TETRA TECH

NOR-02700

May 26, 2021

Mr. Jason Pelton
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A, 12th Floor
625 Broadway
Albany, New York 12233-7015

Reference: CLEAN Contract No. N6247016D9008
Contract Task Order WE13

Subject: Final 2020 Operable Unit 2 Groundwater Investigation
Data Summary Report
VPB181 and Monitoring Wells TT-MW181S, BPOW 1-7 and BPOW 1-8
Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, New York

Dear Mr. Pelton:

On behalf of the Department of the Navy, Tetra Tech is providing the *Final 2020 Operable Unit 2 Groundwater Investigation Data Summary Report VPB181 and Monitoring Wells TT-MW181S, BPOW 1-7 and BPOW 1-8, NWIRP Bethpage* to the New York State Department of Environmental Conservation (NYSDEC) for information. This report provides documentation for the installation of this vertical profile boring and associated groundwater monitoring wells. The Navy is issuing this document as a final. If no comments are received by June 25, 2021, the Navy will include this report as a final in the NWIRP Bethpage Administrative Record.

If you have any questions please contact Mr. James Watts-Gravette, NAVFAC MIDLANT, at james.gravette@navy.mil or (757) 341-0380.

Sincerely,

Ernie Wu
Project Manager

Enclosures: Final 2020 Operable Unit 2 Groundwater Investigation
Data Summary Report
VPB181 and Monitoring Wells TT-MW181S, BPOW 1-7 and BPOW 1-8
NWIRP Bethpage, New York

Distribution:
NYSDEC, Don Hesler
NAVFAC MIDLANT, James Watts-Gravette
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Naval Facilities Engineering Systems Command
Norfolk, Virginia

Final

2020 Operable Unit 2 Groundwater Investigation Data Summary Report VPB181 and Monitoring Wells TT-MW181S, BPOW 1-7, and BPOW 1-8

Naval Weapons Industrial Reserve Plant
Bethpage, New York

May 2021

Approved for public release; distribution is unlimited.

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FINAL

2020 OPERABLE UNIT 2 GROUNDWATER INVESTIGATION DATA SUMMARY REPORT VPB181 AND MONITORING WELLS TT-MW181S, BPOW 1-7, AND BPOW 1-8

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Department of the Navy
Naval Facilities Engineering Systems Command Mid-Atlantic
9324 Virginia Avenue
Norfolk, VA 23511-3095

Submitted by:
Tetra Tech
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CONTRACT NUMBER N62470D9008
CONTRACT TASK ORDER WE13

May 2021

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NEW YORK PROFESSIONAL GEOLOGIST SEAL

As a New York-licensed Professional Geologist, I have reviewed and approved the geological information and drawings in the 2020 Operable Unit 2 Groundwater Investigation Data Summary Report VPB181 and Monitoring Wells TT-MW181S, BPOW 1-7, and BPOW 1-8, Naval Weapons Industrial Reserve Plant, Bethpage and seal it in accordance with Article 145 Section 7209 of the New York State Education Laws. In sealing this document, I certify that the geological information contained in it is true to the best of my knowledge and the geological methods and procedures included herein are consistent with currently accepted geological practices.

It is a violation of this law for any person to alter the contained drawings in anyway, unless he or she is acting under the direction of a NY-licensed Professional Geologist.

Name: Vincent J. Varricchio
NY PG License Number: 000095
State: New York

Signature: Vincent J. Varricchio

Date: 5/25/2021

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Acronyms and Abbreviations

AOC	Area of Concern
bgs	below ground surface
CAMP	Community Air Monitoring Program
CLEAN	Comprehensive Long-term Environmental Action Navy
COR	Continuously Operating Reference
DoD	Department of Defense
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency, United States
ESS	Environmental Sequence Stratigraphy
ft	feet
GOCO	Government-Owned Contractor-Operated
GPS	Global Positioning System
IDW	Investigation Derived Waste
IR	Installation Restoration
MW	monitoring well
NAD	North American Datum
NAVD	North American Vertical Datum
NAVFAC	Naval Facilities Engineering Systems Command
NG	Northrop Grumman
NGS	National Geodetic Survey
NTU	Nephlometric Turbidity Units
NWIRP	Naval Weapons Industrial Reserve Plant
NYSDEC	New York State Department of Environmental Conservation
OU	Operable Unit
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PID	Photoionization Detector
POTW	Publicly Owned Treatment Works

PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SFWD	South Farmingdale Water District
SVOC	Semivolatile Organic Compounds
TCE	Trichloroethene
UFP	United Federal Programs
VOC	Volatile Organic Compounds
VPB	Vertical Profile Boring

1.0 Introduction

Tetra Tech has prepared this Data Summary Report for the Naval Facilities Engineering Systems Command (NAVFAC) Atlantic Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N6247016D9008 Task Order WE13, which is part of the Navy's ongoing Environmental Restoration Program for the Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage Operable Unit (OU) 2 Site 1 plume identified in the 2003 Record of Decision (ROD) (NAVFAC, 2003). This report describes vertical profile boring (VPB) and monitoring well (MW) installation activities (specifically at the VPB181 location) in 2020. As shown in Figure 1, NWIRP Bethpage is located in east-central Nassau County, Long Island, New York, approximately 30 miles east of New York City.

1.1 Scope and Objectives

This data summary report provides information on the installation of VPB181 and three associated monitoring wells (TT-MW181S, BPOW1-7, and BPOW1-8). The purpose of the investigation was to address data gaps in the OU2 plume by better defining the horizontal and vertical extent of groundwater contamination, evaluation of migration, and determining concentrations of volatile organic compounds (VOCs) in groundwater. The contamination is up-gradient of several potable water supply wells in the area and continues to migrate to the south-southeast. VPB and MW locations are shown in Figure 2. VPB181 was completed to 978 feet (ft) below ground surface (bgs).

Field tasks were conducted in 2020 in accordance with the United Federal Programs (UFP) Sampling and Analysis Plan (SAP) Tier II Sampling and Analysis Plan, (Field Sampling and Quality Assurance Project Plan) for Vertical Profile Boring and Monitoring Well Installation Program (Tetra Tech, 2019) and Letter Work Plan, VPB and MW Installation Program, VPB-178, -179, -180, and -181 (Tetra Tech, 2020). The field investigation included completing one vertical profile boring and three monitoring wells, groundwater sampling, geophysical logging and surveying.

Documentation of these activities is included in the appendices of this report. Appendix A contains the summary packet for VPB181 and Appendix B contains the summary packet for the associated wells TT-MW181S and TT-BPOW1-7, and TT-BPOW1-8. Appendix C contains the survey report.

1.2 Site History

NWIRP Bethpage is in the Hamlet of Bethpage, Town of Oyster Bay, New York. Since its inception in 1941, the plant's primary mission was the research, prototyping, testing,

design, engineering, fabrication, and primary assembly of military aircraft. The facilities at NWIRP included four plants used for assembly and prototype testing, a group of quality control laboratories, two warehouse complexes (north and south), a salvage storage area, water recharge basins, the Industrial Wastewater Treatment Plant, and several smaller support buildings.

The Navy's property originally totaled 109.5 acres and was formerly a Government-Owned Contractor-Operated (GOCO) facility that was operated by Northrop Grumman (NG) until September 1998. Prior to 2002, the NWIRP property was bordered on the north, west, and south by current or former NG facilities, and on the east by a residential neighborhood. By March 2008, approximately 100 acres of NWIRP property were transferred to Nassau County in three separate actions. The remaining 9 acres and access easements were retained by the Navy to continue remedial efforts at Installation Restoration (IR) Site 1 – Former Drum Marshalling Area and Site 4 – Former Underground Storage Tanks (Area of Concern [AOC] 22). A parcel of land connecting the two sites was also retained. Currently, the 9-acre parcel of NWIRP is bordered on the east by a residential neighborhood and on the north, south, and west by Steel Equities; however, a small portion near Sites 2 and 3 is still owned by Nassau County. Access to the NWIRP is from South Oyster Bay Road.

1.3 Geology and Hydrogeology

1.3.1 Stratigraphy

Overburden at the site consists of approximately 1,100 ft of unconsolidated deposits overlying crystalline bedrock of the Hartland Formation. Overburden is divided into four geologic units in descending order: the Upper Glacial Formation, the Magothy Formation, the clay member of the Raritan Formation ("Raritan Clay") and the Lloyd Sand member of the Raritan Formation ("Lloyd Sand") (Geraghty and Miller, 1994). The crystalline bedrock consists primarily of metamorphic and igneous rocks.

The Upper Glacial Formation consists of till and outwash deposits of medium to coarse sand and gravel with lenses of fine sand, silt and clay (Smolensky and Feldman, 1988); these deposits form the Upper Glacial Aquifer. Directly underlying this unit is the Magothy Formation with a thickness of 650 to 900 ft that extends to a depth of 700 to 1,000 ft bgs, as observed at the former NWIRP and extending southeast to areas south of Southern State Parkway. Locally at VPB181, the bottom of the Magothy (top of the Raritan Clay) is encountered at approximately 941 feet bgs. The Magothy is characterized by fine to medium sands and silts interbedded with zones of clays, silty sands and sandy clays. Sand and gravel lenses are found in some areas between

depths of 550 and 820 ft bgs; these deposits form the main groundwater producing zones of the Magothy Aquifer.

Investigations performed by the Navy since 2012 indicate that the bottom of the Magothy (top of the Raritan Clay) can extend to depths of 700 to greater than 1,000 ft bgs. The top of the Raritan Clay deepens to the south-southeast, as evidenced by clay depths of 1,000 ft bgs (or more) in borings installed offsite. The Raritan Clay Unit is of continental origin and consists of clay, silty clay, clayey silt, and fine silty sand. This member acts as a confining layer over the Lloyd Sand Unit. The Lloyd Sand Unit is also of continental origin, having been deposited in a large fresh water lacustrine environment. The material consists of fine to coarse-grained sands, gravel, inter-bedded clay, and silty sand. These deposits form the Lloyd Aquifer.

1.3.2 Hydrogeology

The Upper Glacial Aquifer and the Magothy Aquifer comprise the aquifers of interest at the NWIRP. Regionally, these formations are generally considered to form a common, interconnected aquifer as the coarse nature of each unit near their contact and the lack of any regionally confining clay unit allows for the unrestricted flow of groundwater between the formations.

The Magothy Aquifer is the major source of public water in Nassau County. The most productive water bearing zones are the discontinuous lenses of sand and gravel that occur within the siltier matrix. The major water-bearing zones are coarse sand and gravel lenses located in the lower portion of the Magothy. Because of the presence of intermittent clay layers and the depths, the Magothy Aquifer is commonly regarded to function overall as an unconfined aquifer at shallow depths and a confined aquifer at greater depths. The drilling program at the NWIRP has revealed that clay zones beneath the facility are common but laterally discontinuous. No confining clay units of facility-wide extent have been encountered.

Groundwater is encountered at an average depth of approximately 50 ft bgs at the facility. Historically, because of pumping and recharge at the facility, groundwater depths have been measured to range from 15 to 60 ft bgs. The groundwater flow in the area is to the south- southeast.

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2.0 Field Program

Field investigation activities at VPB181 consisted of drilling, groundwater sampling, groundwater analysis, geophysical logging, monitoring well installation, and surveying. After the VPB and geophysical logging were completed, the lithology and analytical data from the groundwater hydropunch samples were used to select the monitoring well screen intervals at the respective location. Drilling during this investigation was performed by Delta Well and Pump Company of Ronkonkoma, New York. A description of these tasks is provided below.

2.1 Vertical Profile Borings

Vertical profile boring VPB181 was completed during this field effort between August and September 2020. The total depth of VPB181 was 978 ft. The location is shown in Figure 2 and details are summarized in Table 1.

2.1.1 Drilling

In order to prevent sloughing of the borehole through unconsolidated lithologies, the VPB was installed by setting a 10-inch diameter surface casing using a hollow stem auger drill rig. The surface casing was set to 52 ft bgs at the VPB locations. The remainder of the drilling depth was advanced using mud rotary drilling techniques. Drilling mud consisted of potable water and polymer-free sodium bentonite. Drilling mud was contained and re- circulated in baffled, high capacity mud tubs. A sand separator was used intermittently to remove fines from circulation.

2.1.2 Sampling

A total of three (3) split spoon samples were collected from VPB181. A change in geology was observed by the field geologist at 941 ft bgs and three (3) split spoon samples were subsequently collected to confirm the presence of the Raritan Clay. Samples were logged by the field geologist and screened for VOCs utilizing a photoionization detector (PID). A detailed boring log for VPB181 is included in Appendix A.

Groundwater grab samples were collected every 50 ft for the first 200 ft of borehole depth. After the first 200 ft, groundwater grab samples were collected approximately every 20 ft until the boring terminated in the Raritan Clay. Groundwater grab samples were collected with a hydropunch sampler and analyzed for VOCs using Environmental Protection Agency (EPA) Method SW846-8260B. In addition to VOCs, groundwater grab samples collected from 200 ft and deeper, at approximately every 40 feet were analyzed for 1,4-dioxane via EPA Method SW846-8270 SIM. The groundwater grab

samples were analyzed by Chemtech, a Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP), and New York State Department of Environmental Conservation (NYSDEC)-certified laboratory. During the collection of groundwater grab samples, field parameters were measured (pH, temperature, specific conductivity, oxidation reduction potential, dissolved oxygen, and turbidity). Groundwater grab sample logs, data validation packages, and analytical data tables for VPB181 are included in Appendix A.

During drilling, air sampling was conducted under a Community Air Monitoring Plan (CAMP). At the VPB location, two air samples, upwind and downwind, were collected using Summa canisters and were submitted for laboratory analysis by EPA Method TO-15. All analyses were performed by Eurofins Air Toxics, LLC. Air sample logs, data validation packages, and analytical data tables for VPB181 are included in Appendix A. In addition to the collected air samples, dust monitoring and PID readings were collected. No exceedances which would cause drilling operations to cease, under the CAMP, were observed during the active operation of the drill rig.

Analytical results from groundwater grab and air samples received full validation. Data validation was performed by an independent, third party contractor, Validata Chemical Services, Inc. of Duluth, GA. Data validation summary reports and analytical data tables for VPB181 are included in Appendix A.

2.1.3 Geophysics

At the VPB181 location, borehole geophysical logs (gamma) were recorded after the borehole was drilled but prior to the removal of drill rods. A copy of the log was printed in the field for review once the probe reached the bottom of the borehole. The instrument was then raised to the top of the boring and a second log was generated and printed in the field. The down hole gamma log sheets and plots comparing the gamma log with trichloroethene (TCE), tetrachloroethene (PCE), and Freon-113 concentrations from hydropunch samples for VPB181 are included in Appendix A.

2.2 Monitoring Well Installation

Three monitoring wells were installed at the site between October 2020 and November 2020. The geophysical logs and the groundwater analytical data collected from the hydropunch sampler were used to determine the number of monitoring wells and the screened interval for each monitoring well. Depths of monitoring wells ranged from 235 ft bgs to 760 ft bgs. Locations are shown on Figure 2.

2.2.1 Drilling and Well Construction

The wells were installed using mud rotary drilling techniques. Well construction details are summarized in Table 2. The wells were installed in close proximity to VPB181. The boring log for VPB181 is in Appendix A and the boring logs for the respective wells are included in Appendix B.

Prior to installing each monitoring well, screen intervals were determined from the results of the groundwater samples, the geophysical logs, lithology, field data collected from the vertical profile borings, and data from nearby vertical profile borings, groundwater monitoring wells or public water supply wells. Screens were selected based on several goals: to monitor the depth interval of the highest VOC concentrations observed in the hydropunch groundwater sample data and to monitor depths of interest to the OU2 plume. During the monitoring well installation, split spoon soil samples were collected every five feet in the screen interval to confirm the presence of a higher permeability interval.

Wells were constructed of 4-inch diameter, Schedule 80, National Sanitation Foundation-approved polyvinylchloride (PVC) riser pipe and 0.010-slot well screen. Wells were completed at the surface with a 12-inch diameter steel curb box. Well risers were set below grade and fit with lockable J plugs. Detailed monitoring well construction diagrams for TT-MW181S, BPOW 1-7 and BPOW 1-8 are included in Appendix B.

2.2.2 Well Development

Following installation, all monitoring wells were developed to evacuate silts and other fine-grained materials and to establish the filter pack to promote a hydraulic connection between the well and the surrounding aquifer. Well development was not initiated until at least 24 hours after well installation.

Monitoring well screens were developed using a combination of air lifting and pumping with a submersible pump. The following groundwater quality parameters were collected during development to determine stabilization: pH, specific conductivity, dissolved oxygen, turbidity, temperature and oxidation-reduction potential. In compliance with NYSDEC policy, wells were developed until turbidity was less than 50 nephlometric turbidity units (NTUs) if possible. Table 3 summarizes total pumped volume from air lifting and pump development and final turbidity. Well development logs for TT-MW181S, BPOW 1-7, and BPOW 1-8 are included in Appendix B.

Groundwater samples were collected at the end of development activities using the submersible pump dedicated for development. These samples were collected to provide

initial screening level data for VOCs. This data did not receive data validation since the samples are not considered high quality samples. These monitoring wells are sampled as part of the ongoing quarterly sampling events and data from the initial sampling event is reported/documented under separate reports. The unvalidated analytical data tables for TT-MW181S, BPOW 1-7, and BPOW 1-8 are included in Appendix B.

2.3 Decontamination and Investigation Derived Waste (IDW)

As part of the IDW management practices and in accordance with the SAP, the investigation waste (consisting of soil cuttings, drilling muds, groundwater monitoring well development water, decontamination fluids, and personal protective equipment [PPE]) generated during the boring installation was containerized and staged at NWIRP Bethpage. IDW solids were characterized and disposed of properly under requirements outlined in NYSDEC subpart 375-6.8(b) and CP-51. Representative samples of soil IDW were collected from roll off containers and submitted to Chemtech for analysis, which includes VOCs, semi-volatile organic compounds (SVOCs), Metals and polychlorinated biphenyls (PCBs)/Pesticides.

IDW fluids was containerized in frac tanks and stored at NWIRP Bethpage for characterization and ultimate disposal to the Publicly Owned Treatment Works (POTW), in accordance with the facilities existing discharge permit. A representative water sample was collected from each frac tank and submitted to Chemtech for analysis of VOCs via Method SW 624, pH via Method SW 9040B, PCBs via Method 8082 and Total Metals via Method SW 846. To the extent feasible, soil and water were not mixed.

All IDW generated during this investigation was characterized as non-hazardous.

2.4 Surveying

A survey of the VPB and groundwater monitoring well locations was conducted by Borbas Surveying & Mapping, LLC, of Boonton, NJ, under the direct supervision of Tetra Tech. The locations were tied into the existing base map developed for this investigation. The survey elevation is referenced to the North American Vertical Datum (NAVD) 1988 and has a vertical accuracy of 0.01 foot. Vertical control is based on observations of the National Geodetic Survey (NGS) Continuously Operating Reference (COR) Stations NYBR, NYCI, NYVH and SHK6. The horizontal location is referenced to the North American Datum (NAD) 1983 New York, Long Island State Plane Coordinate System and has an accuracy of 0.1 foot. Horizontal control is based on Global Positioning System (GPS) observations using the NGS COR Stations NYBR, NYCI, NYVH and SHK6.

A table of survey data (grade elevation, northing/easting and latitude/longitude) is included in Appendix C.

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3.0 References

Geraghty and Miller, Inc., 1994. *Remedial Investigation Report, Grumman Aerospace Corporation, Bethpage, New York.* Revised September 1994.

Naval Facilities Engineering Command (NAVFAC), 2003. *Record of Decision Naval Weapons Industrial Reserve Plant Bethpage, New York, Operable Unit 2 – Groundwater,* NYS Registry: 1-30- 003B. April.

Tetra Tech, 2019. *Tier II Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plant) for Vertical Profile Boring and Monitoring Well Installation Program*. Bethpage, New York. March.

Tetra Tech, 2020. Letter Work Plan, Vertical Profile Boring and Monitoring Well Installation Program VPB-178, -179, -180, and -181. Naval Weapons Industrial Reserve Plant Bethpage, New York. May.

Smolensky, D., and Feldman, S., 1988. *Geohydrology of the Bethpage-Hicksville-Levittown Area, Long Island, New York,* U.S. Geological Survey Water-Resourced Investigations Report 88-4135, 25 pp.

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TABLES

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TABLE 1
VERTICAL PROFILE BORING SUMMARY
2020 OU2 GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NY

BORING	BORING START DATE	BORING COMPLETION DATA	GROUND ELEVATION (MSL)	TOTAL DEPTH (ft bgs)	SURFACE CASING SET AT (ft bgs)	NO. OF SPOON SAMPLES	GAMMA LOG (ft bgs)	NO. GW SAMPLES COLLECTED/ ATTEMPTED	DATE OF AIR SAMPLE	MONITORING WELLS INSTALLED AT LOCATION
VPB181	8/3/2020	9/14/2020	72.9	978	52	3	978	37 / 52	8/26/2020	TT-MW181S, BPOW1-7, BPOW1-8

MSL - mean sea level
ft bgs - feet below ground surface

TABLE 2
MONITORING WELL CONSTRUCTION SUMMARY
2020 OU2 GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NY

MONITORING WELL	ADJACENT VPB	WELL COMPLETION DATE	GROUND ELEVATION (MSL)	WELL DEPTH (ft bgs)	CASING DEPTH (ft bgs)	SCREEN INTERVAL (ft bgs)	SUMP DEPTH INTERVAL (ft bgs)	BORING DEPTH (ft bgs)
TT-MW181S	VPB181	11/5/2020	73.1	235	52	210 - 230	230 - 235	248
BPOW1-7		10/27/2020	73.2	645	52	600 - 640	640 - 645	658
BPOW1-8		10/7/2020	73.4	760	52	725 - 755	755 - 760	773

MSL - mean sea level
ft bgs - feet below ground surface

TABLE 3
MONITORING WELL DEVELOPMENT SUMMARY
2020 OU2 GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NY

MONITORING WELL	ADJACENT VPB	AIR DEVELOPMENT		PUMP DEVELOPMENT			APPROX. TOTAL DEVELOPMENT VOLUME (GAL)	FINAL TURBIDITY (NTUs)
		DATE	APPROX. VOLUME (GAL)	DATE	FINAL PUMP DEPTH (FT)	APPROX. VOLUME (GAL)		
TT-MW181S	VPB181	11/12/2020	4,826	11/17/2020	230	4,161	8,987	4.63
BPOW1-7		11/11/2020	7,157	11/16/2020	640	6,990	14,147	5.91
BPOW1-8		11/10/2020	4,161	11/13/2020	755	4,494	8,655	27.80

GAL - gallon

FT - feet

NTUs - Nephelometric Turbidity Units

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FIGURES

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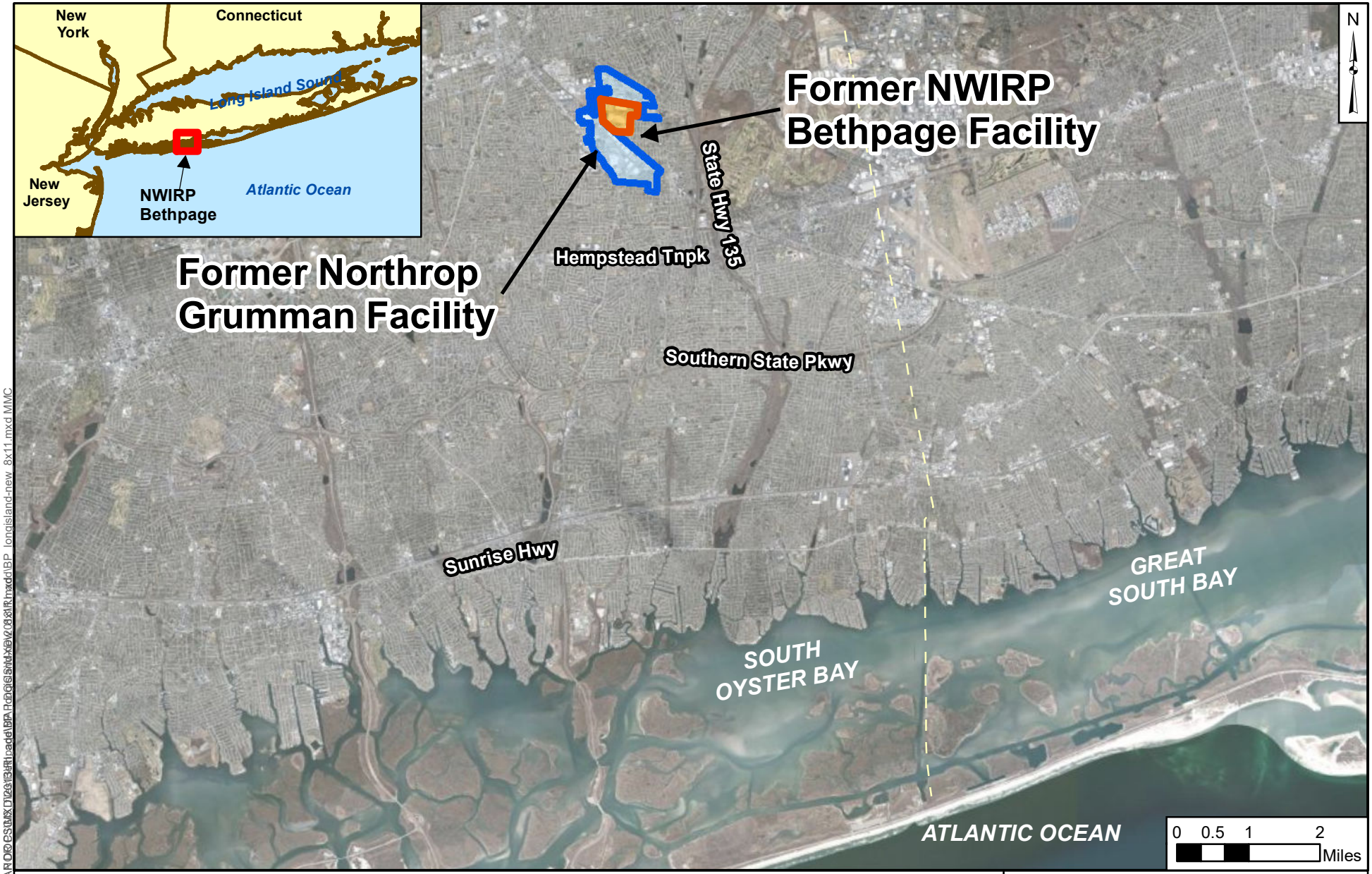

