXANE (P-DIOXANE)		U										U	U
2-HEXANONE		U					179%			33%		UJ	UJ
ACETONE		U										U	U
BENZENE		U										U	U
BROMOCHLOROMETHANE		U										U	U
BROMODICHLOROMETHANE		U										U	U
BROMOFORM		U					211%					U	U
BROMOMETHANE		U										U	U
CARBON DISULFIDE		U					54%					UJ	UJ

CARBON TETRACHLORIDE	U													U	U
CHLOROBENZENE	U													U	U
CHLOROETHANE	U													U	U
CHLOROFORM	U													U	U
CHLOROMETHANE	U													U	U
CIS-1,2-DICHLOROETHYLENE	U								66%					UJ	UJ
CIS-1,3-DICHLOROPROPENE	U													U	U
CYCLOHEXANE	U													U	U
DIBROMOCHLOROMETHANE	U													U	U
DICHLORODIFLUOROMETHANE	U													U	U
ETHYLBENZENE	U								145%					U	U
ISOPROPYLBENZENE (CUMENE)	U								246%			44%		UJ	UJ
M,P-XYLENE (SUM OF ISOMERS)	U								136%					U	U
METHYL ACETATE	U								211%			23%		UJ	UJ
METHYL ETHYL KETONE (2-BUTANONE)	U								132%					U	U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	U								186%			23%		UJ	UJ
METHYLCYCLOHEXANE	U													U	U
METHYLENE CHLORIDE	2.8	J		2.779628711										J	J
O-XYLENE (1,2-DIMETHYLBENZENE)	U								168%					U	U
STYRENE	U													U	U
TERT-BUTYL METHYL ETHER	U								132%					U	U
TETRACHLOROETHYLENE(PCE)	U													U	U
TOLUENE	U													U	U
TRANS-1,2-DICHLOROETHENE	U								58%					UJ	UJ
TRANS-1,3-DICHLOROPROPENE	U								61%					UJ	UJ
TRICHLOROETHYLENE (TCE)	U								57%					UJ	UJ
TRICHLOROFLUOROMETHANE	U													U	U
VINYL CHLORIDE	U													U	U

TP-5-20130514
E2228-09

5.12 G

%S =
77.8

Parameter	Conc ug/kg	Lab Qual	DV Conc.	MB	TB	Surr	MS	LCS	IC	CC	IS	DV Qual	Comb. Qual
1,1,1-TRICHLOROETHANE		U										U	U
1,1,2,2-TETRACHLOROETHANE		U					422%					U	U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		U										U	U
1,1,2-TRICHLOROETHANE		U					145%					U	U
1,1-DICHLOROETHANE		U										U	U
1,1-DICHLOROETHENE		U					66%					UJ	UJ
1,2,3-TRICHLOROBENZENE		UQ						64%	61%			UJ	UJ
1,2,4-TRICHLOROBENZENE		UQ					60%	63%	58%	22%		UJ	UJ
1,2-DIBROMO-3-CHLOROPROPANE		U					361%			21%		UJ	UJ
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)		U										U	U
1,2-DICHLOROBENZENE		U					155%					U	U
1,2-DICHLOROETHANE		U										U	U
1,2-DICHLOROPROPANE		U					144%					U	U

4.79 g	1,1,2,2-TETRACHLOROETHANE	U		422%				U	U
	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	U						U	U
%S =	1,1,2-TRICHLOROETHANE	U		145%				U	U
	1,1-DICHLOROETHANE	U						U	U
91.4	1,1-DICHLOROETHENE	U		66%				UJ	UJ
	1,2,3-TRICHLOROBENZENE	UQ			64%	61%		UJ	UJ
	1,2,4-TRICHLOROBENZENE	UQ		60%	63%	58%	22%	UJ	UJ
	1,2-DIBROMO-3-CHLOROPROPANE	U		361%			21%	UJ	UJ
	1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	U						U	U
	1,2-DICHLOROBENZENE	U		155%				U	U
	1,2-DICHLOROETHANE	U						U	U
	1,2-DICHLOROPROPANE	U		144%				U	U
	1,3-DICHLOROBENZENE	U						U	U
	1,4-DICHLOROBENZENE	U						U	U
	1,4-DIOXANE (P-DIOXANE)	U						U	U
	2-HEXANONE	U		179%			33%	UJ	UJ
	ACETONE	U						U	U
	BENZENE	U						U	U
	BROMOCHLOROMETHANE	U						U	U
	BROMODICHLOROMETHANE	U						U	U
	BROMOFORM	U		211%				U	U
	BROMOMETHANE	U						U	U
	CARBON DISULFIDE	U		54%				UJ	UJ
	CARBON TETRACHLORIDE	U						U	U
	CHLOROBENZENE	U						U	U
	CHLOROETHANE	U						U	U
	CHLOROFORM	U						U	U
	CHLOROMETHANE	U						U	U
	CIS-1,2-DICHLOROETHYLENE	U		66%				UJ	UJ
	CIS-1,3-DICHLOROPROPENE	U						U	U
	CYCLOHEXANE	U						U	U
	DIBROMOCHLOROMETHANE	U						U	U
	DICHLORODIFLUOROMETHANE	U						U	U
	ETHYLBENZENE	U		145%				U	U
	ISOPROPYLBENZENE (CUMENE)	U		246%				U	U
	M,P-XYLENE (SUM OF ISOMERS)	U		136%				U	U
	METHYL ACETATE	U		211%			23%	UJ	UJ
	METHYL ETHYL KETONE (2-BUTANONE)	U		132%				U	U
	METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	U		186%			23%	UJ	UJ
	METHYLCYCLOHEXANE	U						U	U
	METHYLENE CHLORIDE	J	3.1		3.094978141			J	J
	O-XYLENE (1,2-DIMETHYLBENZENE)	U		168%				U	U
	STYRENE	U						U	U
	TERT-BUTYL METHYL ETHER	U		132%				U	U

TETRACHLOROETHYLENE(PCE)	U		U	U
TOLUENE	U		U	U
TRANS-1,2-DICHLOROETHENE	U	58%	UJ	UJ
TRANS-1,3-DICHLOROPROPENE	U	61%	UJ	UJ
TRICHLOROETHYLENE (TCE)	U	57%	UJ	UJ
TRICHLOROFUOROMETHANE	U		U	U
VINYL CHLORIDE	U		U	U

SUMMARY OF THE ANALYTICAL DATA VALIDATION
40-46 Frazee Street, Auburn, NY

Soil and Water Semivolatile Organic Analyses by Method SW846 8270B

Samples Collected: May 14, 2013

Samples Received at Chemtech on May 15, 2013

Sample Delivery Group: E2228

Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix
E2228-01	EB-1	Water
E2228-02	TP-1	Soil
E2228-03	TP-2	Soil
E2228-05	TP-3	Soil
E2228-06	TP-4	Soil
E2228-07	E2228-06MS	Soil
E2228-08	E2228-06MSD	Soil
E2228-09	TP-5	Soil
E2228-10	CHA-1	Soil

Soil and water samples were validated for analyses of semivolatile organics by the US EPA Region II data validation SOP (HW-22, Revision 3). Data were reviewed for usability according to the following criteria:

- * - Data Completeness
- * - GC/MS Tuning
- * - Holding Times
 - Calibrations
- * - Laboratory Blanks
 - Laboratory Control Sample
 - Surrogate Compound Recoveries
- * - Internal Standard Recoveries
 - Matrix Spike / Matrix Spike Duplicate
 - Field Blank
- * - Compound Identification
- * - Compound Quantitation

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The problems with the surrogate recoveries, calibrations blanks and major problems with the matrix spike recoveries should be noted.

