June 05, 2018

415 Oak
Kansas City, MO 64106

RE: Project: PCE CHESTNUT STREET SITE IN AT

Dear

Enclosed are the analytical results for sample(s) received by the laboratory on May 23, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Project Manager

Enclosures

B7A4 40548263 54

Superfund

0400 6/5/18

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PCE CHESTNUT STREET SITE IN AT

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: PCE CHESTNUT STREET SITE IN AT

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60271149001	**PCS052218-001**	Water	05/22/18 10:50	05/23/18 10:53
60271149002	**PCS052218-002**	Water	05/22/18 11:10	05/23/18 10:53
60271149003	**PCS052218-003 FB**	Water	05/22/18 11:30	05/23/18 10:53
60271149004	**PCS052218-004 TB**	Water	05/22/18 11:45	05/23/18 10:53

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[redacted]

[redacted]

SAMPLE ANALYTE COUNT

Project: PCE CHESTNUT STREET SITE IN AT

[redacted] [redacted]

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60271149001	**PCS052218-001**	EPA 5030B/8260	PGH	9	PASI-K
60271149002	**PCS052218-002**	EPA 5030B/8260	PGH	9	PASI-K
60271149003	**PCS052218-003 FB**	EPA 5030B/8260	PGH	9	PASI-K
60271149004	**PCS052218-004 TB**	EPA 5030B/8260	PGH	9	PASI-K

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[redacted]

[redacted]

ANALYTICAL RESULTS

Project: PCE CHESTNUT STREET SITE IN AT

[redacted]

Sample: PCS052218-001 **Lab ID: 60271149001** Collected: 05/22/18 10:50 Received: 05/23/18 10:53 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
cis-1,2-Dichloroethene	**<0.080**	ug/L	1.0	1		06/04/18 23:41	156-59-2	R1
trans-1,2-Dichloroethene	**<0.20**	ug/L	1.0	1		06/04/18 23:41	156-60-5	R1
Tetrachloroethene	**<0.10**	ug/L	1.0	1		06/04/18 23:41	127-18-4	
Trichloroethene	**<0.17**	ug/L	1.0	1		06/04/18 23:41	79-01-6	R1
Vinyl chloride	**<0.13**	ug/L	1.0	1		06/04/18 23:41	75-01-4	R1
Surrogates								
4-Bromofluorobenzene (S)	94	%	80-119	1		06/04/18 23:41	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	80-117	1		06/04/18 23:41	17060-07-0	
Toluene-d8 (S)	88	%	80-115	1		06/04/18 23:41	2037-26-5	
Preservation pH	**1.0**		0.10	1		06/04/18 23:41		

Northeast Schildberg Pond

[redacted]

[redacted]

ANALYTICAL RESULTS

Project: PCE CHESTNUT STREET SITE IN AT

[redacted]

Sample: PCS052218-002 **Lab ID: 60271149002** Collected: 05/22/18 11:10 Received: 05/23/18 10:53 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
cis-1,2-Dichloroethene	**<0.080**	ug/L	1.0	1		06/04/18 23:55	156-59-2	
trans-1,2-Dichloroethene	**<0.20**	ug/L	1.0	1		06/04/18 23:55	156-60-5	
Tetrachloroethene	**<0.10**	ug/L	1.0	1		06/04/18 23:55	127-18-4	
Trichloroethene	**<0.17**	ug/L	1.0	1		06/04/18 23:55	79-01-6	
Vinyl chloride	**<0.13**	ug/L	1.0	1		06/04/18 23:55	75-01-4	
Surrogates								
4-Bromofluorobenzene (S)	96	%	80-119	1		06/04/18 23:55	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	80-117	1		06/04/18 23:55	17060-07-0	
Toluene-d8 (S)	90	%	80-115	1		06/04/18 23:55	2037-26-5	
Preservation pH	**1.0**		0.10	1		06/04/18 23:55		

