December 27, 2018

Discharge Monitoring Report #181
(117-3005035.05)
Mr. Ralph Erickson, Pretreatment Coordinator
Madison Metropolitan Sewerage District
1610 Moorland Road
Madison, WI 53713-3398

RE: November 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 November 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: November 13, 2018 at 1:35 pm.

- The person that collected the sample: Todd Thomson, Senior Environmental Technician, 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.:
  1. Volatile Organic Compounds (VOCs) by EPA Method 8260, November 20, 2018.
  2. Chloride by EPA Method 300.0, November 30, 2018.

  Analysis performed in the field by Tetra Tech personnel:

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

1. Field pH, November 13, 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)**
November 2018 Discharge Volume (October 31 through November 27, 2018)	4,655,064
Cumulative Total Discharge Volume (October 8, 2003 through November 27, 2018)	858,759,260

Hydraulic Barrier System Operation and Maintenance History for the Month of November 2018

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 121 gallons per minute (gpm) in November.

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 November 2018

- P-128: 22.9 to 37.4 gpm.
- P-130: 37.0 to 37.4 gpm
- P-164: 50.2 to 59.4 gpm

Tetra Tech personnel treated extraction well P-164 with muriatic acid solution November 20th to November 21st to maintain the sustainable pumping rate of the well at the target rate of 50 to 55

gpm. Approximately 4 gallons of muriatic acid was poured into P-164 with the pump off followed by about 2 gallons of tap water. The pump in P-164 was turned on for about 15 seconds approximately 1 hour 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 22 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, November 13th, Tuesday, November 20th and Tuesday, November 27th. 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.

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					40179806001	
Date Sample Collected					11/13/18	
Dilution Factor for VOCs					10	
COMPOUND	Units	Target Detection Limits	NR140 ES	NR140 PAL		
1,1,1-Trichloroethane	ug/L	0.50	200	40	406	
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	964	
Methylene chloride	ug/L	0.23	5.0	0.5	46.1	J
Tetrachloroethene	ug/L	0.50	5.0	0.5	28.1	
Toluene	ug/L	0.50	1000	200	102	
Trichloroethene	ug/L	0.33	5.0	0.5	90.8	
Vinyl chloride	ug/L	0.18	0.2	0.02	33.4	
Xylenes (total)	ug/L	2.6	10000	1000	50.8	
TOTAL VOCs	ug/L				1721.2	
Total Chlorinated VOCs	ug/L				1568.4	
Chloride	mg/L	2.5	250	125	42.1	