These are discussed in detail below.

Holding Times

All samples were extracted (14 days) and analyzed (40 days) within the contractual and technical times required by the US EPA Region II protocols.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

Surrogate Recoveries

The recoveries the following surrogates were above the quality control limits:

Sample		2-FBP % Rec.	TPH % Rec.
E2228-06	TP-4	136%	119%
E2228-08	E2228-06MSD	145%	122%

Whenever a base neutral compound was detected in sample TP-4, it was flagged with the "J" qualifier and is an estimated value.

The high recoveries in the matrix spike do not directly affect the use of the data.

All other surrogate recoveries were within the required limits.

Matrix Spike / Matrix Spike Duplicate

Sample E2228-06 / TP-4 was used as the matrix spike and matrix spike duplicate. Most of the recoveries and RPDs were outside of the quality control limits:

Compound	MS % Rec	MSD % Rec.	%RSD
1,2,4,5-TETRACHLOROBENZENE		147%	55%
2,3,4,6-TETRACHLOROPHENOL		137%	54%
2,4,5-TRICHLOROPHENOL		137%	60%
2,4,6-TRICHLOROPHENOL		126%	50%
2,4-DICHLOROPHENOL		132%	44%
2,4-DIMETHYLPHENOL			66%
2,4-DINITROPHENOL			29%
2,4-DINITROTOLUENE	43%		65%
2,6-DINITROTOLUENE			60%
2-CHLORONAPHTHALENE	48%	147%	55%
2-CHLOROPHENOL		121%	56%
2-METHYLNAPHTHALENE		153%	64%
2-METHYLPHENOL (O-CRESOL)		147%	55%
2-NITROPHENOL			64%
3- AND 4- METHYLPHENOL (TOTAL)		153%	64%
3,3'-DICHLOROBENZIDINE		0%	200%
3-NITROANILINE			48%
4,6-DINITRO-2-METHYLPHENOL	0%	0%	
4-BROMOPHENYL PHENYL ETHER		116%	44%
4-CHLORO-3-METHYLPHENOL		116%	67%
4-CHLOROANILINE			57%
4-CHLOROPHENYL PHENYL ETHER		142%	57%
4-NITROANILINE			39%
4-NITROPHENOL			69%
ACENAPHTHENE		153%	58%

Compound	MS % Rec	MSD % Rec.	%RSD
ACENAPHTHYLENE		147%	49%
ACETOPHENONE		147%	49%
ANTHRACENE		153%	53%
ATRAZINE			40%
BENZO(A)ANTHRACENE		153%	47%
BENZO(A)PYRENE		163%	53%
BENZO(B)FLUORANTHENE		242%	79%
BENZO(G,H,I)PERYLENE		168%	56%
BENZYL BUTYL PHTHALATE	126%	153%	
BIS(2-CHLOROETHOXY) METHANE 2-CHLOROETHYL ETHER)	142%	132%	44%
BIS(2-ETHYLHEXYL) PHTHALATE		184%	45%
CAPROLACTAM		147%	55%
CARBAZOLE		142%	57%
CHRYSENE		147%	49%
DIBENZ(A,H)ANTHRACENE			54%
DIBENZOFURAN		153%	53%
DIETHYL PHTHALATE		147%	55%
DIMETHYL PHTHALATE		153%	47%
DI-N-BUTYL PHTHALATE		142%	35%
DI-N-OCTYLPHTHALATE		147%	43%
FLUORANTHENE	-11%		277%
FLUORENE		153%	58%
HEXACHLOROBENZENE		132%	50%
HEXACHLOROBUTADIENE		132%	56%
HEXACHLOROCYCLOPENTADIENE			30%
HEXACHLOROETHANE		132%	56%
INDENO(1,2,3-C,D)PYRENE		147%	55%
ISOPHORONE			42%
NAPHTHALENE		153%	58%
NITROBENZENE		126%	52%
N-NITROSODI-N-PROPYLAMINE		137%	54%
N-NITROSODIPHENYLAMINE		163%	59%
PENTACHLOROPHENOL			50%
PHENANTHRENE	0%		200%
PHENOL		132%	50%
PYRENE	11%		141%

Compounds that had recoveries less than 10% were flagged with the "R" qualifier and technically rejected when they were undetected in a sample.

Compounds with recoveries between 11% and the lower quality assurance limit were flagged with the "J" qualifier and are estimated values.

Compounds with high recoveries were only qualified when they were detected in a sample.

Compounds with high RPDs were only qualified when they were detected in a sample.

Laboratory Control Samples

All of the recoveries in the soil LCS were within the required limits.

All of the recoveries in the water LSC were within the required limits with the exception of 3&4 methylphenols (93%). This was just above the 91% quality control limit.

This compound was not detected in the sample and the high recovery does not affect the use of the data.

Calibrations

The %RSDs of all compounds in the 5/23 initial calibration were less than 15% with the exceptions of benzaldehyde (18), 4,6-dinitro-2-methylphenol (37%) and 2,4-dinitrophenol (33%). This initial calibration was associated with all of the samples.

4,6-Dinitro-2-methylphenol and benzaldehyde were not detected in any of the samples and the high percent RSD does not affect the use of the data.

The relative response factor of 2,4-dinitrophenol (0.048) was less than the 0.050 quality control limit. This compound was not detected in any of the samples and the data were flagged with the "R" qualifier and technically rejected.

The %Ds of all compounds in the 5/23 continuing calibration were less than 20% with the exception of 2-nitroaniline (22%).

The relative response factor of 2,4-dinitrophenol (0.044) was again less than the 0.050 quality control limit.

Method Blanks

No target compounds were detected in either of the method blanks.

Field Blank

A field blank was not analyzed with this sample delivery group.

Internal Standard Areas and Retention Times

All internal standard recoveries and retention times were within the required limits.

Sample Results

No problems were found with the results of any of the samples of this delivery group.

BIS(2-ETHYLHEXYL) PHTHALATE	U	U	U
CAPROLACTAM	U	U	U
CARBAZOLE	U	U	U
CHRYSENE	U	U	U
DIBENZ(A,H)ANTHRACENE	U	U	U
DIBENZOFURAN	U	U	U
DIETHYL PHTHALATE	U	U	U
DIMETHYL PHTHALATE	U	U	U
DI-N-BUTYL PHTHALATE	U	U	U
DI-N-OCTYLPHTHALATE	U	U	U
FLUORANTHENE	U	U	U
FLUORENE	U	U	U
HEXACHLOROBENZENE	U	U	U
HEXACHLOROBUTADIENE	U	U	U
HEXACHLOROCYCLOPENTADIENE	U	U	U
HEXACHLOROETHANE	U	U	U
INDENO(1,2,3-C,D)PYRENE	U	U	U
ISOPHORONE	U	U	U
NAPHTHALENE	U	U	U
NITROBENZENE	U	U	U
N-NITROSODI-N-PROPYLAMINE	U	U	U
N-NITROSODIPHENYLAMINE	U	U	U
PENTACHLOROPHENOL	U	U	U
PHENANTHRENE	U	U	U
PHENOL	U	U	U
PYRENE	U	U	U