GENERAL LOCATION MAP
NWIRP BETHPAGE, NEW YORK

NAVFAC
Naval Facilities Engineering Systems Command

DRAWN BY	DATE	CTO
MS	02/12/21	112G08005-WE16
CHECKED BY	DATE	FIGURE NUMBER
EW	05/24/21	1

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Former Northrop Grumman Facility

Former NWIRP Bethpage Facility

RW-21

BPOW 1-7
TT-MW181S
VPB181
BPOW 1-8

Inset: VPB181, TT-MW181S, BPOW 1-7 and BPOW 1-8

Legend

- Monitoring Well
- Vertical Profile Boring
- Water Supply Well

0 1,500 3,000 Feet

VPB181S, TT-MW181, BPOW 1-7, AND BPOW 1-8 LOCATION MAP
2020 OU2 GROUNDWATER INVESTIGATION
DATA SUMMARY REPORT VPB181 AND MONITORING WELLS TT-MW181S, BPOW 1-7 AND BPOW 1-8
NWIRP BETHPAGE, NEW YORK

NAVFAC Naval Facilities Engineering Systems Command

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EW	05/25/21	2

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APPENDICES

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Appendix A

VPB181

Vertical Profile Boring 181

1. **VPB181 Boring and Gamma Log**
2. **VPB181 Gamma and PCE/TCE/Freon-113 Plot**
3. **VPB181 Groundwater Sample Log Sheets**
4. **VPB181 Groundwater Analytical Data Validation**
   - Validation Letter
   - Chain of Custody Records
   - Analytical Data Sheets
5. **VPB181 Groundwater Analytical Data Validation Table**
6. **VPB181 Air Sample Analytical Data Validation**
   - Validation Letter
   - Chain of Custody Records
   - Analytical Data Sheets
7. **VPB181 Air Sample Analytical Data Validated Table**

1. VPB181 Boring and Gamma Log

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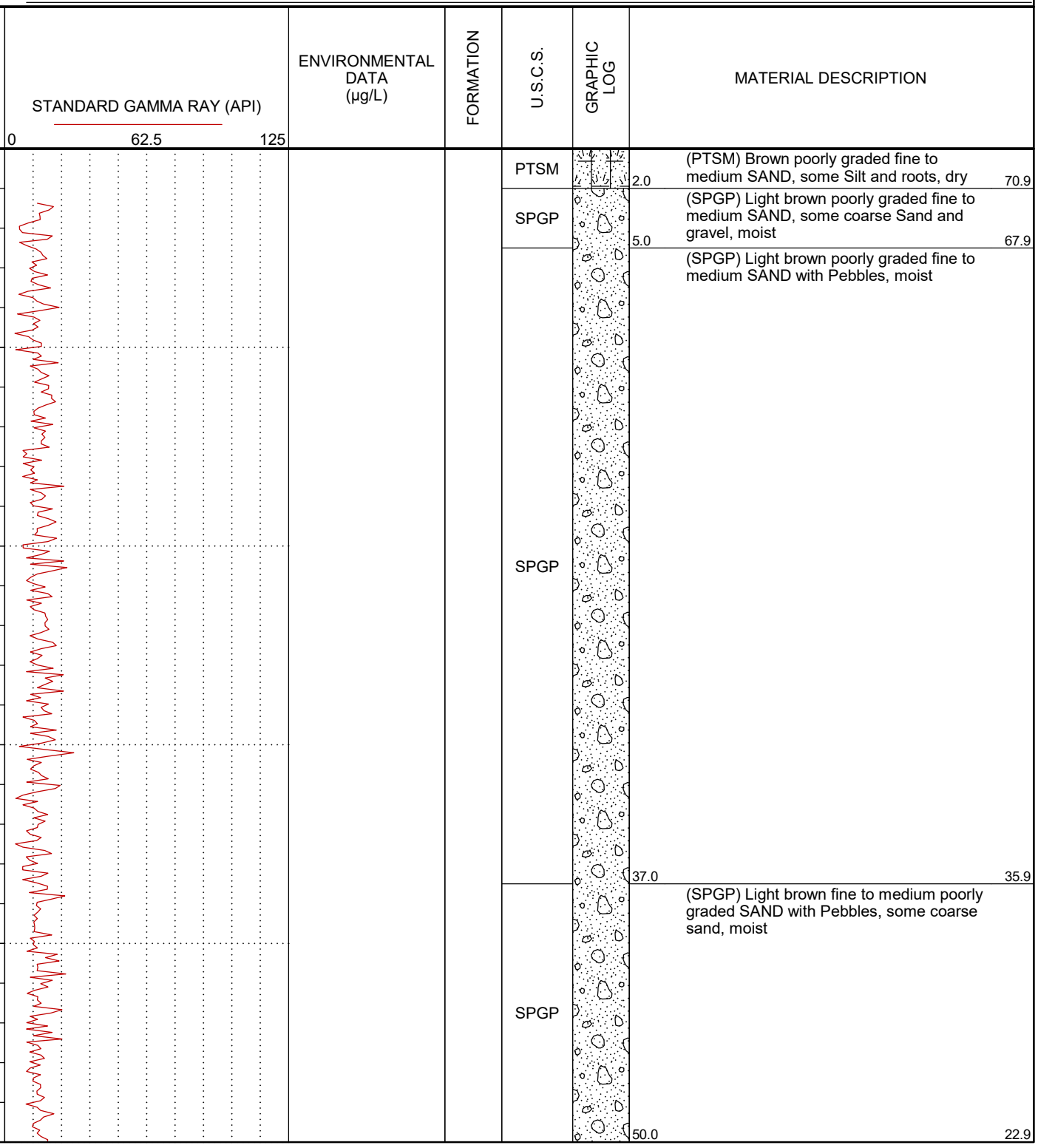
BORING NUMBER VPB-181

Tetra Tech

CLIENT NAVFAC MIDLANT
PROJECT NAME NWIRP Bethpage OU2
PROJECT NUMBER 112G08005-WE13
PROJECT LOCATION BETHPAGE
DATE STARTED 8/3/20 **COMPLETED** 9/14/20
TOTAL DEPTH (ft): 978 **HOLE SIZE** 8.625 inches
DRILLINGCONTRACTOR DELTA WELL & PUMP
LOGGED BY Beau Benfield
DRILLINGMETHOD MUD ROTARY
NORTHING 201907.2 ft **EASTING** 1130757.5 ft
GROUND ELEVATION 72.9 ft NVD 88
NOTES hole size 12.25 from 0 to 50 HAS



VPB-GAMMA LOG - GINT STD US.GDT - 5/25/21 12:39 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	STANDARD GAMMA RAY (API) 0 – 62.5 – 125	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
50				GP		(GP) White to tan medium to coarse subrounded GRAVEL, wet
78.0						-5.1
				SPGP		(SPGP) White to tan poorly graded coarse SAND with small subrounded Gravel, wet
83.0						-10.1
				GP		(GP) White to tan poorly graded sandy subrounded to rounded medium GRAVEL, some large Gravel, wet
93.0						-20.1
				CLSP		(CLSP) Dark tan to brown lean CLAY, some Sand, wet
98.0						-25.1
				SWGP		(SWGP) White to light tan well graded fine to coarse SAND, some subrounded to subangular small Gravel, trace silt, wet

60 70 80 90 100

VPB-GAMMA LOG - GINT STD US.GDT - 5/25/21 12:39 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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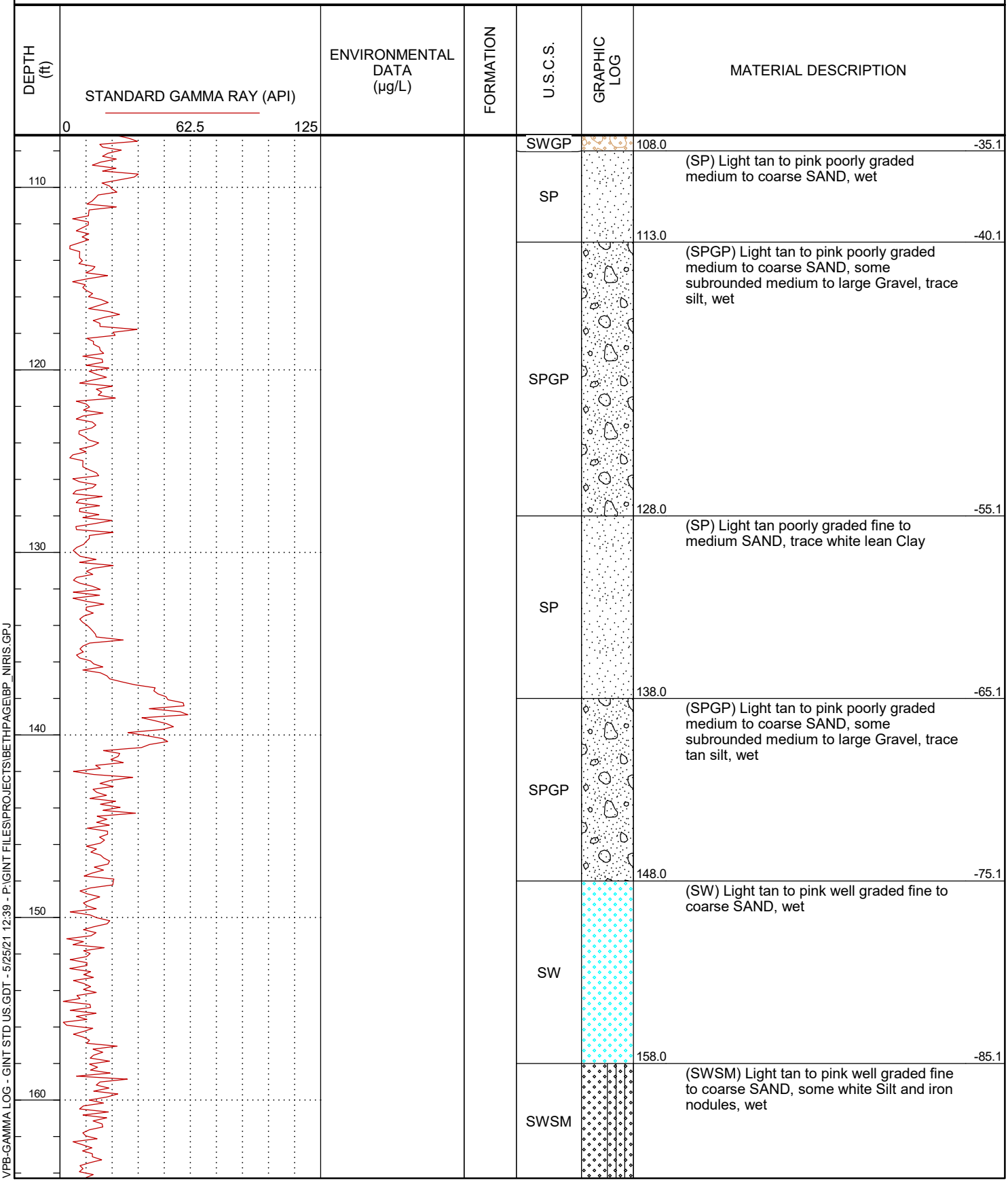
BORING NUMBER VPB-181

Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE



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Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	STANDARD GAMMA RAY (API) 0 62.5 125	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
170				SWSM		(SWSM) Light tan to pink well graded fine to coarse SAND, some white Silt and iron nodules, wet *(continued)*
						178.0 -105.1
180				SWSM		(SWSM) Light tan to pink poorly graded medium to coarse SAND, some white silt, wet
190						198.0 -125.1
200				MLSP		(MLSP) Tan silty poorly graded fine SAND, wet
						208.0 -135.1
210				MLSP		(MLSP) White to tan fine sandy SILT, wet
						213.0 -140.1
				MLSP		(MLSP) White to silver SILT with fine Sand, trace iron nodules, wet
						218.0 -145.1
220				MLSP		(MLSP) Tan to dark tan SILT, some fine to medium Sand, trace iron nodules, wet

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VPB-GAMMA LOG - GINT STD US.GDT - 5/25/21 12:39 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	STANDARD GAMMA RAY (API) 0 – 62.5 – 125	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION		
230				MLSP		(MLSP) Tan to dark tan SILT, some fine to medium Sand, trace iron nodules, wet *(continued)*		
							233.0	-160.1
				MLSP		(MLSP) Tan to dark tan sandy SILT, many iron nodules, wet		
							238.0	-165.1
240				SP		(SP) Light brown poorly graded fine to medium SAND		
							243.0	-170.1
				SPSM		(SPSM) Light brown poorly graded fine to medium silty SAND, some Clay and iron nodules, wet		
250							253.0	-180.1
				SPSM		(SPSM) Light brown poorly graded fine to medium SAND, some Silt and iron nodules, trace clay, wet		
							258.0	-185.1
260				SWSM		(SWSM) Light brown well graded fine to coarse SAND, some Silt and iron nodules, wet		
							263.0	-190.1
				SPSM		(SPSM) Light brown poorly graded fine to medium SAND, many Iron Nodules, some silt, lignite and mica, wet		
270							273.0	-200.1
				SP		(SP) Light brown poorly graded fine to medium SAND and Mica, some iron nodules, trace silt, wet		
							278.0	-205.1

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BORING NUMBER VPB-181

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	STANDARD GAMMA RAY (API) 0 – 62.5 – 125	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
280				CLSP		(CLSP) Dark gray lean CLAY, some fine Sand and lignite, wet *(continued)*
290				CLSP		293.0 -220.1
300				SPSM		(SPSM) Pale brown poorly graded fine to medium SAND and Lignite, some clayey silt, wet
310						318.0 -245.1
320				MLCL		(MLCL) Gray SILT, trace Clay and lignite, wet
330				CLCH		328.0 -255.1 (CLCH) Gray to black lean CLAY and Lignite, wet

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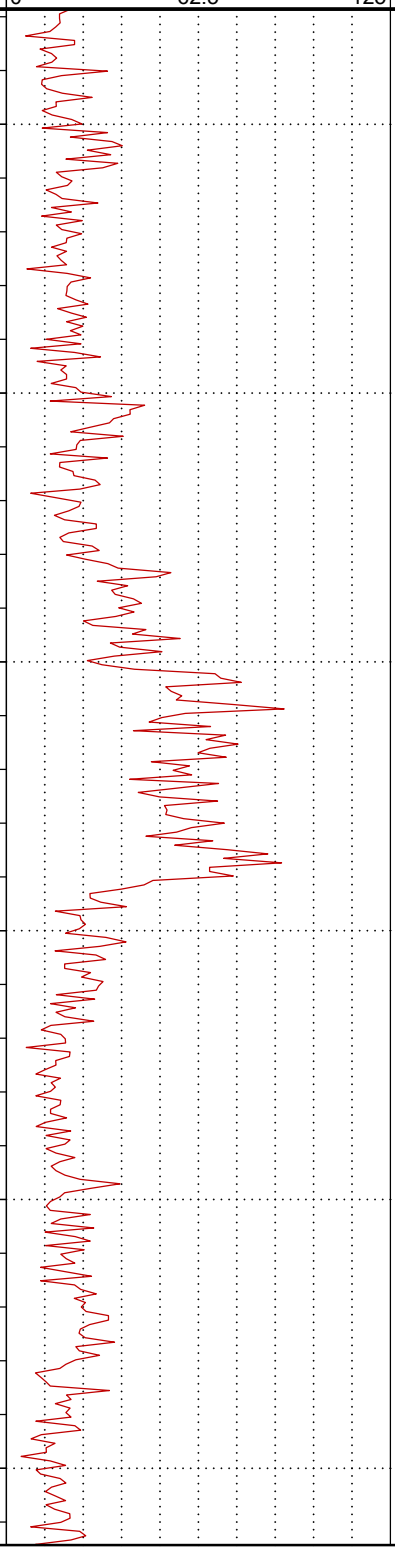
Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE



DEPTH (ft)	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
			CLCH		(CLCH) Gray to black lean CLAY and Lignite, wet *(continued)*
338.0					-265.1
			MH		(MH) Gray to dark gray SILT and Lignite, wet
353.0					-280.1
			MH		(MH) Gray to dark gray SILT and Lignite, some clay, trace coarse sand, wet
363.0					-290.1
			CLML		(CLML) Gray lean CLAY with Silt, wet
368.0					-295.1
			MH		(MH) Gray SILT, some Lignite, wet
388.0					-315.1
			MLCL		(MLCL) Gray SILT, some lean Clay and lignite, wet

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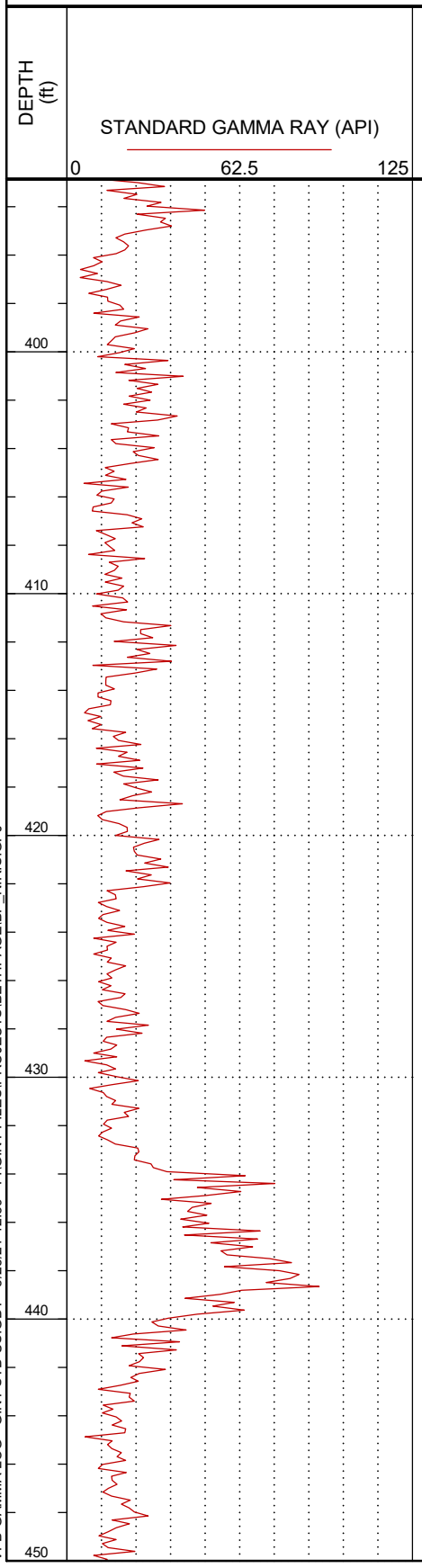
CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE



ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
		MLCL		(MLCL) Gray SILT, some lean Clay and lignite, wet *(continued)*
				398.0 -325.1
		MLCL		(MLCL) Gray SILT and Lignite, some lean clay, trace coarse sand, wet
				428.0 -355.1
		MLCL		(MLCL) Gray SILT and Lignite, some lean clay and mica, trace coarse sand, wet
				438.0 -365.1
		MLCL		(MLCL) Gray clayey SILT, some Lignite and mica, trace coarse sand, wet

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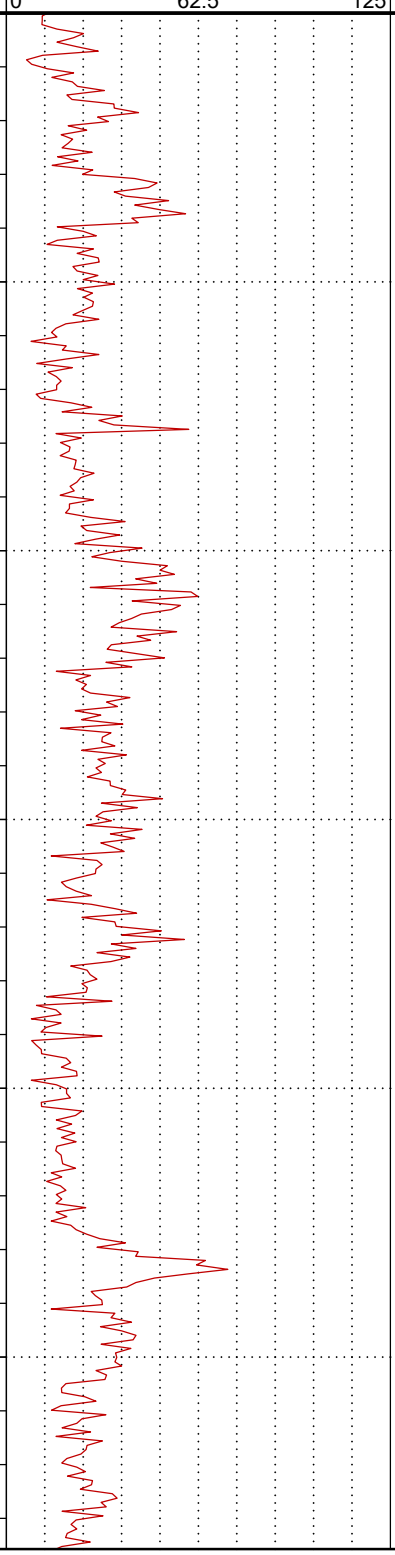
CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE



ENVIRONMENTAL DATA (µg/L)

FORMATION

U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
MLCL		(MLCL) Gray clayey SILT, some Lignite and mica, trace coarse sand, wet *(continued)*
		458.0 -385.1
MLCL		(MLCL) Gray SILT, few Clay and ligntie, wet
		478.0 -405.1
MLCL		(MLCL) Gray SILT, some coarse Sand and lignite, wet

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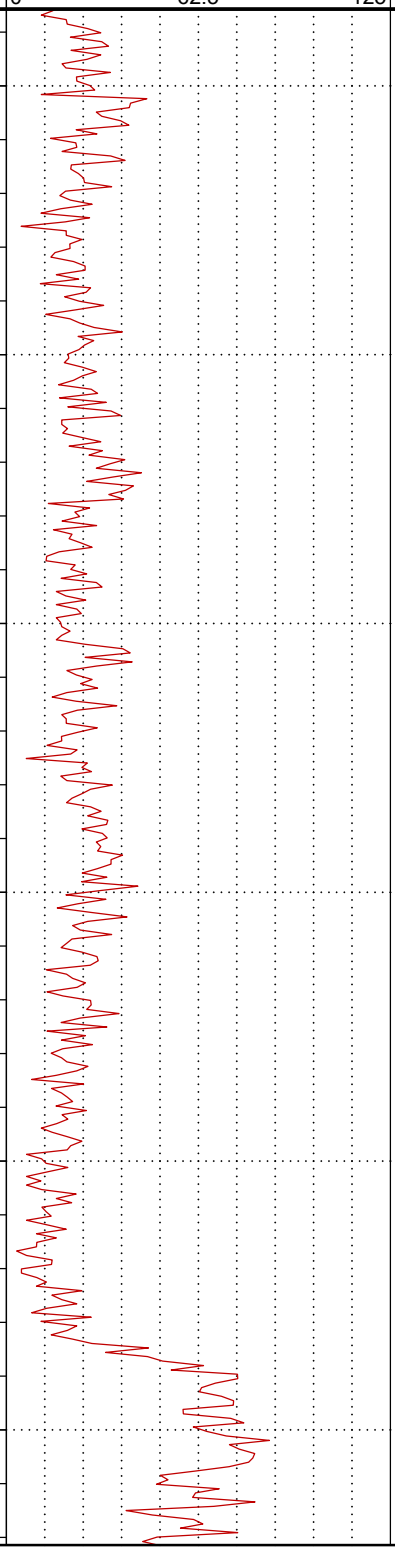
CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE



DEPTH (ft)	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
			MLCL		(MLCL) Gray SILT, some coarse Sand and lignite, wet *(continued)*
523.0					-450.1
			SPSM		(SPSM) Tan poorly graded coarse SAND, some Silt and ligntie, wet
538.0					-465.1
			SM		(SM) Gray SILT, some coarse Sand and lignite, wet
548.0					-475.1
			MLSP		(MLSP) Gray sandy SILT, some Lignite, wet
553.0					-480.1
			SWSM		(SWSM) Light gray well graded fine to coarse SAND, trace Silt, wet
557.0					-484.1
			MLSP		(MLSP) Dark gray SILT, trace coarse Sand, wet

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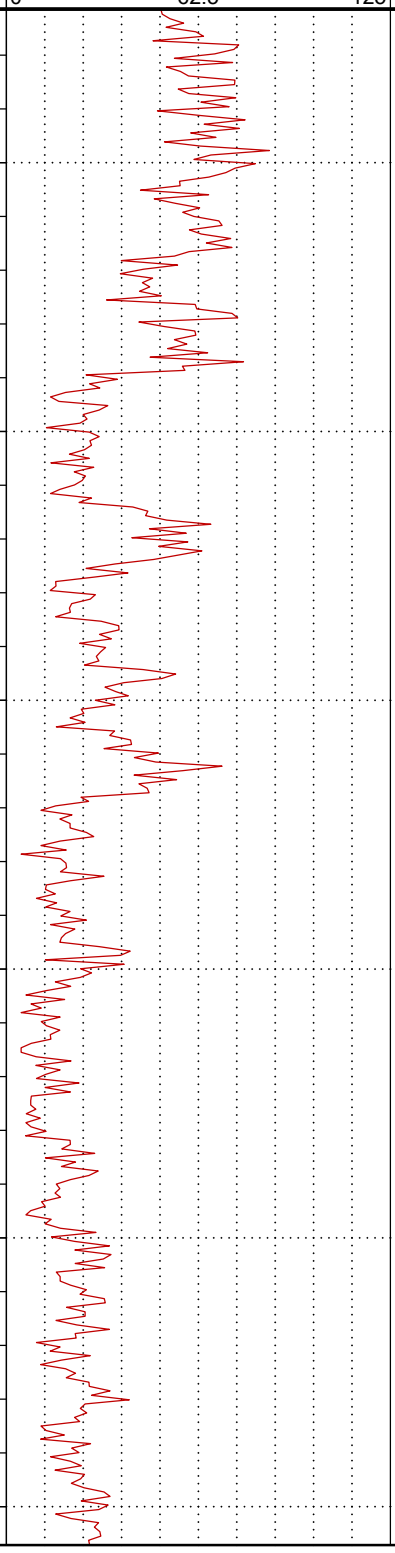
CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE



ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
		MLSP		(MLSP) Dark gray SILT, trace coarse Sand, wet *(continued)*	
				568.0	-495.1
		MLSP		(MLSP) Gray SILT, some coarse Sand and lignite, wet	
				578.0	-505.1
		SWSM		(SWSM) Light gray well graded fine to coarse SAND, some Silt, wet	
				588.0	-515.1
		MLSP		(MLSP) Gray SILT, some fine to coarse Sand and lignite, wet	
				598.0	-525.1
		SW		(SW) Gray to white well graded fine to coarse SAND, wet	
				608.0	-535.1
		SWSM		(SWSM) Gray to white well graded fine to coarse silty SAND, wet	
				613.0	-540.1
		SW		(SW) Gray to white well graded fine to coarse SAND, some small subangular gravel and lignite, trace silt, wet	

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CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	STANDARD GAMMA RAY (API) 0 62.5 125	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
630				SW		(SW) Gray to white well graded fine to coarse SAND, some small subangular gravel and lignite, trace silt, wet *(continued)*
640				SW		628.0 -555.1 (SW) Gray to white well graded fine to coarse SAND, some small subangular gravel, lignite and silt, wet
650				SPSM		648.0 -575.1 (SPSM) Gray to white poorly graded fine to medium SAND, some Silt and lignite, wet
660				MLSP		663.0 -590.1 (MLSP) Gray SILT, some poorly graded fine to medium Sand, wet
670				SWSM		668.0 -595.1 (SWSM) Gray to white well graded fine to coarse SAND, some Silt, wet
						678.0 -605.1

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CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	STANDARD GAMMA RAY (API) 0 – 62.5 – 125	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
680				SW		(SW) Gray to white well graded fine to coarse SAND, wet *(continued)*	
				SW			
							688.0 -615.1
690				SWSM		(SWSM) Gray to white well graded fine to coarse SAND, some Silt and subangular small gravel, wet	
							693.0 -620.1
				SPSM		(SPSM) Tan to gray poorly graded fine to medium silty SAND, trace Lignite, wet	
							698.0 -625.1
700				SP		(SP) Tan poorly graded fine to medium SAND, trace Silt and lignite, wet	
							703.0 -630.1
				SWSM		(SWSM) Tan to gray well graded fine to coarse SAND, some small subangular to subrounded Gravel and silt, wet	
710							713.0 -640.1
				SWSM		(SWSM) Tan to gray well graded fine to coarse SAND, some small subangular to subrounded Gravel, silt and lignite, wet	
							723.0 -650.1
720				MLSP		(MLSP) Gray to white SILT, some fine to medium Sand, wet	
							728.0 -655.1
				SWSM		(SWSM) Tan well graded fine to coarse SAND, some Silt and small to medium subangular gravel, wet	
730							733.0 -660.1
				GPSP		(GPSP) Tan poorly graded small to medium subangular GRAVEL, few medium to coarse Sand, wet	

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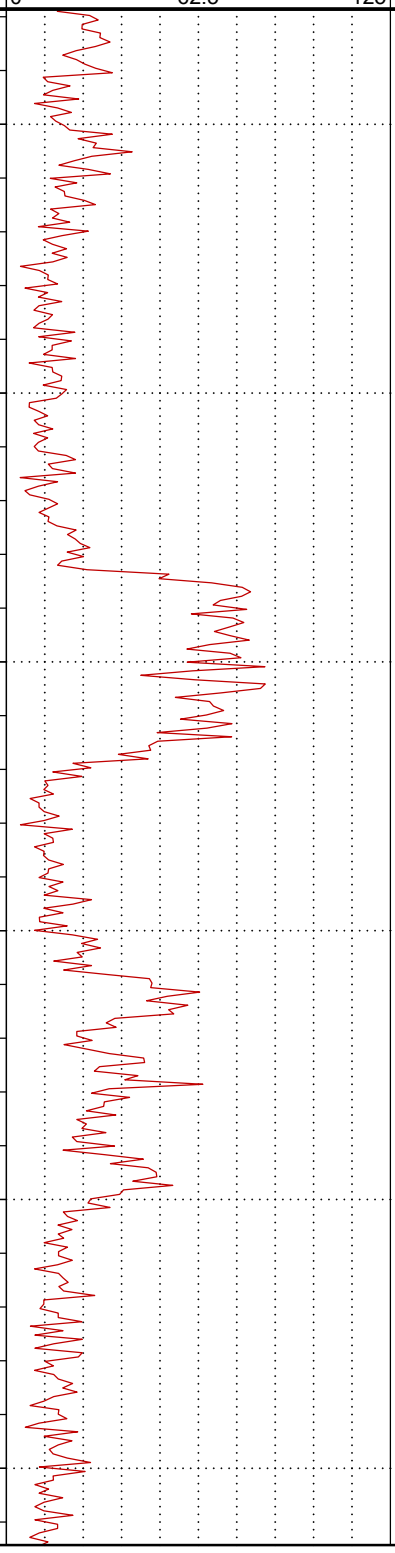
CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE



ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
		GPSP		738.0	-665.1
		SW		(SW) Tan to white well graded fine to coarse SAND, some small subangular Gravel, trace silt, wet	
				743.0	-670.1
		GWSW		(GWSW) Tan to white well graded fine to coarse subangular GRAVEL, some coarse Sand, wet	
				757.0	-684.1
		CLCH		(CLCH) Gray lean CLAY, trace Lignite, wet	
				765.0	-692.1
		SW		(SW) Yellowish tan fine SAND to coarse Gravel, wet	
				768.0	-695.1
		SW		(SW) Yellowish tan fine SAND to coarse Gravel, some silt, wet	
				778.0	-705.1
		SWGP		(SWGP) Tan well graded fine to coarse SAND, some small subrounded Gravel, gray silt and white clay, wet	
				788.0	-715.1
		SWSM		(SWSM) Tan well graded fine to coarse SAND, some Silt, trace small subrounded gravel, wet	
				793.0	-720.1

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BORING NUMBER VPB-181

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CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	STANDARD GAMMA RAY (API) 0 – 62.5 – 125	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
800				SWGP		(SWGP) Tan well graded fine to coarse SAND, some small subrounded Gravel, gray silt and white clay, wet 798.0 -725.1
				SP		(SP) Tan poorly graded fine to medium SAND, some small subangular Gravel, trace silt, wet 808.0 -735.1
810				SWGP		(SWGP) Tan well graded fine to coarse SAND, some small subangular Gravel, silt and lignite, wet 820.0 -747.1
820				MLCL		(MLCL) Gray to white clayey SILT, trace coarse Sand and small subrounded gravel, wet 823.0 -750.1
				MLSP		(MLSP) Gray to white clayey SILT, some medium to coarse Sand and lignite, wet 833.0 -760.1
830				MLSP		(MLSP) Gray to white clayey SILT, some medium to coarse Sand and lignite, trace iron nodules, wet 843.0 -770.1
840				MH		(MH) Gray SILT, trace medium to coarse Sand and lignite, wet 848.0 -775.1
850				MH		(MH) Gray elastic SILT, wet

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Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	STANDARD GAMMA RAY (API) 0 62.5 125	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
850				MH		(MH) Gray elastic SILT, wet *(continued)*
						858.0 -785.1
860						(MH) Gray elastic SILT, trace Sand and lignite, wet
870						
880				MH		
890						
900						

VPB-GAMMA LOG - GINT STD US.GDT - 5/25/21 12:39 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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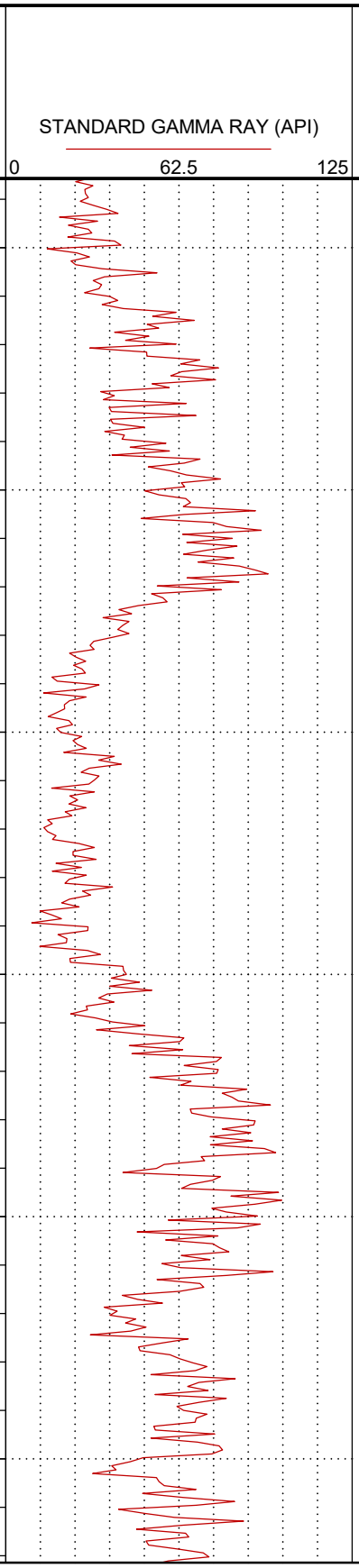
CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE



ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
		MH		908.0	-835.1
		CH		(CH) Gray fat CLAY, trace Silt and lignite, wet	
				918.0	-845.1
		CH		(CH) Gray fat CLAY, wet	
				930.0	-857.1
		SPGP		(SPGP) Gray poorly graded medium to coarse SAND, some small subrounded Gravel and silt, wet	
				941.0	-868.1
		CH		(CH) Dark gray fat CLAY, moist	

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BORING NUMBER VPB-181

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CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

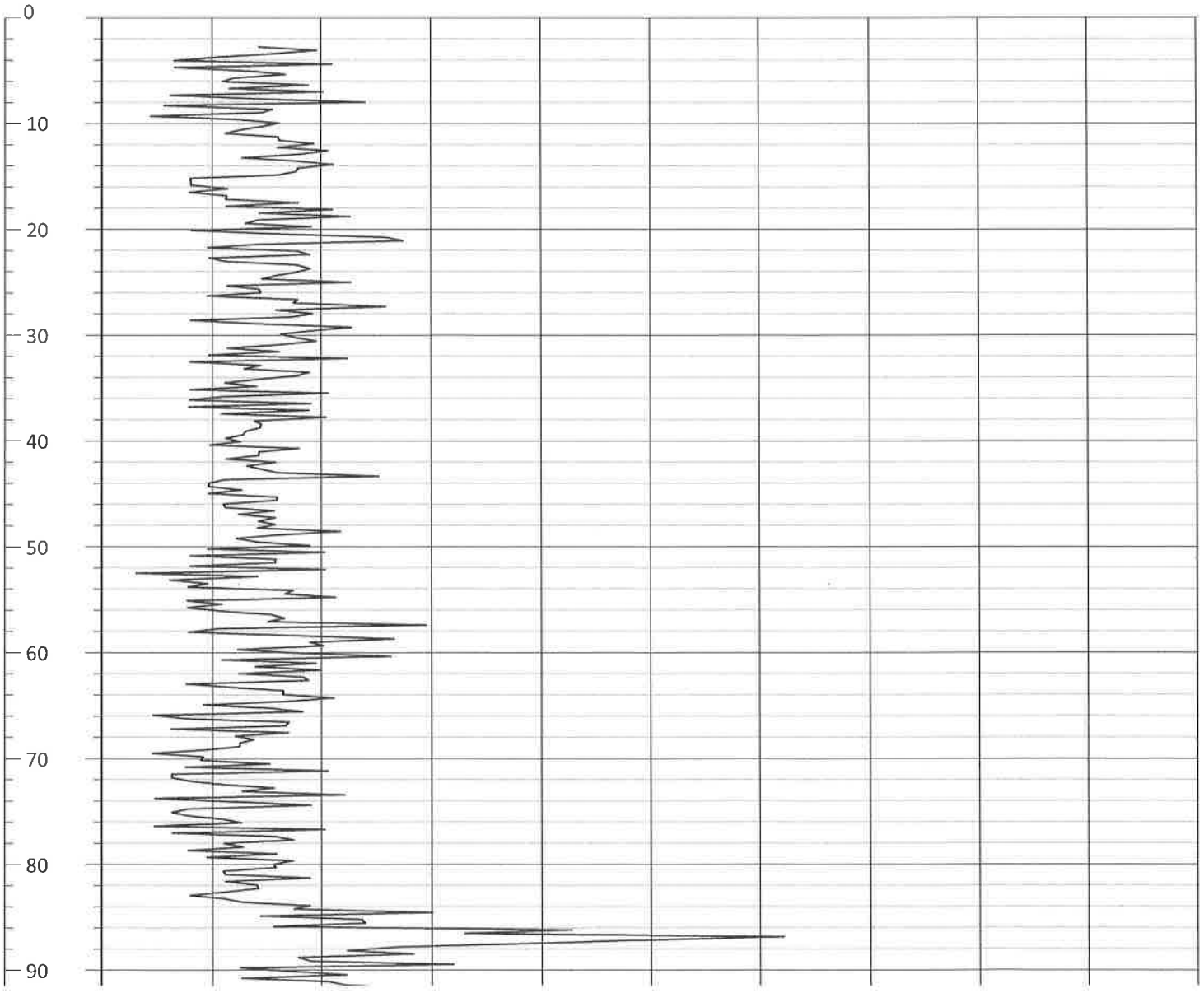
DEPTH (ft)	STANDARD GAMMA RAY (API) 0 62.5 125	ENVIRONMENTAL DATA (µg/L)	FORMATION	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
970				CH		(CH) Dark gray fat CLAY, moist *(continued)*
978.0						-905.1
						Bottom of borehole at 978.0 feet.

VPB-GAMMA LOG - GINT STD US.GDT - 5/25/21 12:39 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

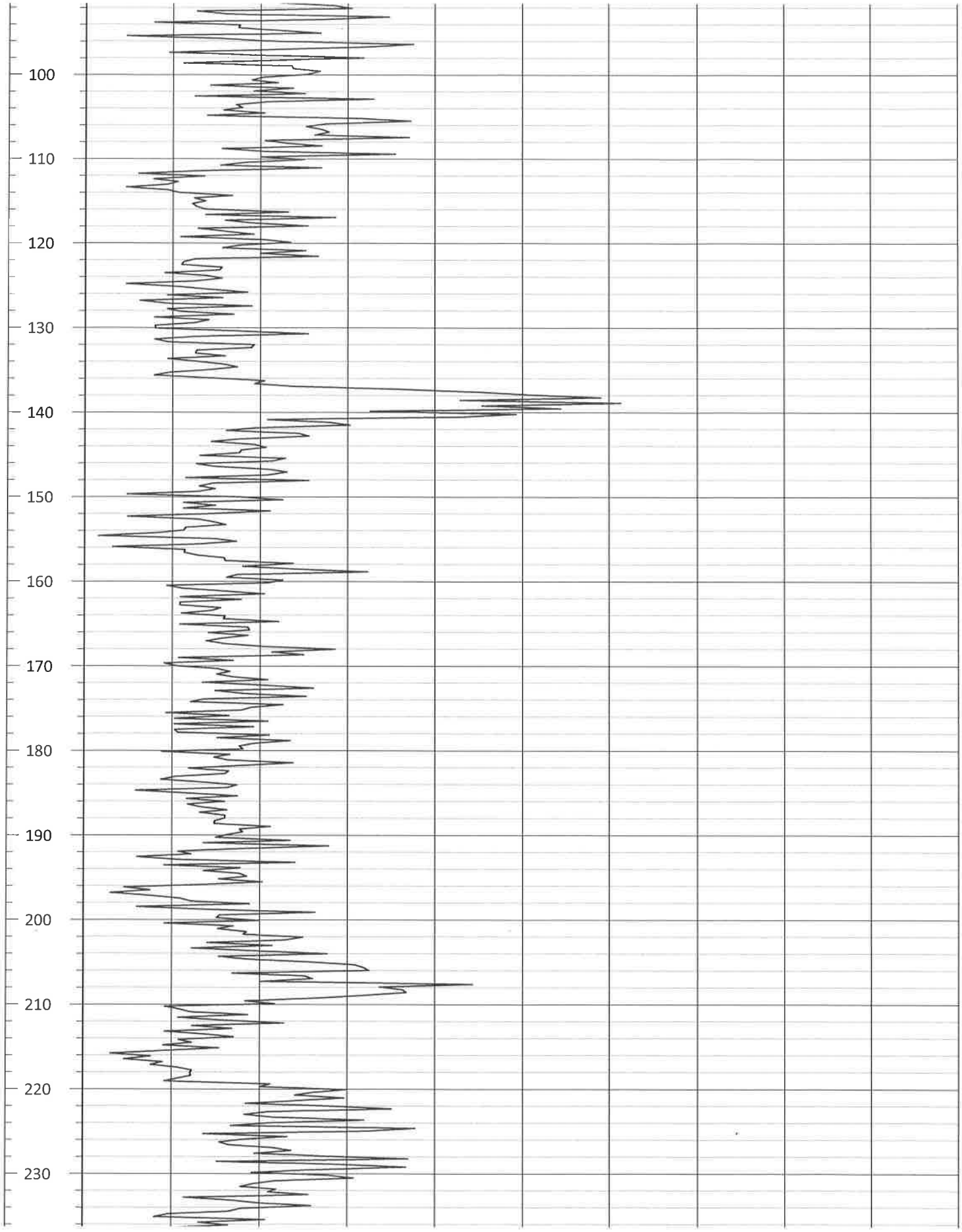
DOWN

COMPANY:	DELTA WELL & PUMP CO., INC.
LOCATION:	SO ZORANNE DR
Well: VPB-181	Depth Driller:
	Depth Logger:
Date: 09-09-20	Time:
	Logged by: CMO
File Name: 763	Witness: BO/VIN.

