June 8, 2018
Discharge Monitoring Report #176
(117-3005035.05)

Mr. Ralph Erickson, Pretreatment Coordinator
Madison Metropolitan Sewerage District
1610 Moorland Road
Madison, WI 53713-3398

RE: May 2018 Discharge Monitoring Report, Hydraulic Barrier System, Hydrite Chemical Co., Cottage Grove, Wisconsin

Dear Mr. Erickson:

Tetra Tech, on behalf of Hydrite Chemical Co., has prepared this discharge monitoring report to comply with the reporting requirements listed in Part 3 of the reissued Wastewater Discharge Permit for the Hydrite Chemical Co. Cottage Grove facility Hydraulic Barrier System (Permit No. NTO-88.06). This report provides information on the operation history and discharge monitoring results for the Hydraulic Barrier System for the month of May 2018. The following information is being provided in accordance with Section 3.01 of Part 3 (Reporting) of the reissued Wastewater Discharge Permit:

- Sample Type: Groundwater
- Place sample collected: Sample tap on the hydraulic barrier system effluent line located in the manhole east of the 110 South Main Street lift station.
- Date and time the sample was collected: May 22, 2018 at 2:02 pm.
- The person that collected the sample: Mark Manthey, Associate Hydrogeologist, Tetra Tech.
- The persons and laboratory performing the analyses: Pace Analytical Services Chemists, Pace Analytical Services, Inc., Green Bay, Wisconsin.
- Dates the analyses were performed and analytical techniques used:
  Analyses performed by Pace Analytical Services, Inc.:

TETRA TECH
175 N. Corporate Drive, Suite 100, Brookfield, WI 53045
Tel 262.792.1282 Fax 262.792.1310 www.tetratech.com

1. Volatile Organic Compounds (VOCs) by EPA Method 8260, April 24, 2018.
2. Chloride by EPA Method 300.0, April 27, 2018.

Analysis performed in the field by Tetra Tech personnel:

1. Field pH, May 22, 2018.
   The effluent sampling and analysis form containing the field pH result for the effluent sample and the equipment calibration form documenting the successful calibration of the instrument used to measure the effluent sample pH in the field are included in Attachment A.

- The laboratory analytical results for the monthly effluent sample collected from the hydraulic barrier system during this reporting period are included in Attachment A to this report and are summarized on Table 1.

- Total VOCs time series charts for the effluent samples collected from the hydraulic barrier system are provided as Chart 1 and Chart 2. Chart 1 displays the total VOCs concentrations and average pumping rates for the barrier system from 2003 to present, which is the year the barrier system was brought on-line. Chart 2 displays the total VOCs concentrations and average pumping rates for the barrier system from 2008 to present. A chart showing the total mass of VOCs and chlorinated VOCs discharged to the sanitary sewer is provided as Chart 3.

- The current month discharge and cumulative total discharge volumes are provided below:

Reporting Period	Groundwater Discharge Volume (gallons)
May 2018 Discharge Volume (April 30 through May 30, 2018)	5,041,226
Cumulative Total Discharge Volume (October 8, 2003 through May 30, 2018)	829,973,934

<u>Hydraulic Barrier System Operation and Maintenance History for the Month of May 2018</u>

Groundwater was pumped from extraction wells P-128, P-130, and P-164 during this reporting period. Total flow readings taken from the 3-inch Badger Magnetoflow® electromagnetic water meter (mag meter) indicate the hydraulic barrier system operated at an average pumping rate of 122 gallons per minute (gpm) in May.

Based on meter readings collected from the water meters in the manholes at extraction wells P-128 and P-130 and the total barrier system flow readings from the mag meter, the extraction wells operated at the pumping rates listed below during this reporting period:

Extraction Wells Pumping Rates for May 2018

- P-128: 22.9 to 33.1 gpm.
- P-130: 37.1 to 37.6 gpm
- P-164: 51.3 to 65.3 gpm

Tetra Tech personnel treated extraction well P-164 with muriatic acid solution May 1st to May 3rd to maintain the sustainable pumping rate of the well at the target rate of 50 to 55 gpm. Approximately 3 gallons of muriatic acid was poured into P-164 with the pump off followed by about 3 gallons of tap water. The pump in P-164 was turned on for about 20 seconds approximately 22 hours after the muriatic solution was poured into the well to distribute the muriatic solution into the discharge pipe. The pump was then kept off for an additional 21 hours to allow the muriatic solution to break down the slime bacteria build-up in the discharge pipe, well and pump components. Extraction wells P-128 and P-130 were operating while P-164 was shut down for the muriatic acid solution treatment.

Occasions when the barrier system was shut down and re-started are listed below:

- Village of Cottage Grove Public Works Department personnel performed tests of the backup generator in the 110 South Main Street lift station building on Tuesday, May 1st and Tuesday, May 22nd. The hydraulic barrier system automatically shut down during the generator tests and was re-started the same day by Tetra Tech personnel after the generator tests were completed.

- The hydraulic barrier system automatically shut down at 8:22 am on Wednesday, May 2nd due to the failure of lift station pump #2. The barrier system was re-started the same day by Tetra Tech personnel at 11:20 am after Village of Cottage Grove Public Works Department personnel repaired lift station pump #2.

- A temporary power interruption caused a shut-down of the hydraulic barrier system at 3:15 am on Friday, May 11th. The barrier system was re-started the same day by Hydrite Chemical personnel at 7:45 am.

- Three shut-downs of the hydraulic barrier system occurred on Monday, May 14th. The first shut-down occurred at 3:45 am due to a temporary power interruption. Hydrite Chemical personnel re-started the barrier system at 8:04 am. The second shut-down was an automatic shut-down at 3:03 pm due to a high lift station wet well water level alarm. Tetra Tech personnel re-started the hydraulic barrier system at 3:46 pm after the high water level alarm was addressed by Village of Cottage Grove Public Works Department personnel. The third shut down of the hydraulic barrier occurred at 7:05 pm and was caused by a fault in one of the electronic probes of the lift station controls. The hydraulic barrier system was re-started at 11:10 am on Tuesday, May 15th by Tetra Tech personnel after the electronic probe was repaired by Village of Cottage Grove Public Works Department personnel.