TP-1-20130514

E2228-02

Compound

ug/kg	Lab Qual.	DV Conc.	MB	Surr	MS	LCS	IC	CC	IS	DV Qual.	Comb. Qual.
	U				147%					U	U
	U				137%					U	U
30.05 G	U				137%					U	U
	U				126%					U	U
%S =	U				132%					U	U
85.4	U				RPD					U	U
	U				RPD		RRF	RRF		R	R
	U				43%					UJ	UJ
	U				RPD					U	U
	U				48%					UJ	UJ
	U				121%					U	U
	U				153%					U	U
	U				147%					U	U

1,2,4,5-TETRACHLOROBENZENE
 2,3,4,6-TETRACHLOROPHENOL
 2,4,5-TRICHLOROPHENOL
 2,4,6-TRICHLOROPHENOL
 2,4-DICHLOROPHENOL
 2,4-DIMETHYLPHENOL
 2,4-DINITROPHENOL
 2,4-DINITROTOLUENE
 2,6-DINITROTOLUENE
 2-CHLORONAPHTHALENE
 2-CHLOROPHENOL
 2-METHYLNAPHTHALENE
 2-METHYLPHENOL (O-CRESOL)

2-NITROANILINE	U			22%	UJ	UJ	
2-NITROPHENOL	U			RPD	U	U	
3- AND 4- METHYLPHENOL (TOTAL)	U			153%	U	U	
3,3'-DICHLOROBENZIDINE	U			0%	R	R	
3-NITROANILINE	U			RPD	U	U	
4,6-DINITRO-2-METHYLPHENOL	U			0%	37%	R	R
4-BROMOPHENYL PHENYL ETHER	U			116%	U	U	
4-CHLORO-3-METHYLPHENOL	U			116%	U	U	
4-CHLOROANILINE	U			RPD	U	U	
4-CHLOROPHENYL PHENYL ETHER	U			142%	U	U	
4-NITROANILINE	U			RPD	U	U	
4-NITROPHENOL	U			RPD	U	U	
ACENAPHTHENE	U			153%	U	U	
ACENAPHTHYLENE	U			147%	U	U	
ACETOPHENONE	U			147%	U	U	
ANTHRACENE	U			153%	U	U	
ATRAZINE	U			RPD	U	U	
BENZALDEHYDE	U				18%	U	U
BENZO(A)ANTHRACENE	U			153%	U	U	
BENZO(A)PYRENE	U			163%	U	U	
BENZO(B)FLUORANTHENE	U			242%	U	U	
BENZO(G,H,I)PERYLENE	U			168%	U	U	
BENZO(K)FLUORANTHENE	U				U	U	
BENZYL BUTYL PHTHALATE	U			126%	U	U	
BIPHENYL (DIPHENYL)	U				U	U	
BIS(2-CHLOROETHOXY) METHANE	U			132%	U	U	
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	U			142%	U	U	
BIS(2-CHLOROISOPROPYL) ETHER	U				U	U	
BIS(2-ETHYLHEXYL) PHTHALATE	U			184%	U	U	
CAPROLACTAM	U			147%	U	U	
CARBAZOLE	U			142%	U	U	
CHRYSENE	U			147%	U	U	
DIBENZ(A,H)ANTHRACENE	U			RPD	U	U	
DIBENZOFURAN	U			153%	U	U	
DIETHYL PHTHALATE	U			147%	U	U	
DIMETHYL PHTHALATE	180	J	181.3173302	153%	J	J	
DI-N-BUTYL PHTHALATE	U			142%	U	U	
DI-N-OCTYLPHTHALATE	U			147%	U	U	
FLUORANTHENE	200	J	199.6440281	0%	J	J	
FLUORENE	U			153%	U	U	
HEXACHLOROBENZENE	U			132%	U	U	
HEXACHLOROBUTADIENE	U			132%	U	U	
HEXACHLOROCYCLOPENTADIENE	U			RPD	U	U	

HEXACHLOROETHANE	U			132%	U	U
INDENO(1,2,3-C,D)PYRENE	U			147%	U	U
ISOPHORONE	U			RPD	U	U
NAPHTHALENE	U			153%	U	U
NITROBENZENE	U			126%	U	U
N-NITROSODI-N-PROPYLAMINE	U			137%	U	U
N-NITROSODIPHENYLAMINE	U			163%	U	U
PENTACHLOROPHENOL	U			RPD	U	U
PHENANTHRENE	U			RPD	U	U
PHENOL	U			132%	U	U
PYRENE	170	J	172.7388759	11%	J	J

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E2228-03	Compound	ug/kg	Lab	DV	MB	Surr	MS	LCS	IC	CC	IS	DV	Comb.
			Qual.	Conc.								Qual.	Qual.
	1,2,4,5-TETRACHLOROENZENE		U				147%					U	U
	2,3,4,6-TETRACHLOROPHENOL		U				137%					U	U
30.05 g	2,4,5-TRICHLOROPHENOL		U				137%					U	U
	2,4,6-TRICHLOROPHENOL		U				126%					U	U
%S =	2,4-DICHLOROPHENOL		U				132%					U	U
83.6	2,4-DIMETHYLPHENOL		U				RPD					U	U
	2,4-DINITROPHENOL		U				RPD		RRF	RRF		R	R
DF = 5	2,4-DINITROTOLUENE		U				43%					UJ	UJ
	2,6-DINITROTOLUENE		U				RPD					U	U
	2-CHLORONAPHTHALENE		U				48%					UJ	UJ
	2-CHLOROPHENOL		U				121%					U	U
	2-METHYLNAPHTHALENE	2000					153%						
	2-METHYLPHENOL (O-CRESOL)		U				147%					U	U
	2-NITROANILINE		U							22%		UJ	UJ
	2-NITROPHENOL		U				RPD					U	U
	3- AND 4- METHYLPHENOL (TOTAL)		U				153%					U	U
	3,3'-DICHLOROBENZIDINE		U				0%					R	R
	3-NITROANILINE		U				RPD					U	U
	4,6-DINITRO-2-METHYLPHENOL		U				0%		37%			R	R
	4-BROMOPHENYL PHENYL ETHER		U				116%					U	U
	4-CHLORO-3-METHYLPHENOL		U				116%					U	U
	4-CHLOROANILINE		U				RPD					U	U
	4-CHLOROPHENYL PHENYL ETHER		U				142%					U	U
	4-NITROANILINE		U				RPD					U	U
	4-NITROPHENOL		U				RPD					U	U
	ACENAPHTHENE		U				153%					U	U
	ACENAPHTHYLENE		U				147%					U	U
	ACETOPHENONE		U				147%					U	U