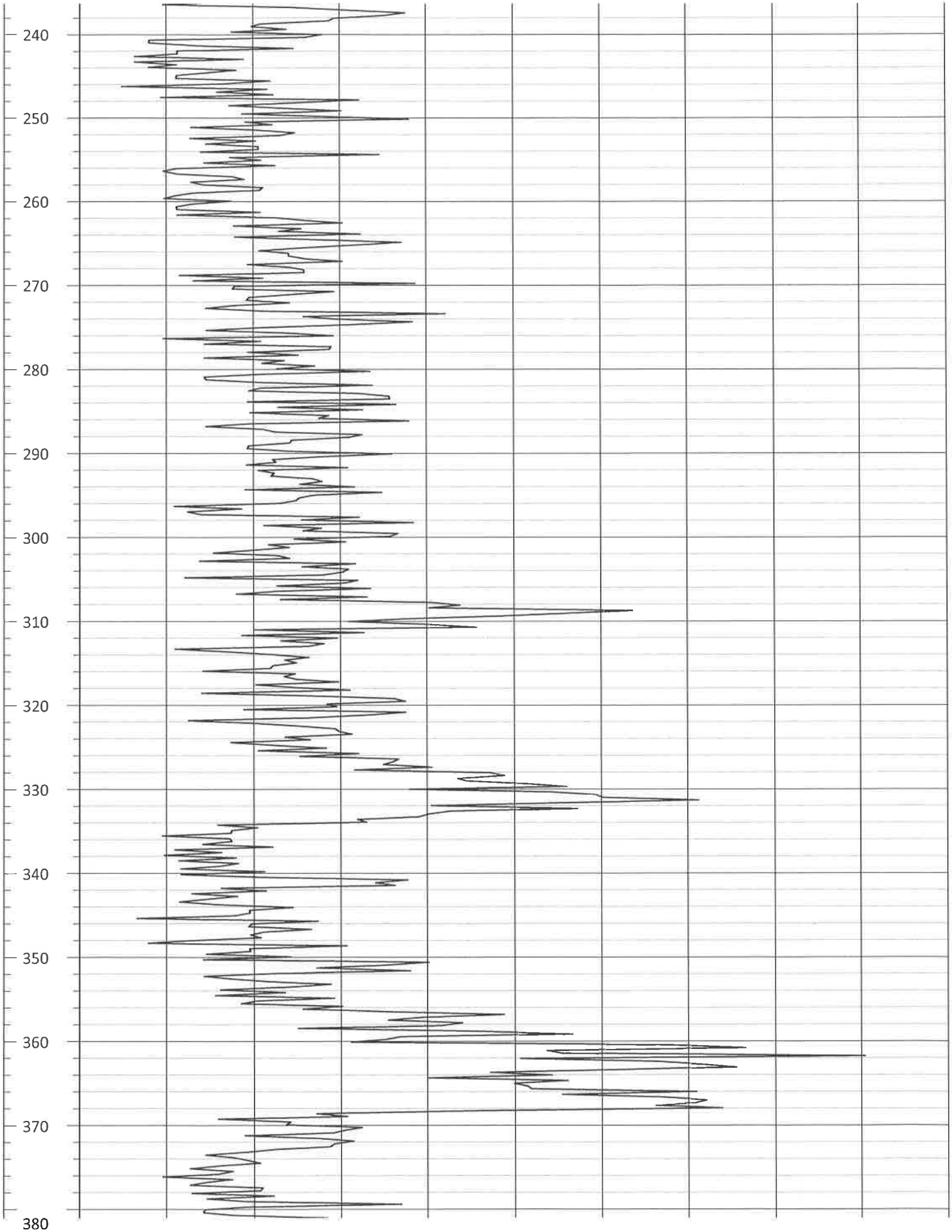
Depth (ft.)	GAMMA (cps)	
0.0		100.0



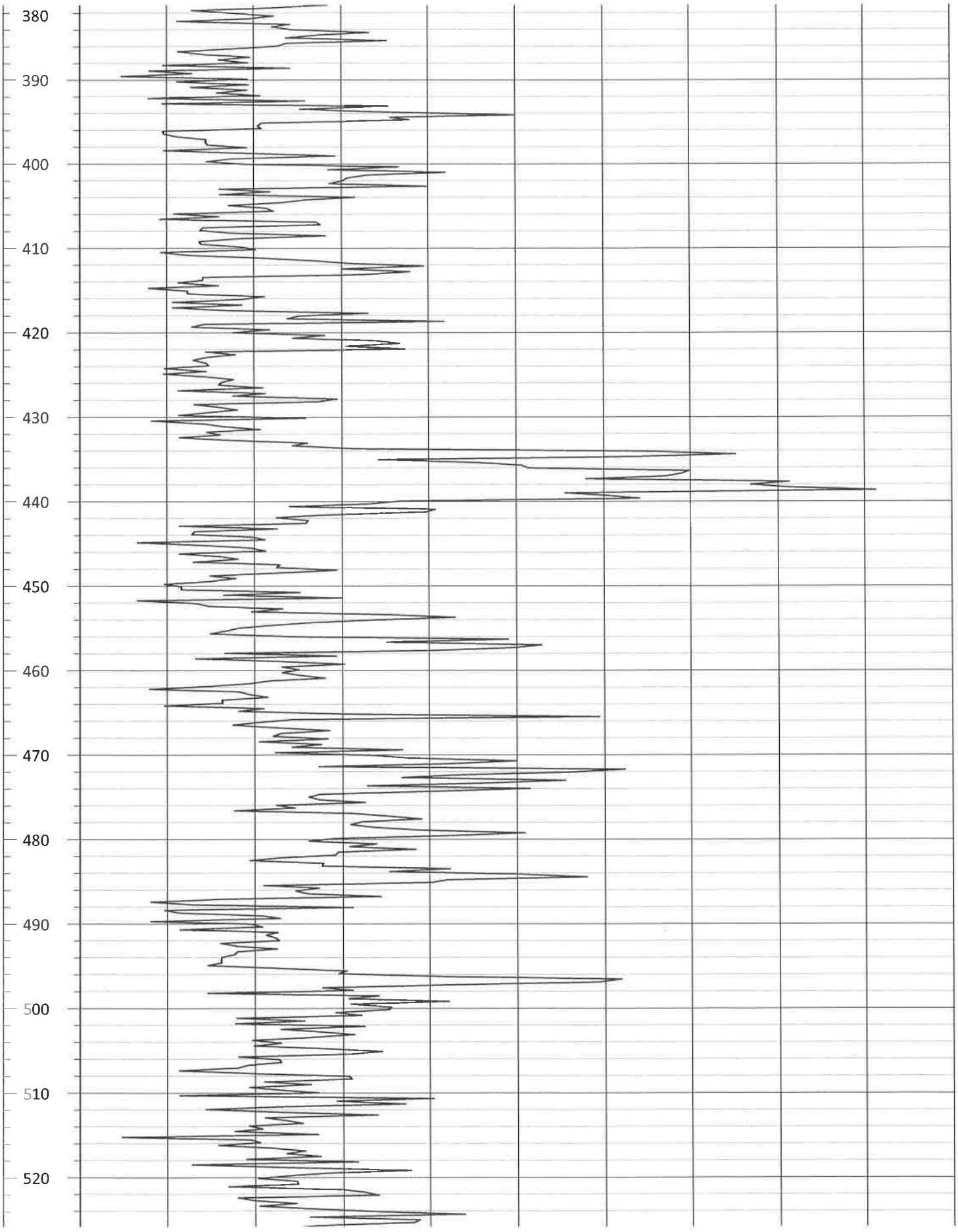
Depth (ft.)	GAMMA (cps)	
0.0		100.0



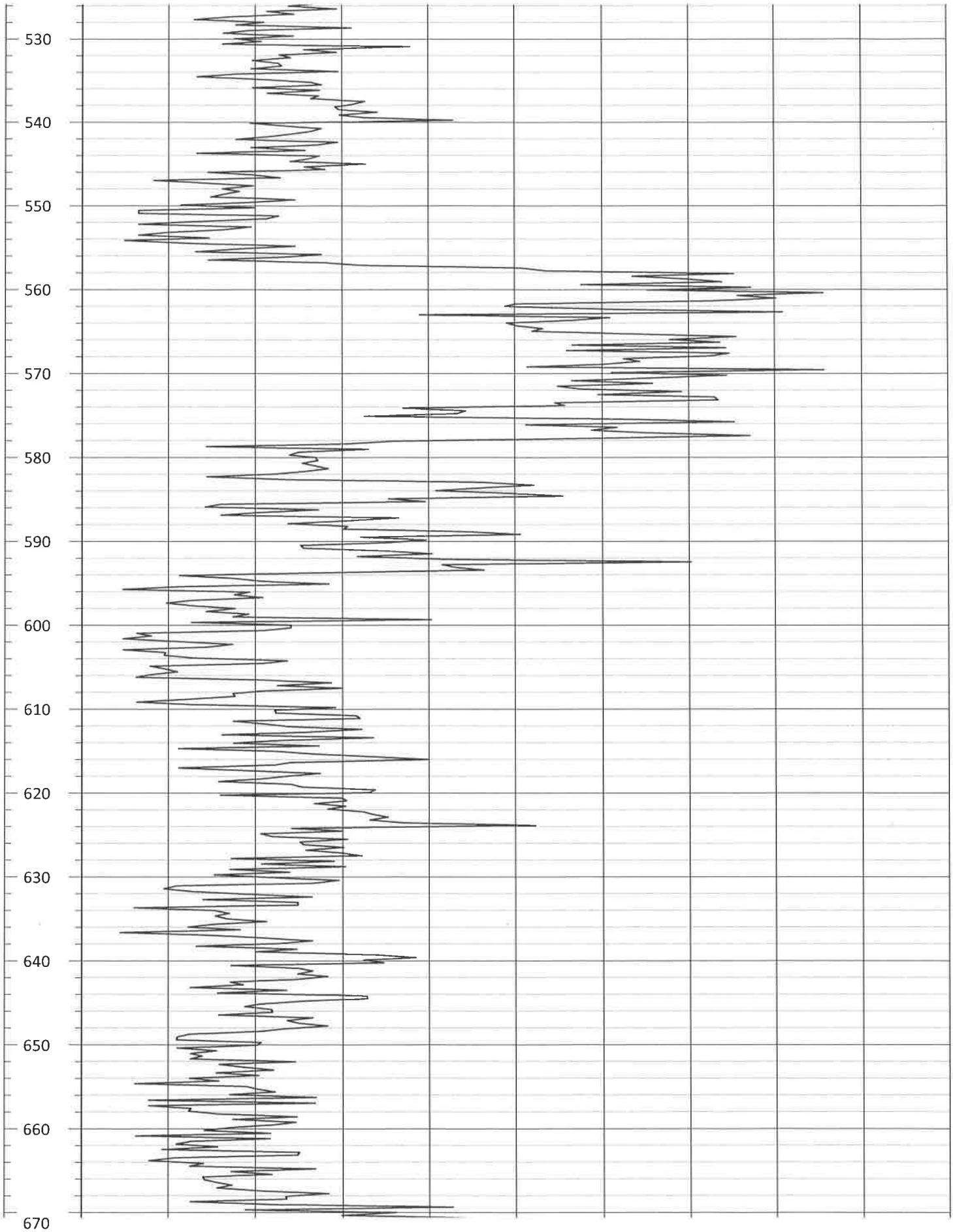
Depth (ft.)	0.0	GAMMA (cps)	100.0



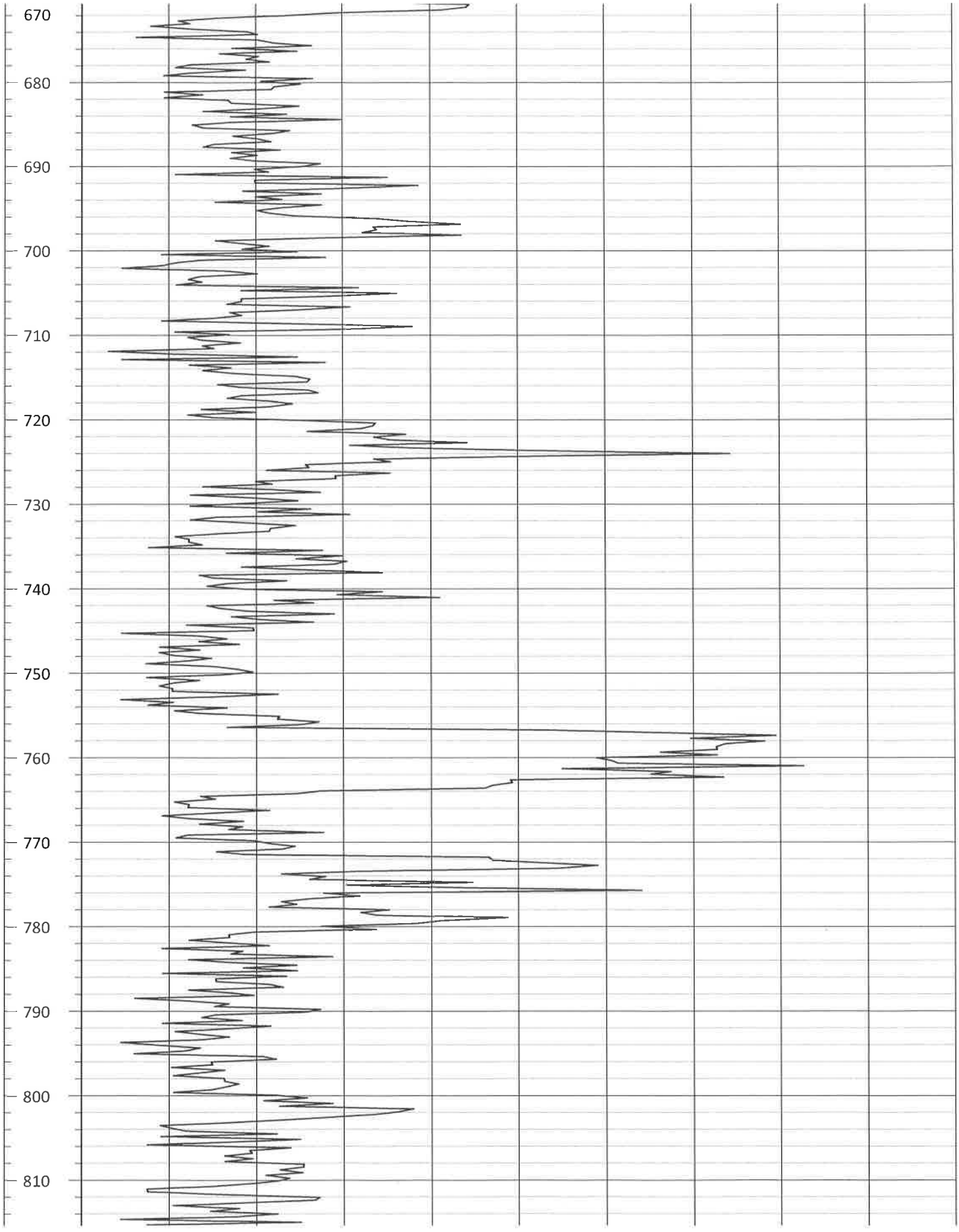
Depth (ft.)	0.0	GAMMA (cps)	100.0



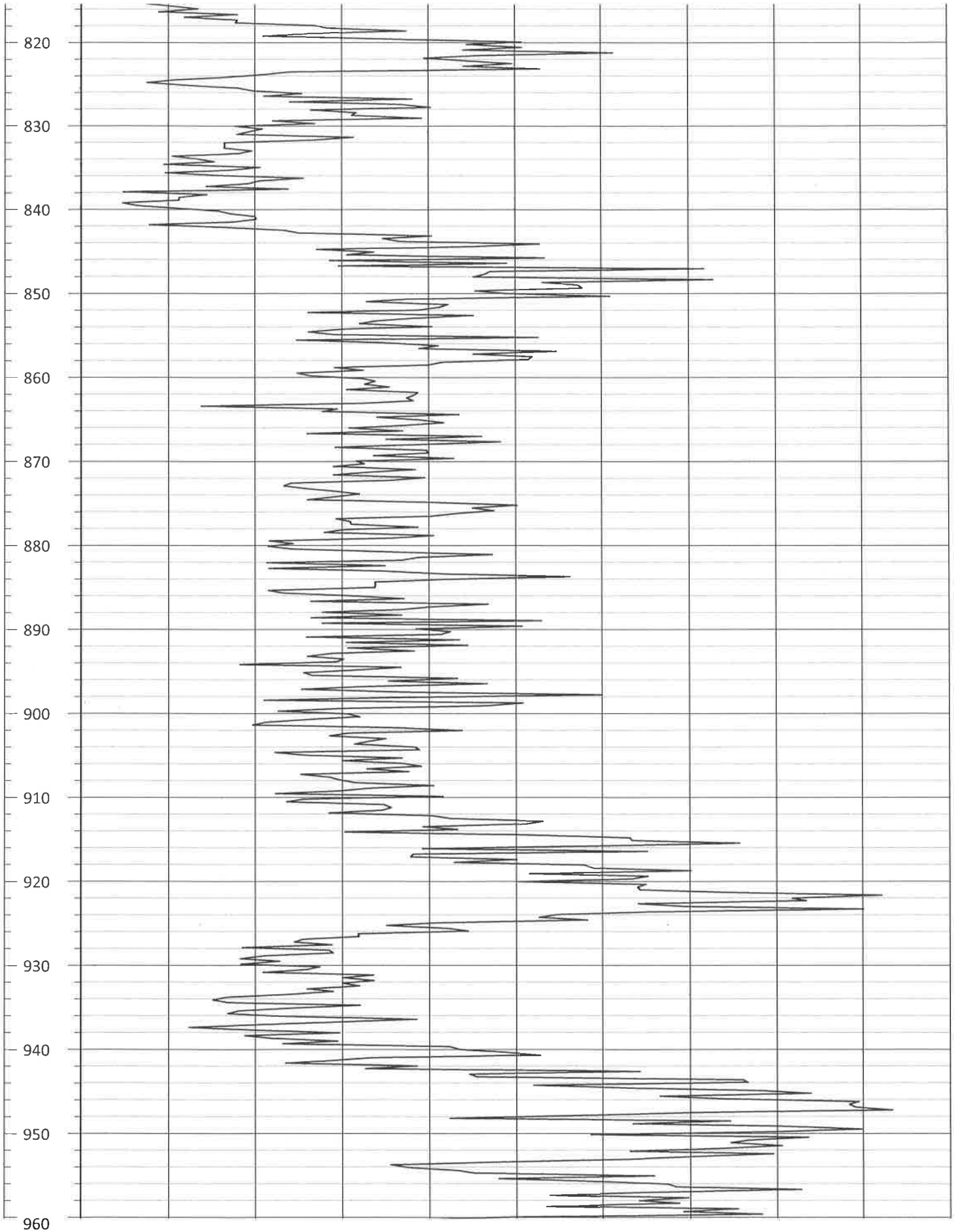
Depth (ft.)	0.0	GAMMA (cps)	100.0



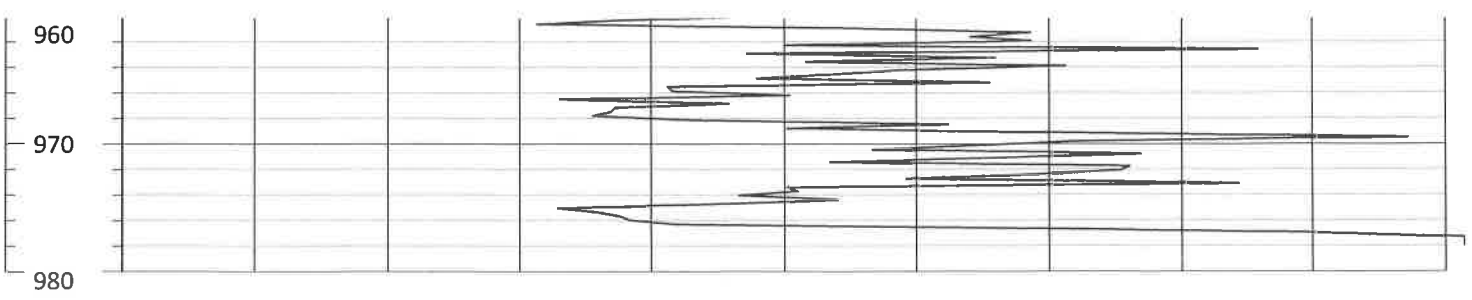
Depth (ft.)	0.0	GAMMA (cps)	100.0



Depth (ft.)	0.0	GAMMA (cps)	100.0



Depth (ft.)	0.0	GAMMA (cps)	100.0



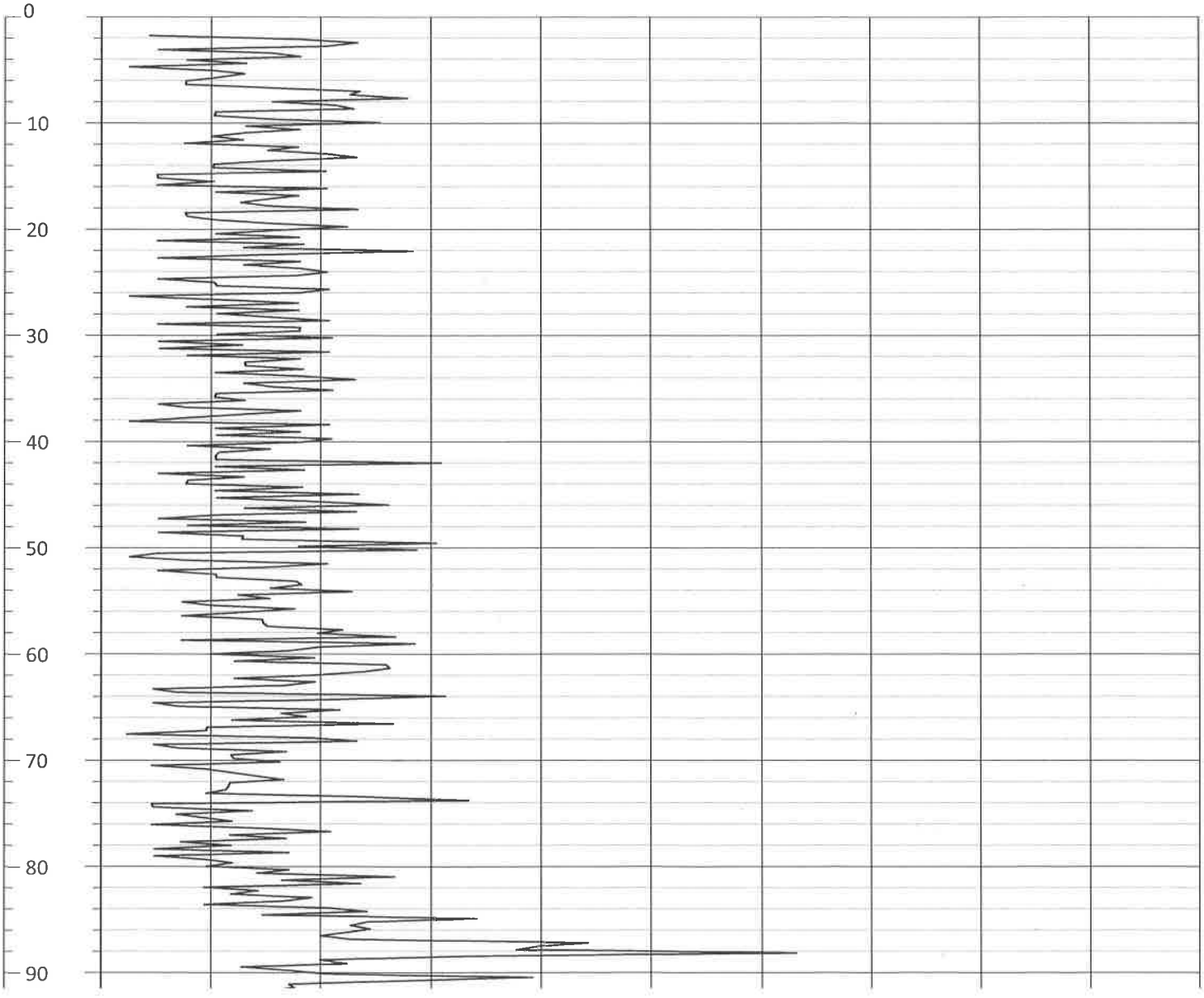
Depth (ft.)	0.0	GAMMA (cps)	100.0

VP

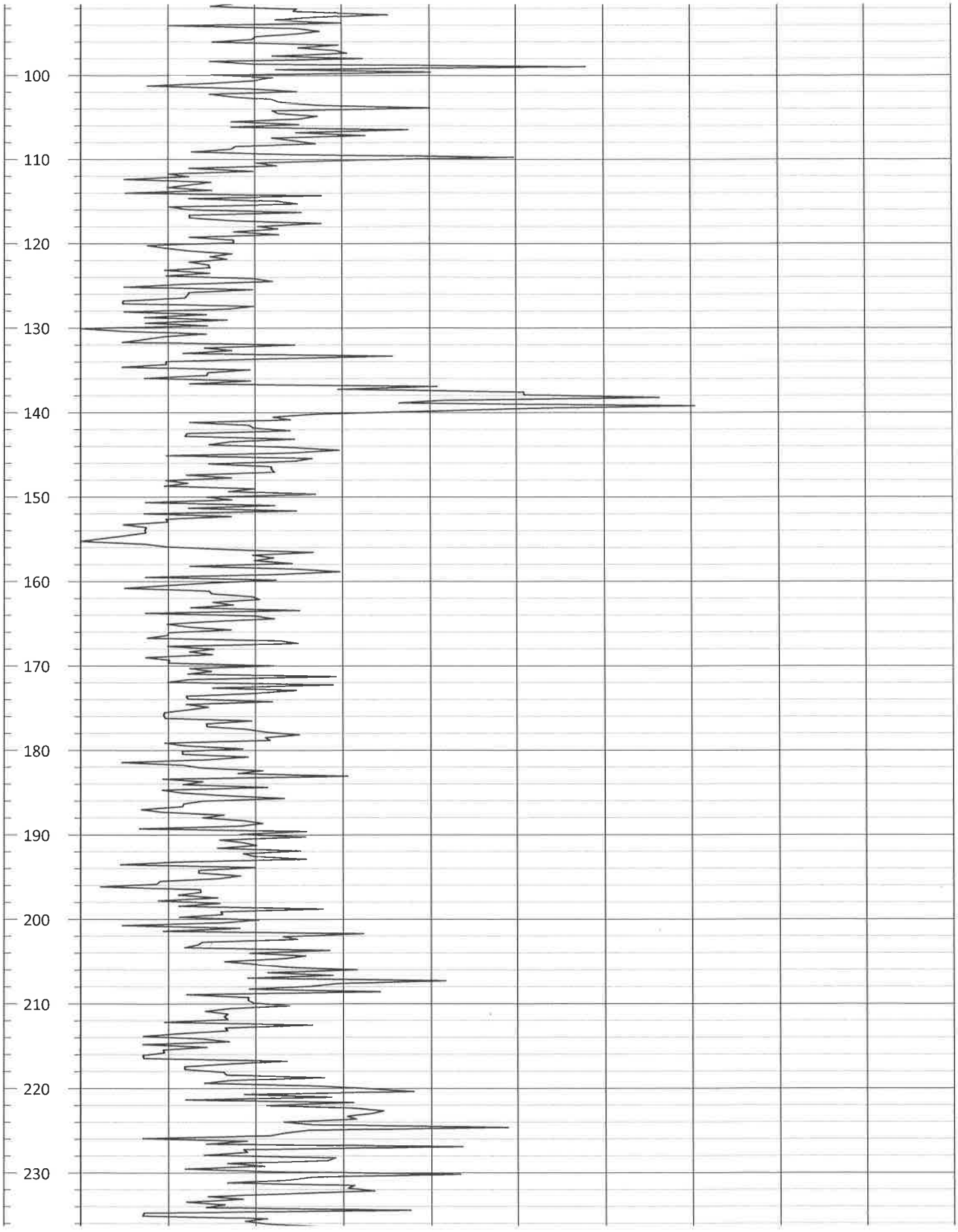
COMPANY:	DELTA WELL & PUMP CO., INC.
LOCATION:	SO ZORANNE DR

Well: VPB-181		Depth Driller:
		Depth Logger:
Date: 09-09-20	Time:	Logged by: CMO
File Name: 763		Witness: BO/VIN.