Drainage to Nishnabotna River

ANALYTICAL RESULTS

Project: PCE CHESTNUT STREET SITE IN AT

Sample: PCS052218-003 FB **Lab ID: 60271149003** Collected: 05/22/18 11:30 Received: 05/23/18 10:53 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
cis-1,2-Dichloroethene	**<0.080**	ug/L	1.0	1		06/05/18 00:08	156-59-2	
trans-1,2-Dichloroethene	**<0.20**	ug/L	1.0	1		06/05/18 00:08	156-60-5	
Tetrachloroethene	**<0.10**	ug/L	1.0	1		06/05/18 00:08	127-18-4	
Trichloroethene	**<0.17**	ug/L	1.0	1		06/05/18 00:08	79-01-6	
Vinyl chloride	**<0.13**	ug/L	1.0	1		06/05/18 00:08	75-01-4	
Surrogates								
4-Bromofluorobenzene (S)	95	%	80-119	1		06/05/18 00:08	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	80-117	1		06/05/18 00:08	17060-07-0	
Toluene-d8 (S)	89	%	80-115	1		06/05/18 00:08	2037-26-5	
Preservation pH	**1.0**		0.10	1		06/05/18 00:08		

[redacted]

[redacted]

ANALYTICAL RESULTS

Project: PCE CHESTNUT STREET SITE IN AT

[redacted]

Sample: PCS052218-004 TB **Lab ID: 60271149004** Collected: 05/22/18 11:45 Received: 05/23/18 10:53 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
cis-1,2-Dichloroethene	**<0.080**	ug/L	1.0	1		06/04/18 21:35	156-59-2	
trans-1,2-Dichloroethene	**<0.20**	ug/L	1.0	1		06/04/18 21:35	156-60-5	
Tetrachloroethene	**<0.10**	ug/L	1.0	1		06/04/18 21:35	127-18-4	
Trichloroethene	**<0.17**	ug/L	1.0	1		06/04/18 21:35	79-01-6	
Vinyl chloride	**<0.13**	ug/L	1.0	1		06/04/18 21:35	75-01-4	
Surrogates								
4-Bromofluorobenzene (S)	99	%	80-119	1		06/04/18 21:35	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	80-117	1		06/04/18 21:35	17060-07-0	
Toluene-d8 (S)	94	%	80-115	1		06/04/18 21:35	2037-26-5	
Preservation pH	**1.0**		0.10	1		06/04/18 21:35		

[redacted]

[redacted]

QUALITY CONTROL DATA

Project: PCE CHESTNUT STREET SITE IN AT

[redacted]

QC Batch: 528492 | Analysis Method: EPA 5030B/8260

QC Batch Method: EPA 5030B/8260 | Analysis Description: 8260 MSV Water 10 mL Purge

Associated Lab Samples: 60271149001, 60271149002, 60271149003, 60271149004

METHOD BLANK: 2165072 | Matrix: Water

Associated Lab Samples: 60271149001, 60271149002, 60271149003, 60271149004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	<0.080	1.0	06/04/18 20:39	
Tetrachloroethene	ug/L	<0.10	1.0	06/04/18 20:39	
trans-1,2-Dichloroethene	ug/L	<0.20	1.0	06/04/18 20:39	
Trichloroethene	ug/L	<0.17	1.0	06/04/18 20:39	
Vinyl chloride	ug/L	<0.13	1.0	06/04/18 20:39	
1,2-Dichloroethane-d4 (S)	%	102	80-117	06/04/18 20:39	
4-Bromofluorobenzene (S)	%	103	80-119	06/04/18 20:39	
Toluene-d8 (S)	%	97	80-115	06/04/18 20:39	

LABORATORY CONTROL SAMPLE: 2165073

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	20	21.6	108	84-121	
Tetrachloroethene	ug/L	20	19.7	98	87-120	
trans-1,2-Dichloroethene	ug/L	20	20.6	103	83-121	
Trichloroethene	ug/L	20	23.7	119	82-120	
Vinyl chloride	ug/L	20	24.3	121	74-147	
1,2-Dichloroethane-d4 (S)	%			107	80-117	
4-Bromofluorobenzene (S)	%			101	80-119	
Toluene-d8 (S)	%			95	80-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2165074 2165075