ANTHRACENE	U			153%		U	U
ATRAZINE	U			RPD		U	U
BENZALDEHYDE	U				18%	U	U
BENZO(A)ANTHRACENE	U			153%		U	U
BENZO(A)PYRENE	U			163%		U	U
BENZO(B)FLUORANTHENE	U			242%		U	U
BENZO(G,H,I)PERYLENE	U			168%		U	U
BENZO(K)FLUORANTHENE	U					U	U
BENZYL BUTYL PHTHALATE	U			126%		U	U
BIPHENYL (DIPHENYL)	U					U	U
BIS(2-CHLOROETHOXY) METHANE	U			132%		U	U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	U			142%		U	U
BIS(2-CHLOROISOPROPYL) ETHER	U					U	U
BIS(2-ETHYLHEXYL) PHTHALATE	U			184%		U	U
CAPROLACTAM	U			147%		U	U
CARBAZOLE	U			142%		U	U
CHRYSENE	U			147%		U	U
DIBENZ(A,H)ANTHRACENE	U			RPD		U	U
DIBENZOFURAN	U			153%		U	U
DIETHYL PHTHALATE	U			147%		U	U
DIMETHYL PHTHALATE	U			153%		U	U
DI-N-BUTYL PHTHALATE	U			142%		U	U
DI-N-OCTYLPHTHALATE	U			147%		U	U
FLUORANTHENE	U			0%		R	R
FLUORENE	U			153%		U	U
HEXACHLOROBENZENE	U			132%		U	U
HEXACHLOROBUTADIENE	U			132%		U	U
HEXACHLOROCYCLOPENTADIENE	U			RPD		U	U
HEXACHLOROETHANE	U			132%		U	U
INDENO(1,2,3-C,D)PYRENE	U			147%		U	U
ISOPHORONE	U			RPD		U	U
NAPHTHALENE	U			153%		U	U
NITROBENZENE	U			126%		U	U
N-NITROSODI-N-PROPYLAMINE	U			137%		U	U
N-NITROSODIPHENYLAMINE	U			163%		U	U
PENTACHLOROPHENOL	U			RPD		U	U
PHENANTHRENE	U			RPD		U	U
PHENOL	U			132%		U	U
PYRENE	1000	J	1025.687799	11%		J	J

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E2228-05

Compound

Lab	DV	DV	DV	Comb.
ug/kg	Qual.	Conc.	Qual.	Qual.

30.07 G	1,2,4,5-TETRACHLOROBENZENE	U	147%		U	U	
	2,3,4,6-TETRACHLOROPHENOL	U	137%		U	U	
	2,4,5-TRICHLOROPHENOL	U	137%		U	U	
	2,4,6-TRICHLOROPHENOL	U	126%		U	U	
	%S =	2,4-DICHLOROPHENOL	U	132%		U	U
	91.1	2,4-DIMETHYLPHENOL	U	RPD		U	U
		2,4-DINITROPHENOL	U	RPD	RRF RRF	R	R
		2,4-DINITROTOLUENE	U	43%		UJ	UJ
		2,6-DINITROTOLUENE	U	RPD		U	U
		2-CHLORONAPHTHALENE	U	48%		UJ	UJ
		2-CHLOROPHENOL	U	121%		U	U
		2-METHYLNAPHTHALENE	U	153%		U	U
		2-METHYLPHENOL (O-CRESOL)	U	147%		U	U
		2-NITROANILINE	U		22%	UJ	UJ
		2-NITROPHENOL	U	RPD		U	U
		3- AND 4- METHYLPHENOL (TOTAL)	U	153%		U	U
		3,3'-DICHLOROBENZIDINE	U	0%		R	R
		3-NITROANILINE	U	RPD		U	U
		4,6-DINITRO-2-METHYLPHENOL	U	0%	37%	R	R
		4-BROMOPHENYL PHENYL ETHER	U	116%		U	U
		4-CHLORO-3-METHYLPHENOL	U	116%		U	U
		4-CHLOROANILINE	U	RPD		U	U
		4-CHLOROPHENYL PHENYL ETHER	U	142%		U	U
		4-NITROANILINE	U	RPD		U	U
		4-NITROPHENOL	U	RPD		U	U
		ACENAPHTHENE	U	153%		U	U
		ACENAPHTHYLENE	U	147%		U	U
	ACETOPHENONE	U	147%		U	U	
	ANTHRACENE	U	153%		U	U	
	ATRAZINE	U	RPD		U	U	
	BENZALDEHYDE	U		18%	U	U	
	BENZO(A)ANTHRACENE	U	153%		U	U	
	BENZO(A)PYRENE	U	163%		U	U	
	BENZO(B)FLUORANTHENE	U	242%		U	U	
	BENZO(G,H,I)PERYLENE	U	168%		U	U	
	BENZO(K)FLUORANTHENE	U			U	U	
	BENZYL BUTYL PHTHALATE	U	126%		U	U	
	BIPHENYL (DIPHENYL)	U			U	U	
	BIS(2-CHLOROETHOXY) METHANE	U	132%		U	U	
	BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	U	142%		U	U	
	BIS(2-CHLOROISOPROPYL) ETHER	U			U	U	
	BIS(2-ETHYLHEXYL) PHTHALATE	U	184%		U	U	
	CAPROLACTAM	U	147%		U	U	

CARBAZOLE		U		142%		U	U
CHRYSENE		U		147%		U	U
DIBENZ(A,H)ANTHRACENE		U		RPD		U	U
DIBENZOFURAN		U		153%		U	U
DIETHYL PHTHALATE		U		147%		U	U
DIMETHYL PHTHALATE	170	J	165.9517014	153%		J	J
DI-N-BUTYL PHTHALATE		U		142%		U	U
DI-N-OCTYLPHTHALATE		U		147%		U	U
FLUORANTHENE		U		0%		R	R
FLUORENE		U		153%		U	U
HEXACHLOROBENZENE		U		132%		U	U
HEXACHLOROBUTADIENE		U		132%		U	U
HEXACHLOROCYCLOPENTADIENE		U		RPD		U	U
HEXACHLOROETHANE		U		132%		U	U
INDENO(1,2,3-C,D)PYRENE		U		147%		U	U
ISOPHORONE		U		RPD		U	U
NAPHTHALENE		U		153%		U	U
NITROBENZENE		U		126%		U	U
N-NITROSODI-N-PROPYLAMINE		U		137%		U	U
N-NITROSODIPHENYLAMINE		U		163%		U	U
PENTACHLOROPHENOL		U		RPD		U	U
PHENANTHRENE		U		RPD		U	U
PHENOL		U		132%		U	U
PYRENE		U		11%		UJ	UJ

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		Lab	DV							DV	Comb.		
E2228-06	Compound	ug/kg	Qual.	Conc.	MB	Surr	MS	LCS	IC	CC	IS	Qual.	Qual.
	1,2,4,5-TETRACHLOROBENZENE		U				147%					U	U
30.02 G	2,3,4,6-TETRACHLOROPHENOL		U				137%					U	U
	2,4,5-TRICHLOROPHENOL		U				137%					U	U
%S =	2,4,6-TRICHLOROPHENOL		U				126%					U	U
88.4	2,4-DICHLOROPHENOL		U				132%					U	U
	2,4-DIMETHYLPHENOL		U				RPD					U	U
DF = 10	2,4-DINITROPHENOL		U				RPD		RRF	RRF		R	R
	2,4-DINITROTOLUENE		U				43%					UJ	UJ
	2,6-DINITROTOLUENE		U				RPD					U	U
	2-CHLORONAPHTHALENE		U				48%					UJ	UJ
	2-CHLOROPHENOL		U				121%					U	U
	2-METHYLNAPHTHALENE		U				153%					U	U
	2-METHYLPHENOL (O-CRESOL)		U				147%					U	U
	2-NITROANILINE		U							22%		UJ	UJ
	2-NITROPHENOL		U				RPD					U	U