- A temporary power interruption caused a shut-down of the hydraulic barrier system at 12:10 pm on Wednesday, May 30th. The barrier system was re-started the same day by Tetra Tech personnel at 1:30 pm.

This report was prepared by,

Tetra Tech

Associate Hydrogeologist
encl.

cc: Mr. Chris Hampton – Town of Cottage Grove
Mr. Thomas J. Miazga - Hydrite Chemical Co.
Mr. Raymond R. Krueger - Michael, Best & Friedrich, LLP
Mr. JJ Larson - Village of Cottage Grove (Electronic copy via email.)
Mr. Michael R. Schmoller – Wisconsin Department of Natural Resources (Electronic copy via email.)

TABLE
AND CHARTS

Table 1. Summary of Hydraulic Barrier System Effluent Monitoring VOCs and Chloride Analytical Results, Hydrite Chemical Co., Cottage Grove Facility

Sample Identification					EFFLUENT	
Lab Sample Identification					40169700001	
Date Sample Collected					05/22/18	
Dilution Factor for VOCs					10	
COMPOUND	Units	Target Detection Limits	NR140 ES	NR140 PAL		
1,1,1-Trichloroethane	ug/L	0.50	200	40	122	
2-Butanone (MEK)	ug/L	3.0	460	90		U
4-Methyl-2-Pentanone (MIBK)	ug/L	2.1	500	50		U
Acetone	ug/L	3.0	1000	200		U
cis-1,2-Dichloroethene	ug/L	0.26	70	7	1020	
Methylene chloride	ug/L	0.23	5.0	0.5		U
Tetrachloroethene	ug/L	0.50	5.0	0.5	10.2	
Toluene	ug/L	0.50	1000	200	97.9	
Trichloroethene	ug/L	0.33	5.0	0.5	30.8	
Vinyl chloride	ug/L	0.18	0.2	0.02	39.9	
Xylenes (total)	ug/L	2.6	10000	1000	17.8	J
TOTAL VOCs	ug/L				1338.6	
Total Chlorinated VOCs	ug/L				1222.9	
Chloride	mg/L	2.5	250	125	42.3	

Notes:
VOCs - Volatile organic compounds.
Blank spaces indicate the compound was analyzed but not detected. The detection limits for the VOCs are equal to the target detection limits multiplied by the corresponding dilution factor for each sample.
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
M0 - Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1 - Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
U - Indicates the compound was analyzed but not detected.
X - Analyte was above the QC limits for the continuing calibration check.
ug/L - micrograms per liter which is equivalent to parts per billion (ppb)
NR140 ES - The compound's Enforcement Standard as listed in Chapter NR140 of the Wisconsin Administrative Code.
NR140 PAL - The compound's Preventive Action Limit as listed in Chapter NR140 of the Wisconsin Administrative Code.
Madison Metropolitan Sewerage District Total VOCs discharge limit for hydraulic barrier system = 10,000 ug/L or 10 mg/L (as of 12/13/2016).
The Madison Metroplitan Sewerage District set no discharge limit for chloride, but it is a parameter of concern.
"Effluent" samples are collected from the sample spigot on the combined effluent discharge line for the barrier system located in the manhole by the Village of Cottage Grove lift station.

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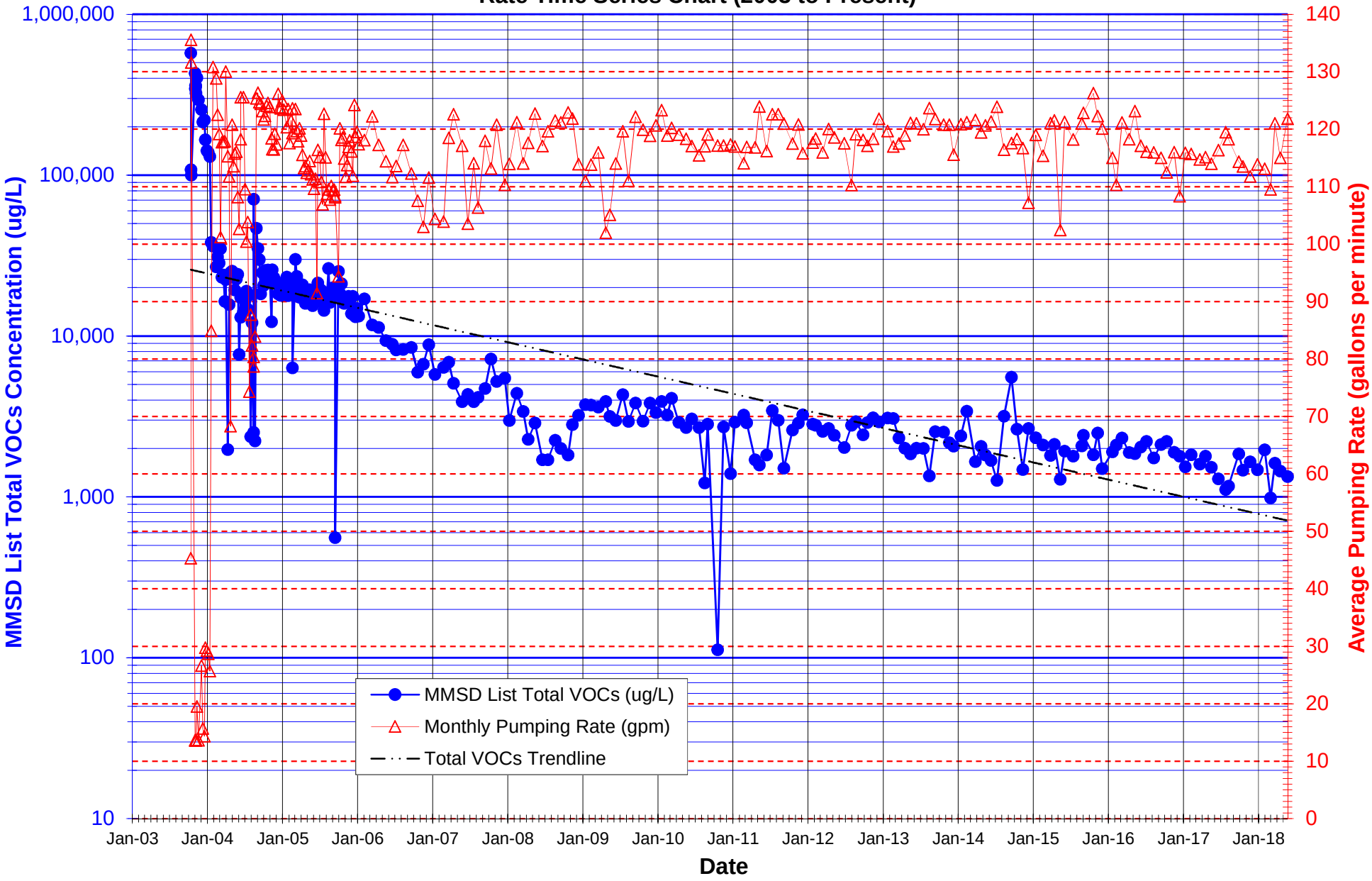
Chart 1. Hydrite Chemical Co. Hydraulic Barrier System MMSD List Total VOCs and Average Pumping Rate Time Series Chart (2003 to Present)