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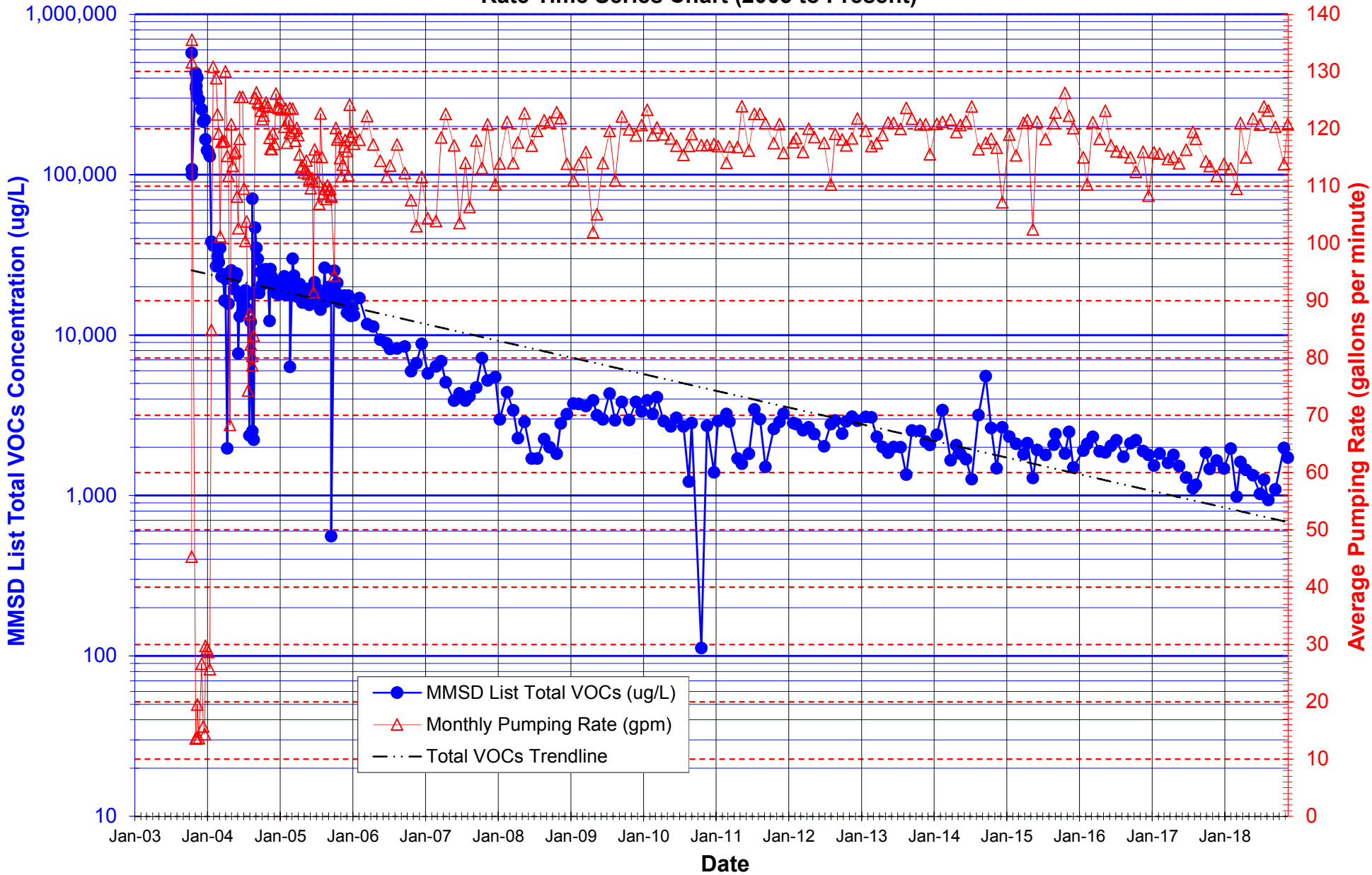
Chart 1. Hydrite Chemical Co. Hydraulic Barrier System MMSD List Total VOCs and Average Pumping Rate Time Series Chart (2003 to Present)



P:\Hydrite\Cottage Grove\Barrier system\Monitoring\Spreadsheets\Effluent_Chemistry.xlsx