3- AND 4- METHYLPHENOL (TOTAL)	U			153%		U	U
3,3'-DICHLOROBENZIDINE	U			0%		R	R
3-NITROANILINE	U			RPD		U	U
4,6-DINITRO-2-METHYLPHENOL	U			0%	37%	R	R
4-BROMOPHENYL PHENYL ETHER	U			116%		U	U
4-CHLORO-3-METHYLPHENOL	U			116%		U	U
4-CHLOROANILINE	U			RPD		U	U
4-CHLOROPHENYL PHENYL ETHER	U			142%		U	U
4-NITROANILINE	U			RPD		U	U
4-NITROPHENOL	U			RPD		U	U
ACENAPHTHENE	U			153%		U	U
ACENAPHTHYLENE	U			147%		U	U
ACETOPHENONE	U			147%		U	U
ANTHRACENE	U			153%		U	U
ATRAZINE	U			RPD		U	U
BENZALDEHYDE	U				18%	U	U
BENZO(A)ANTHRACENE	U			153%		U	U
BENZO(A)PYRENE	U			163%		U	U
BENZO(B)FLUORANTHENE	U			242%		U	U
BENZO(G,H,I)PERYLENE	U			168%		U	U
BENZO(K)FLUORANTHENE	U					U	U
BENZYL BUTYL PHTHALATE	U			126%		U	U
BIPHENYL (DIPHENYL)	U					U	U
BIS(2-CHLOROETHOXY) METHANE	U			132%		U	U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	U			142%		U	U
BIS(2-CHLOROISOPROPYL) ETHER	U					U	U
BIS(2-ETHYLHEXYL) PHTHALATE	U			184%		U	U
CAPROLACTAM	U			147%		U	U
CARBAZOLE	U			142%		U	U
CHRYSENE	U			147%		U	U
DIBENZ(A,H)ANTHRACENE	U			RPD		U	U
DIBENZOFURAN	U			153%		U	U
DIETHYL PHTHALATE	U			147%		U	U
DIMETHYL PHTHALATE	U			153%		U	U
DI-N-BUTYL PHTHALATE	U			142%		U	U
DI-N-OCTYLPHTHALATE	U			147%		U	U
FLUORANTHENE	2200	J	2162	High	0%	J	J
FLUORENE	U			153%		U	U
HEXACHLOROBENZENE	U			132%		U	U
HEXACHLOROBUTADIENE	U			132%		U	U
HEXACHLOROCYCLOPENTADIENE	U			RPD		U	U
HEXACHLOROETHANE	U			132%		U	U
INDENO(1,2,3-C,D)PYRENE	U			147%		U	U

ISOPHORONE		U			RPD		U	U
NAPHTHALENE		U			153%		U	U
NITROBENZENE		U			126%		U	U
N-NITROSODI-N-PROPYLAMINE		U			137%		U	U
N-NITROSODIPHENYLAMINE		U			163%		U	U
PENTACHLOROPHENOL		U			RPD		U	U
PHENANTHRENE	2000	J		x	High RPD		J	J
PHENOL		U			132%		U	U
PYRENE	1600	J		x	High 11%		J	J

TP-5-20130514

E2228-09	Compound	ug/kg	Lab Qual.	DV Conc.	MB	Surr	MS	LCS	IC	CC	IS	DV Qual.	Comb. Qual.
	1,2,4,5-TETRACHLOROBENZENE		U				147%					U	U
30.12 G	2,3,4,6-TETRACHLOROPHENOL		U				137%					U	U
	2,4,5-TRICHLOROPHENOL		U				137%					U	U
%S =	2,4,6-TRICHLOROPHENOL		U				126%					U	U
77.8	2,4-DICHLOROPHENOL		U				132%					U	U
	2,4-DIMETHYLPHENOL		U				RPD					U	U
	2,4-DINITROPHENOL		U				RPD		RRF	RRF		R	R
	2,4-DINITROTOLUENE		U				43%					UJ	UJ
	2,6-DINITROTOLUENE		U				RPD					U	U
	2-CHLORONAPHTHALENE		U				48%					UJ	UJ
	2-CHLOROPHENOL		U				121%					U	U
	2-METHYLNAPHTHALENE		U				153%					U	U
	2-METHYLPHENOL (O-CRESOL)		U				147%					U	U
	2-NITROANILINE		U							22%		UJ	UJ
	2-NITROPHENOL		U				RPD					U	U
	3- AND 4- METHYLPHENOL (TOTAL)		U				153%					U	U
	3,3'-DICHLOROBENZIDINE		U				0%					R	R
	3-NITROANILINE		U				RPD					U	U
	4,6-DINITRO-2-METHYLPHENOL		U				0%		37%			R	R
	4-BROMOPHENYL PHENYL ETHER		U				116%					U	U
	4-CHLORO-3-METHYLPHENOL		U				116%					U	U
	4-CHLOROANILINE		U				RPD					U	U
	4-CHLOROPHENYL PHENYL ETHER		U				142%					U	U
	4-NITROANILINE		U				RPD					U	U
	4-NITROPHENOL		U				RPD					U	U
	ACENAPHTHENE		U				153%					U	U
	ACENAPHTHYLENE		U				147%					U	U
	ACETOPHENONE		U				147%					U	U
	ANTHRACENE		U				153%					U	U
	ATRAZINE		U				RPD					U	U

30.06 G	2,4,5-TRICHLOROPHENOL	U	137%		U	U
	2,4,6-TRICHLOROPHENOL	U	126%		U	U
%S =	2,4-DICHLOROPHENOL	U	132%		U	U
	2,4-DIMETHYLPHENOL	U	RPD		U	U
91.4	2,4-DINITROPHENOL	U	RPD	RRF RRF	R	R
	2,4-DINITROTOLUENE	U	43%		UJ	UJ
	2,6-DINITROTOLUENE	U	RPD		U	U
	2-CHLORONAPHTHALENE	U	48%		UJ	UJ
	2-CHLOROPHENOL	U	121%		U	U
	2-METHYLNAPHTHALENE	U	153%		U	U
	2-METHYLPHENOL (O-CRESOL)	U	147%		U	U
	2-NITROANILINE	U		22%	UJ	UJ
	2-NITROPHENOL	U	RPD		U	U
	3- AND 4- METHYLPHENOL (TOTAL)	U	153%		U	U
	3,3'-DICHLOROBENZIDINE	U	0%		R	R
	3-NITROANILINE	U	RPD		U	U
	4,6-DINITRO-2-METHYLPHENOL	U	0%	37%	R	R
	4-BROMOPHENYL PHENYL ETHER	U	116%		U	U
	4-CHLORO-3-METHYLPHENOL	U	116%		U	U
	4-CHLOROANILINE	U	RPD		U	U
	4-CHLOROPHENYL PHENYL ETHER	U	142%		U	U
	4-NITROANILINE	U	RPD		U	U
	4-NITROPHENOL	U	RPD		U	U
	ACENAPHTHENE	U	153%		U	U
	ACENAPHTHYLENE	U	147%		U	U
	ACETOPHENONE	U	147%		U	U
	ANTHRACENE	U	153%		U	U
	ATRAZINE	U	RPD		U	U
	BENZALDEHYDE	U		18%	U	U
	BENZO(A)ANTHRACENE	U	153%		U	U
	BENZO(A)PYRENE	U	163%		U	U
	BENZO(B)FLUORANTHENE	U	242%		U	U
	BENZO(G,H,I)PERYLENE	U	168%		U	U
	BENZO(K)FLUORANTHENE	U			U	U
	BENZYL BUTYL PHTHALATE	U	126%		U	U
	BIPHENYL (DIPHENYL)	U			U	U
	BIS(2-CHLOROETHOXY) METHANE	U	132%		U	U
	BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	U	142%		U	U
	BIS(2-CHLOROISOPROPYL) ETHER	U			U	U
	BIS(2-ETHYLHEXYL) PHTHALATE	U	184%		U	U
	CAPROLACTAM	U	147%		U	U
	CARBAZOLE	U	142%		U	U
	CHRYSENE	U	147%		U	U