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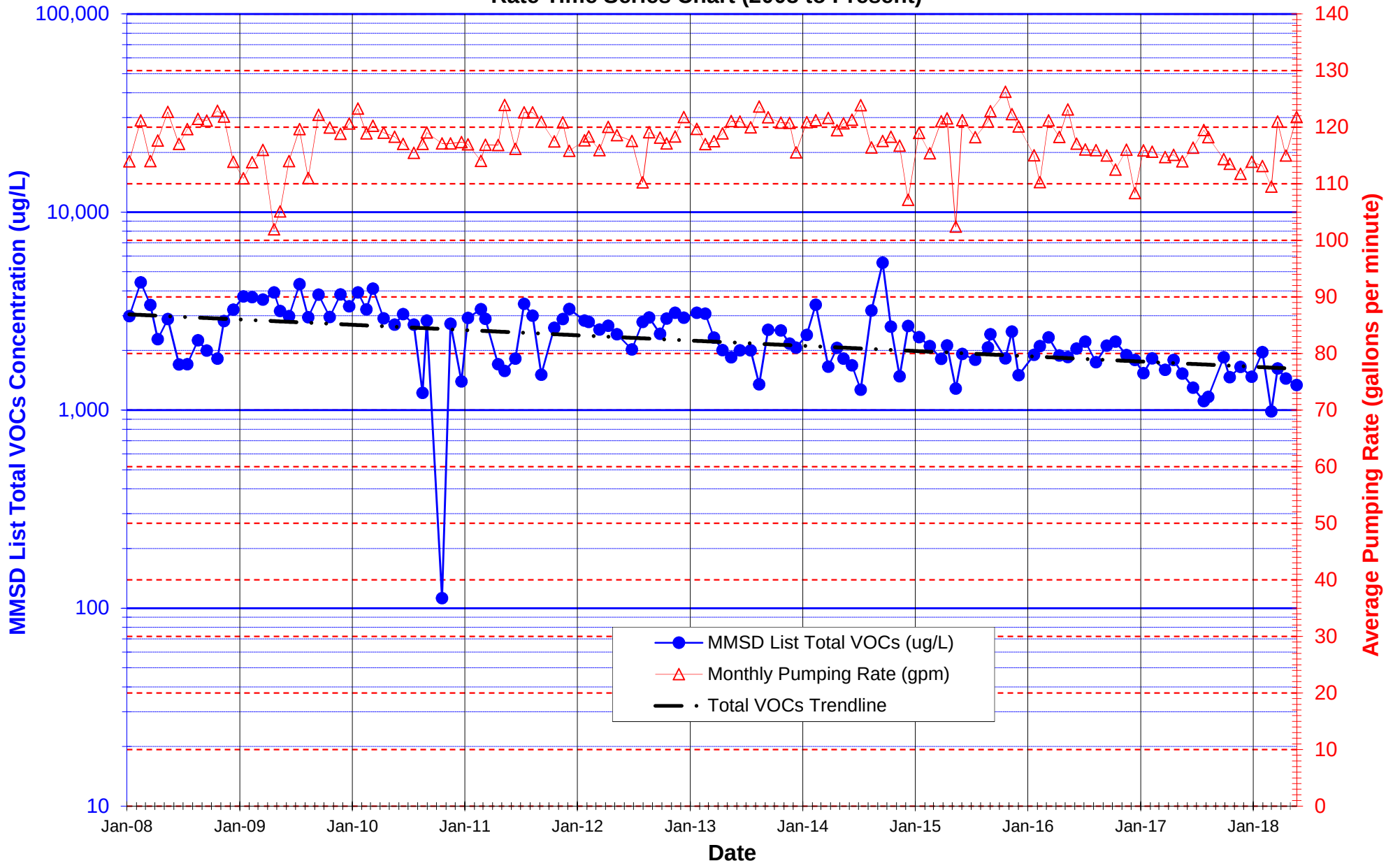
TETRA TECH

Chart 2. Hydrite Chemical Co. Hydraulic Barrier System MMSD List Total VOCs and Average Pumping Rate Time Series Chart (2008 to Present)