TETRA TECH

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

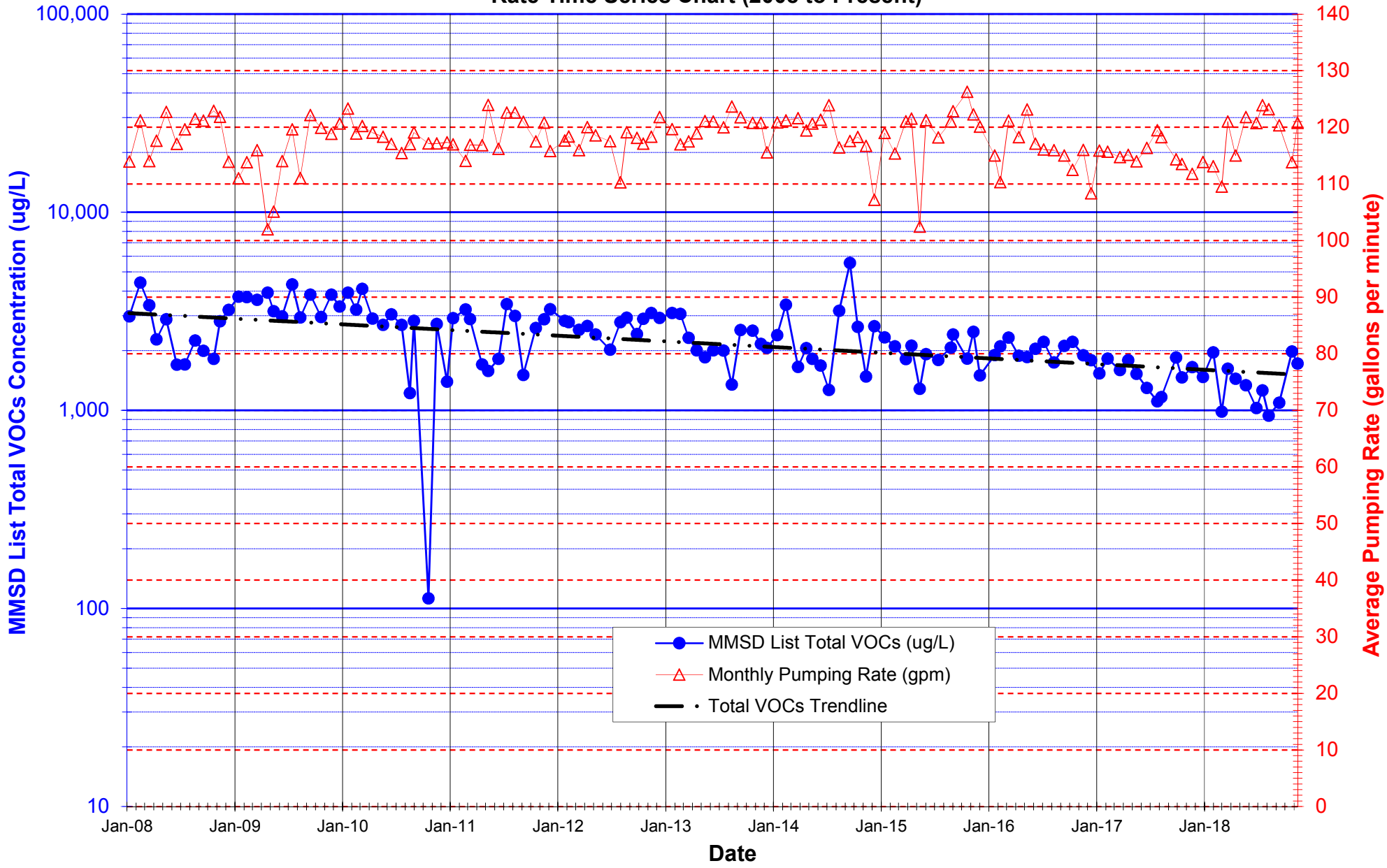


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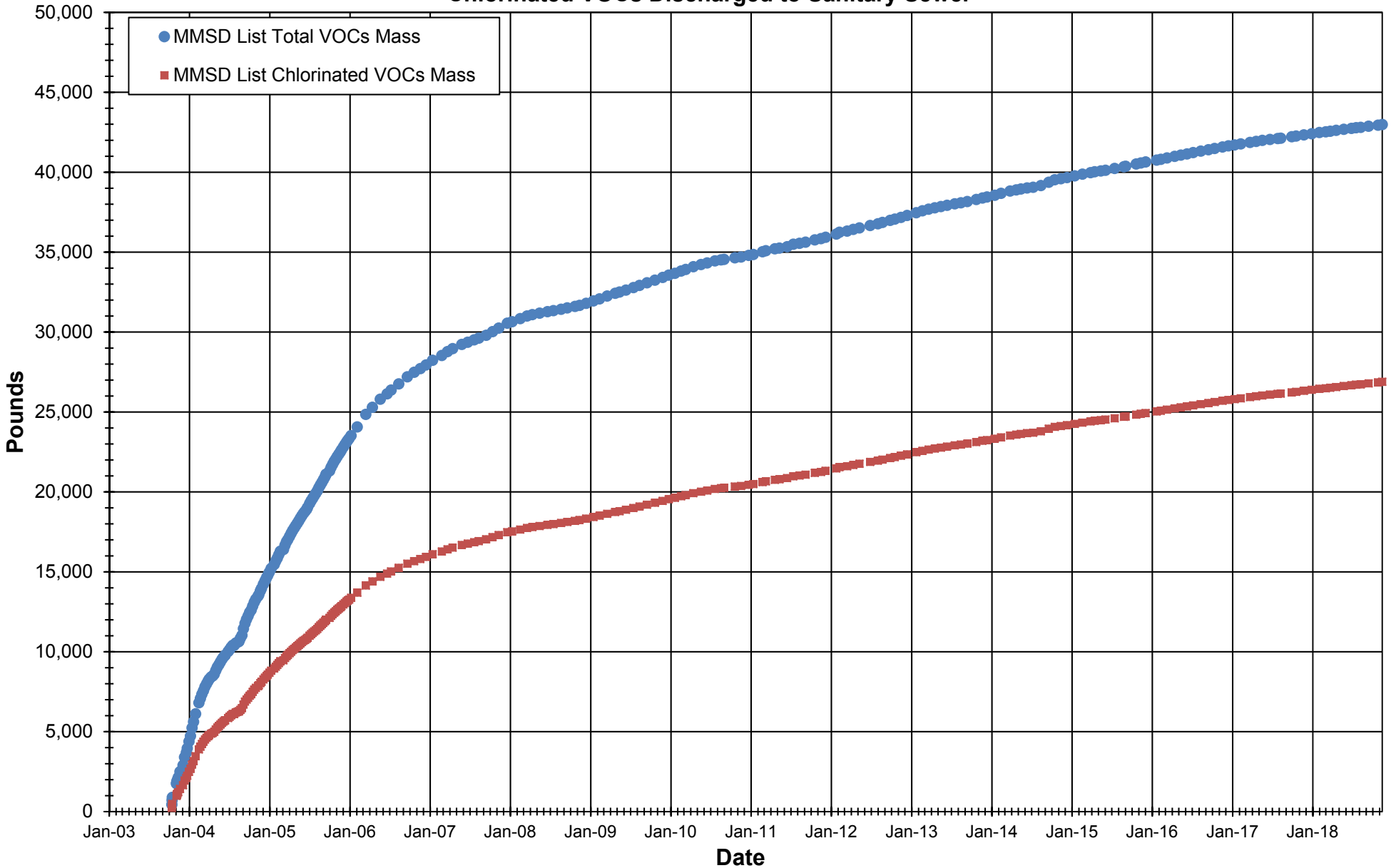
Chart 3. Hydrite Chemical Co. Hydraulic Barrier System Cumulative Mass of MMSD List Total Vocs and Chlorinated VOCs Discharged to Sanitary Sewer