DIBENZ(A,H)ANTHRACENE	U	RPD	U	U
DIBENZOFURAN	U	153%	U	U
DIETHYL PHTHALATE	U	147%	U	U
DIMETHYL PHTHALATE	U	153%	U	U
DI-N-BUTYL PHTHALATE	U	142%	U	U
DI-N-OCTYLPHTHALATE	U	147%	U	U
FLUORANTHENE	U	0%	R	R
FLUORENE	U	153%	U	U
HEXACHLOROBENZENE	U	132%	U	U
HEXACHLOROBUTADIENE	U	132%	U	U
HEXACHLOROCYCLOPENTADIENE	U	RPD	U	U
HEXACHLOROETHANE	U	132%	U	U
INDENO(1,2,3-C,D)PYRENE	U	147%	U	U
ISOPHORONE	U	RPD	U	U
NAPHTHALENE	U	153%	U	U
NITROBENZENE	U	126%	U	U
N-NITROSODI-N-PROPYLAMINE	U	137%	U	U
N-NITROSODIPHENYLAMINE	U	163%	U	U
PENTACHLOROPHENOL	U	RPD	U	U
PHENANTHRENE	U	RPD	U	U
PHENOL	U	132%	U	U
PYRENE	U	11%	UJ	UJ

SUMMARY OF THE ANALYTICAL DATA VALIDATION
40-46 Frazee Street, Auburn, NY

Soil and Water PCB Analyses
Samples Collected: May 14, 2013
Samples Received at Chemtech on May 15, 2013
Sample Delivery Group: E2228
Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix
E2228-01	EB-1	Water
E2228-02	TP-1	Soil
E2228-03	TP-2	Soil
E2228-03 RE	TP-2RE	Soil
E2228-05	TP-3	Soil
E2228-06	TP-4	Soil
E2228-07	E2228-06MS	Soil
E2228-08	E2228-06MSD	Soil
E2228-09	TP-5	Soil
E2228-10	CHA-1	Soil

Soil and water samples were validated for analyses of PCBs by the US EPA Region II data validation SOP (HW-45, Revision 1). Data were reviewed for usability according to the following criteria:

- * - Data Completeness
- * - Holding Times
- * - Laboratory Blanks
 - Field Blanks
 - Surrogate Recoveries
- * - Surrogate Retention Times
 - Matrix Spike / Matrix Spike Duplicate
- * - Laboratory Control Sample
 - Calibrations
- * - Method Blanks
- * - Performance Evaluation Mixtures
 - Florisil Cartridge Check
 - GPC Calibration
- * - Compound Identification

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The problems with the surrogates, matrix spike and continuing calibrations should be noted. These are described in detail below.

Form IX for a florisil cleanup was not included in the data package.

No other problems were detected with any of the data.

Holding Times

All extractions and analyses were performed within the required holding times.

Surrogate Recoveries

All surrogate recoveries for the samples were within the required limits with the following exceptions:

Sample		TCX1	DCB1	TCX2	DCB2
E2228-03	TP-2		57%		39%
E2228-03 RE	TP-2RE		47%		30%
E2228-05	TP-3				41%
E2228-06	TP-4				53%
E2228-07	E2228-06MS				55%
E2228-08	E2228-06MSD				59%
E2228-09	TP-5				51%
E2228-10	CHA-1				55%

The NYS DEC ASP program allows one surrogate on each column to be outside of the quality control limits.

Sample TP-2 was reanalyzed since both DCB surrogates were less than the quality control limit. No PCBs were detected in either sample. It is recommended that the data from the original analysis be used for the final reporting.

Matrix Spike

Sample E2228-06 / TP-4 was used for the matrix spike and matrix spike duplicate.

The recoveries of both Aroclor 1016 (159% & 146%) and 1260 (465% & 438%) were above the quality control limits of 140% and 150%.

Aroclor 1254 was detected in sample E2228-06 / TP-4 at a concentration of 370 ug/kg. The data for this compound was flagged with the "J" qualifier and is an estimated value.

Laboratory Control Samples

All recoveries were within the quality control limits used for the validation.

Initial Calibrations

All percent RSDs for PCB 1016 and PCB 1260 were less than 20%.

Continuing Calibrations

Most of the percent differences in the continuing calibrations were less than the 20% quality control limit. (Aroclor 1016-4 (22%) 5/16 17:40; Aroclor 1260-5 (24%) 5/15 20:03; Aroclor 1260-4 (21%) Aroclor 1260-5 (24%) 5/20 11:20)

The average of all of the percent differences of the individual peaks were less than 20%.

Florisil Cartridge Check

Form IX for a florisil cleanup was not included in the data package.

GPC Calibration

A GPC cleanup was not performed on these samples.

Method Blanks

No problems were detected with any of the method blanks.

Calibration Blanks

No problems were detected with the calibration blanks associated with this sample delivery group.

Field Blank

A field blank was not analyzed with this sample delivery group.

Sample Results

The data were qualified on the basis of the percent difference of the concentrations on the two columns:

<u>% Difference</u>	Qualifier
0 - 25%	None
25 - 70%	"J"
70 - 100%	"JN"
> 100%	"R"
100 - 200% (Interference detected)	"JN"
> 50% (Value is < CRQL)	"U"

No problems were detected with the sample data.

EB-1-20130514
E2228-01

	ug/l	Lab Qual.	DV Conc.	HT	MB	TB	Surr	MS	LCS	IC	CC	DV Qual.	Comb. Qual.
Aroclor-1016		U										U	U
Aroclor-1221		U										U	U
Aroclor-1232		U										U	U
Aroclor-1242		U										U	U
Aroclor-1248		U										U	U
Aroclor-1254		U										U	U
Aroclor-1260		U										U	U

TP-1-20130514
E2228-02

	ug/kg	Lab Qual.	DV Conc.	HT	MB	TB	Surr	MS	LCS	IC	CC	DV Qual.	Comb. Qual.
Aroclor-1016		U										U	U
Aroclor-1221		U										U	U
Aroclor-1232		U										U	U
Aroclor-1242		U										U	U
Aroclor-1248		U										U	U
Aroclor-1254		U										U	U
Aroclor-1260		U										U	U

TP-2-20130514
E2228-03

	ug/kg	Lab Qual.	DV Conc.	HT	MB	TB	Surr	MS	LCS	IC	CC	DV Qual.	Comb. Qual.
Aroclor-1016		U										U	U
Aroclor-1221		U										U	U
Aroclor-1232		U										U	U
Aroclor-1242		U										U	U
Aroclor-1248		U										U	U
Aroclor-1254		U										U	U
Aroclor-1260		U										U	U

TP-2-20130514
E2228-03 RE

	ug/kg	Lab Qual.	DV Conc.	HT	MB	TB	Surr	MS	LCS	IC	CC	DV Qual.	Comb. Qual.
Aroclor-1016		U										U	U
Aroclor-1221		U										U	U
Aroclor-1232		U										U	U
Aroclor-1242		U										U	U
Aroclor-1248		U										U	U
Aroclor-1254		U										U	U
Aroclor-1260		U										U	U