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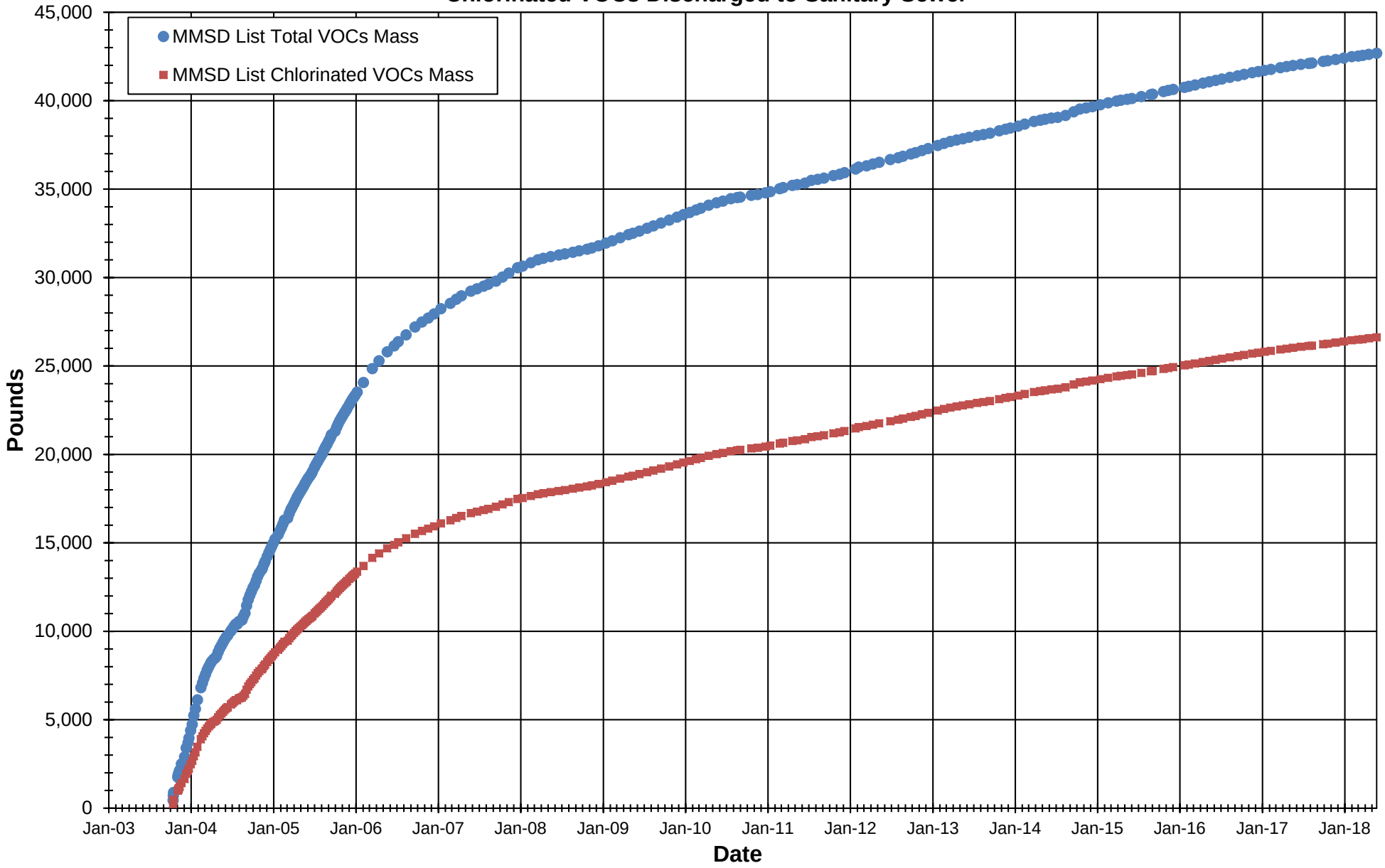
TETRA TECH

Chart 3. Hydrite Chemical Co. Hydraulic Barrier System Cumulative Mass of MMSD List Total Vocs and Chlorinated VOCs Discharged to Sanitary Sewer



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ATTACHMENT A
HYDRAULIC BARRIER SYSTEM
EFFLUENT SAMPLE FIELD FORMS AND
LABORATORY ANALYTICAL REPORT

TETRA TECH REMEDIATION SYSTEM EFFLUENT WATER QUALITY SAMPLING AND ANALYSIS FORM

PROJECT INFORMATION		INSTRUMENTS	
PROJECT	Hydrite Chemical Co., Cottage Grove Facility Layer 5 Hydraulic Barrier System Monitoring	Temp. & pH	Hanna Combo
PROJECT NO.	117-3005035.05	Conductivity	Hanna Combo
LOCATION	Cottage Grove, WI	ORP	NA
PERSONNEL	Mark Manthey	DO	NA

SAMPLE ID	Effluent	Trip Blank		
WATER TYPE	Groundwater	DI		
DATE (month/day/year)	5/22/2018	5/22/2018		
CLOCK TIME (Military)	14:02	13:28		
FLOW METER READING (gallons)	99,087,960			
FLOW RATE (gpm)	128.85			
SAMPLING DEVICE	Sample Spigot on 6-inch discharge line			
FIELD TEMPERATURE (°C)	13.8			
pH	7.34			
ELECTRICAL CONDUCTIVITY at 25° C (µS/cm)	720			
ORP (mV)	NM			
DISSOLVED OXYGEN (ppm)	NM			
DISSOLVED OXYGEN (% Sat.)	NM			
COLOR	Clear			
ODOR	Slight Sewer			
CLARITY	Clear			
SAMPLING PARAMETERS	# OF CONTAINERS & VOLUME; CONTAINER TYPE (A = AMBER GLASS; G = GLASS; P = PLASTIC); PRESERVATIVE TYPE (L = LAB ADDED; F = FIELD ADDED) OR NEUTRAL; FILTERED (YES or NO)			
TCL VOCs (Method SW846 8260B)	**3-40 ml; G; HCL-L; No**	2-40ml, G, HCL-L; NO		
Chloride (Method 300.0)	**250-ml; P; None; No**			
Trip Blank:				
NAME OF LABORATORY	Pace Analytical	Pace		
DATE SENT TO LAB	5/23/2018	5/23/2018		
SAMPLER'S NAME	Mark M.	Mark M.		