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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	Todd M. Thomson	DO	NA

SAMPLE ID	Effluent			
WATER TYPE	Groundwater			
DATE (month/day/year)	11-13-18			
CLOCK TIME (Military)	13:35			
FLOW METER READING (gallons)	26835300			
FLOW RATE (gpm)	123.3			
SAMPLING DEVICE	Sample Spigot on 6-inch discharge line			
FIELD TEMPERATURE (°C)	12.0			
pH	7.15			
ELECTRICAL CONDUCTIVITY at 25° C (µS/cm)	692			
ORP (mV)	NM			
DISSOLVED OXYGEN (ppm)	NM			
DISSOLVED OXYGEN (% Sat.)	NM			
COLOR	CLEAR			
ODOR	NONE			
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			
Chloride (Method 300.0)	250-ml; P; None; No			
NAME OF LABORATORY	Pace Analytical			
DATE SENT TO LAB	11-15-18			
SAMPLER'S NAME	TMT			

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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 20/18	TIME	CALIBRATION MEDIA	RESULTS	COMMENTS
11-13	13:20	pH 4.0 and pH 7.0 buffer solutions	Calibration successful	
11-13	13:20	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	
		pH 4.0 and pH 7.0 buffer solutions	Calibration successful	
		1,413 µs conductivity calibration solution	Calibration successful	

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

December 03, 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.: 40179806

Dear Mark Manthey:
Enclosed are the analytical results for sample(s) received by the laboratory on November 16, 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.: 40179806

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.: 40179806

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40179806001	**EFFLUENT**	Water	11/13/18 13:35	11/16/18 09:15
40179806002	**TRIP BLANK**	Water	11/13/18 00:00	11/16/18 09:15

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SAMPLE ANALYTE COUNT

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40179806

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40179806001	**EFFLUENT**	EPA 8260	HNW	38
		EPA 300.0	HMB	1
40179806002	**TRIP BLANK**	EPA 8260	HNW	38