Parameter	Units	60271149001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
cis-1,2-Dichloroethene	ug/L	<0.080	20	20	23.3	19.3	117	97	69-135	19	15	R1
Tetrachloroethene	ug/L	<0.10	20	20	19.0	17.8	95	89	72-136	7	15	
trans-1,2-Dichloroethene	ug/L	<0.20	20	20	25.7	21.0	128	105	75-137	20	15	R1
Trichloroethene	ug/L	<0.17	20	20	24.1	20.5	121	102	66-136	16	15	R1
Vinyl chloride	ug/L	<0.13	20	20	30.6	25.2	153	126	65-164	19	16	R1
1,2-Dichloroethane-d4 (S)	%						101	94	80-117			
4-Bromofluorobenzene (S)	%						90	89	80-119			
Toluene-d8 (S)	%						93	93	80-115			
Preservation pH		1.0			1.0	1.0				0		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

QUALIFIERS

Project: PCE CHESTNUT STREET SITE IN AT

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

ANALYTE QUALIFIERS

R1 RPD value was outside control limits.

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[redacted]

[redacted]

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PCE CHESTNUT STREET SITE IN AT

[redacted] [redacted]

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60271149001	**PCS052218-001**	EPA 5030B/8260	528492		
60271149002	**PCS052218-002**	EPA 5030B/8260	528492		
60271149003	**PCS052218-003 FB**	EPA 5030B/8260	528492		
60271149004	**PCS052218-004 TB**	EPA 5030B/8260	528492		

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[redacted]

Sample Condition Upon Receipt

WO#: 60271149

60271149

Client Name: Tetra Tech

Courier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☑ Other ☐

Tracking #: _____ [redacted] Shipping Label Used? Yes ☑ No ☐

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☐ None ☐ Other ☐

Thermometer Used: T-2166 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.7, 0.2 **Corr. Factor** +0.2 **Corrected** 0.9, 0.4

Date and initials of person examining contents: KE 5/23

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
[redacted] containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☑N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	☐Yes ☑No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☑No	
Trip Blank present:	☑Yes ☐No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☑No ☐N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: JMS Date: 5/24/18

[redacted]

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately

Page: 1 of 1

[redacted]

EGULATORY AGENCY

NPDES ☐ GROUND WATER ☐ DRINKING WATER

UST ☐ RCRA ☒ OTHER Superfund

ite Location STATE: IA

Section D
Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION (°C)	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: 8260 VOC* (Requested Analysis Filtered (Y/N) Y/N: N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. (60271149)
1	PCS052218-001	WT	G			5/22/18	1050	20.6	9				X					X	4 DG9H		001
2	PCS052218-002	WT	G			↓	1110	17.5	3				X					X	3 DG9H		002
3	PCS052218-003 FB	WT	G				1130	NA	3				X					X	↓		003
4	PCS052218-004 TB	WT	G			✓	1145	NA	2				X					X			004
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Complete
L.P.
5/23/18

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride	[redacted]				5/18	1055	0.9	Y	Y	Y
Extra volume collected for PCS052218-001 for MS/MSD analyses							0.4	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
					23/18					

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days

F-ALL-Q-020rev.08, 12-Oct-2007

June 05, 2018

415 Oak
Kansas City, MO 64106

RE: Project: PCE CHESTNUT STREET SITE IN AT

Dear :

Enclosed are the analytical results for sample(s) received by the laboratory on May 23, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

1(913)563-1408
Project Manager

Enclosures

CERTIFICATIONS

Project: PCE CHESTNUT STREET SITE IN AT

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
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Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: PCE CHESTNUT STREET SITE IN AT

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60271149001	**PCS052218-001**	Water	05/22/18 10:50	05/23/18 10:53
60271149002	**PCS052218-002**	Water	05/22/18 11:10	05/23/18 10:53
60271149003	**PCS052218-003 FB**	Water	05/22/18 11:30	05/23/18 10:53
60271149004	**PCS052218-004 TB**	Water	05/22/18 11:45	05/23/18 10:53

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SAMPLE ANALYTE COUNT

Project: PCE CHESTNUT STREET SITE IN AT

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60271149001	PCS052218-001	EPA 5030B/8260	PGH	9	PASI-K
60271149002	PCS052218-002	EPA 5030B/8260	PGH	9	PASI-K
60271149003	PCS052218-003 FB	EPA 5030B/8260	PGH	9	PASI-K
60271149004	PCS052218-004 TB	EPA 5030B/8260	PGH	9	PASI-K