TP-3-20130514
E2228-05

	ug/kg	Lab Qual.	DV Conc.	HT	MB	TB	Surr	MS	LCS	IC	CC	DV Qual.	Comb. Qual.
Aroclor-1016		U										U	U
Aroclor-1221		U										U	U
Aroclor-1232		U										U	U
Aroclor-1242		U										U	U
Aroclor-1248		U										U	U
Aroclor-1254		U										U	U
Aroclor-1260		U										U	U

TP-4-20130514
E2228-06

	ug/kg	Lab Qual.	DV Conc.	HT	MB	TB	Surr	MS	LCS	IC	CC	DV Qual.	Comb. Qual.
Aroclor-1016		U										U	U
Aroclor-1221		U										U	U
Aroclor-1232		U										U	U
Aroclor-1242		U										U	U
Aroclor-1248		U										U	U
Aroclor-1254	370						J					J	J
Aroclor-1260		U										U	U

TP-5-20130514
E2228-09

	ug/kg	Lab Qual.	DV Conc.	HT	MB	TB	Surr	MS	LCS	IC	CC	DV Qual.	Comb. Qual.
Aroclor-1016		U										U	U
Aroclor-1221		U										U	U
Aroclor-1232		U										U	U
Aroclor-1242		U										U	U
Aroclor-1248		U										U	U
Aroclor-1254		U										U	U
Aroclor-1260		U										U	U

CHA-1-20130514
E2228-10

	ug/kg	Lab Qual.	DV Conc.	HT	MB	TB	Surr	MS	LCS	IC	CC	DV Qual.	Comb. Qual.
Aroclor-1016		U										U	U
Aroclor-1221		U										U	U
Aroclor-1232		U										U	U
Aroclor-1242		U										U	U
Aroclor-1248		U										U	U
Aroclor-1254		U										U	U
Aroclor-1260		U										U	U

SUMMARY OF THE ANALYTICAL DATA VALIDATION
40-46 Frazee Street, Auburn, NY

Soil and Water Total Metals

Samples Collected: May 14, 2013

Samples Received at Chemtech on May 15, 2013

Sample Delivery Group: E2228

Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix
E2228-01	EB-1	Water
E2228-02	TP-1	Soil
E2228-03	TP-2	Soil
E2228-05	TP-3	Soil
E2228-06	TP-4	Soil
E2228-07	E2228-06MS	Soil
E2228-08	E2228-06MSD	Soil
E2228-09	TP-5	Soil
E2228-10	CHA-1	Soil

Soil and water samples were validated for inorganic analyses by the US EPA Region II data validation SOP (HW-2, Revision 13). Data were reviewed for usability according to the following criteria:

- * - Holding Times
- * - Calibration Verification
- * - CRDL Standard
- * - Laboratory Control Sample
- * - Serial Dilution
- * - Calibration Blanks
 - Field Blank
 - Preparation Blanks
 - Matrix Spike
- * - Duplicate Analyses
- * - ICP Interference Check Sample
- * - Detection Limit Results
- * - Linear Range
- * - Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

The problems with the matrix spike and serial dilutions should be noted. These are described in detail below.

No other problems were detected that would affect the use of the data.

Holding Times

All samples were analyzed within the required holding times.

CRDL Standards

All of the CRDL standards were within the 70% - 130% quality control limits.

Initial and Continuing Calibrations

No problems were found with any of the initial or continuing calibrations.

Preparation Blank

No compounds were detected in the one preparation blank associated with the digestions of these samples at concentrations above the CRDL. Several analytes were found in the preparation blank at concentrations between the CRDL and instrument detection limit. These very low concentrations are not required to be noted in the data validation summary table.

Calibration Blanks

Several analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. These very low concentrations are not required to be noted in the data validation summary table and do not affect the end use of the data.

Field Blank

A field blank was not collected with this sample delivery group.

ICP Interference Check Sample

All of the ICP Interference Check Sample recoveries were within the required limits.

Matrix Spike Recovery

Sample E2228-06 / TP-4 was used as the matrix spike and matrix spike duplicate.

All recoveries were within the 75% - 125% quality control limits with the following exceptions:

Analyte	MS % Rec	MSD % Rec.
ANTIMONY	32%	33%
BERYLLIUM	36%	37%
CHROMIUM, TOTAL	1392%	1388%
COBALT	129%	129%
NICKEL	846%	850%

The data for antimony, cobalt and beryllium were flagged with the "J" qualifier and are estimated values.

The data for total chromium and nickel were flagged with the “R” qualifier and technically rejected since their recoveries were greater than 200%.

Duplicate Analysis

Sample E2228-06 / TP-4 was used for the matrix duplicate.

All RPDs which could be accurately calculated were less than 20%.

Laboratory Control Sample

No problems were detected with the recoveries of the LCS standards.

Serial Dilutions

Sample E2228-06 / TP-4 was used for the serial dilution.

The “E” qualifier was not added to the FORM I’s or EDDs as required by the NYS DEC ASP program. These were added during the validation.

The percent differences were calculated during the data validation:

Analyte	MDL	50X MDL	Initial Concentration	% D
ALUMINUM	6.5	325	43314	20%
ANTIMONY	8	400	0	
ARSENIC	4.2	210	88.35	38%
BARIUM	4	200	1209	26%
BERYLLIUM	0.7	35	0	
CADMIUM	0.5	25	42.05	27%
CALCIUM	31.8	1,590	1078550	39%
CHROMIUM	1.1	55	274	36%
COBALT	5.8	290	90	3%
COPPER	2	100	3952	37%
IRON	20.4	1,020	412460	15%
LEAD	25.6	1,280	4313	5%
MAGNESIUM	32.5	1,625	1222003863	34%
MANGANESE	1.7	85	3863	42%
NICKEL	4.2	210	494	3%
POTASSIUM	38.8	1,940	6408	28%
SELENIUM	4.8	240	0	0%
SILVER	1.5	75	11.7	44%
SODIUM	13.9	695	0	100%
THALLIUM	2.4	120	19.77	26%
VANADIUM	6.4	320	66.02	38%
ZINC	6.5	325	7482	19%
Mercury	0.0915	4.575	12.09	16%

The analytes noted in red were flagged with the “EJ” qualifier in the data validation summary table and in the NYS EDD.

The data for these analytes are estimated values.

Instrument Detection Limit

No problems were found with the instrument detection limits.

ICP Linear Ranges

No problems were detected with the linear ranges.

Sample Results

No problems were detected with any of the data.