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ANALYTICAL RESULTS

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40179806

Sample: EFFLUENT **Lab ID: 40179806001** Collected: 11/13/18 13:35 Received: 11/16/18 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Acetone	**<27.4**	ug/L	200	27.4	10		11/20/18 09:49	67-64-1	
Benzene	**<2.5**	ug/L	10.0	2.5	10		11/20/18 09:49	71-43-2	
Bromodichloromethane	**<3.6**	ug/L	12.1	3.6	10		11/20/18 09:49	75-27-4	
Bromoform	**<39.7**	ug/L	132	39.7	10		11/20/18 09:49	75-25-2	
Bromomethane	**<9.7**	ug/L	50.0	9.7	10		11/20/18 09:49	74-83-9	
2-Butanone (MEK)	**<29.4**	ug/L	200	29.4	10		11/20/18 09:49	78-93-3	
Carbon disulfide	**<3.7**	ug/L	50.0	3.7	10		11/20/18 09:49	75-15-0	
Carbon tetrachloride	**<1.7**	ug/L	10.0	1.7	10		11/20/18 09:49	56-23-5	
Chlorobenzene	**<7.1**	ug/L	23.7	7.1	10		11/20/18 09:49	108-90-7	
Chloroethane	**113**	ug/L	50.0	13.4	10		11/20/18 09:49	75-00-3	
Chloroform	**<12.7**	ug/L	50.0	12.7	10		11/20/18 09:49	67-66-3	
Chloromethane	**<21.9**	ug/L	73.0	21.9	10		11/20/18 09:49	74-87-3	
Dibromochloromethane	**<26.0**	ug/L	86.7	26.0	10		11/20/18 09:49	124-48-1	
1,1-Dichloroethane	**256**	ug/L	10.0	2.7	10		11/20/18 09:49	75-34-3	
1,2-Dichloroethane	**<2.8**	ug/L	10.0	2.8	10		11/20/18 09:49	107-06-2	
1,1-Dichloroethene	**46.8**	ug/L	10.0	2.4	10		11/20/18 09:49	75-35-4	
cis-1,2-Dichloroethene	**964**	ug/L	10.0	2.7	10		11/20/18 09:49	156-59-2	
trans-1,2-Dichloroethene	**21.7J**	ug/L	36.4	10.9	10		11/20/18 09:49	156-60-5	
1,2-Dichloropropane	**<2.8**	ug/L	10.0	2.8	10		11/20/18 09:49	78-87-5	
cis-1,3-Dichloropropene	**<36.3**	ug/L	121	36.3	10		11/20/18 09:49	10061-01-5	
trans-1,3-Dichloropropene	**<43.7**	ug/L	146	43.7	10		11/20/18 09:49	10061-02-6	
Ethylbenzene	**12.6**	ug/L	10.0	2.2	10		11/20/18 09:49	100-41-4	
2-Hexanone	**<24.6**	ug/L	81.9	24.6	10		11/20/18 09:49	591-78-6	
Methylene Chloride	**46.1J**	ug/L	50.0	5.8	10		11/20/18 09:49	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<15.3**	ug/L	51.0	15.3	10		11/20/18 09:49	108-10-1	
Styrene	**<4.7**	ug/L	15.5	4.7	10		11/20/18 09:49	100-42-5	
1,1,2,2-Tetrachloroethane	**<2.8**	ug/L	10.0	2.8	10		11/20/18 09:49	79-34-5	
Tetrachloroethene	**28.1**	ug/L	10.9	3.3	10		11/20/18 09:49	127-18-4	
Toluene	**102**	ug/L	50.0	1.7	10		11/20/18 09:49	108-88-3	
1,1,1-Trichloroethane	**406**	ug/L	10.0	2.4	10		11/20/18 09:49	71-55-6	
1,1,2-Trichloroethane	**<5.5**	ug/L	50.0	5.5	10		11/20/18 09:49	79-00-5	
Trichloroethene	**90.8**	ug/L	10.0	2.6	10		11/20/18 09:49	79-01-6	
Vinyl acetate	**<30.9**	ug/L	200	30.9	10		11/20/18 09:49	108-05-4	
Vinyl chloride	**33.4**	ug/L	10.0	1.7	10		11/20/18 09:49	75-01-4	
Xylene (Total)	**50.8**	ug/L	30.0	15.0	10		11/20/18 09:49	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		10		11/20/18 09:49	460-00-4	
Dibromofluoromethane (S)	101	%	70-130		10		11/20/18 09:49	1868-53-7	
Toluene-d8 (S)	101	%	70-130		10		11/20/18 09:49	2037-26-5	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**42.1**	mg/L	10.0	2.5	5		11/30/18 19:14	16887-00-6	