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[redacted]

[redacted]

ANALYTICAL RESULTS

Project: PCE CHESTNUT STREET SITE IN AT

[redacted]

Sample: PCS052218-001 **Lab ID: 60271149001** Collected: 05/22/18 10:50 Received: 05/23/18 10:53 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
cis-1,2-Dichloroethene	**<0.080**	ug/L	1.0	1		06/04/18 23:41	156-59-2	R1
trans-1,2-Dichloroethene	**<0.20**	ug/L	1.0	1		06/04/18 23:41	156-60-5	R1
Tetrachloroethene	**<0.10**	ug/L	1.0	1		06/04/18 23:41	127-18-4	
Trichloroethene	**<0.17**	ug/L	1.0	1		06/04/18 23:41	79-01-6	R1
Vinyl chloride	**<0.13**	ug/L	1.0	1		06/04/18 23:41	75-01-4	R1
Surrogates								
4-Bromofluorobenzene (S)	94	%	80-119	1		06/04/18 23:41	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	80-117	1		06/04/18 23:41	17060-07-0	
Toluene-d8 (S)	88	%	80-115	1		06/04/18 23:41	2037-26-5	
Preservation pH	**1.0**		0.10	1		06/04/18 23:41		

[redacted]

[redacted]

ANALYTICAL RESULTS

Project: PCE CHESTNUT STREET SITE IN AT
[redacted]

Sample: PCS052218-002 **Lab ID: 60271149002** Collected: 05/22/18 11:10 Received: 05/23/18 10:53 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
cis-1,2-Dichloroethene	**<0.080**	ug/L	1.0	1		06/04/18 23:55	156-59-2	
trans-1,2-Dichloroethene	**<0.20**	ug/L	1.0	1		06/04/18 23:55	156-60-5	
Tetrachloroethene	**<0.10**	ug/L	1.0	1		06/04/18 23:55	127-18-4	
Trichloroethene	**<0.17**	ug/L	1.0	1		06/04/18 23:55	79-01-6	
Vinyl chloride	**<0.13**	ug/L	1.0	1		06/04/18 23:55	75-01-4	
Surrogates								
4-Bromofluorobenzene (S)	96	%	80-119	1		06/04/18 23:55	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	80-117	1		06/04/18 23:55	17060-07-0	
Toluene-d8 (S)	90	%	80-115	1		06/04/18 23:55	2037-26-5	
Preservation pH	**1.0**		0.10	1		06/04/18 23:55		

ANALYTICAL RESULTS

Project: PCE CHESTNUT STREET SITE IN AT

Sample: PCS052218-003 FB **Lab ID: 60271149003** Collected: 05/22/18 11:30 Received: 05/23/18 10:53 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
cis-1,2-Dichloroethene	**<0.080**	ug/L	1.0	1		06/05/18 00:08	156-59-2	
trans-1,2-Dichloroethene	**<0.20**	ug/L	1.0	1		06/05/18 00:08	156-60-5	
Tetrachloroethene	**<0.10**	ug/L	1.0	1		06/05/18 00:08	127-18-4	
Trichloroethene	**<0.17**	ug/L	1.0	1		06/05/18 00:08	79-01-6	
Vinyl chloride	**<0.13**	ug/L	1.0	1		06/05/18 00:08	75-01-4	
Surrogates								
4-Bromofluorobenzene (S)	95	%	80-119	1		06/05/18 00:08	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	80-117	1		06/05/18 00:08	17060-07-0	
Toluene-d8 (S)	89	%	80-115	1		06/05/18 00:08	2037-26-5	
Preservation pH	**1.0**		0.10	1		06/05/18 00:08		