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TETRA TECH EQUIPMENT CALIBRATION FORM

Equipment Make	**HANNA Instruments**
Equipment Model	**HI 98129 pH/EC/TDC/Temperature Meter**
Tetra Tech GEO ID Number	**1**

DATE	TIME	CALIBRATION MEDIA	RESULTS	COMMENTS
4-17-18	13:05	pH 4.0 and pH 7.0 buffer solutions	Calibration successful	
4-17-18	13:05	1,413 µs conductivity calibration solution	Calibration successful	
5-21-18	16:30	pH 4.0 and pH 7.0 buffer solutions	Calibration successful	
5-21-18	16:30	1,413 µs conductivity calibration solution	Calibration successful	
		pH 4.0 and pH 7.0 buffer solutions	Calibration successful	
		1,413 µs conductivity calibration solution	Calibration successful	
		pH 4.0 and pH 7.0 buffer solutions	Calibration successful	
		1,413 µs conductivity calibration solution	Calibration successful	
		pH 4.0 and pH 7.0 buffer solutions	Calibration successful	
		1,413 µs conductivity calibration solution	Calibration successful	

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

June 05, 2018

Mark Manthey
Tetra Tech Geo
175 North Corporate Drive
Suite 100
Brookfield, WI 53045

RE: Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

Dear Mark Manthey:
Enclosed are the analytical results for sample(s) received by the laboratory on May 24, 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,

Brian Basten
brian.basten@pacelabs.com
(920)469-2436
Project Manager

Enclosures

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CERTIFICATIONS

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

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SAMPLE SUMMARY

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40169700001	**EFFLUENT**	Water	05/22/18 14:02	05/24/18 09:45
40169700002	**TRIP BLANK**	Water	05/22/18 13:28	05/24/18 09:45

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SAMPLE ANALYTE COUNT

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40169700001	**EFFLUENT**	EPA 8260	LAP	38
		EPA 300.0	HMB	1
40169700002	**TRIP BLANK**	EPA 8260	LAP	38

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ANALYTICAL RESULTS

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

Sample: EFFLUENT **Lab ID: 40169700001** Collected: 05/22/18 14:02 Received: 05/24/18 09:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Acetone	**<29.5**	ug/L	200	29.5	10		05/25/18 22:24	67-64-1	
Benzene	**<5.0**	ug/L	10.0	5.0	10		05/25/18 22:24	71-43-2	
Bromodichloromethane	**<5.0**	ug/L	10.0	5.0	10		05/25/18 22:24	75-27-4	
Bromoform	**<5.0**	ug/L	10.0	5.0	10		05/25/18 22:24	75-25-2	
Bromomethane	**<24.3**	ug/L	50.0	24.3	10		05/25/18 22:24	74-83-9	
2-Butanone (MEK)	**<29.8**	ug/L	200	29.8	10		05/25/18 22:24	78-93-3	
Carbon disulfide	**<6.1**	ug/L	50.0	6.1	10		05/25/18 22:24	75-15-0	
Carbon tetrachloride	**<5.0**	ug/L	10.0	5.0	10		05/25/18 22:24	56-23-5	
Chlorobenzene	**<5.0**	ug/L	10.0	5.0	10		05/25/18 22:24	108-90-7	
Chloroethane	**123**	ug/L	10.0	3.7	10		05/25/18 22:24	75-00-3	
Chloroform	**<25.0**	ug/L	50.0	25.0	10		05/25/18 22:24	67-66-3	
Chloromethane	**<5.0**	ug/L	10.0	5.0	10		05/25/18 22:24	74-87-3	
Dibromochloromethane	**<5.0**	ug/L	10.0	5.0	10		05/25/18 22:24	124-48-1	
1,1-Dichloroethane	**269**	ug/L	10.0	2.4	10		05/25/18 22:24	75-34-3	
1,2-Dichloroethane	**<1.7**	ug/L	10.0	1.7	10		05/25/18 22:24	107-06-2	
1,1-Dichloroethene	**33.2**	ug/L	10.0	4.1	10		05/25/18 22:24	75-35-4	
cis-1,2-Dichloroethene	**1020**	ug/L	10.0	2.6	10		05/25/18 22:24	156-59-2	
trans-1,2-Dichloroethene	**48.4**	ug/L	10.0	2.6	10		05/25/18 22:24	156-60-5	
1,2-Dichloropropane	**<2.3**	ug/L	10.0	2.3	10		05/25/18 22:24	78-87-5	
cis-1,3-Dichloropropene	**<5.0**	ug/L	10.0	5.0	10		05/25/18 22:24	10061-01-5	
trans-1,3-Dichloropropene	**<2.3**	ug/L	10.0	2.3	10		05/25/18 22:24	10061-02-6	
Ethylbenzene	**12.8**	ug/L	10.0	5.0	10		05/25/18 22:24	100-41-4	
2-Hexanone	**<11.1**	ug/L	50.0	11.1	10		05/25/18 22:24	591-78-6	
Methylene Chloride	**<2.3**	ug/L	10.0	2.3	10		05/25/18 22:24	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<21.4**	ug/L	50.0	21.4	10		05/25/18 22:24	108-10-1	
Styrene	**<5.0**	ug/L	10.0	5.0	10		05/25/18 22:24	100-42-5	
1,1,2,2-Tetrachloroethane	**<2.5**	ug/L	10.0	2.5	10		05/25/18 22:24	79-34-5	
Tetrachloroethene	**10.2**	ug/L	10.0	5.0	10		05/25/18 22:24	127-18-4	
Toluene	**97.9**	ug/L	10.0	5.0	10		05/25/18 22:24	108-88-3	
1,1,1-Trichloroethane	**122**	ug/L	10.0	5.0	10		05/25/18 22:24	71-55-6	
1,1,2-Trichloroethane	**<2.0**	ug/L	10.0	2.0	10		05/25/18 22:24	79-00-5	
Trichloroethene	**30.8**	ug/L	10.0	3.3	10		05/29/18 10:58	79-01-6	
Vinyl acetate	**<9.2**	ug/L	50.0	9.2	10		05/25/18 22:24	108-05-4	
Vinyl chloride	**39.9**	ug/L	10.0	1.8	10		05/25/18 22:24	75-01-4	
Xylene (Total)	**17.8J**	ug/L	30.0	15.0	10		05/25/18 22:24	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	92	%	61-130		10		05/25/18 22:24	460-00-4	
Dibromofluoromethane (S)	102	%	67-130		10		05/25/18 22:24	1868-53-7	
Toluene-d8 (S)	99	%	70-130		10		05/25/18 22:24	2037-26-5	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**42.3**	mg/L	2.0	0.50	1		06/01/18 01:21	16887-00-6	