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ANALYTICAL RESULTS

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40179806

Sample: TRIP BLANK **Lab ID: 40179806002** Collected: 11/13/18 00:00 Received: 11/16/18 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Acetone	**<2.7**	ug/L	20.0	2.7	1		11/20/18 17:17	67-64-1	
Benzene	**<0.25**	ug/L	1.0	0.25	1		11/20/18 17:17	71-43-2	
Bromodichloromethane	**<0.36**	ug/L	1.2	0.36	1		11/20/18 17:17	75-27-4	
Bromoform	**<4.0**	ug/L	13.2	4.0	1		11/20/18 17:17	75-25-2	
Bromomethane	**<0.97**	ug/L	5.0	0.97	1		11/20/18 17:17	74-83-9	
2-Butanone (MEK)	**<2.9**	ug/L	20.0	2.9	1		11/20/18 17:17	78-93-3	
Carbon disulfide	**<0.37**	ug/L	5.0	0.37	1		11/20/18 17:17	75-15-0	
Carbon tetrachloride	**<0.17**	ug/L	1.0	0.17	1		11/20/18 17:17	56-23-5	
Chlorobenzene	**<0.71**	ug/L	2.4	0.71	1		11/20/18 17:17	108-90-7	
Chloroethane	**<1.3**	ug/L	5.0	1.3	1		11/20/18 17:17	75-00-3	
Chloroform	**<1.3**	ug/L	5.0	1.3	1		11/20/18 17:17	67-66-3	
Chloromethane	**<2.2**	ug/L	7.3	2.2	1		11/20/18 17:17	74-87-3	
Dibromochloromethane	**<2.6**	ug/L	8.7	2.6	1		11/20/18 17:17	124-48-1	
1,1-Dichloroethane	**<0.27**	ug/L	1.0	0.27	1		11/20/18 17:17	75-34-3	
1,2-Dichloroethane	**<0.28**	ug/L	1.0	0.28	1		11/20/18 17:17	107-06-2	
1,1-Dichloroethene	**<0.24**	ug/L	1.0	0.24	1		11/20/18 17:17	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/L	1.0	0.27	1		11/20/18 17:17	156-59-2	
trans-1,2-Dichloroethene	**<1.1**	ug/L	3.6	1.1	1		11/20/18 17:17	156-60-5	
1,2-Dichloropropane	**<0.28**	ug/L	1.0	0.28	1		11/20/18 17:17	78-87-5	
cis-1,3-Dichloropropene	**<3.6**	ug/L	12.1	3.6	1		11/20/18 17:17	10061-01-5	
trans-1,3-Dichloropropene	**<4.4**	ug/L	14.6	4.4	1		11/20/18 17:17	10061-02-6	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		11/20/18 17:17	100-41-4	
2-Hexanone	**<2.5**	ug/L	8.2	2.5	1		11/20/18 17:17	591-78-6	
Methylene Chloride	**<0.58**	ug/L	5.0	0.58	1		11/20/18 17:17	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<1.5**	ug/L	5.1	1.5	1		11/20/18 17:17	108-10-1	
Styrene	**<0.47**	ug/L	1.6	0.47	1		11/20/18 17:17	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.28**	ug/L	1.0	0.28	1		11/20/18 17:17	79-34-5	
Tetrachloroethene	**<0.33**	ug/L	1.1	0.33	1		11/20/18 17:17	127-18-4	
Toluene	**<0.17**	ug/L	5.0	0.17	1		11/20/18 17:17	108-88-3	
1,1,1-Trichloroethane	**<0.24**	ug/L	1.0	0.24	1		11/20/18 17:17	71-55-6	
1,1,2-Trichloroethane	**<0.55**	ug/L	5.0	0.55	1		11/20/18 17:17	79-00-5	
Trichloroethene	**<0.26**	ug/L	1.0	0.26	1		11/20/18 17:17	79-01-6	
Vinyl acetate	**<3.1**	ug/L	20.0	3.1	1		11/20/18 17:17	108-05-4	
Vinyl chloride	**<0.17**	ug/L	1.0	0.17	1		11/20/18 17:17	75-01-4	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		11/20/18 17:17	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130		1		11/20/18 17:17	460-00-4	
Dibromofluoromethane (S)	101	%	70-130		1		11/20/18 17:17	1868-53-7	
Toluene-d8 (S)	102	%	70-130		1		11/20/18 17:17	2037-26-5	

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

QUALITY CONTROL DATA

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40179806

QC Batch: 307107 | Analysis Method: EPA 8260
QC Batch Method: EPA 8260 | Analysis Description: 8260 MSV
Associated Lab Samples: 40179806001, 40179806002