ANALYTICAL RESULTS

Project: PCE CHESTNUT STREET SITE IN AT

Sample: PCS052218-004 TB **Lab ID: 60271149004** Collected: 05/22/18 11:45 Received: 05/23/18 10:53 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
cis-1,2-Dichloroethene	**<0.080**	ug/L	1.0	1		06/04/18 21:35	156-59-2	
trans-1,2-Dichloroethene	**<0.20**	ug/L	1.0	1		06/04/18 21:35	156-60-5	
Tetrachloroethene	**<0.10**	ug/L	1.0	1		06/04/18 21:35	127-18-4	
Trichloroethene	**<0.17**	ug/L	1.0	1		06/04/18 21:35	79-01-6	
Vinyl chloride	**<0.13**	ug/L	1.0	1		06/04/18 21:35	75-01-4	
Surrogates								
4-Bromofluorobenzene (S)	99	%	80-119	1		06/04/18 21:35	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	80-117	1		06/04/18 21:35	17060-07-0	
Toluene-d8 (S)	94	%	80-115	1		06/04/18 21:35	2037-26-5	
Preservation pH	**1.0**		0.10	1		06/04/18 21:35		

[redacted]

[redacted]

QUALITY CONTROL DATA

Project: PCE CHESTNUT STREET SITE IN AT

[redacted]

QC Batch: 528492 Analysis Method: EPA 5030B/8260

QC Batch Method: EPA 5030B/8260 Analysis Description: 8260 MSV Water 10 mL Purge

Associated Lab Samples: 60271149001, 60271149002, 60271149003, 60271149004

METHOD BLANK: 2165072 Matrix: Water

Associated Lab Samples: 60271149001, 60271149002, 60271149003, 60271149004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	<0.080	1.0	06/04/18 20:39	
Tetrachloroethene	ug/L	<0.10	1.0	06/04/18 20:39	
trans-1,2-Dichloroethene	ug/L	<0.20	1.0	06/04/18 20:39	
Trichloroethene	ug/L	<0.17	1.0	06/04/18 20:39	
Vinyl chloride	ug/L	<0.13	1.0	06/04/18 20:39	
1,2-Dichloroethane-d4 (S)	%	102	80-117	06/04/18 20:39	
4-Bromofluorobenzene (S)	%	103	80-119	06/04/18 20:39	
Toluene-d8 (S)	%	97	80-115	06/04/18 20:39	

LABORATORY CONTROL SAMPLE: 2165073

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	20	21.6	108	84-121	
Tetrachloroethene	ug/L	20	19.7	98	87-120	
trans-1,2-Dichloroethene	ug/L	20	20.6	103	83-121	
Trichloroethene	ug/L	20	23.7	119	82-120	
Vinyl chloride	ug/L	20	24.3	121	74-147	
1,2-Dichloroethane-d4 (S)	%			107	80-117	
4-Bromofluorobenzene (S)	%			101	80-119	
Toluene-d8 (S)	%			95	80-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2165074 2165075

Parameter	Units	60271149001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
cis-1,2-Dichloroethene	ug/L	<0.080	20	20	23.3	19.3	117	97	69-135	19	15	R1
Tetrachloroethene	ug/L	<0.10	20	20	19.0	17.8	95	89	72-136	7	15	
trans-1,2-Dichloroethene	ug/L	<0.20	20	20	25.7	21.0	128	105	75-137	20	15	R1
Trichloroethene	ug/L	<0.17	20	20	24.1	20.5	121	102	66-136	16	15	R1
Vinyl chloride	ug/L	<0.13	20	20	30.6	25.2	153	126	65-164	19	16	R1
1,2-Dichloroethane-d4 (S)	%						101	94	80-117			
4-Bromofluorobenzene (S)	%						90	89	80-119			
Toluene-d8 (S)	%						93	93	80-115			
Preservation pH		1.0			1.0	1.0				0		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PCE CHESTNUT STREET SITE IN AT

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

is TNI accredited. Contact your PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

ANALYTE QUALIFIERS

R1 RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PCE CHESTNUT STREET SITE IN AT

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60271149001	**PCS052218-001**	EPA 5030B/8260	528492		
60271149002	**PCS052218-002**	EPA 5030B/8260	528492		
60271149003	**PCS052218-003 FB**	EPA 5030B/8260	528492		
60271149004	**PCS052218-004 TB**	EPA 5030B/8260	528492		

[redacted]

Sample Condition Upon Receipt

WO#: 60271149

60271149

Client Name: Tetra Tech

Courier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☑ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☑ No ☐