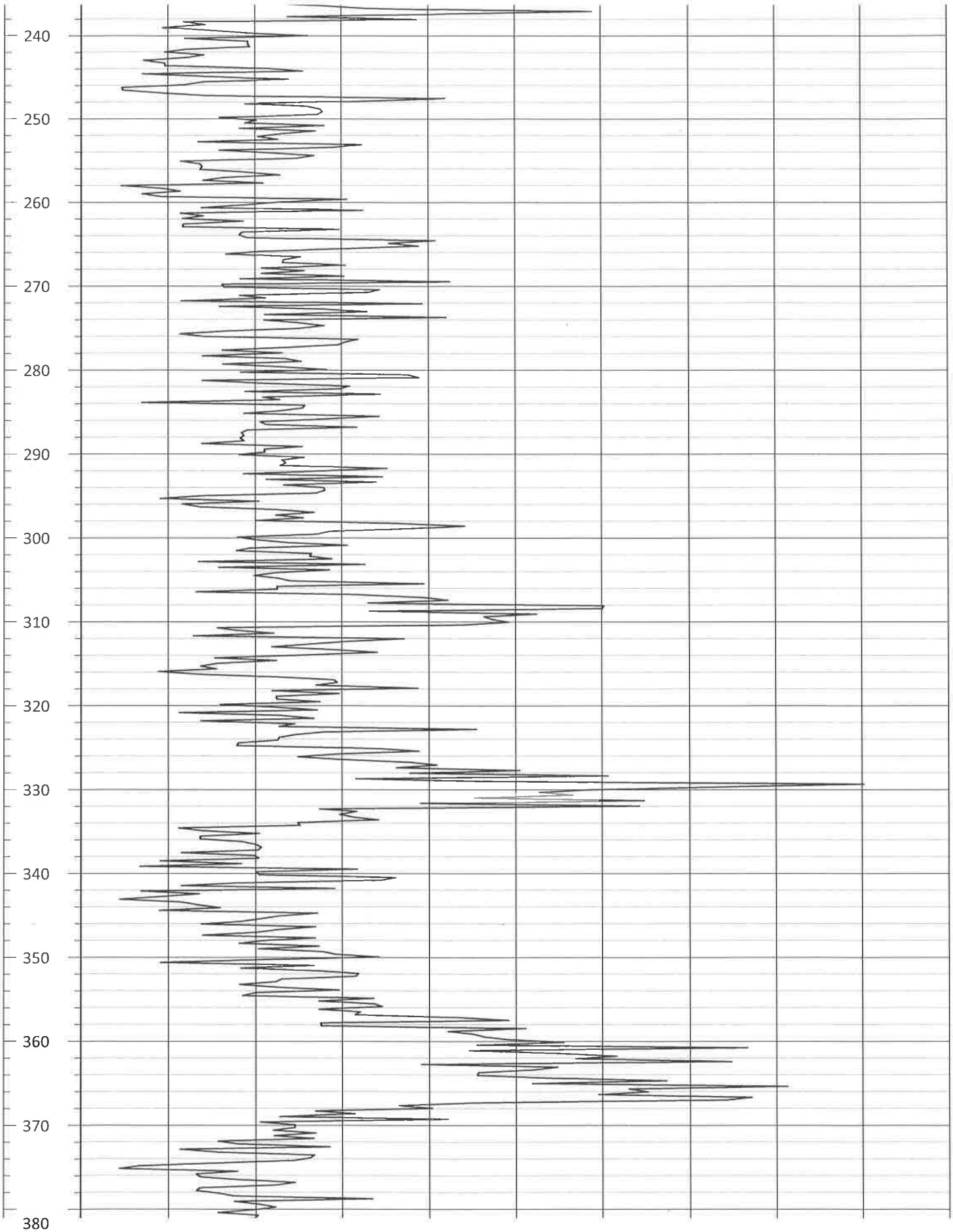
Depth (ft.)	GAMMA (cps)	
0.0		100.0



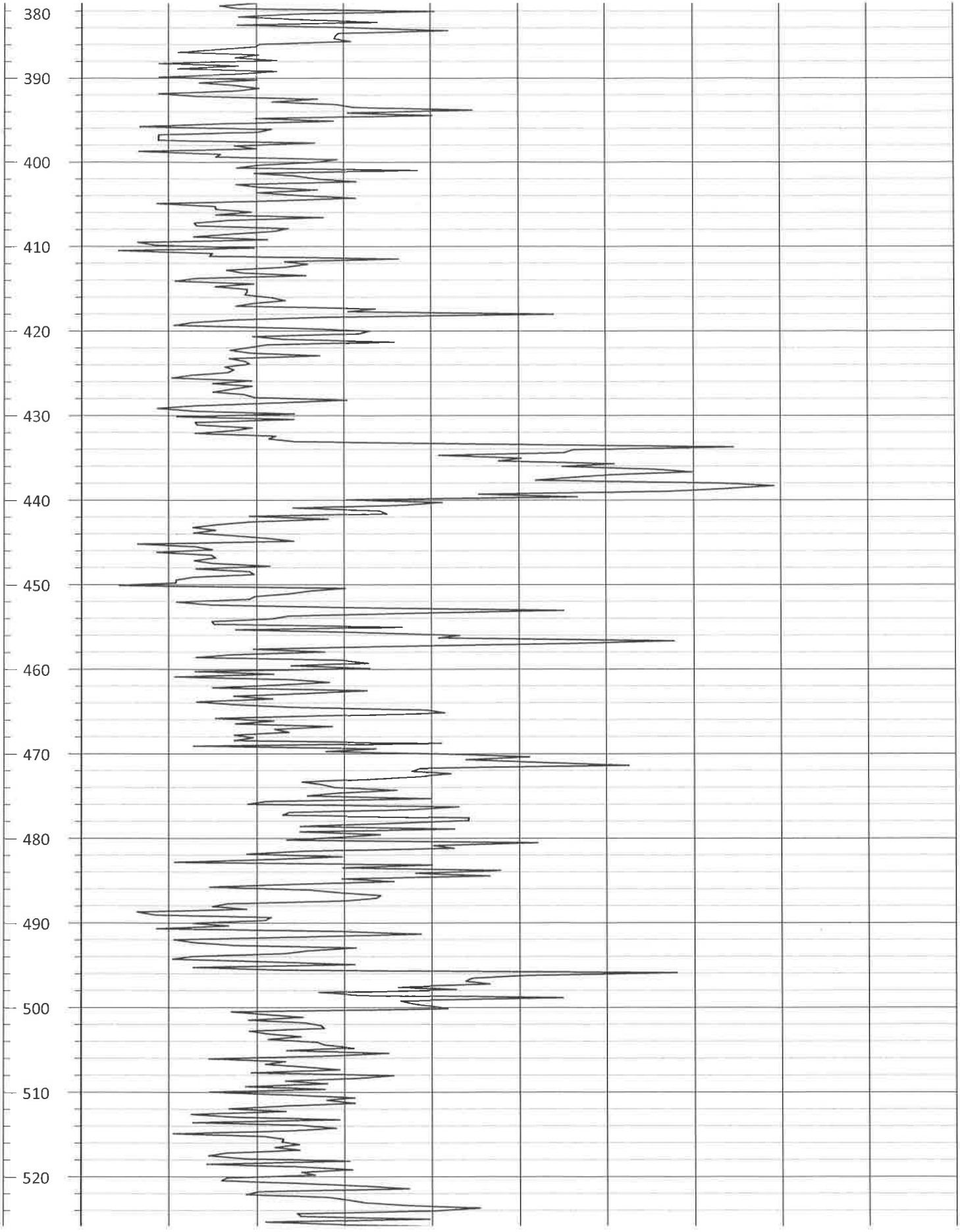
Depth (ft.)	GAMMA (cps)	
0.0		100.0



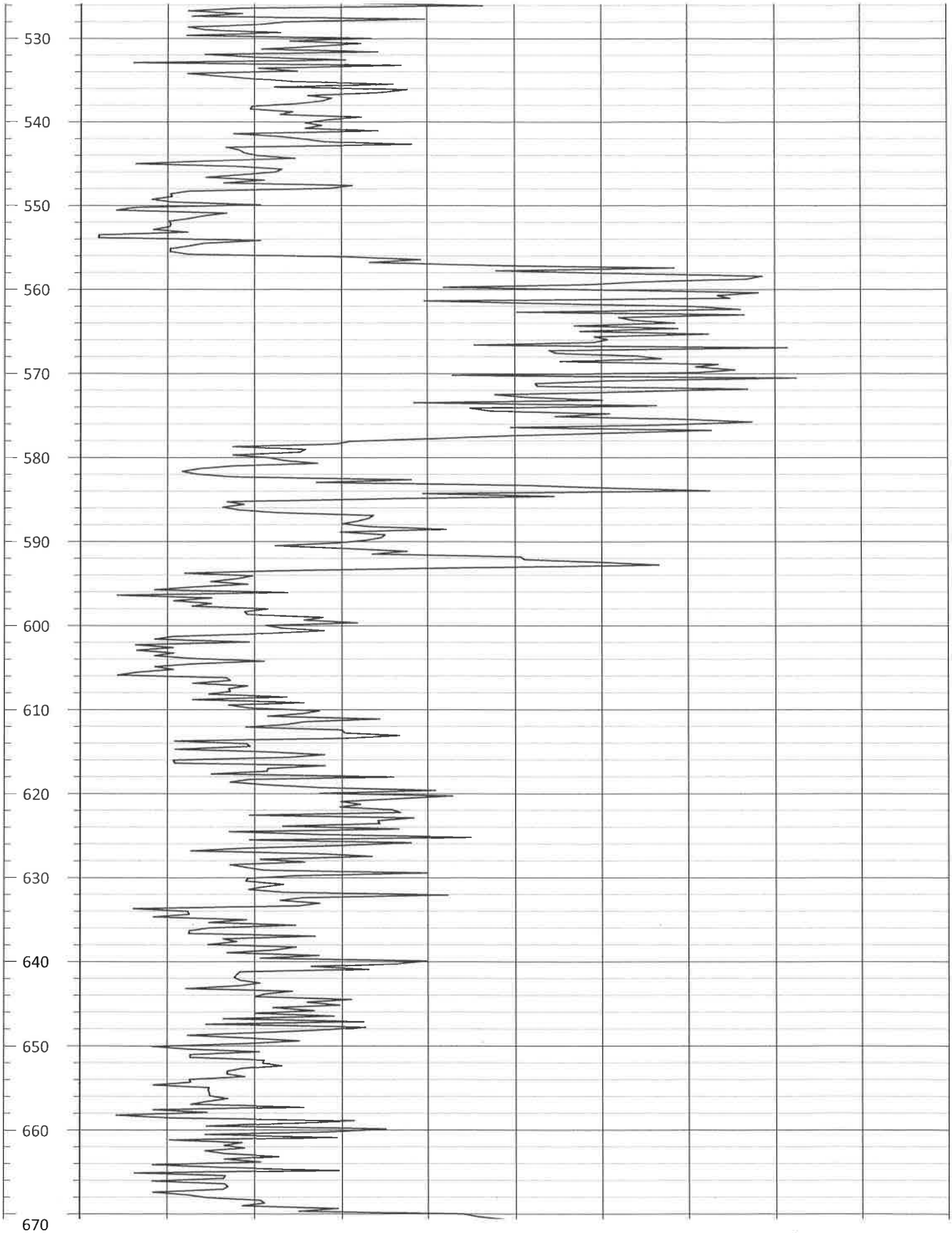
Depth (ft.)	0.0	GAMMA (cps)	100.0



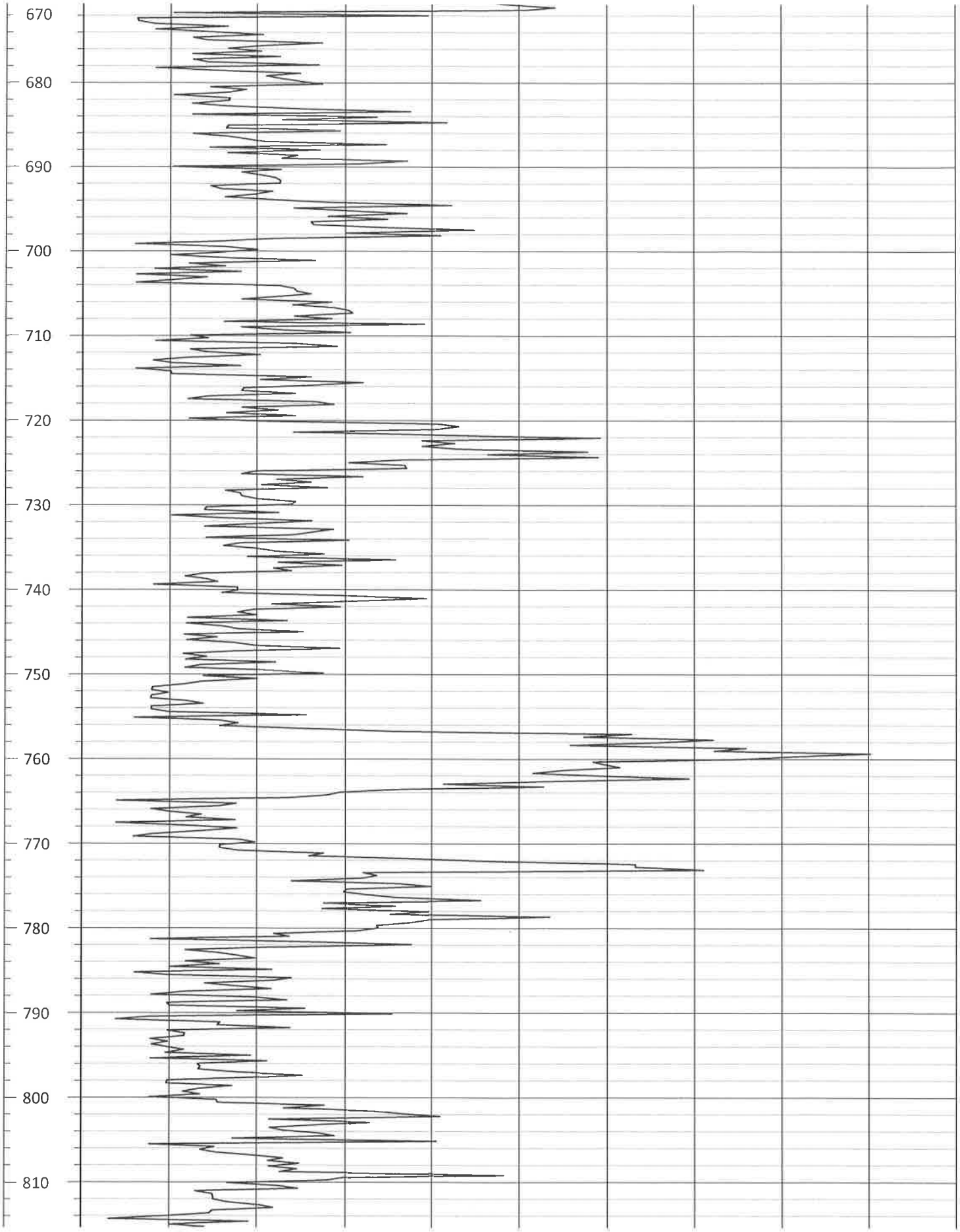
Depth (ft.)	0.0	GAMMA (cps)	100.0



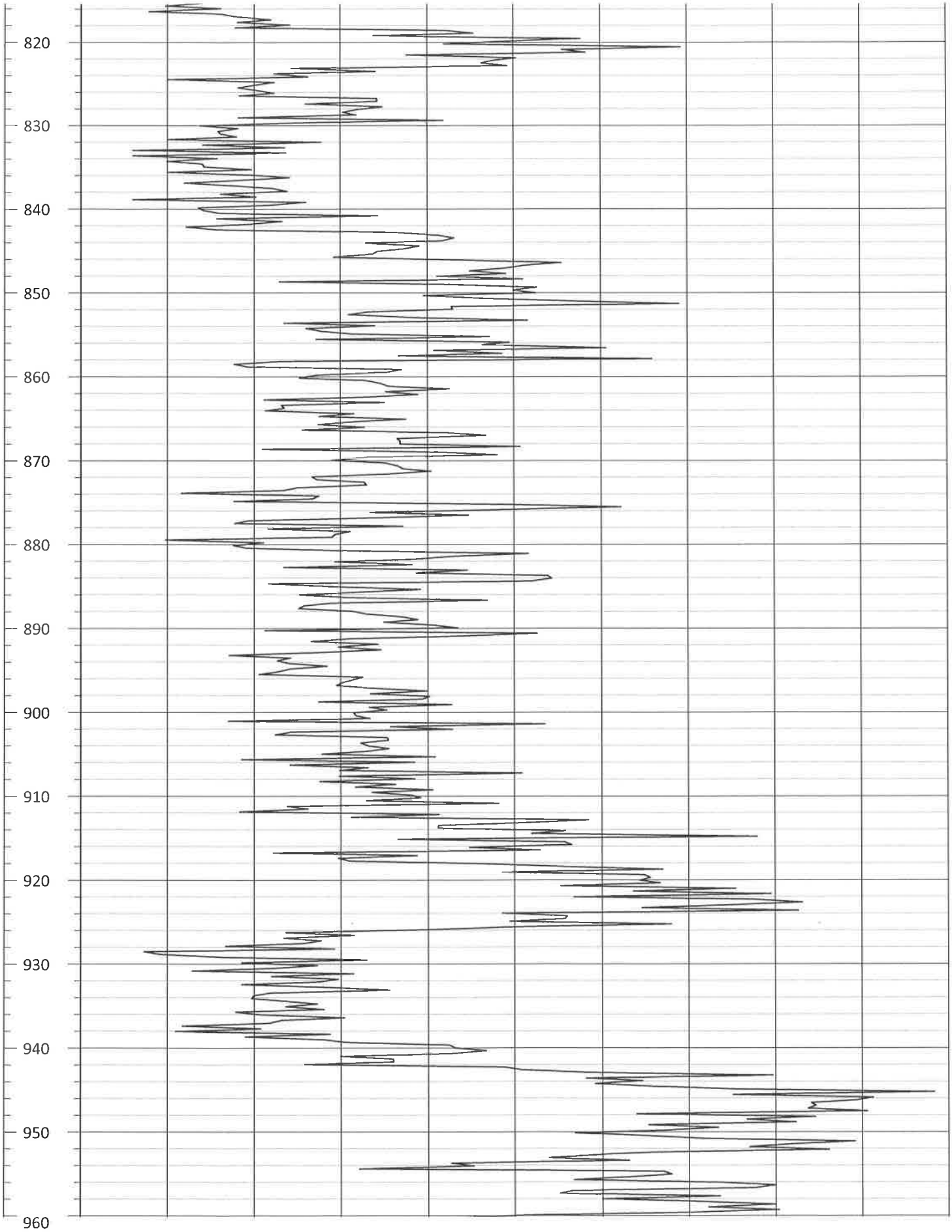
Depth (ft.)	0.0	GAMMA (cps)	100.0



Depth (ft.)	0.0	GAMMA (cps)	100.0



Depth (ft.)	0.0	GAMMA (cps)	100.0



Depth (ft.)	0.0	GAMMA (cps)	100.0

Depth (ft.)	0.0	GAMMA (cps)	100.0

2. VPB181 Gamma and PCE/TCE/Freon-113 Plot

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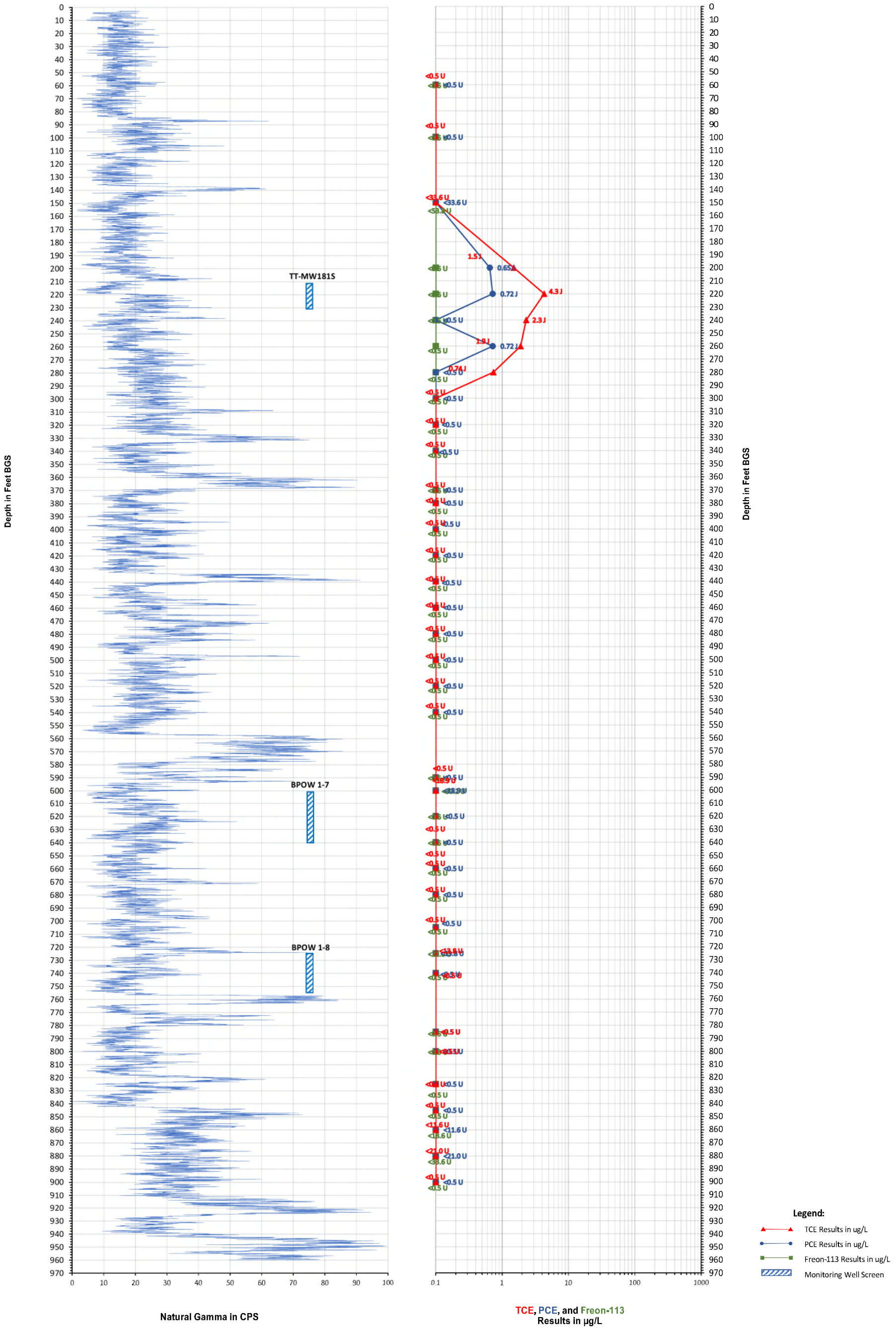
Vertical Profile Boring VPB-181
Downward Run - 9/9/2020
Validated Data



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3. VPB181 Groundwater Sample Log Sheets

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GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-58-60	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/10/20
MS/MSD Collected:	YES / NO	**Sample Time:**	15:00

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
15:00	-	-	udy, light b	6.4	626	1.99	OR	28.6	-40.7	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-98-100	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/11/20
MS/MSD Collected:	YES NO	**Sample Time:**	10:10

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:10	-	-	Cloudy	6.1	813	2.77	269	26.2	-31.6	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	X

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-148-150	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/11/20
MS/MSD Collected:	YES NO	**Sample Time:**	12:53
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:53	-	-	Not enough volume for water quality meter								

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	8	40 ml	VOA	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-198-200	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/12/20
MS/MSD Collected:	YES NO	**Sample Time:**	9:40
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
9:40	-	-	Not enough volume for water quality meter							-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-218-220	**Sampled By:**	Benfield
QA/QC Duplicate ID:	DUP-20200812	**Sample Date:**	08/12/20
MS/MSD Collected:	YES / NO	**Sample Time:**	11:25
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
11:25	-	-	Cloudy	6.23	251.1	4.81	250	25.7	81.1	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-238-240	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/12/20
MS/MSD Collected:	YES / NO	**Sample Time:**	13:25

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
13:25	-	-	Not enough volume for water quality meter							-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-258-260	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/13/20
MS/MSD Collected:	YES NO	**Sample Time:**	9:45

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
9:45	-	-	Light brow	6.52	255.3	3.68	OR	23.3	-70.5	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	6	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-278-280	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/13/20
MS/MSD Collected:	YES NO	**Sample Time:**	11:35

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
11:35	-	-	Not enough volume for WQ meter								

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-298-300	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/13/20
MS/MSD Collected:	YES NO	**Sample Time:**	13:20

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
13:20	-	-	Cloudy	6.09	238.7	5.03	367	23.2	93.2	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-318-320	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/13/20
MS/MSD Collected:	YES NO	**Sample Time:**	15:00

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
15:00	-	-	Not enough volume for WQ meter							-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-338-340	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/14/20
MS/MSD Collected:	YES / NO	**Sample Time:**	9:50

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
9:50	-	-	Cloudy	6.13	343.2	1.66	271	22.3	-77.9	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-368-370	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/17/20
MS/MSD Collected:	YES NO	**Sample Time:**	9:45

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
9:45	-	-	Not enough volume for WQ meter							-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-378-380	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/17/20
MS/MSD Collected:	YES NO	**Sample Time:**	11:35

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
11:35	-	-	Light gray	7.04	238.7	9.26	751	19.6	18.4	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-398-400	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/17/20
MS/MSD Collected:	YES NO	**Sample Time:**	13:25

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
13:25	-	-	Not enough volume for WQ meter							-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-418-420	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/17/20
MS/MSD Collected:	YES / NO	**Sample Time:**	15:05

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
15:05	-	-	Gray	6.41	185	4.76	OR	22.9	50.4	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-438-440	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/18/20
MS/MSD Collected:	YES / NO	**Sample Time:**	10:10

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:10	-	-	Light gray	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-458-460	**Sampled By:**	Benfield
QA/QC Duplicate ID:	BP-VPB181-DUP-20200818	**Sample Date:**	08/18/20
MS/MSD Collected:	YES / NO	**Sample Time:**	12:10
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:10	-	-	Gray	5.61	193.7	1.67	709	22.7	50	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-478-480	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/18/20
MS/MSD Collected:	YES NO	**Sample Time:**	14:10

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
14:10	-	-	Cloudy	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-498-500	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/19/20
MS/MSD Collected:	YES NO	**Sample Time:**	10:00

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:00	-	-	Gray	6.12	100.5	6.74	OR	19.3	53.2	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	6	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-518-520	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/19/20
MS/MSD Collected:	YES NO	**Sample Time:**	13:25

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
13:25	-	-	Cloudy	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-538-540	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/19/20
MS/MSD Collected:	YES NO	**Sample Time:**	15:15
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
15:15	-	-	Gray	6.57	126.4	7.51	OR	19.5	47.1	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	6	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: VPB-181 Hydropunch
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	BP-VPB181-GW-588-590	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/21/20
MS/MSD Collected:	YES NO	**Sample Time:**	12:00

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:00	-	-	Dark gray	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range
2 hydropunches needed to collect enough volume for VOC and Dioxane

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-598-600	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/24/20
MS/MSD Collected:	YES NO	**Sample Time:**	15:00
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
15:00	-	-	Gray	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	8	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range
Collected extra volume due to turbidity

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-618-620	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/25/20
MS/MSD Collected:	YES NO	**Sample Time:**	10:05
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:05	-	-	Slightly clo	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-638-640	**Sampled By:**	Benfield
QA/QC Duplicate ID:	BP-VPB181-DUP-20200825	**Sample Date:**	08/25/20
MS/MSD Collected:	YES / NO	**Sample Time:**	12:20
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:20	-	-	Gray	7.08	97.3	3.8	OR	22.2	-83.8	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-658-660	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/25/20
MS/MSD Collected:	YES NO	**Sample Time:**	14:30

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
14:30	-	-	Gray	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-678-680	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/26/20
MS/MSD Collected:	YES NO	**Sample Time:**	10:05

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:05	-	-	Cloudy	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-703-705	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/26/20
MS/MSD Collected:	YES NO	**Sample Time:**	14:00
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
14:00	-	-	Slightly clo	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-723-725	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/27/20
MS/MSD Collected:	YES NO	**Sample Time:**	12:15

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:15	-	-	Gray	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-738-740	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/27/20
MS/MSD Collected:	YES NO	**Sample Time:**	14:45

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
14:45	-	-	Slightly clo	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-783-785	**Sampled By:**	Benfield
QA/QC Duplicate ID:	BP-VPB181-DUP-20200831	**Sample Date:**	08/31/20
MS/MSD Collected:	YES NO	**Sample Time:**	10:40

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:40	-	-	Cloudy to	6.52	140.6	3.68	OR	18.2	84.1	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	6	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-798-780	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	08/31/20
MS/MSD Collected:	YES NO	**Sample Time:**	12:45

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:45	-	-	Slightly Clo	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-823-825	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	09/01/20
MS/MSD Collected:	YES NO	**Sample Time:**	10:20

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:20	-	-	Light brow	6.48	45.3	6.31	OR	19.3	140.2	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-843-845	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	09/01/20
MS/MSD Collected:	YES NO	**Sample Time:**	14:05
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
14:05	-	-	Light brow	6.4	153.7	1.59	OR	19.1	-142.3	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-858-860	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	09/02/20
MS/MSD Collected:	YES NO	**Sample Time:**	12:10
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:10	-	-	Dark gray	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	6	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-878-880	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	09/02/20
MS/MSD Collected:	YES / NO	**Sample Time:**	14:15

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
14:15	-	-	Gray	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	x

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	VPB-181 Hydropunch
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	BP-VPB181-GW-898-900	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	09/03/20
MS/MSD Collected:	YES NO	**Sample Time:**	10:20

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI Professional DSS	**Pump Controller:**	
Turbidity Meter:	Hach 2100Q		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:20	-	-	Gray	Not enough volume for WQ meter						-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	SW846-8260B	HCl	2	40 ml	VOA	x
1,4-Dioxane	8270-SIM	None	1	1 L	Amber	

OBSERVATIONS / NOTES:

OR - Over Range

Coordinates:	N	E	Signature(s):

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4. VPB181 Groundwater Analytical Data Validation

Validation Letter

Chain of Custody Records

Analytical Data Sheets

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VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com

DATA VALIDATION SUMMARY REPORT - CHEMISTRY

COMPANY:	Tetra Tech, Inc., Norfolk, VA
PROJECT NAME:	Basewide Groundwater Investigation, Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, N62470-16-D-9008
SITE NAME:	CTO-WE13
CONTRACTED LAB:	CHEMTECH, Mountainside, NJ
JOB NO./ACCOUNTING CODE:	112G08005-WE13
QA/QC LEVEL:	EPA Stage 4
ANALYTICAL METHOD(S):	SW846 Methods 8260C
VALIDATION GUIDELINES:	Tier II Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Vertical Profile Boring and Monitoring Well Installation Program Site 0001 – Former Drum Marshalling Area Operable Unit 2 Plume Naval Weapons Industrial Reserve Plant Bethpage, New York, March 2019, DOD QSM 5.0; July 2013, DOD Data Validation Guidance, February 2018, Method criteria, Laboratory limits and Professional Judgment
SAMPLE MATRICES:	Soil & Groundwater
TYPES OF ANALYSES:	Volatile Organic Compounds (VOC)
DATA VALIDATION DATE:	October 14, 2020
DATA REVIEWER(S):	Amy L. Hogan
SDG NUMBER:	L3671
SAMPLING DATE(S):	August 10-11, 2020

SAMPLES:

Client Sample ID	Laboratory ID	VOC
BP-VPB181-TB-20200810	L3671-01	X
BP-VPB181-GW-58-60	L3671-02	X
BP-VPB181-GW-98-100	L3671-03	X
BP-VPB181-GW-148-150	L3671-04	X

Suffix Codes: DL= DILUTION, MS = MATRIX SPIKE,
MSD = MATRIX SPIKE DUPLICATE, RE = REANALYSIS

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

CHEMTECH – SDG: L3671 – Organic Chemistry

VOLATILE ORGANICS

SUMMARY

I.) General:

The analyses for Volatile Organics were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8260C.