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ANALYTICAL RESULTS

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

Sample: TRIP BLANK **Lab ID: 40169700002** Collected: 05/22/18 13:28 Received: 05/24/18 09:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Acetone	**<3.0**	ug/L	20.0	3.0	1		05/25/18 15:46	67-64-1	
Benzene	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	71-43-2	
Bromodichloromethane	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	75-27-4	
Bromoform	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	75-25-2	
Bromomethane	**<2.4**	ug/L	5.0	2.4	1		05/25/18 15:46	74-83-9	
2-Butanone (MEK)	**<3.0**	ug/L	20.0	3.0	1		05/25/18 15:46	78-93-3	
Carbon disulfide	**<0.61**	ug/L	5.0	0.61	1		05/25/18 15:46	75-15-0	
Carbon tetrachloride	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	56-23-5	
Chlorobenzene	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	108-90-7	
Chloroethane	**<0.37**	ug/L	1.0	0.37	1		05/25/18 15:46	75-00-3	
Chloroform	**<2.5**	ug/L	5.0	2.5	1		05/25/18 15:46	67-66-3	
Chloromethane	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	74-87-3	
Dibromochloromethane	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	124-48-1	
1,1-Dichloroethane	**<0.24**	ug/L	1.0	0.24	1		05/25/18 15:46	75-34-3	
1,2-Dichloroethane	**<0.17**	ug/L	1.0	0.17	1		05/25/18 15:46	107-06-2	
1,1-Dichloroethene	**<0.41**	ug/L	1.0	0.41	1		05/25/18 15:46	75-35-4	
cis-1,2-Dichloroethene	**<0.26**	ug/L	1.0	0.26	1		05/25/18 15:46	156-59-2	
trans-1,2-Dichloroethene	**<0.26**	ug/L	1.0	0.26	1		05/25/18 15:46	156-60-5	
1,2-Dichloropropane	**<0.23**	ug/L	1.0	0.23	1		05/25/18 15:46	78-87-5	
cis-1,3-Dichloropropene	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	10061-01-5	
trans-1,3-Dichloropropene	**<0.23**	ug/L	1.0	0.23	1		05/25/18 15:46	10061-02-6	
Ethylbenzene	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	100-41-4	
2-Hexanone	**<1.1**	ug/L	5.0	1.1	1		05/25/18 15:46	591-78-6	
Methylene Chloride	**<0.23**	ug/L	1.0	0.23	1		05/25/18 15:46	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<2.1**	ug/L	5.0	2.1	1		05/25/18 15:46	108-10-1	
Styrene	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.25**	ug/L	1.0	0.25	1		05/25/18 15:46	79-34-5	
Tetrachloroethene	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	127-18-4	
Toluene	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	108-88-3	
1,1,1-Trichloroethane	**<0.50**	ug/L	1.0	0.50	1		05/25/18 15:46	71-55-6	
1,1,2-Trichloroethane	**<0.20**	ug/L	1.0	0.20	1		05/25/18 15:46	79-00-5	
Trichloroethene	**<0.33**	ug/L	1.0	0.33	1		05/25/18 15:46	79-01-6	
Vinyl acetate	**<0.92**	ug/L	5.0	0.92	1		05/25/18 15:46	108-05-4	
Vinyl chloride	**<0.18**	ug/L	1.0	0.18	1		05/25/18 15:46	75-01-4	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		05/25/18 15:46	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	91	%	61-130		1		05/25/18 15:46	460-00-4	
Dibromofluoromethane (S)	100	%	67-130		1		05/25/18 15:46	1868-53-7	
Toluene-d8 (S)	101	%	70-130		1		05/25/18 15:46	2037-26-5	

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1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

QC Batch: 290015 | Analysis Method: EPA 8260
QC Batch Method: EPA 8260 | Analysis Description: 8260 MSV
Associated Lab Samples: 40169700001, 40169700002