METHOD BLANK: 1795942 | Matrix: Water
Associated Lab Samples: 40179806001, 40179806002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	<0.24	1.0	11/20/18 07:12	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	11/20/18 07:12	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	11/20/18 07:12	
1,1-Dichloroethane	ug/L	<0.27	1.0	11/20/18 07:12	
1,1-Dichloroethene	ug/L	<0.24	1.0	11/20/18 07:12	
1,2-Dichloroethane	ug/L	<0.28	1.0	11/20/18 07:12	
1,2-Dichloropropane	ug/L	<0.28	1.0	11/20/18 07:12	
2-Butanone (MEK)	ug/L	<2.9	20.0	11/20/18 07:12	
2-Hexanone	ug/L	<2.5	8.2	11/20/18 07:12	
4-Methyl-2-pentanone (MIBK)	ug/L	<1.5	5.1	11/20/18 07:12	
Acetone	ug/L	<2.7	20.0	11/20/18 07:12	
Benzene	ug/L	<0.25	1.0	11/20/18 07:12	
Bromodichloromethane	ug/L	<0.36	1.2	11/20/18 07:12	
Bromoform	ug/L	<4.0	13.2	11/20/18 07:12	
Bromomethane	ug/L	<0.97	5.0	11/20/18 07:12	
Carbon disulfide	ug/L	<0.37	5.0	11/20/18 07:12	
Carbon tetrachloride	ug/L	<0.17	1.0	11/20/18 07:12	
Chlorobenzene	ug/L	<0.71	2.4	11/20/18 07:12	
Chloroethane	ug/L	<1.3	5.0	11/20/18 07:12	
Chloroform	ug/L	<1.3	5.0	11/20/18 07:12	
Chloromethane	ug/L	<2.2	7.3	11/20/18 07:12	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	11/20/18 07:12	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	11/20/18 07:12	
Dibromochloromethane	ug/L	<2.6	8.7	11/20/18 07:12	
Ethylbenzene	ug/L	<0.22	1.0	11/20/18 07:12	
Methylene Chloride	ug/L	<0.58	5.0	11/20/18 07:12	
Styrene	ug/L	<0.47	1.6	11/20/18 07:12	
Tetrachloroethene	ug/L	<0.33	1.1	11/20/18 07:12	
Toluene	ug/L	<0.17	5.0	11/20/18 07:12	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	11/20/18 07:12	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	11/20/18 07:12	
Trichloroethene	ug/L	<0.26	1.0	11/20/18 07:12	
Vinyl acetate	ug/L	<3.1	20.0	11/20/18 07:12	
Vinyl chloride	ug/L	<0.17	1.0	11/20/18 07:12	
Xylene (Total)	ug/L	<1.5	3.0	11/20/18 07:12	
4-Bromofluorobenzene (S)	%	100	70-130	11/20/18 07:12	
Dibromofluoromethane (S)	%	99	70-130	11/20/18 07:12	
Toluene-d8 (S)	%	102	70-130	11/20/18 07:12	

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.

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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.: 40179806

LABORATORY CONTROL SAMPLE: 1795943

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	46.9	94	70-133	
1,1,2,2-Tetrachloroethane	ug/L	50	49.5	99	67-130	
1,1,2-Trichloroethane	ug/L	50	53.6	107	70-130	
1,1-Dichloroethane	ug/L	50	53.9	108	70-134	
1,1-Dichloroethene	ug/L	50	46.7	93	75-132	
1,2-Dichloroethane	ug/L	50	53.3	107	73-134	
1,2-Dichloropropane	ug/L	50	55.4	111	79-128	
Benzene	ug/L	50	51.5	103	69-137	
Bromodichloromethane	ug/L	50	51.2	102	70-130	
Bromoform	ug/L	50	49.4	99	64-133	
Bromomethane	ug/L	50	26.5	53	29-123	
Carbon disulfide	ug/L	50	45.1	90	67-153	
Carbon tetrachloride	ug/L	50	44.2	88	73-142	
Chlorobenzene	ug/L	50	50.9	102	70-130	
Chloroethane	ug/L	50	44.8	90	59-133	
Chloroform	ug/L	50	52.0	104	80-129	
Chloromethane	ug/L	50	31.8	64	27-125	
cis-1,2-Dichloroethene	ug/L	50	49.8	100	70-134	
cis-1,3-Dichloropropene	ug/L	50	49.4	99	70-130	
Dibromochloromethane	ug/L	50	47.0	94	70-130	
Ethylbenzene	ug/L	50	54.1	108	86-127	
Methylene Chloride	ug/L	50	47.3	95	72-133	
Styrene	ug/L	50	51.6	103	70-130	
Tetrachloroethene	ug/L	50	54.3	109	70-130	
Toluene	ug/L	50	52.3	105	84-124	
trans-1,2-Dichloroethene	ug/L	50	49.2	98	70-133	
trans-1,3-Dichloropropene	ug/L	50	46.4	93	67-130	
Trichloroethene	ug/L	50	54.1	108	70-130	
Vinyl chloride	ug/L	50	40.9	82	48-134	
Xylene (Total)	ug/L	150	158	105	70-130	
4-Bromofluorobenzene (S)	%			104	70-130	
Dibromofluoromethane (S)	%			100	70-130	
Toluene-d8 (S)	%			101	70-130	