II.) Overall Assessment of Data:

It was noted that due to the high level of sediment in the sample, with the client's permission, sample BP-VPB181-GW-148-150 was analyzed as a soil.

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blanks for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank for this SDG. No data qualification was necessary.

Field Blank:

There were no associated field blanks for this SDG. No data qualification was necessary.

Trip Blank:

There were no detections in associated trip blank BP-VPB181-TB-20200810. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

Two LCS / LCSD set were analyzed by the laboratory for this SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data were not submitted for this SDG. Data qualification based on the absence of MS / MSD data was not required. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified as part of this SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD area count criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All forty-three requested compounds for groundwater samples and all forty-four requested compounds for soil samples were reported with acceptable LOD and LOQ results as determined by the SAP.

The validator has noted that the non-detect results for the following compounds were reported at the LOD, which exceeds the PAL limit of 0.17 ug/L for the groundwater samples : carbon disulfide, carbon tetrachloride, chlorobenzene, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene , 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene and 1,1,2-trichlorotrifluoroethane.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

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Appendix A

Data Qualification Summary Table (DQST) with Qualification Codes

There were no data qualifications for this SDG

Appendix B

Laboratory Sample Results

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/10/20
Project:	CTO WE13	Date Received:	08/12/20
Client Sample ID:	BP-VPB181-TB-20200810	SDG No.:	L3671
Lab Sample ID:	L3671-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN062853.D	1		08/12/20 13:12	VN081220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/10/20
Project:	CTO WE13	Date Received:	08/12/20
Client Sample ID:	BP-VPB181-TB-20200810	SDG No.:	L3671
Lab Sample ID:	L3671-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN062853.D	1		08/12/20 13:12	VN081220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	51.1		81 - 118		102%	SPK: 50
1868-53-7	Dibromofluoromethane	53.2		80 - 119		106%	SPK: 50
2037-26-5	Toluene-d8	48.7		89 - 112		97%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.2		85 - 114		96%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	121000	7.63				
540-36-3	1,4-Difluorobenzene	206000	8.55				
3114-55-4	Chlorobenzene-d5	208000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	79400	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/10/20
Project:	CTO WE13	Date Received:	08/12/20
Client Sample ID:	BP-VPB181-GW-58-60	SDG No.:	L3671
Lab Sample ID:	L3671-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN062863.D	1		08/12/20 17:23	VN081220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	5.70	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/10/20
Project:	CTO WE13	Date Received:	08/12/20
Client Sample ID:	BP-VPB181-GW-58-60	SDG No.:	L3671
Lab Sample ID:	L3671-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN062863.D	1		08/12/20 17:23	VN081220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	53.2		81 - 118		106%	SPK: 50
1868-53-7	Dibromofluoromethane	52.5		80 - 119		105%	SPK: 50
2037-26-5	Toluene-d8	48.6		89 - 112		97%	SPK: 50
460-00-4	4-Bromofluorobenzene	47.4		85 - 114		95%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	118000	7.63				
540-36-3	1,4-Difluorobenzene	206000	8.55				
3114-55-4	Chlorobenzene-d5	208000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	79800	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/11/20
Project:	CTO WE13	Date Received:	08/12/20
Client Sample ID:	BP-VPB181-GW-98-100	SDG No.:	L3671
Lab Sample ID:	L3671-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN062864.D	1		08/12/20 17:47	VN081220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	5.60	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/11/20
Project:	CTO WE13	Date Received:	08/12/20
Client Sample ID:	BP-VPB181-GW-98-100	SDG No.:	L3671
Lab Sample ID:	L3671-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN062864.D	1		08/12/20 17:47	VN081220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	52.3		81 - 118		105%	SPK: 50
1868-53-7	Dibromofluoromethane	51.7		80 - 119		103%	SPK: 50
2037-26-5	Toluene-d8	48.6		89 - 112		97%	SPK: 50
460-00-4	4-Bromofluorobenzene	47.7		85 - 114		95%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	123000	7.63				
540-36-3	1,4-Difluorobenzene	211000	8.55				
3114-55-4	Chlorobenzene-d5	220000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	80600	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/11/20
Project:	CTO WE13	Date Received:	08/12/20
Client Sample ID:	BP-VPB181-GW-148-150	SDG No.:	L3671
Lab Sample ID:	L3671-04	Matrix:	SOIL
Analytical Method:	SW8260	% Moisture:	92.6
Sample Wt/Vol:	5.02 Units: g	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group3
GC Column:	RTX-VMS ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VD066213.D	1		08/13/20 16:33	VD081320

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units(Dry Weight)
TARGETS							
75-71-8	Dichlorodifluoromethane	53.8	U	19.7	53.8	67.3	ug/Kg
74-87-3	Chloromethane	53.8	U	30.0	53.8	67.3	ug/Kg
75-01-4	Vinyl Chloride	53.8	U	18.6	53.8	67.3	ug/Kg
74-83-9	Bromomethane	53.8	U	17.5	53.8	67.3	ug/Kg
75-00-3	Chloroethane	53.8	U	22.1	53.8	67.3	ug/Kg
75-69-4	Trichlorofluoromethane	53.8	U	20.1	53.8	67.3	ug/Kg
76-13-1	1,1,2-Trichlorotrifluoroethane	53.8	U	22.1	53.8	67.3	ug/Kg
75-35-4	1,1-Dichloroethene	53.8	U	19.1	53.8	67.3	ug/Kg
67-64-1	Acetone	270	U	81.9	270	340	ug/Kg
75-15-0	Carbon Disulfide	33.6	U	13.1	33.6	67.3	ug/Kg
1634-04-4	Methyl tert-butyl Ether	53.8	U	19.1	53.8	67.3	ug/Kg
75-09-2	Methylene Chloride	250		76.9	110	130	ug/Kg
156-60-5	trans-1,2-Dichloroethene	53.8	U	21.4	53.8	67.3	ug/Kg
75-34-3	1,1-Dichloroethane	33.6	U	12.7	33.6	67.3	ug/Kg
78-93-3	2-Butanone	270	U	110	270	340	ug/Kg
56-23-5	Carbon Tetrachloride	33.6	U	12.0	33.6	67.3	ug/Kg
156-59-2	cis-1,2-Dichloroethene	53.8	U	18.8	53.8	67.3	ug/Kg
67-66-3	Chloroform	53.8	U	17.2	53.8	67.3	ug/Kg
71-55-6	1,1,1-Trichloroethane	33.6	U	10.2	33.6	67.3	ug/Kg
108-87-2	Methylcyclohexane	33.6	U	6.20	33.6	67.3	ug/Kg
71-43-2	Benzene	33.6	U	11.5	33.6	67.3	ug/Kg
107-06-2	1,2-Dichloroethane	33.6	U	12.3	33.6	67.3	ug/Kg
79-01-6	Trichloroethene	33.6	U	11.4	33.6	67.3	ug/Kg
78-87-5	1,2-Dichloropropane	33.6	U	11.9	33.6	67.3	ug/Kg
75-27-4	Bromodichloromethane	33.6	U	12.1	33.6	67.3	ug/Kg
108-10-1	4-Methyl-2-Pentanone	270	U	93.9	270	340	ug/Kg
108-88-3	Toluene	33.6	U	11.6	33.6	67.3	ug/Kg
10061-02-6	t-1,3-Dichloropropene	33.6	U	14.5	33.6	67.3	ug/Kg
10061-01-5	cis-1,3-Dichloropropene	33.6	U	13.2	33.6	67.3	ug/Kg
79-00-5	1,1,2-Trichloroethane	33.6	U	13.4	33.6	67.3	ug/Kg
591-78-6	2-Hexanone	270	U	120	270	340	ug/Kg
124-48-1	Dibromochloromethane	33.6	U	14.3	33.6	67.3	ug/Kg

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/11/20
Project:	CTO WE13	Date Received:	08/12/20
Client Sample ID:	BP-VPB181-GW-148-150	SDG No.:	L3671
Lab Sample ID:	L3671-04	Matrix:	SOIL
Analytical Method:	SW8260	% Moisture:	92.6
Sample Wt/Vol:	5.02 Units: g	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group3
GC Column:	RTX-VMS ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VD066213.D	1		08/13/20 16:33	VD081320

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units(Dry Weight)
127-18-4	Tetrachloroethene	33.6	U	11.7	33.6	67.3	ug/Kg
108-90-7	Chlorobenzene	33.6	U	12.1	33.6	67.3	ug/Kg
100-41-4	Ethyl Benzene	33.6	U	13.9	33.6	67.3	ug/Kg
179601-23-1	m/p-Xylenes	67.3	U	29.2	67.3	130	ug/Kg
95-47-6	o-Xylene	33.6	U	13.4	33.6	67.3	ug/Kg
100-42-5	Styrene	53.8	U	18.6	53.8	67.3	ug/Kg
75-25-2	Bromoform	53.8	U	16.2	53.8	67.3	ug/Kg
98-82-8	Isopropylbenzene	33.6	U	15.3	33.6	67.3	ug/Kg
79-34-5	1,1,2,2-Tetrachloroethane	33.6	U	14.3	33.6	67.3	ug/Kg
541-73-1	1,3-Dichlorobenzene	53.8	U	17.4	53.8	67.3	ug/Kg
106-46-7	1,4-Dichlorobenzene	33.6	U	11.5	33.6	67.3	ug/Kg
95-50-1	1,2-Dichlorobenzene	53.8	U	14.0	53.8	67.3	ug/Kg
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	52.0		71 - 136		104%	SPK: 50
1868-53-7	Dibromofluoromethane	47.4		78 - 119		95%	SPK: 50
2037-26-5	Toluene-d8	44.8		85 - 116		90%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.0		79 - 119		96%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	223000	7.97				
540-36-3	1,4-Difluorobenzene	344000	8.86				
3114-55-4	Chlorobenzene-d5	324000	11.64				
3855-82-1	1,4-Dichlorobenzene-d4	160000	13.58				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/Kg

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Appendix C

Support Documents

A. Documents Supporting Qualifications

Support Documentation was not required for this SDG.

Appendix C

Support Documents

B. Chain of Custody (COC)

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CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax: (908) 78-8922
www.chemtech.net

Chemtech Project Number: ~~L3666~~ L3671

COC Number: SC 8-12-20

CLIENT INFORMATION

COMPANY: Tetra Tech
ADDRESS: 5700 Lake Wright Dr., Suite 102
CITY: Norfolk STATE: VA ZIP: 23502
ATTENTION: Dave Brayack
PHONE: 757-466-4909 FAX: 757-461-4148

PROJECT INFORMATION

PROJECT NAME: NWIRP Bethpage
PROJECT #: 112G08005-WE13 LOCATION: VPB-179
PROJECT MANAGER: Dave Brayack
E-MAIL: david.brayack@tetratech.com
PHONE: 757-466-4909 FAX: 757-461-4148

BILLING INFORMATION

BILL TO: SEE CONTRACT PO#
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: 2 DAYS*
HARD COPY: 2 DAYS*
EDD 2 DAYS*
* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ☐ RESULTS ONLY
- ☐ RESULTS + QC
- ☐ New Jersey REDUCED
- ☐ New Jersey CLP
- ☐ USEPA CLP
- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other
- ☐ EDD Format

ANALYSIS

	1	2	3	4	5	6	7	8	9
VOC(SW846-8260B)									

PRESERVATIVES

	1	2	3	4	5	6	7	8	9
A				/					

COMMENTS

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-Other

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# of Bottles	Comments
1.	BP-VPB181-TB-20200810	QA		X	8/10/20	12:00	2	Trip Blank
2.	BP-VPB181-GW-58-60	AQ		X	8/10/20	15:00	2	
3.	BP-VPB181-GW-98-100	AQ		X	8/11/20	10:10	2	
4.	BP-VPB181-GW-148-150	AQ		X	8/11/20	12:53	8	Very turbid
5.								
6.								
7.								
8.								
9.								
10.								

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1.	8/11/20/1630	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2.	8-12-20 10:10	2.
RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY
3.		3.

Conditions of bottles or coolers at receipt: ☐ Compliant ☐ Non Compliant ☐ Cooler Temp 3.7 C
MeOH extraction requires an additional 4oz. Jar for percent solid ☐ Ice in Cooler?: Yes

Comments: **48hr TAT** - For VOC's see worksheet #15 of SAP 2018 for VPB program VOC list

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ Overnight
CHEMTECH: ☐ Picked Up ☐ Overnight

Shipment Complete ☐ YES ☐ NO

WHITE - CHEMTECH COPYFOR RETURN TO CLIENT **YELLOW** - CHEMTECH COPY **PINK** - SAMPLER COPY

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Appendix C

Support Documents

C. Calculations for Stage 4 Data Validation

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SDG L3671

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

VOC (8260) SAMPLE QUANTITATION

Sample # acetone for BP-VPB181-GW-58-60

Cpd. Concentration = Areac(ConcISTD)(Vf)(Dl)(UnitF)/(Areast)(Vi)

Calc. Concentration = 5.7

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL	UnitF
4030	117505	50	0.299	5000	5000	1	1

Reported Concentration = 5.7

VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com

DATA VALIDATION SUMMARY REPORT - CHEMISTRY

COMPANY:	Tetra Tech, Inc., Norfolk, VA
PROJECT NAME:	Basewide Groundwater Investigation, Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, N62470-16-D-9008
SITE NAME:	CTO-WE13
CONTRACTED LAB:	CHEMTECH, Mountainside, NJ
JOB NO./ACCOUNTING CODE:	112G08005-WE13
QA/QC LEVEL:	EPA Stage 4
ANALYTICAL METHOD(S):	SW846 Methods 8260C and 8270SIM
VALIDATION GUIDELINES:	Tier II Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Vertical Profile Boring and Monitoring Well Installation Program Site 0001 – Former Drum Marshalling Area Operable Unit 2 Plume Naval Weapons Industrial Reserve Plant Bethpage, New York, March 2019, DOD QSM 5.0; July 2013, DOD Data Validation Guidance, February 2018, Method criteria, Laboratory limits and Professional Judgment
SAMPLE MATRICES:	Soil & Groundwater
TYPES OF ANALYSES:	Volatile Organic Compounds (VOC) Semivolatile Organic Compounds (SVOC)*
DATA VALIDATION DATE:	October 14, 2020
DATA REVIEWER(S):	Amy L. Hogan
SDG NUMBER:	L3718
SAMPLING DATE(S):	August 12-14, 2020

SAMPLES:

Client Sample ID	Laboratory ID	VOC	SVOC*
BP-VPB181-TB-20200812	L3718-01	X	
BP-VPB181-GW-198-200	L3718-02	X	X
BP-VPB181-GW-218-220	L3718-03	X	
BP-VPB181-DUP-20200812	L3718-04	X	
BP-VPB181-GW-238-240	L3718-05	X	X
BP-VPB181-GW-258-260	L3718-06	X	
BP-VPB181-GW-258-260MS	L3718-07	X	
BP-VPB181-GW-258-260MSD	L3718-08	X	
BP-VPB181-EB-20200813	L3718-09	X	
BP-VPB181-GW-278-280	L3718-10	X	X
BP-VPB181-GW-298-300	L3718-11	X	
BP-VPB181-GW-318-320	L3718-12	X	X

Client Sample ID	Laboratory ID	VOC	SVOC*
BP-VPB181-GW-338-340	L3718-13	X	

Suffix Codes: DL= DILUTION, MS = MATRIX SPIKE,
MSD = MATRIX SPIKE DUPLICATE, RE = REANALYSIS

* SVOC analyses reported 1,4-dioxane only.

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

CHEMTECH – SDG: L3718 – Organic Chemistry

VOLATILE ORGANICS

SUMMARY

I.) General:

The analyses for Volatile Organics were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8260C.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

The Percent Differences (%Ds) for the standards run on 8/19/20 at 09:44 on instrument MSVOA_X were 26.75% for m,p-xylene and 20.12% for styrene, which exceeded the 20% QC limit. The positive and non-detect results for these compounds in associated samples BP-VPB181-GW-258-260, BP-VPB181-GW-278-280, BP-VPB181-GW-298-300, BP-VPB181-GW-318-320 and BP-VPB181-GW-338-340 were qualified as estimated (J) and (UJ) with reason code C.

IV.) Blanks:

Method Blanks:

There were no detections in the method blanks for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

Acetone (5.20 ug/L) and toluene (5.30 ug/L) were detected in associated equipment blank BP-VPB181-EB-20200813. Since the positive acetone and toluene result for the SDG samples were less than the LOQ, the results were qualified as undetected (U) with the results raised to the LOQ and reason code B.

Field Blank:

There were no associated field blanks for this SDG. No data qualification was necessary.

Trip Blank:

There were no detections in associated trip blank BP-VPB181-TB-20200812. No data qualification was necessary.

V.) Surrogate Recoveries:

The Percent Recovery (%R) for toluene-d8 was 86% for BP-VPB181-GW-258-260MSD, which was below the QC limits. Since the sample is a laboratory QC sample, no data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

Two LCS were analyzed by the laboratory for this SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses were performed using sample BP-VPB181-GW-258-260. All criteria were met. No data qualification was necessary.

VIII.) Field Duplicates:

One set of field duplicate samples (BP-VPB181-GW-218-220 / BP-VPB181-DUP-20200812) was identified for this fraction of the SDG. The calculable differences for 1,1-dichloroethene, chloroform, trichloroethene and tetrachloroethene were less than 2X the LOQ, so no data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD area count criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All forty-three requested compounds for groundwater samples were reported with acceptable LOD and LOQ results as determined by the SAP.

The validator has noted that the non-detect results for the following compounds were reported at the LOD, which exceeds the PAL limit of 0.17 ug/L for the groundwater samples : carbon disulfide, carbon tetrachloride, chlorobenzene, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene , 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene and 1,1,2-trichlorotrifluoroethane.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

SEMIVOLATILE ORGANICS (1,4-DIOXANE ONLY)

SUMMARY

I.) General:

The analyses for Semivolatile Organics (1,4-dioxane only) were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8270SIM.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

The Percent Relative Standards Deviation (%RSD) for the standards analyzed on 8/21/20 on instrument BNA_N was 16.4% for 1,4-dioxane, which exceeded the 15% QC limit. The 1,4-dioxane results for all SDG samples, which were all positive, were qualified as estimated (J) with reason code C.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank. No data qualification was necessary.

V.) Surrogate Recoveries:

The Percent Recoveries (%Rs) for several surrogate compounds were outside the established QC limits for both samples. Since the surrogate compounds were not associated with the target compound, no data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

One LCS / LCSD set was analyzed by the laboratory for this fraction of the SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data was not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified as part of this fraction of the SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

1,4-dioxane was reported with acceptable LOD and LOQ results as determined by the SAP.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

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Appendix A

Data Qualification Summary Table (DQST) with Qualification Codes

DATA QUALIFICATION SUMMARY TABLE (DQST) WITH QUALIFICATION CODES

VOC								
Client Sample ID	Date Collected	Lab Sample ID	Analyte	Lab Qual	Val Result	VAL_RES ERROR	Val Qual	Val Reason
BP-VPB181-GW-198-200	8/12/2020 0:00	L3718-02	ACETONE	J	4.8	25.0	U	B
BP-VPB181-GW-198-200	8/12/2020 0:00	L3718-02	TOLUENE	J	2.3	5.0	U	B
BP-VPB181-GW-258-260	8/13/2020 0:00	L3718-06	ACETONE	J	8.4	25.0	U	B
BP-VPB181-GW-258-260	8/13/2020 0:00	L3718-06	M/P-XYLENES	J	0.75		J	C
BP-VPB181-GW-258-260	8/13/2020 0:00	L3718-06	STYRENE	U	0.5		UJ	C
BP-VPB181-GW-258-260	8/13/2020 0:00	L3718-06	TOLUENE	J	1	5.0	U	B
BP-VPB181-GW-278-280	8/13/2020 0:00	L3718-10	ACETONE	J	5	25.0	U	B
BP-VPB181-GW-278-280	8/13/2020 0:00	L3718-10	M/P-XYLENES	U	1		UJ	C
BP-VPB181-GW-278-280	8/13/2020 0:00	L3718-10	STYRENE	U	0.5		UJ	C
BP-VPB181-GW-298-300	8/13/2020 0:00	L3718-11	ACETONE	J	3.6	25.0	U	B
BP-VPB181-GW-298-300	8/13/2020 0:00	L3718-11	M/P-XYLENES	U	1		UJ	C
BP-VPB181-GW-298-300	8/13/2020 0:00	L3718-11	STYRENE	U	0.5		UJ	C
BP-VPB181-GW-318-320	8/13/2020 0:00	L3718-12	ACETONE	J	3.7	25.0	U	B
BP-VPB181-GW-318-320	8/13/2020 0:00	L3718-12	M/P-XYLENES	U	1		UJ	C
BP-VPB181-GW-318-320	8/13/2020 0:00	L3718-12	STYRENE	U	0.5		UJ	C
BP-VPB181-GW-338-340	8/14/2020 0:00	L3718-13	ACETONE	J	4.5	25.0	U	B
BP-VPB181-GW-338-340	8/14/2020 0:00	L3718-13	M/P-XYLENES	U	1		UJ	C
BP-VPB181-GW-338-340	8/14/2020 0:00	L3718-13	STYRENE	U	0.5		UJ	C

SVOC								
Client Sample ID	Date Collected	Lab Sample ID	Analyte	Lab Qual	Val Result	VAL_RES ERROR	Val Qual	Val Reason
BP-VPB181-GW-198-200	8/12/2020 0:00	L3718-02	1,4-DIOXANE		0.11		J	C
BP-VPB181-GW-238-240	8/12/2020 0:00	L3718-05	1,4-DIOXANE		0.29		J	C
BP-VPB181-GW-278-280	8/13/2020 0:00	L3718-10	1,4-DIOXANE		0.24		J	C
BP-VPB181-GW-318-320	8/13/2020 0:00	L3718-12	1,4-DIOXANE		0.78		J	C