METHOD BLANK: 1697063 | Matrix: Water
Associated Lab Samples: 40169700001, 40169700002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	<0.50	1.0	05/25/18 13:34	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	05/25/18 13:34	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	05/25/18 13:34	
1,1-Dichloroethane	ug/L	<0.24	1.0	05/25/18 13:34	
1,1-Dichloroethene	ug/L	<0.41	1.0	05/25/18 13:34	
1,2-Dichloroethane	ug/L	<0.17	1.0	05/25/18 13:34	
1,2-Dichloropropane	ug/L	<0.23	1.0	05/25/18 13:34	
2-Butanone (MEK)	ug/L	<3.0	20.0	05/25/18 13:34	
2-Hexanone	ug/L	<1.1	5.0	05/25/18 13:34	
4-Methyl-2-pentanone (MIBK)	ug/L	<2.1	5.0	05/25/18 13:34	
Acetone	ug/L	<3.0	20.0	05/25/18 13:34	
Benzene	ug/L	<0.50	1.0	05/25/18 13:34	
Bromodichloromethane	ug/L	<0.50	1.0	05/25/18 13:34	
Bromoform	ug/L	<0.50	1.0	05/25/18 13:34	
Bromomethane	ug/L	<2.4	5.0	05/25/18 13:34	
Carbon disulfide	ug/L	<0.61	5.0	05/25/18 13:34	
Carbon tetrachloride	ug/L	<0.50	1.0	05/25/18 13:34	
Chlorobenzene	ug/L	<0.50	1.0	05/25/18 13:34	
Chloroethane	ug/L	<0.37	1.0	05/25/18 13:34	
Chloroform	ug/L	<2.5	5.0	05/25/18 13:34	
Chloromethane	ug/L	<0.50	1.0	05/25/18 13:34	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	05/25/18 13:34	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	05/25/18 13:34	
Dibromochloromethane	ug/L	<0.50	1.0	05/25/18 13:34	
Ethylbenzene	ug/L	<0.50	1.0	05/25/18 13:34	
Methylene Chloride	ug/L	<0.23	1.0	05/25/18 13:34	
Styrene	ug/L	<0.50	1.0	05/25/18 13:34	
Tetrachloroethene	ug/L	<0.50	1.0	05/25/18 13:34	
Toluene	ug/L	<0.50	1.0	05/25/18 13:34	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	05/25/18 13:34	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	05/25/18 13:34	
Trichloroethene	ug/L	<0.33	1.0	05/25/18 13:34	
Vinyl acetate	ug/L	<0.92	5.0	05/25/18 13:34	
Vinyl chloride	ug/L	<0.18	1.0	05/25/18 13:34	
Xylene (Total)	ug/L	<1.5	3.0	05/25/18 13:34	
4-Bromofluorobenzene (S)	%	87	61-130	05/25/18 13:34	
Dibromofluoromethane (S)	%	100	67-130	05/25/18 13:34	
Toluene-d8 (S)	%	99	70-130	05/25/18 13:34	

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1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

LABORATORY CONTROL SAMPLE: 1697064

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	58.1	116	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	51.4	103	70-130	
1,1,2-Trichloroethane	ug/L	50	54.4	109	70-130	
1,1-Dichloroethane	ug/L	50	56.2	112	71-132	
1,1-Dichloroethene	ug/L	50	59.8	120	75-130	
1,2-Dichloroethane	ug/L	50	56.8	114	70-131	
1,2-Dichloropropane	ug/L	50	52.3	105	80-120	
Benzene	ug/L	50	51.8	104	73-145	
Bromodichloromethane	ug/L	50	55.9	112	70-130	
Bromoform	ug/L	50	57.1	114	67-130	
Bromomethane	ug/L	50	43.9	88	26-128	
Carbon disulfide	ug/L	50	50.8	102	72-156	
Carbon tetrachloride	ug/L	50	56.6	113	70-133	
Chlorobenzene	ug/L	50	57.7	115	70-130	
Chloroethane	ug/L	50	47.0	94	58-120	
Chloroform	ug/L	50	55.3	111	80-121	
Chloromethane	ug/L	50	41.3	83	40-127	
cis-1,2-Dichloroethene	ug/L	50	57.5	115	70-130	
cis-1,3-Dichloropropene	ug/L	50	55.3	111	70-130	
Dibromochloromethane	ug/L	50	58.9	118	70-130	
Ethylbenzene	ug/L	50	57.3	115	87-129	
Methylene Chloride	ug/L	50	52.9	106	70-130	
Styrene	ug/L	50	58.0	116	70-130	
Tetrachloroethene	ug/L	50	59.9	120	70-130	
Toluene	ug/L	50	57.2	114	82-130	
trans-1,2-Dichloroethene	ug/L	50	55.0	110	75-132	
trans-1,3-Dichloropropene	ug/L	50	53.7	107	70-130	
Trichloroethene	ug/L	50	56.5	113	70-130	
Vinyl chloride	ug/L	50	49.6	99	57-136	
Xylene (Total)	ug/L	150	181	120	70-130	
4-Bromofluorobenzene (S)	%			102	61-130	
Dibromofluoromethane (S)	%			97	67-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1697365 1697366

Parameter	Units	40169728002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	<0.50	50	50	56.7	56.8	113	114	70-134	0	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	50	50	49.5	51.6	99	103	70-130	4	20	
1,1,2-Trichloroethane	ug/L	<0.20	50	50	51.6	53.4	103	107	70-130	3	20	
1,1-Dichloroethane	ug/L	<0.24	50	50	54.8	55.2	110	110	71-133	1	20	
1,1-Dichloroethene	ug/L	<0.41	50	50	58.2	58.2	116	116	75-136	0	20	
1,2-Dichloroethane	ug/L	<0.17	50	50	55.2	54.7	110	109	70-131	1	20	
1,2-Dichloropropane	ug/L	<0.23	50	50	51.3	52.7	103	105	80-120	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1697365 1697366