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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.: 40179806

QC Batch: 307588 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40179806001

METHOD BLANK: 1797936 | Matrix: Water
Associated Lab Samples: 40179806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	11/30/18 11:52	

LABORATORY CONTROL SAMPLE: 1797937

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	18.7	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1797938 1797939

Parameter	Units	40179718001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	116	400	400	554	573	109	114	90-110	3	15	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1797940 1797941

Parameter	Units	40179745004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	294	400	400	722	727	107	108	90-110	1	15	

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Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40179806

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, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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.

ANALYTE QUALIFIERS

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

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Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 117-3005035.05 HYDRITE COTTAGE
Pace Project No.: 40179806

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40179806001	**EFFLUENT**	EPA 8260	307107		
40179806002	**TRIP BLANK**	EPA 8260	307107		
40179806001	**EFFLUENT**	EPA 300.0	307588		

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

Page 1 of 1

40179806

CHAIN OF CUSTODY

*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
Project Contact:	MARK MANTHEY
Phone:	(262) 792-1282
Project Number:	117-305035.05
Project Name:	HYDRITE COTTAGE GROVE
Project State:	WI.
Sampled By (Print):	TODD M. THOMSON
Sampled By (Sign):	
PO #:	
Regulatory Program:	

Quote #:	
Mail To Contact:	MARK MANTHEY
Mail To Company:	TETRA TECH
Mail To Address:	1515 N. CORPORATE DR. SUITE 100 BROOKFIELD, WI. 53045
Invoice To Contact:	SAME AS ABOVE
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

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	COLLECTED DATE	COLLECTED TIME	MATRIX	Analyses Requested: TCL VOC 8260 (Y/N)	Analyses Requested: CHLORIDE (Y/N)	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	EFFLUENT	11-13-18	8:35	GW	3	1			
002	TRIP BLANK	—	—	DI	1		LAB PREPARED		

FILTERED? (YES/NO): Y/N — N N
PRESERVATION (CODE)*: Pick Letter — B A

* NOTE *
SEE BRIAN BOSTEN FOR SPECIAL HYDRITE COTTAGE GROVE TCL VOC LIST.

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

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

Email #1:	
Email #2:	
Telephone:	
Fax:	

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

Relinquished By:	Date/Time:	Received By:	Date/Time:
[signature]	11-15-18 08:00	Mary Jannin	11/15/18 1297
Mary Jannin	11/15/18 1545	[signature]	
[signature]	11/16/18 0915	Susan [signature]	11/16/18 0915

PACE Project No. 40179806

Receipt Temp = ROI °C

Sample Receipt pH: OK / Adjusted

Cooler Custody Seal: Present / Not Present; Intact / Not Intact

C019a(27Jun2006)

Version 6.0 06/14/06

ORIGINAL

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

Sample Preservation Receipt Form

Client Name: Tetra Tech Project # 40179806

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

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted): Initial when completed: Date/ Time:

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																																	2.5 / 5 / 10
003																																	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)

Client Name: Tetra Tech

Project #: **WO#: 40179806**

40179806

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: ROI /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: 11-16-18
Initials: SW

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:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☑Yes ☐No ☐N/A	13. Expired 10/25/16
Trip Blank Custody Seals Present	☑Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased): 372		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐ 11-16-18 SW

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 11/16/18