Appendix B

Laboratory Sample Results

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-TB-20200812	SDG No.:	L3718
Lab Sample ID:	L3718-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063006.D	1		08/19/20 12:13	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-TB-20200812	SDG No.:	L3718
Lab Sample ID:	L3718-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063006.D	1		08/19/20 12:13	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	55.4		81 - 118		111%	SPK: 50
1868-53-7	Dibromofluoromethane	53.0		80 - 119		106%	SPK: 50
2037-26-5	Toluene-d8	51.2		89 - 112		102%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.3		85 - 114		97%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	150000	7.63				
540-36-3	1,4-Difluorobenzene	250000	8.55				
3114-55-4	Chlorobenzene-d5	255000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	94800	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-198-200	SDG No.:	L3718
Lab Sample ID:	L3718-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063009.D	1		08/19/20 13:26	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	25.0 ~~4.80~~	~~J~~ U	1.40	B	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	1.50	J	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	5.0 ~~2.30~~	~~J~~ U	0.20	B	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82		3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.65	J	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-198-200	SDG No.:	L3718
Lab Sample ID:	L3718-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063009.D	1		08/19/20 13:26	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.35	J	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.30	J	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.69	J	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	55.7		81 - 118		111%	SPK: 50
1868-53-7	Dibromofluoromethane	52.4		80 - 119		105%	SPK: 50
2037-26-5	Toluene-d8	51.4		89 - 112		103%	SPK: 50
460-00-4	4-Bromofluorobenzene	49.4		85 - 114		99%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	149000	7.63				
540-36-3	1,4-Difluorobenzene	250000	8.55				
3114-55-4	Chlorobenzene-d5	256000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	96300	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-218-220	SDG No.:	L3718
Lab Sample ID:	L3718-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063010.D	1		08/19/20 13:50	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.86	J	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	4.30	J	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.72	J	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-218-220	SDG No.:	L3718
Lab Sample ID:	L3718-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063010.D	1		08/19/20 13:50	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	52.6		81 - 118		105%	SPK: 50
1868-53-7	Dibromofluoromethane	52.9		80 - 119		106%	SPK: 50
2037-26-5	Toluene-d8	52.1		89 - 112		104%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.9		85 - 114		98%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	144000	7.63				
540-36-3	1,4-Difluorobenzene	234000	8.55				
3114-55-4	Chlorobenzene-d5	245000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	91600	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-DUP-20200812	SDG No.:	L3718
Lab Sample ID:	L3718-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063011.D	1		08/19/20 14:15	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	1.90	J	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.87	J	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	3.80	J	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.57	J	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-DUP-20200812	SDG No.:	L3718
Lab Sample ID:	L3718-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063011.D	1		08/19/20 14:15	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	52.8		81 - 118		106%	SPK: 50
1868-53-7	Dibromofluoromethane	51.5		80 - 119		103%	SPK: 50
2037-26-5	Toluene-d8	51.4		89 - 112		103%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.8		85 - 114		98%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	148000	7.63				
540-36-3	1,4-Difluorobenzene	245000	8.55				
3114-55-4	Chlorobenzene-d5	253000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	92800	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-238-240	SDG No.:	L3718
Lab Sample ID:	L3718-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063012.D	1		08/19/20 14:39	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	9.80		0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.58	J	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	2.30	J	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-238-240	SDG No.:	L3718
Lab Sample ID:	L3718-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063012.D	1		08/19/20 14:39	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	53.4		81 - 118		107%	SPK: 50
1868-53-7	Dibromofluoromethane	52.3		80 - 119		105%	SPK: 50
2037-26-5	Toluene-d8	51.6		89 - 112		103%	SPK: 50
460-00-4	4-Bromofluorobenzene	49.5		85 - 114		99%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	149000	7.63				
540-36-3	1,4-Difluorobenzene	248000	8.55				
3114-55-4	Chlorobenzene-d5	259000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	94400	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-258-260	SDG No.:	L3718
Lab Sample ID:	L3718-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX017982.D	1		08/19/20 14:10	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	25.0 ~~8.40~~	~~J~~ U	1.40	B	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.40	J	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	4.30	J	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.24	J	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	1.90	J	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	5.00 ~~1.00~~	~~J~~ U	0.20	B	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82		3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.72	J	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-258-260	SDG No.:	L3718
Lab Sample ID:	L3718-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX017982.D	1		08/19/20 14:10	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12		0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.24	J	0.12		0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	0.75	~~J~~ J	0.25	C	1.00	10.0	ug/L
95-47-6	o-Xylene	0.37	J	0.12		0.50	5.00	ug/L
100-42-5	Styrene	0.50	U UJ	0.16	C	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18		0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21		0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27		0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.22	J	0.16		0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.29	J	0.13		0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18		0.50	5.00	ug/L
SURROGATES								
17060-07-0	1,2-Dichloroethane-d4	44.9		81 - 118			90%	SPK: 50
1868-53-7	Dibromofluoromethane	46.8		80 - 119			94%	SPK: 50
2037-26-5	Toluene-d8	45.8		89 - 112			92%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.2		85 - 114			90%	SPK: 50
INTERNAL STANDARDS								
363-72-4	Pentafluorobenzene	477000	5.63					
540-36-3	1,4-Difluorobenzene	713000	6.83					
3114-55-4	Chlorobenzene-d5	668000	10.1					
3855-82-1	1,4-Dichlorobenzene-d4	313000	12.06					
TENTATIVE IDENTIFIED COMPOUNDS								
75-43-4	Dichlorofluoromethane	5.00	U				4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-EB-20200813	SDG No.:	L3718
Lab Sample ID:	L3718-09	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063007.D	1		08/19/20 12:38	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	5.20	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	5.30		0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-EB-20200813	SDG No.:	L3718
Lab Sample ID:	L3718-09	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063007.D	1		08/19/20 12:38	VN081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	52.5		81 - 118		105%	SPK: 50
1868-53-7	Dibromofluoromethane	51.9		80 - 119		104%	SPK: 50
2037-26-5	Toluene-d8	51.9		89 - 112		104%	SPK: 50
460-00-4	4-Bromofluorobenzene	49.1		85 - 114		98%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	148000	7.63				
540-36-3	1,4-Difluorobenzene	240000	8.55				
3114-55-4	Chlorobenzene-d5	251000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	89800	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-278-280	SDG No.:	L3718
Lab Sample ID:	L3718-10	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX017983.D	1		08/19/20 14:33	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	1.30	J	0.27		0.50	5.00	ug/L
67-64-1	Acetone	25.0 ~~5.00~~	~~J~~ U	1.40	B	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.51	J	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	1.60	J	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	5.20		0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.57	J	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.74	J	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82		3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-278-280	SDG No.:	L3718
Lab Sample ID:	L3718-10	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX017983.D	1		08/19/20 14:33	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12		0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12		0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U UJ	0.25	C	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12		0.50	5.00	ug/L
100-42-5	Styrene	0.50	U UJ	0.16	C	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18		0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21		0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27		0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16		0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13		0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18		0.50	5.00	ug/L
SURROGATES								
17060-07-0	1,2-Dichloroethane-d4	45.3		81 - 118			91%	SPK: 50
1868-53-7	Dibromofluoromethane	48.7		80 - 119			97%	SPK: 50
2037-26-5	Toluene-d8	45.7		89 - 112			91%	SPK: 50
460-00-4	4-Bromofluorobenzene	44.6		85 - 114			89%	SPK: 50
INTERNAL STANDARDS								
363-72-4	Pentafluorobenzene	486000	5.64					
540-36-3	1,4-Difluorobenzene	725000	6.84					
3114-55-4	Chlorobenzene-d5	700000	10.1					
3855-82-1	1,4-Dichlorobenzene-d4	336000	12.06					
TENTATIVE IDENTIFIED COMPOUNDS								
75-43-4	Dichlorofluoromethane	5.00	U				4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-298-300	SDG No.:	L3718
Lab Sample ID:	L3718-11	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX017987.D	1		08/19/20 16:04	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	25.0 ~~3.60~~	--J- U	1.40	B	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.73	J	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	3.10	J	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82		3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-298-300	SDG No.:	L3718
Lab Sample ID:	L3718-11	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX017987.D	1		08/19/20 16:04	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12		0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12		0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U UJ	0.25	C	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12		0.50	5.00	ug/L
100-42-5	Styrene	0.50	U UJ	0.16	C	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18		0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21		0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27		0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16		0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13		0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18		0.50	5.00	ug/L
SURROGATES								
17060-07-0	1,2-Dichloroethane-d4	48.6		81 - 118			97%	SPK: 50
1868-53-7	Dibromofluoromethane	49.3		80 - 119			99%	SPK: 50
2037-26-5	Toluene-d8	49.6		89 - 112			99%	SPK: 50
460-00-4	4-Bromofluorobenzene	42.8		85 - 114			86%	SPK: 50
INTERNAL STANDARDS								
363-72-4	Pentafluorobenzene	455000	5.64					
540-36-3	1,4-Difluorobenzene	687000	6.84					
3114-55-4	Chlorobenzene-d5	642000	10.1					
3855-82-1	1,4-Dichlorobenzene-d4	294000	12.06					
TENTATIVE IDENTIFIED COMPOUNDS								
75-43-4	Dichlorofluoromethane	5.00	U				4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-318-320	SDG No.:	L3718
Lab Sample ID:	L3718-12	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX017985.D	1		08/19/20 15:18	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	25.0 ~~3.70~~	~~J~~ U	1.40	B	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82		3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-318-320	SDG No.:	L3718
Lab Sample ID:	L3718-12	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX017985.D	1		08/19/20 15:18	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12		0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12		0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U UJ	0.25	C	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12		0.50	5.00	ug/L
100-42-5	Styrene	0.50	U UJ	0.16	C	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18		0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21		0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27		0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16		0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13		0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18		0.50	5.00	ug/L
SURROGATES								
17060-07-0	1,2-Dichloroethane-d4	46.8		81 - 118			94%	SPK: 50
1868-53-7	Dibromofluoromethane	46.6		80 - 119			93%	SPK: 50
2037-26-5	Toluene-d8	44.9		89 - 112			90%	SPK: 50
460-00-4	4-Bromofluorobenzene	43.0		85 - 114			86%	SPK: 50
INTERNAL STANDARDS								
363-72-4	Pentafluorobenzene	487000	5.63					
540-36-3	1,4-Difluorobenzene	752000	6.84					
3114-55-4	Chlorobenzene-d5	673000	10.1					
3855-82-1	1,4-Dichlorobenzene-d4	323000	12.06					
TENTATIVE IDENTIFIED COMPOUNDS								
75-43-4	Dichlorofluoromethane	5.00	U				4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/14/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-338-340	SDG No.:	L3718
Lab Sample ID:	L3718-13	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX017986.D	1		08/19/20 15:41	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	25.0 ~~4.50~~	~~J~~ U	1.40	B	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82		3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/14/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-338-340	SDG No.:	L3718
Lab Sample ID:	L3718-13	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX017986.D	1		08/19/20 15:41	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12		0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12		0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U UJ	0.25	C	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12		0.50	5.00	ug/L
100-42-5	Styrene	0.50	U UJ	0.16	C	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18		0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21		0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27		0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16		0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13		0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18		0.50	5.00	ug/L
SURROGATES								
17060-07-0	1,2-Dichloroethane-d4	46.2		81 - 118			92%	SPK: 50
1868-53-7	Dibromofluoromethane	47.2		80 - 119			94%	SPK: 50
2037-26-5	Toluene-d8	45.2		89 - 112			90%	SPK: 50
460-00-4	4-Bromofluorobenzene	44.1		85 - 114			88%	SPK: 50
INTERNAL STANDARDS								
363-72-4	Pentafluorobenzene	479000	5.63					
540-36-3	1,4-Difluorobenzene	740000	6.84					
3114-55-4	Chlorobenzene-d5	685000	10.1					
3855-82-1	1,4-Dichlorobenzene-d4	309000	12.06					
TENTATIVE IDENTIFIED COMPOUNDS								
75-43-4	Dichlorofluoromethane	5.00	U				4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-198-200	SDG No.:	L3718
Lab Sample ID:	L3718-02	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011576.D	1	08/18/20 08:55	08/22/20 07:53	PB131047

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
123-91-1	1,4-Dioxane	0.11	J	0.090	C	0.10	0.10	ug/L
SURROGATES								
7297-45-2	2-Methylnaphthalene-d10	0.25		30 - 150			63%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.33		30 - 150			82%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.47	*	55 - 111			116%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.54	*	53 - 106			135%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.71	*	58 - 132			176%	SPK: 0.4
INTERNAL STANDARDS								
3855-82-1	1,4-Dichlorobenzene-d4	1600	7.4					
1146-65-2	Naphthalene-d8	6400	10.14					
15067-26-2	Acenaphthene-d10	4060	14.03					
1517-22-2	Phenanthrene-d10	8930	16.79					
1719-03-5	Chrysene-d12	8860	21.01					
1520-96-3	Perylene-d12	8010	23.1					

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
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J = Estimated Value
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N = Presumptive Evidence of a Compound
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D = Dilution
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A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/12/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-238-240	SDG No.:	L3718
Lab Sample ID:	L3718-05	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011583.D	1	08/18/20 08:55	08/22/20 12:06	PB131047

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
123-91-1	1,4-Dioxane	0.29	J	0.090	C	0.10	0.10	ug/L
SURROGATES								
7297-45-2	2-Methylnaphthalene-d10	0.25		30 - 150			63%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.29		30 - 150			73%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.45	*	55 - 111			113%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.55	*	53 - 106			138%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.73	*	58 - 132			182%	SPK: 0.4
INTERNAL STANDARDS								
3855-82-1	1,4-Dichlorobenzene-d4	1470	7.4					
1146-65-2	Naphthalene-d8	5590	10.14					
15067-26-2	Acenaphthene-d10	3640	14.03					
1517-22-2	Phenanthrene-d10	7430	16.79					
1719-03-5	Chrysene-d12	6240	21.01					
1520-96-3	Perylene-d12	6130	23.1					

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
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N = Presumptive Evidence of a Compound
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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-278-280	SDG No.:	L3718
Lab Sample ID:	L3718-10	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup : N	PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011577.D	1	08/18/20 08:55	08/22/20 08:29	PB131047

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
123-91-1	1,4-Dioxane	0.24	J	0.090	C	0.10	0.10	ug/L
SURROGATES								
7297-45-2	2-Methylnaphthalene-d10	0.30		30 - 150			74%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.26		30 - 150			64%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.47	*	55 - 111			118%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.50	*	53 - 106			125%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.68	*	58 - 132			169%	SPK: 0.4
INTERNAL STANDARDS								
3855-82-1	1,4-Dichlorobenzene-d4	1550	7.4					
1146-65-2	Naphthalene-d8	5100	10.15					
15067-26-2	Acenaphthene-d10	3280	14.03					
1517-22-2	Phenanthrene-d10	7520	16.79					
1719-03-5	Chrysene-d12	5820	21.01					
1520-96-3	Perylene-d12	5350	23.1					

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
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M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/13/20
Project:	CTO WE13	Date Received:	08/15/20
Client Sample ID:	BP-VPB181-GW-318-320	SDG No.:	L3718
Lab Sample ID:	L3718-12	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011582.D	1	08/18/20 08:55	08/22/20 11:30	PB131047

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
123-91-1	1,4-Dioxane	0.78	J	0.090	C	0.10	0.10	ug/L
SURROGATES								
7297-45-2	2-Methylnaphthalene-d10	0.27		30 - 150			68%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.36		30 - 150			89%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.40		55 - 111			101%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.54	*	53 - 106			134%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.75	*	58 - 132			188%	SPK: 0.4
INTERNAL STANDARDS								
3855-82-1	1,4-Dichlorobenzene-d4	1500	7.4					
1146-65-2	Naphthalene-d8	6330	10.14					
15067-26-2	Acenaphthene-d10	3940	14.03					
1517-22-2	Phenanthrene-d10	8380	16.79					
1719-03-5	Chrysene-d12	7470	21.01					
1520-96-3	Perylene-d12	6660	23.11					

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Appendix C

Support Documents

A. Documents Supporting Qualifications

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CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L3718 SAS No.: L3718 SDG No.: L3718

Instrument ID: MSVOA_X Calibration Date/Time: 08/19/2020 09:44

Lab File ID: VX017971.D Init. Calib. Date(s): 08/18/2020 08/18/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 17:48 19:44

GC Column: DB-624UI ID: 0.18 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
Chloromethane	0.657	0.653	0.1	-0.61	20
Vinyl Chloride	0.614	0.657		7	20
Bromomethane	0.383	0.388		1.3	20
Chloroethane	0.359	0.374		4.18	20
Trichlorofluoromethane	0.992	1.016		2.42	20
1,1,2-Trichlorotrifluoroethane	0.492	0.459		-6.71	20
1,1-Dichloroethene	0.450	0.406		-9.78	20
Acetone	0.285	0.248		-12.98	20
Carbon Disulfide	1.069	1.020		-4.58	20
Methyl tert-butyl Ether	1.630	1.720		5.52	20
Methylene Chloride	0.563	0.467		-17.05	20
trans-1,2-Dichloroethene	0.456	0.457		0.22	20
1,1-Dichloroethane	0.911	0.891	0.1	-2.19	20
2-Butanone	0.420	0.393		-6.43	20
Carbon Tetrachloride	0.525	0.574		9.33	20
cis-1,2-Dichloroethene	0.544	0.550		1.1	20
Chloroform	1.000	0.974		-2.6	20
1,1,1-Trichloroethane	0.902	0.872		-3.33	20
Methylcyclohexane	0.467	0.553		18.42	20
Benzene	1.229	1.272		3.5	20
1,2-Dichloroethane	0.520	0.541		4.04	20
Trichloroethene	0.367	0.379		3.27	20
1,2-Dichloropropane	0.357	0.341		-4.48	20
Bromodichloromethane	0.529	0.527		-0.38	20
4-Methyl-2-Pentanone	0.505	0.552		9.31	20
Toluene	0.782	0.881		12.66	20
t-1,3-Dichloropropene	0.555	0.618		11.35	20
cis-1,3-Dichloropropene	0.579	0.653		12.78	20
1,1,2-Trichloroethane	0.364	0.389		6.87	20
2-Hexanone	0.381	0.395		3.67	20
Dibromochloromethane	0.452	0.463		2.43	20
Tetrachloroethene	0.370	0.434		17.3	20
Chlorobenzene	0.957	1.098	0.3	14.73	20
Ethyl Benzene	1.543	1.715		11.08	20
m/p-Xylenes	0.587	0.744		26.75	20
o-Xylene	0.566	0.636		12.37	20
Styrene	0.974	1.170		20.12	20
Bromoform	0.358	0.383	0.1	6.98	20
Isopropylbenzene	3.027	3.040		0.43	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L3718 SAS No.: L3718 SDG No.: L3718

Instrument ID: MSVOA_X Calibration Date/Time: 08/19/2020 09:44

Lab File ID: VX017971.D Init. Calib. Date(s): 08/18/2020 08/18/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 17:48 19:44

GC Column: DB-624UI ID: 0.18 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
1,1,2,2-Tetrachloroethane	1.109	1.037	0.3	-6.49	20
1,3-Dichlorobenzene	1.555	1.510		-2.89	20
1,4-Dichlorobenzene	1.555	1.583		1.8	20
1,2-Dichlorobenzene	1.448	1.378		-4.83	20
1,2-Dichloroethane-d4	0.733	0.654		-10.78	20
Dibromofluoromethane	0.372	0.353		-5.11	20
Toluene-d8	1.316	1.336		1.52	20
4-Bromofluorobenzene	0.486	0.557		14.61	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

Surrogate Summary

SDG No.: L3718

Client: Tetra Tech NUS, Inc.

Analytical Method: SW8260C

Lab Sample ID	Client ID	Parameter	Spike	Result	RecoveryQual	Limits Low	Limits High
L3718-01	BP-VPB181-TB-20200812	1,2-Dichloroethane-d4	50	55.4	111	81	118
		Dibromofluoromethane	50	53.0	106	80	119
		Toluene-d8	50	51.2	102	89	112
		4-Bromofluorobenzene	50	48.3	97	85	114
L3718-02	BP-VPB181-GW-198-200	1,2-Dichloroethane-d4	50	55.7	111	81	118
		Dibromofluoromethane	50	52.4	105	80	119
		Toluene-d8	50	51.4	103	89	112
		4-Bromofluorobenzene	50	49.4	99	85	114
L3718-03	BP-VPB181-GW-218-220	1,2-Dichloroethane-d4	50	52.6	105	81	118
		Dibromofluoromethane	50	52.9	106	80	119
		Toluene-d8	50	52.1	104	89	112
		4-Bromofluorobenzene	50	48.9	98	85	114
L3718-04	BP-VPB181-DUP-20200812	1,2-Dichloroethane-d4	50	52.8	106	81	118
		Dibromofluoromethane	50	51.5	103	80	119
		Toluene-d8	50	51.4	103	89	112
		4-Bromofluorobenzene	50	48.8	98	85	114
L3718-05	BP-VPB181-GW-238-240	1,2-Dichloroethane-d4	50	53.4	107	81	118
		Dibromofluoromethane	50	52.3	105	80	119
		Toluene-d8	50	51.6	103	89	112
		4-Bromofluorobenzene	50	49.5	99	85	114
L3718-06	BP-VPB181-GW-258-260	1,2-Dichloroethane-d4	50	44.9	90	81	118
		Dibromofluoromethane	50	46.8	94	80	119
		Toluene-d8	50	45.8	92	89	112
		4-Bromofluorobenzene	50	45.2	90	85	114
L3718-07MS	BP-VPB181-GW-258-260MS	1,2-Dichloroethane-d4	50	46.8	94	81	118
		Dibromofluoromethane	50	49.2	98	80	119
		Toluene-d8	50	48.0	96	89	112
		4-Bromofluorobenzene	50	52.7	105	85	114
L3718-08MSD	BP-VPB181-GW-258-260MSD	1,2-Dichloroethane-d4	50	44.8	90	81	118
		Dibromofluoromethane	50	45.0	90	80	119
		Toluene-d8	50	43.2	86 *	89	112
		4-Bromofluorobenzene	50	48.8	98	85	114
L3718-09	BP-VPB181-EB-20200813	1,2-Dichloroethane-d4	50	52.5	105	81	118
		Dibromofluoromethane	50	51.9	104	80	119
		Toluene-d8	50	51.9	104	89	112
		4-Bromofluorobenzene	50	49.1	98	85	114
L3718-10	BP-VPB181-GW-278-280	1,2-Dichloroethane-d4	50	45.3	91	81	118
		Dibromofluoromethane	50	48.7	97	80	119
		Toluene-d8	50	45.7	91	89	112
		4-Bromofluorobenzene	50	44.6	89	85	114
L3718-11	BP-VPB181-GW-298-300	1,2-Dichloroethane-d4	50	48.6	97	81	118
		Dibromofluoromethane	50	49.3	99	80	119
		Toluene-d8	50	49.6	99	89	112
		4-Bromofluorobenzene	50	42.8	86	85	114
L3718-12	BP-VPB181-GW-318-320	1,2-Dichloroethane-d4	50	46.8	94	81	118
		Dibromofluoromethane	50	46.5	93	80	119
		Toluene-d8	50	44.9	90	89	112
		4-Bromofluorobenzene	50	43.0	86	85	114
L3718-13	BP-VPB181-GW-338-340	1,2-Dichloroethane-d4	50	46.2	92	81	118
		Dibromofluoromethane	50	47.1	94	80	119
		Toluene-d8	50	45.2	90	89	112
		4-Bromofluorobenzene	50	44.1	88	85	114

Surrogate Summary

SDG No.: L3718

Client: Tetra Tech NUS, Inc.

Analytical Method: SW8260C

Lab Sample ID	Client ID	Parameter	Spike	Result	RecoveryQual	Limits Low	Limits High
VX0819WBL01	VX0819WBL01	1,2-Dichloroethane-d4	50	42.4	85	81	118
		Dibromofluoromethane	50	46.9	94	80	119
		Toluene-d8	50	44.9	90	89	112
		4-Bromofluorobenzene	50	43.1	86	85	114
VX0819WBS01	VX0819WBS01	1,2-Dichloroethane-d4	50	44.2	88	81	118
		Dibromofluoromethane	50	44.9	90	80	119
		Toluene-d8	50	44.8	90	89	112
		4-Bromofluorobenzene	50	47.7	95	85	114

Response Factor Report BNA_N

Method Path : Z:\SVOASRV\HPCHEM1\BNA_N\METHODS\
Method File : 8270-SIM-BN082120.M
Title : ASP BNA STANDARDS FOR 5 POINT CALIBRATION
Last Update : Wed Mar 25 10:49:04 2015
Response Via : Initial Calibration

Calibration Files
0.1 =BN011557.D 0.2 =BN011558.D 0.4 =BN011559.D 0.8 =BN011560.D 1.6 =BN011561.D 3.2 =BN011562.D 5 =BN011563.D

		Compound	0.1	0.2	0.4	0.8	1.6	3.2	5	Avg	%RSD
1)	I	1,4-Dichlorobenzen...	----------ISTD----------								
2)		1,4-Dioxane	0.672	0.652	0.546	0.534	0.529	0.469	0.424	0.547	16.43
3)		n-Nitrosodimet...		0.228	0.212	0.219	0.248	0.229	0.217	0.225	5.71
4)	S	2-Fluorophenol	1.019	0.994	0.748	0.846	0.880	0.758	0.731	0.854	13.77
5)	S	Phenol-d6	0.651	0.820	0.659	0.896	1.052	0.995	0.963	0.862	18.49
6)		bis(2-Chloroet...	0.973	0.761	0.648	0.877	0.892	0.905	0.846	0.843	12.72
7)	I	Naphthalene-d8	----------ISTD----------								
8)	S	Nitrobenzene-d5	0.195	0.216	0.217	0.278	0.315	0.313	0.305	0.263	19.71
9)		Naphthalene	1.304	1.262	1.095	1.139	1.181	1.098	1.035	1.159	8.31
10)		Hexachlorobuta...	0.406	0.370	0.324	0.312	0.310	0.283	0.264	0.324	15.18
11)	SURR	2-Methylnaphth...	0.775	0.776	0.635	0.710	0.739	0.695	0.673	0.715	7.32
12)		2-Methylnaphth...	0.810	0.866	0.720	0.805	0.836	0.784	0.763	0.798	6.01
13)	I	Acenaphthene-d10	----------ISTD----------								
14)	S	2,4,6-Tribromo...	0.202	0.191	0.169	0.190	0.209	0.216	0.216	0.199	8.46
15)	S	2-Fluorobiphenyl	1.568	1.648	1.556	1.691	1.818	1.672	1.563	1.645	5.74
16)		Acenaphthylene	2.211	2.144	1.825	1.982	2.115	2.037	1.930	2.035	6.57
17)		Acenaphthene	1.527	1.461	1.241	1.286	1.360	1.273	1.197	1.335	9.04
18)		Fluorene	1.855	1.935	1.621	1.753	1.842	1.704	1.651	1.766	6.56
19)	I	Phenanthrene-d10	----------ISTD----------								
20)		4,6-Dinitro-2-...	0.019	0.040	0.037	0.051	0.066	0.077		0.048	43.68
21)		4-Bromophenyl-...	0.279	0.152	0.102	0.040	0.020	0.012	0.008	0.087	114.42
22)		Hexachlorobenzene	0.405	0.336	0.293	0.284	0.297	0.283	0.261	0.308	15.69
23)		Atrazine	0.242	0.222	0.128	0.200	0.227	0.221	0.216	0.208	17.90
24)		Pentachlorophenol		0.090	0.076	0.087	0.101	0.108	0.115	0.096	15.13
25)		Phenanthrene	1.375	1.332	1.129	1.206	1.299	1.247	1.226	1.259	6.60
26)		Anthracene	1.018	1.058	0.882	1.000	1.136	1.141	1.117	1.050	8.86
27)	SURR	Fluoranthene-d10	1.734	1.447	1.102	1.224	1.361	1.286	1.280	1.348	14.95
28)		Fluoranthene	2.071	1.726	1.324	1.488	1.648	1.554	1.526	1.620	14.56
29)	I	Chrysene-d12	----------ISTD----------								
30)		Pyrene	2.150	1.780	1.591	1.442	1.473	1.432	1.270	1.591	18.37
31)	S	Terphenyl-d14	1.312	1.140	0.986	0.968	1.015	0.991	0.890	1.043	13.41
32)		Benzo(a)anthra...	1.397	1.336	1.105	1.253	1.460	1.380	1.265	1.314	8.95
33)		Chrysene	1.699	1.748	1.433	1.409	1.494	1.378	1.303	1.495	11.17
34)		Bis(2-ethylhex...	0.982	0.692	0.540	0.555	0.617	0.577	0.610	0.653	23.44
35)		Indeno(1,2,3-c...	1.377	1.276	1.247	1.226	1.633	1.282	1.461	1.357	10.81

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Surrogate Summary

SW-846

SDG No.: L3718

Client: Tetra Tech NUS, Inc.