Parameter	Units	40169728002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	<0.50	50	50	50.0	52.0	100	104	73-145	4	20	
Bromodichloromethane	ug/L	<0.50	50	50	54.2	54.2	108	108	70-130	0	20	
Bromoform	ug/L	<0.50	50	50	56.8	58.0	114	116	67-130	2	20	
Bromomethane	ug/L	<2.4	50	50	49.4	49.5	99	99	26-129	0	20	
Carbon disulfide	ug/L	<0.61	50	50	49.7	52.0	99	104	72-156	5	30	
Carbon tetrachloride	ug/L	<0.50	50	50	55.2	56.0	110	112	70-134	1	20	
Chlorobenzene	ug/L	<0.50	50	50	55.3	57.2	111	114	70-130	3	20	
Chloroethane	ug/L	<0.37	50	50	47.3	47.1	95	94	58-120	1	20	
Chloroform	ug/L	<2.5	50	50	53.8	54.1	108	108	80-121	1	20	
Chloromethane	ug/L	<0.50	50	50	40.3	39.6	81	79	40-128	2	20	
cis-1,2-Dichloroethene	ug/L	<0.26	50	50	57.1	56.6	114	113	70-130	1	20	
cis-1,3-Dichloropropene	ug/L	<0.50	50	50	51.6	54.8	103	110	70-130	6	20	
Dibromochloromethane	ug/L	<0.50	50	50	55.0	58.8	110	118	70-130	7	20	
Ethylbenzene	ug/L	<0.50	50	50	55.0	57.2	110	114	87-129	4	20	
Methylene Chloride	ug/L	<0.23	50	50	52.1	53.0	104	106	70-130	2	20	
Styrene	ug/L	<0.50	50	50	56.9	57.7	114	115	70-130	1	20	
Tetrachloroethene	ug/L	<0.50	50	50	57.2	58.2	114	116	70-130	2	20	
Toluene	ug/L	<0.50	50	50	54.2	56.2	108	112	82-131	4	20	
trans-1,2-Dichloroethene	ug/L	<0.26	50	50	55.4	54.9	111	110	75-135	1	20	
trans-1,3-Dichloropropene	ug/L	<0.23	50	50	53.9	54.0	108	108	70-130	0	20	
Trichloroethene	ug/L	<0.33	50	50	54.9	56.5	110	113	70-130	3	20	
Vinyl chloride	ug/L	<0.18	50	50	49.7	49.0	99	98	56-143	1	20	
Xylene (Total)	ug/L	<1.5	150	150	168	177	112	118	70-130	5	20	
4-Bromofluorobenzene (S)	%						100	101	61-130			
Dibromofluoromethane (S)	%						100	101	67-130			
Toluene-d8 (S)	%						98	99	70-130			

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(920)469-2436

QUALITY CONTROL DATA

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

QC Batch: 290524 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40169700001

METHOD BLANK: 1699558 | Matrix: Water
Associated Lab Samples: 40169700001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	05/31/18 22:01	

LABORATORY CONTROL SAMPLE: 1699559

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.8	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1699560 1699561

Parameter	Units	40169884001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.5	20	20	25.1	25.3	108	109	90-110	1	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1699562 1699563

Parameter	Units	40169781001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	167	200	200	370	375	102	104	90-110	1	15	

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(920)469-2436

QUALIFIERS

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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.

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(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40169700

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40169700001	**EFFLUENT**	EPA 8260	290015		
40169700002	**TRIP BLANK**	EPA 8260	290015		
40169700001	**EFFLUENT**	EPA 300.0	290524		

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UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

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www.pacelabs.com

CHAIN OF CUSTODY

40169700

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)

Company Name:	Tetra Tech
Branch/Location:	Brookfield, WI
Project Contact:	Mark Manthey
Phone:	262-792-1282
Project Number:	117-3005035.05
Project Name:	Hydrite Cottage Grove
Project State:	WI
Sampled By (Print):	Mark Manthey
Sampled By (Sign):	Mark Manthey
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Mark Manthey
Mail To Company:	Tetra Tech
Mail To Address:	175 N. Corporate Dr. #100 Brookfield, WI 53045
Invoice To Contact:	Same
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	262-792-1282

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested: TCL VOCs (8260B)	Chloride (300.0)	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
FILTERED? (YES/NO)					N	N			
PRESERVATION (CODE)*					B	A			
001	Effluent	5/22	14:02	GW	3	1	See Brian Basten for Hydrite Cottage Grove Project Target Compount List.		
002	Trip Blank	5/22	13:28	W	2				

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	Mark.Manthey@tetratech.com
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Mark Manthey	5/23/18 9:00	Mary Jannin	5/23/18 10:25
Mary Jannin	5/23/18 1430		
CS Logistics	5/24/18 0945	[illegible]	5/24/18 0945

PACE Project No. 40169700

Receipt Temp = Rot °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Tetra Tech

Project # 40169700

All containers needing preservation have been checked and noted below: □Yes □No ☒N/A

Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN							
001											1							3															2.5 / 5 / 10
002								5m										2															2.5 / 5 / 10
003								5/24/18																									2.5 / 5 / 10
004																																	2.5 / 5 / 10
005																																	2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
010																																	2.5 / 5 / 10
011																																	2.5 / 5 / 10
012																																	2.5 / 5 / 10
013																																	2.5 / 5 / 10
014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : □Yes ☒No □N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: 25Apr2018
	Document No.: **F-GB-C-031-Rev.07**	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #: **WO#: 40169700**

40169700

Client Name: Tetra Tech

Courier: ☒ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

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

Thermometer Used SR - N/A **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: Rol /Corr: _____

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 5/24/18
Initials: SSM

Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No	5.
- VOA Samples frozen upon receipt	☐ Yes ☐ No	Date/Time:
Short Hold Time Analysis (<72hr):	☐ Yes ☒ No	6.
Rush Turn Around Time Requested:	☐ Yes ☒ No	7.
Sufficient Volume: For Analysis: ☒ Yes ☐ No MS/MSD: ☐ Yes ☒ No ☐ N/A		8.
Correct Containers Used:	☒ Yes ☐ No	9.
-Pace Containers Used:	☒ Yes ☐ No ☐ N/A	
-Pace IR Containers Used:	☐ Yes ☐ No ☒ N/A	
Containers Intact:	☒ Yes ☐ No	10.
Filtered volume received for Dissolved tests	☐ Yes ☐ No ☒ N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☒ Yes ☐ No ☐ N/A	12.
Trip Blank Present:	☒ Yes ☐ No ☐ N/A	13.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☐ N/A	
Pace Trip Blank Lot # (if purchased): 372		trip blanks expired SSM 5/24/18

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 5-24-18