EB-1-20130514
E2228-01

	Conc.	Lab Qual	DV Conc	FB	CRDL	CC	MS	Dup.	Ser. Dil.	DV Qual	Comb. Qual
ALUMINUM	8990										
ANTIMONY		U								U	U
ARSENIC	4.950	J								J	J
BARIUM	242										
BERYLLIUM		U								U	U
CADMIUM		U								U	U
CALCIUM	112000										
CHROMIUM, TOTAL	24.9										
COBALT	9.430										
COPPER	10.2										
IRON	18600										
LEAD	139										
MAGNESIUM	25400										
MANGANESE	436										
NICKEL	28.0										
POTASSIUM	2950										
SELENIUM		U								U	U
SILVER	1.200	J								J	J
SODIUM	477	J								J	J
THALLIUM		U								U	U
VANADIUM	18.3										
ZINC	426										

TP-1-20130514
E2228-02

	Conc.	Lab Qual	DV Conc	FB	CRDL	CC	MS	MS Qual	Dup.	Ser. Dil.	SD Qual	DV Qual	Comb. Qual
ALUMINUM	10200												
ANTIMONY		UN					32%	J		20%	E	UNEJ	UNEJ
ARSENIC	3.790												
BARIUM	67.0									26%	E	EJ	EJ
BERYLLIUM		UN					36%	J				UNJ	UNJ
CADMIUM		U								27%	E	UEJ	UEJ
CALCIUM	39400									39%	E	EJ	EJ
CHROMIUM, TOTAL	12.9	N					1392%	R		36%	E	R	R
COBALT	12.2	N					129%	J				NJ	NJ
COPPER		U										U	U
IRON	24900												
LEAD	10.8												
MAGNESIUM	18800									34%	E	EJ	EJ
MANGANESE	329									42%	E	EJ	EJ
NICKEL	31.7	N					846%	R				R	R
POTASSIUM	1430									28%	E	EJ	EJ
SELENIUM		U										U	U
SILVER	0.99												
SODIUM		U										U	U
THALLIUM	0.68	J										J	J
VANADIUM	12.4												
ZINC	41.7									19%	E	EJ	EJ

TP-2-20130514
E2228-03

	Conc.	Lab Qual	DV Conc	FB	CRDL	CC	MS	MS Qual	Dup.	Ser. Dil.	SD Qual	DV Qual	Comb. Qual
ALUMINUM	4570												
ANTIMONY		UN					32%	J		20%	E	UNEJ	UNEJ
ARSENIC	17.0												
BARIUM	57.2									26%	E	EJ	EJ
BERYLLIUM		UN					36%	J				UNJ	UNJ
CADMIUM		U								27%	E	UEJ	UEJ
CALCIUM	3920									39%	E	EJ	EJ
CHROMIUM, TOTAL	11.8	N					1392%	R		36%	E	R	R
COBALT	5.440	N					129%	J				NJ	NJ
COPPER	1.280											U	U
IRON	23300												
LEAD	26.8												
MAGNESIUM	1950									34%	E	EJ	EJ
MANGANESE	97.4									42%	E	EJ	EJ
NICKEL	17.4	N					846%	R				R	R
POTASSIUM	888									28%	E	EJ	EJ
SELENIUM		U										U	U
SILVER	0.33												
SODIUM		U										U	U
THALLIUM	0.71	J										J	J
VANADIUM	12.4												
ZINC	35.5									19%	E	EJ	EJ

TP-3-20130514
E2228-05

	Conc.	Lab Qual	DV Conc	FB	CRDL	CC	MS	MS Qual	Dup.	Ser. Dil.	SD Qual	DV Qual	Comb. Qual
ALUMINUM	1670												
ANTIMONY		UN					32%	J		20%	E	UNEJ	UNEJ
ARSENIC	9.910												
BARIUM	32.7									26%	E	EJ	EJ
BERYLLIUM		UN					36%	J				UNJ	UNJ
CADMIUM	26.7									27%	E	EJ	EJ
CALCIUM	13700									39%	E	EJ	EJ
CHROMIUM, TOTAL	76.9	N					1392%	R		36%	E	R	R
COBALT	25.3	N					129%	J				NJ	NJ
COPPER	20.7												
IRON	142639.6	OR										R	R
LEAD	57.3												
MAGNESIUM	1620									34%	E	EJ	EJ
MANGANESE	1250									42%	E	EJ	EJ
NICKEL	138	N					846%	R				R	R
POTASSIUM	283									28%	E	EJ	EJ
SELENIUM		U										U	U
SILVER		U										U	U
SODIUM		U										U	U
THALLIUM	8.520												
VANADIUM	0.53	J										J	J
ZINC	14.9									19%	E	EJ	EJ

10X

IRON	370000	D										D	D
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TP-4-20130514
E2228-06

	Conc.	Lab Qual	DV Conc	FB	CRDL	CC	MS	MS Qual	Dup.	Ser. Dil.	SD Qual	DV Qual	Comb. Qual
ALUMINUM	4220												
ANTIMONY		UN					32%	J		20%	E	UNEJ	UNEJ
ARSENIC	8.620												
BARIUM	118									26%	E	EJ	EJ
BERYLLIUM		UN					36%	J				UNJ	UNJ
CADMIUM	4.100									27%	E	EJ	EJ
CALCIUM	105000									39%	E	EJ	EJ
CHROMIUM, TOTAL	26.7	N					1392%	R		36%	E	ENJ	ENJ
COBALT	8.820	N					129%	J				NJ	NJ
COPPER	385												
IRON	40200												
LEAD	421												
MAGNESIUM	11900									34%	E	EJ	EJ
MANGANESE	377									42%	E	EJ	EJ
NICKEL	48.2	N					846%	R				R	R
POTASSIUM	625									28%	E	EJ	EJ
SELENIUM		U										U	U
SILVER	1.140												
SODIUM		U										U	U
THALLIUM	1.930												
VANADIUM	6.440												
ZINC	730									19%	E	EJ	EJ

TP-5-20130514
E2228-09

	Conc.	Lab Qual	DV Conc	FB	CRDL	CC	MS	MS Qual	Dup.	Ser. Dil.	SD Qual	DV Qual	Comb. Qual
ALUMINUM	1730												
ANTIMONY		UN					32%	J		20%	E	UNEJ	UNEJ
ARSENIC	3.340												
BARIUM	58.9									26%	E	EJ	EJ
BERYLLIUM		UN					36%	J				UNJ	UNJ
CADMIUM	1.960									27%	E	EJ	EJ
CALCIUM	1770									39%	E	EJ	EJ
CHROMIUM, TOTAL	6.470	N					1392%	R		36%	E	R	R
COBALT	2.990	N					129%	J				NJ	NJ
COPPER	3.090												
IRON	13700												
LEAD	14.7												
MAGNESIUM	191									34%	E	EJ	EJ
MANGANESE	33.6									42%	E	EJ	EJ
NICKEL	12.3	N					846%	R				R	R
POTASSIUM	165									28%	E	EJ	EJ
SELENIUM		U										U	U
SILVER	0.12	J										J	J
SODIUM	59.7												
THALLIUM		U										U	U
VANADIUM	9.370												
ZINC	13.0									19%	E	EJ	EJ

CHA-1-20130514
E2228-10

10X

	Conc.	Lab Qual	DV Conc	FB	CRDL	CC	MS	MS Qual	Dup.	Ser. Dil.	SD Qual	DV Qual	Comb. Qual
ALUMINUM	1710												
ANTIMONY		UN					32%	J		20%	E	UNEJ	UNEJ
ARSENIC	9.240												
BARIUM	29.5									26%	E	EJ	EJ
BERYLLIUM		UN					36%	J				UNJ	UNJ
CADMIUM	27.1									27%	E	EJ	EJ
CALCIUM	10200									39%	E	EJ	EJ
CHROMIUM, TOTAL	104	N					1392%	R		36%	E	R	R
COBALT	26.5	N					129%	J				JN	JN
COPPER	23.6												
IRON	147574.5	OR										R	R
LEAD	85.2												
MAGNESIUM	1460									34%	E	EJ	EJ
MANGANESE	1350									42%	E	EJ	EJ
NICKEL	139	N					846%	R				R	R
POTASSIUM	236									28%	E	EJ	EJ
SELENIUM		U										U	U
SILVER		U										U	U
SODIUM		U										U	U
THALLIUM	8.330												
VANADIUM	7.010												
ZINC	10.6									19%	E	EJ	EJ
IRON	413000	D										D	D

CHIA