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☐ None ☐ Other ☐

Thermometer Used: T-2166 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.7, 0.2 **Corr. Factor** +0.2 **Corrected** 0.9, 0.4

Date and initials of person examining contents: RE 5/23

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
[redacted] containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☑N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	☐Yes ☑No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☑No	
Trip Blank present:	☑Yes ☐No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☑No ☐N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: JD Date: 5/24/18

[redacted]

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately

Section A | Section B | Section C

[redacted]

Page: 1 of 1

GULATORY AGENCY

NPDES | GROUND WATER | DRINKING WATER

UST | RCRA | X OTHER Superfund

te Location STATE: IA

Section D
Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / -)
Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	TIME	COMPOSITE END/GRAB DATE	TIME	TEMP AT COLLECTION (°C)	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	8260 VOC*	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Requested Analysis Filtered (Y/N)	N		60271149
1	PCS052218-001	WT	G			5/22/18	1050		9				X						X 4 DG9H		an
2	PCS052218-002	WT	G				1110		3				X						X 3 DG9H		ao
3	PCS052218-003 FB	WT	G				1130	NA	3				X						X		ap
4	PCS052218-004 TB	WT	G				1145	NA	2				X						X		aq
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Complete
5/23/18

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride	[redacted]						0.9	Y	Y	Y
Extra volume collected							0.4	Y	Y	Y
for PCS052218-001 for										
MS/MSD analyses										
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting [redacted]

F-ALL-Q-020rev 06 12-Oct-2007

June 05, 2018

TETRA TECH EMI
415 Oak
Kansas City, MO 64106

RE: Project: HIGHWAY 3 PCE SITE IN LE MARS

Dear

Enclosed are the analytical results for sample(s) received by the laboratory on May 23, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Project Manager

Enclosures

SAMPLE SUMMARY

Project: HIGHWAY 3 PCE SITE IN LE MARS

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60271115001	H3P052118-001	Water	05/21/18 14:45	05/23/18 10:53
60271115002	H3P052118-002	Water	05/21/18 16:25	05/23/18 10:53
60271115003	H3P052118-003	Water	05/21/18 16:45	05/23/18 10:53
60271115004	H3P052118-004	Water	05/21/18 19:50	05/23/18 10:53
60271115005	H3P052118-005 FB	Water	05/21/18 16:55	05/23/18 10:53
60271115006	H3P052118-005 TB	Water	05/21/18 17:25	05/23/18 10:53

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[redacted]

Sample Condition Upon Receipt

WO#: 60271115

60271115

Client Name: Tetra Tech

Courier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☒ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Other ☐

Thermometer Used: ~~T-297~~ T-266 5/23/18 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): As-read 0.7, 0.2 Corr. Factor +0.2 Corrected 0.9, 0.4

Date and initials of person examining contents: AE 5/23

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
[redacted] containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☒N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	☐Yes ☒No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☒No	
Trip Blank present:	☒Yes ☐No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☒No ☐N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: JWS Date: 5/24/18

[redacted]

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately

[redacted]

Page: 1 of 1

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☒ OTHER Superfund

Site Location STATE: IA

Section D
Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION (°C)	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 524.2 VOC*	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. (6271115)
1	H3P052118-001	DW	G			5/21/18	1445	12.9	3				X					X	3DG9H	001
2	H3P052118-002	DW	G				1625	12.8	3				X					X	↓	002
3	H3P052118-003	DW	G				1645	13.9	3				X					X		003
4	H3P052118-004	DW	G				1950	13.8	9				X					X	9DG9H	004
5	H3P052118-005FB	WT	G				1655	NA	3				X					X	3DG9H	005
6	H3P052118-006TB	WT	G				1725	NA	2				X					X	2DG9H	006
7																				
8																				
9																				
10																				
11																				
12																				

Complete
Z.P.
5/23/18

ADDITIONAL COMMENTS

*PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chl

Extra volume collec
for H3P052118-00
MS/MSD analyses

[redacted]

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
0.9	Y	Y	Y
0.4	Y	Y	Y

*Important Note: By signing this form you are accepting [redacted] 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007