Analytical Method: 8270-Modified

Lab Sample ID	Client ID	Parameter	Spike (PPM)	Result (PPM)	Recovery (%)	Qual	Limits (%) Low	Limits (%) High
L3718-02	BP-VPB181-GW-198-200	2-Methylnaphthalene-d10	0.4	0.25	63		30	150
		Fluoranthene-d10	0.4	0.33	82		30	150
		Nitrobenzene-d5	0.4	0.47	116	*	55	111
		2-Fluorobiphenyl	0.4	0.54	135	*	53	106
		Terphenyl-d14	0.4	0.71	176	*	58	132
L3718-05	BP-VPB181-GW-238-240	2-Methylnaphthalene-d10	0.4	0.25	63		30	150
		Fluoranthene-d10	0.4	0.29	73		30	150
		Nitrobenzene-d5	0.4	0.45	113	*	55	111
		2-Fluorobiphenyl	0.4	0.55	138	*	53	106
		Terphenyl-d14	0.4	0.73	182	*	58	132
L3718-10	BP-VPB181-GW-278-280	2-Methylnaphthalene-d10	0.4	0.30	74		30	150
		Fluoranthene-d10	0.4	0.26	64		30	150
		Nitrobenzene-d5	0.4	0.47	118	*	55	111
		2-Fluorobiphenyl	0.4	0.50	125	*	53	106
		Terphenyl-d14	0.4	0.68	169	*	58	132
L3718-12	BP-VPB181-GW-318-320	2-Methylnaphthalene-d10	0.4	0.27	68		30	150
		Fluoranthene-d10	0.4	0.36	89		30	150
		Nitrobenzene-d5	0.4	0.40	101		55	111
		2-Fluorobiphenyl	0.4	0.54	134	*	53	106
		Terphenyl-d14	0.4	0.75	188	*	58	132
PB131047BL	PB131047BL	2-Methylnaphthalene-d10	0.4	0.25	63		30	150
		Fluoranthene-d10	0.4	0.25	63		30	150
		Nitrobenzene-d5	0.4	0.30	74		55	111
		2-Fluorobiphenyl	0.4	0.30	75		53	106
		Terphenyl-d14	0.4	0.30	75		58	132
PB131047BS	PB131047BS	2-Methylnaphthalene-d10	0.4	0.39	97		30	150
		Fluoranthene-d10	0.4	0.38	94		30	150
		Nitrobenzene-d5	0.4	0.42	104		55	111
		2-Fluorobiphenyl	0.4	0.41	102		53	106
		Terphenyl-d14	0.4	0.41	103		58	132
PB131047BSD	PB131047BSD	2-Methylnaphthalene-d10	0.4	0.39	97		30	150
		Fluoranthene-d10	0.4	0.38	95		30	150
		Nitrobenzene-d5	0.4	0.42	104		55	111
		2-Fluorobiphenyl	0.4	0.42	105		53	106
		Terphenyl-d14	0.4	0.42	104		58	132

Appendix C

Support Documents

B. Chain of Custody (COC)

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CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax: (908) 78-8922
www.chemtech.net

Chemtech Project Number: L3718

COC Number:

CLIENT INFORMATION

COMPANY: Tetra Tech
ADDRESS: 5700 Lake Wright Dr., Suite 102
CITY: Norfolk STATE: VA ZIP: 23502
ATTENTION: Dave Brayack
PHONE: 757-466-4909 FAX: 757-461-4148

PROJECT INFORMATION

PROJECT NAME: NWIRP Bethpage
PROJECT #: 112G08005-WE13 LOCATION: VPB-181
PROJECT MANAGER: Dave Brayack
E-MAIL: david.brayack@tetratech.com
PHONE: 757-466-4909 FAX: 757-461-4148

BILLING INFORMATION

BILL TO: SEE CONTRACT PO#
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: 2 & 10 DAYS*
HARD COPY: 2 & 10 DAYS*
EDD 2 & 10 DAYS*
* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ☐ RESULTS ONLY
- ☐ RESULTS + QC
- ☐ New Jersey REDUCED
- ☐ New Jersey CLP
- ☐ USEPA CLP
- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other
- ☐ EDD Format

ANALYSIS

	1	2	3	4	5	6	7	8	9
	VOC(SW846-8260B)	1,4 Dioxane (8270 SIM)							

PRESERVATIVES

COMMENTS

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-Other

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# of Bottles	A 1	2	3	4	5	6	7	8	9	COMMENTS
1.	BP-VPB181-TB-20200812	QA		X	8/12/20	8:00	2	2									Trip Blank
2.	BP-VPB181-GW-198-200	AQ		X	8/12/20	9:40	3	2	1								
3.	BP-VPB181-GW-218-220	AQ		X	8/12/20	11:25	2	2									
4.	BP-VPB181-DUP-20200812	AQ		X	8/12/20	11:00	2	2									
5.	BP-VPB181-GW-238-240	AQ		X	8/12/20	11:25	3	2	1								
6.	BP-VPB181-GW-258-260	AQ		X	8/13/20	9:45	6	6									Run MS/MSD
7.	BP-VPB181-EB-20200813	QA		X	8/13/20	11:00	2	2									
8.	BP-VPB181-GW-278-280	AQ		X	8/13/20	11:35	3	2	1								
9.	BP-VPB181-GW-298-300	AQ		X	8/13/20	13:20	2	2									
10.	BP-VPB181-GW-318-320	AQ		X	8/13/20	15:00	3	2	1								

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSSESSION INCLUDING COURIER DELIVERY

	RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1.		8/14/20 1600	1.
2.	RELINQUISHED BY	DATE/TIME 8/15/20 13:15	RECEIVED BY 2.
3.	RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY 3.

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant ☐ Cooler Temp 2.1°C
MeOH extraction requires an additional 4oz. Jar for percent solid ☒ Ice in Cooler?:

Comments: **48hr TAT** - For VOC's see worksheet #15 of SAP 2018 for VPB program VOC list
10-DAY TAT - For 1,4 Dioxane (8270 SIM)

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ Overnight
CHEMTECH: ☐ Picked Up ☐ Overnight

Shipment Complete ☒ YES ☐ NO

WHITE - CHEMTECH COPYFOR RETURN TO CLIENT **YELLOW** - CHEMTECH COPY **PINK** - SAMPLER COPY

CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax: (908) 78-8922
www.chemtech.net

Chemtech Project Number: L3718

COC Number:

CLIENT INFORMATION	PROJECT INFORMATION	BILLING INFORMATION
COMPANY: Tetra Tech	PROJECT NAME: NWIRP Bethpage	BILL TO: SEE CONTRACT PO#
ADDRESS: 5700 Lake Wright Dr., Suite 102	PROJECT #: 112G08005-WE13 LOCATION: VPB-179	ADDRESS:
CITY: Norfolk STATE: VA ZIP: 23502	PROJECT MANAGER: Dave Brayack	CITY: STATE: ZIP:
ATTENTION: Dave Brayack	E-MAIL: david.brayack@tetratech.com	ATTENTION: PHONE:
PHONE: 757-466-4909 FAX: 757-461-4148	PHONE: 757-466-4909 FAX: 757-461-4148	

DATA TURNAROUND INFORMATION

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- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other
- ☐ EDD Format

ANALYSIS

	1	2	3	4	5	6	7	8	9
VOC(SW846-8260B)									

PRESERVATIVES

	A								
	1	2	3	4	5	6	7	8	9

COMMENTS

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-Other

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# of Bottles
1.	BP-VPB181-GW-338-340	AQ		X	8/14/20	9:50	2
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1.	8/14/20 1400	1.
RELINQUISHED BY 2.	DATE/TIME 8/15/20 13:15	RECEIVED BY 2.
RELINQUISHED BY 3.	DATE/TIME	RECEIVED FOR LAB BY 3.

Conditions of bottles or coolers at receipt: ☑ Compliant ☐ Non Compliant ☐ Cooler Temp 0.5
MeOH extraction requires an additional 4oz. Jar for percent solid ☒ Ice in Cooler?:

Comments: **48hr TAT** - For VOC's see worksheet #15 of SAP 2018 for VPB program VOC list

Page 2 of 2

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ Overnight
CHEMTECH: ☐ Picked Up ☐ Overnight

Shipment Complete ☐ YES ☐ NO

WHITE - CHEMTECH COPYFOR RETURN TO CLIENT **YELLOW** - CHEMTECH COPY **PINK** - SAMPLER COPY

Appendix C

Support Documents

C. Calculations for Stage 4 Data Validation

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SDG L3718

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

VOC (8260) SAMPLE QUANTITATION

Sample # acetone for BP-VPB181-GW-238-240

Cpd. Concentration = Areac(ConcISTD)(Vf)(Dl)(UnitF)/(Areast)(Vi)

Calc. Concentration = 9.8

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL	UnitF
16188	148859	50	0.557	5000	5000	1	1

Reported Concentration = 9.8

SDG L3718

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

SVOC (8270) SAMPLE QUANTITATION

Sample # 1,4-dioxane for BP-VPB181-GW-318-320

Cpd. Concentration = $\frac{(Area_c)(Conc_{istd})(Vf)(DL)}{(Area_{st})(\overline{RRF_c})(Vi)}$

Calc. Concentration = 0.78

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL
1599	1496	0.4	0.547	1000	1000	1

Reported Concentration = 0.78

VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com

DATA VALIDATION SUMMARY REPORT - CHEMISTRY

COMPANY:	Tetra Tech, Inc., Norfolk, VA
PROJECT NAME:	Basewide Groundwater Investigation, Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, N62470-16-D-9008
SITE NAME:	CTO-WE13
CONTRACTED LAB:	CHEMTECH, Mountainside, NJ
JOB NO./ACCOUNTING CODE:	112G08005-WE13
QA/QC LEVEL:	EPA Stage 4
ANALYTICAL METHOD(S):	SW846 Methods 8260C and 8270SIM
VALIDATION GUIDELINES:	Tier II Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Vertical Profile Boring and Monitoring Well Installation Program Site 0001 – Former Drum Marshalling Area Operable Unit 2 Plume Naval Weapons Industrial Reserve Plant Bethpage, New York, March 2019, DOD QSM 5.0; July 2013, DOD Data Validation Guidance, February 2018, Method criteria, Laboratory limits and Professional Judgment
SAMPLE MATRICES:	Soil & Groundwater
TYPES OF ANALYSES:	Volatile Organic Compounds (VOC) Semivolatile Organic Compounds (SVOC)*
DATA VALIDATION DATE:	October 14, 2020
DATA REVIEWER(S):	Amy L. Hogan
SDG NUMBER:	L3738
SAMPLING DATE(S):	August 17-18, 2020

SAMPLES:

Client Sample ID	Laboratory ID	VOC	SVOC*
BP-VPB181-TB-20200817	L3738-01	X	
BP-VPB181-GW-368-370	L3738-02	X	X
BP-VPB181-GW-378-380	L3738-03	X	
BP-VPB181-GW-398-400	L3738-04	X	X
BP-VPB181-GW-418-420	L3738-05	X	
BP-VPB181-GW-438-440	L3738-06	X	X
BP-VPB181-GW-458-460	L3738-07	X	
BP-VPB181-DUP-20200817	L3738-08	X	
BP-VPB181-GW-478-480	L3738-09	X	X

Suffix Codes: DL= DILUTION, MS = MATRIX SPIKE,
MSD = MATRIX SPIKE DUPLICATE, RE = REANALYSIS

* SVOC analyses reported 1,4-dioxane only.

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

CHEMTECH – SDG: L3738 – Organic Chemistry

VOLATILE ORGANICS

SUMMARY

I.) General:

The analyses for Volatile Organics were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8260C.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blanks for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank for this SDG. No data qualification was necessary.

Field Blank:

There were no associated field blanks for this SDG. No data qualification was necessary.

Trip Blank:

There were no detections in associated trip blank BP-VPB181-TB-20200817. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

One LCS and one LCS / LCSD set were analyzed by the laboratory for this SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data were not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required. No data qualification was necessary.

VIII.) Field Duplicates:

One set of field duplicate samples (BP-VPB181-GW-458-460 / BP-VPB181-DUP-20200817) was identified for this SDG. There were no calculable RPDs or differences. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD area count criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All forty-three requested compounds for groundwater samples were reported with acceptable LOD and LOQ results as determined by the SAP.

The validator has noted that the non-detect results for the following compounds were reported at the LOD, which exceeds the PAL limit of 0.17 ug/L for the groundwater samples : carbon disulfide, carbon tetrachloride, chlorobenzene, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene , 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene and 1,1,2-trichlorotrifluoroethane.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

SEMIVOLATILE ORGANICS (1,4-DIOXANE ONLY)

SUMMARY

I.) General:

The analyses for Semivolatile Organics (1,4-dioxane only) were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8270SIM.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank. No data qualification was necessary.

V.) Surrogate Recoveries:

The Percent Recoveries (%Rs) for several surrogate compounds were outside the established QC limits for both samples. Since the surrogate compounds were not associated with the target compound, no data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

One LCS / LCSD set was analyzed by the laboratory for this fraction of the SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data was not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified as part of this fraction of the SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

1,4-dioxane was reported with acceptable LOD and LOQ results as determined by the SAP.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

Appendix A

Data Qualification Summary Table (DQST) with Qualification Codes

There were no data qualifications for this SDG.

Appendix B

Laboratory Sample Results

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-TB-20200817	SDG No.:	L3738
Lab Sample ID:	L3738-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018001.D	1		08/19/20 22:55	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-TB-20200817	SDG No.:	L3738
Lab Sample ID:	L3738-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018001.D	1		08/19/20 22:55	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	44.9		81 - 118		90%	SPK: 50
1868-53-7	Dibromofluoromethane	46.1		80 - 119		92%	SPK: 50
2037-26-5	Toluene-d8	45.7		89 - 112		91%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.5		85 - 114		91%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	509000	5.64				
540-36-3	1,4-Difluorobenzene	777000	6.84				
3114-55-4	Chlorobenzene-d5	726000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	359000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-368-370	SDG No.:	L3738
Lab Sample ID:	L3738-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018028.D	1		08/20/20 12:38	VX082020

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	3.00	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-368-370	SDG No.:	L3738
Lab Sample ID:	L3738-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018028.D	1		08/20/20 12:38	VX082020

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	44.4		81 - 118		89%	SPK: 50
1868-53-7	Dibromofluoromethane	45.1		80 - 119		90%	SPK: 50
2037-26-5	Toluene-d8	45.2		89 - 112		90%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.7		85 - 114		91%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	584000	5.63				
540-36-3	1,4-Difluorobenzene	918000	6.83				
3114-55-4	Chlorobenzene-d5	824000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	419000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-378-380	SDG No.:	L3738
Lab Sample ID:	L3738-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018029.D	1		08/20/20 13:01	VX082020

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	3.10	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-378-380	SDG No.:	L3738
Lab Sample ID:	L3738-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018029.D	1		08/20/20 13:01	VX082020

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	44.1		81 - 118		88%	SPK: 50
1868-53-7	Dibromofluoromethane	44.3		80 - 119		89%	SPK: 50
2037-26-5	Toluene-d8	45.6		89 - 112		91%	SPK: 50
460-00-4	4-Bromofluorobenzene	46.0		85 - 114		92%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	592000	5.63				
540-36-3	1,4-Difluorobenzene	928000	6.83				
3114-55-4	Chlorobenzene-d5	843000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	425000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-398-400	SDG No.:	L3738
Lab Sample ID:	L3738-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018012.D	1		08/20/20 03:06	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	5.10	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-398-400	SDG No.:	L3738
Lab Sample ID:	L3738-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018012.D	1		08/20/20 03:06	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.9		81 - 118		98%	SPK: 50
1868-53-7	Dibromofluoromethane	45.9		80 - 119		92%	SPK: 50
2037-26-5	Toluene-d8	45.7		89 - 112		91%	SPK: 50
460-00-4	4-Bromofluorobenzene	43.5		85 - 114		87%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	461000	5.64				
540-36-3	1,4-Difluorobenzene	767000	6.84				
3114-55-4	Chlorobenzene-d5	709000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	327000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-418-420	SDG No.:	L3738
Lab Sample ID:	L3738-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018038.D	1		08/20/20 16:27	VX082020

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	3.20	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	1.50	J	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-418-420	SDG No.:	L3738
Lab Sample ID:	L3738-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018038.D	1		08/20/20 16:27	VX082020

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	44.6		81 - 118		89%	SPK: 50
1868-53-7	Dibromofluoromethane	45.5		80 - 119		91%	SPK: 50
2037-26-5	Toluene-d8	46.5		89 - 112		93%	SPK: 50
460-00-4	4-Bromofluorobenzene	47.6		85 - 114		95%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	591000	5.63				
540-36-3	1,4-Difluorobenzene	924000	6.84				
3114-55-4	Chlorobenzene-d5	874000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	427000	12.07				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/18/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-438-440	SDG No.:	L3738
Lab Sample ID:	L3738-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018014.D	1		08/20/20 03:52	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/18/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-438-440	SDG No.:	L3738
Lab Sample ID:	L3738-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018014.D	1		08/20/20 03:52	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	47.1		81 - 118		94%	SPK: 50
1868-53-7	Dibromofluoromethane	47.3		80 - 119		95%	SPK: 50
2037-26-5	Toluene-d8	45.8		89 - 112		92%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.5		85 - 114		91%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	511000	5.63				
540-36-3	1,4-Difluorobenzene	801000	6.84				
3114-55-4	Chlorobenzene-d5	747000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	373000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/18/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-458-460	SDG No.:	L3738
Lab Sample ID:	L3738-07	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018015.D	1		08/20/20 04:14	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/18/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-458-460	SDG No.:	L3738
Lab Sample ID:	L3738-07	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018015.D	1		08/20/20 04:14	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	46.1		81 - 118		92%	SPK: 50
1868-53-7	Dibromofluoromethane	46.0		80 - 119		92%	SPK: 50
2037-26-5	Toluene-d8	45.5		89 - 112		91%	SPK: 50
460-00-4	4-Bromofluorobenzene	44.8		85 - 114		90%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	462000	5.63				
540-36-3	1,4-Difluorobenzene	768000	6.84				
3114-55-4	Chlorobenzene-d5	711000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	328000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/18/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-DUP-20200817	SDG No.:	L3738
Lab Sample ID:	L3738-08	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018016.D	1		08/20/20 04:37	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/18/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-DUP-20200817	SDG No.:	L3738
Lab Sample ID:	L3738-08	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018016.D	1		08/20/20 04:37	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	47.6		81 - 118		95%	SPK: 50
1868-53-7	Dibromofluoromethane	46.4		80 - 119		93%	SPK: 50
2037-26-5	Toluene-d8	45.5		89 - 112		91%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.2		85 - 114		90%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	499000	5.63				
540-36-3	1,4-Difluorobenzene	797000	6.84				
3114-55-4	Chlorobenzene-d5	749000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	377000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/18/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-478-480	SDG No.:	L3738
Lab Sample ID:	L3738-09	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018017.D	1		08/20/20 05:00	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.90	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/18/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-478-480	SDG No.:	L3738
Lab Sample ID:	L3738-09	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018017.D	1		08/20/20 05:00	VX081920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.8		81 - 118		98%	SPK: 50
1868-53-7	Dibromofluoromethane	46.9		80 - 119		94%	SPK: 50
2037-26-5	Toluene-d8	46.2		89 - 112		92%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.0		85 - 114		90%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	482000	5.63				
540-36-3	1,4-Difluorobenzene	790000	6.83				
3114-55-4	Chlorobenzene-d5	742000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	363000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-368-370	SDG No.:	L3738
Lab Sample ID:	L3738-02	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011635.D	1	08/24/20 08:30	08/26/20 03:27	PB131164

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.10	U	0.090	0.10	0.10	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.27		30 - 150		67%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.29		30 - 150		72%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.51	*	55 - 111		128%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.52	*	53 - 106		129%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.68	*	58 - 132		170%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2180	7.76				
1146-65-2	Naphthalene-d8	8760	10.54				
15067-26-2	Acenaphthene-d10	5590	14.39				
1517-22-2	Phenanthrene-d10	12300	17.14				
1719-03-5	Chrysene-d12	11900	21.32				
1520-96-3	Perylene-d12	13100	23.58				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/17/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-398-400	SDG No.:	L3738
Lab Sample ID:	L3738-04	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	560 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011636.D	1	08/24/20 08:30	08/26/20 04:03	PB131164

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.21		0.16	0.18	0.18	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.25		30 - 150		62%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.24		30 - 150		61%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.48	*	55 - 111		119%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.48	*	53 - 106		120%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.60	*	58 - 132		150%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2300	7.76				
1146-65-2	Naphthalene-d8	9550	10.54				
15067-26-2	Acenaphthene-d10	6060	14.39				
1517-22-2	Phenanthrene-d10	13400	17.14				
1719-03-5	Chrysene-d12	13400	21.32				
1520-96-3	Perylene-d12	14400	23.58				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/18/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-438-440	SDG No.:	L3738
Lab Sample ID:	L3738-06	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011637.D	1	08/24/20 08:30	08/26/20 04:39	PB131164

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.10	U	0.090	0.10	0.10	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.25		30 - 150		63%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.29		30 - 150		72%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.48	*	55 - 111		119%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.48	*	53 - 106		121%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.66	*	58 - 132		164%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2310	7.76				
1146-65-2	Naphthalene-d8	9400	10.54				
15067-26-2	Acenaphthene-d10	5990	14.4				
1517-22-2	Phenanthrene-d10	13400	17.14				
1719-03-5	Chrysene-d12	13000	21.32				
1520-96-3	Perylene-d12	13800	23.58				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/18/20
Project:	CTO WE13	Date Received:	08/19/20
Client Sample ID:	BP-VPB181-GW-478-480	SDG No.:	L3738
Lab Sample ID:	L3738-09	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011638.D	1	08/24/20 08:30	08/26/20 05:15	PB131164

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.10	U	0.090	0.10	0.10	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.24		30 - 150		61%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.28		30 - 150		69%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.29		55 - 111		72%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.29		53 - 106		72%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.35		58 - 132		86%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2340	7.76				
1146-65-2	Naphthalene-d8	9370	10.54				
15067-26-2	Acenaphthene-d10	5930	14.39				
1517-22-2	Phenanthrene-d10	13300	17.14				
1719-03-5	Chrysene-d12	13400	21.32				
1520-96-3	Perylene-d12	14500	23.58				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Appendix C

Support Documents

A. Documents Supporting Qualifications

Support Documentation was not required for this SDG.

Appendix C

Support Documents

B. Chain of Custody (COC)

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CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax: (908) 78-8922
www.chemtech.net

Chemtech Project Number: L3738

COC Number:

CLIENT INFORMATION

COMPANY: Tetra Tech
ADDRESS: 5700 Lake Wright Dr., Suite 102
CITY: Norfolk STATE: VA ZIP: 23502
ATTENTION: Dave Brayack
PHONE: 757-466-4909 FAX: 757-461-4148

PROJECT INFORMATION

PROJECT NAME: NWIRP Bethpage
PROJECT #: 112G08005-WE13 LOCATION: VPB-181
PROJECT MANAGER: Dave Brayack
E-MAIL: david.brayack@tetratech.com
PHONE: 757-466-4909 FAX: 757-461-4148

BILLING INFORMATION

BILL TO: SEE CONTRACT PO#
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: 2 & 10 DAYS*
HARD COPY: 2 & 10 DAYS*
EDD 2 & 10 DAYS*
* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ☐ RESEULTS ONLY
- ☐ RESULTS + QC
- ☐ New Jersey REDUCED
- ☐ New Jersey CLP
- ☐ USEPA CLP
- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other
- ☐ EDD Format

ANALYSIS

	1	2	3	4	5	6	7	8	9
	VOC(SW846-8260B)	1,4 Dioxane (8270 SIM)							

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# of Bottles	PRESERVATIVES A	1	2	3	4	5	6	7	8	9	COMMENTS
1.	BP-VPB181-TB-20200817	QA		X	8/17/20	8:15	2	2										Trip Blank
2.	BP-VPB181-GW-368-370	AQ		X	8/17/20	9:45	3	2	1									
3.	BP-VPB181-GW-378-380	AQ		X	8/17/20	11:35	2	2										
4.	BP-VPB181-GW-398-400	AQ		X	8/17/20	13:25	3	2	1									
5.	BP-VPB181-GW-418-420	AQ		X	8/17/20	15:05	2	2										
6.	BP-VPB181-GW-438-440	AQ		X	8/18/20	10:10	3	2	1									
7.	BP-VPB181-GW-458-460	AQ		X	8/18/20	12:10	2	2										
8.	BP-VPB181-DUP-20200817	AQ		X	8/18/20	11:00	2	2										
9.	BP-VPB181-GW-478-480	AQ		X	8/18/20	14:10	2	2	1									
10.																		

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-Other

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1.	8/18/20 1600	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2.	8-19-20 10:30	2.
RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY
3.		3.

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant ☐ Cooler Temp 2-5 °C
MeOH extraction requires an additional 4oz. Jar for percent solid ☐ Ice in Cooler?: yes

Comments: **48hr TAT** - For VOC's see worksheet #15 of SAP 2018 for VPB program VOC list
10-DAY TAT - For 1,4 Dioxane (8270 SIM)

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ Overnight
CHEMTECH: ☐ Picked Up ☐ Overnight

Shipment Complete ☒ YES ☐ NO

WHITE - CHEMTECH COPYFOR RETURN TO CLIENT YELLOW - CHEMTECH COPY PINK - SAMPLER COPY

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Appendix C

Support Documents

C. Calculations for Stage 4 Data Validation

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SDG L3738

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

VOC (8260) SAMPLE QUANTITATION

Sample # carbon disulfide for BP-VPB181-GW-418-420

Cpd. Concentration = Areac(ConcISTD)(Vf)(Dl)(UnitF)/(Areast)(Vi)

Calc. Concentration = 1.5

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL	UnitF
19523	590904	50	1.093	5000	5000	1	1

Reported Concentration = 1.5

SDG L3738

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

SVOC (8270) SAMPLE QUANTITATION

Sample # 1,4-dioxane for BP-VPB181-GW-318-320

Cpd. Concentration = $\frac{(Area_c)(Conc_{istd})(Vf)(DL)}{(Area_{st})(\overline{RRF_c})(Vi)}$

Calc. Concentration = 0.22

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL
429	2300	0.4	0.62	1000	560	1

Reported Concentration = 0.21

VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com

DATA VALIDATION SUMMARY REPORT - CHEMISTRY

COMPANY:	Tetra Tech, Inc., Norfolk, VA
PROJECT NAME:	Basewide Groundwater Investigation, Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, N62470-16-D-9008
SITE NAME:	CTO-WE13
CONTRACTED LAB:	CHEMTECH, Mountainside, NJ
JOB NO./ACCOUNTING CODE:	112G08005-WE13
QA/QC LEVEL:	EPA Stage 4
ANALYTICAL METHOD(S):	SW846 Methods 8260C and 8270SIM
VALIDATION GUIDELINES:	Tier II Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Vertical Profile Boring and Monitoring Well Installation Program Site 0001 – Former Drum Marshalling Area Operable Unit 2 Plume Naval Weapons Industrial Reserve Plant Bethpage, New York, March 2019, DOD QSM 5.0; July 2013, DOD Data Validation Guidance, February 2018, Method criteria, Laboratory limits and Professional Judgment
SAMPLE MATRICES:	Soil & Groundwater
TYPES OF ANALYSES:	Volatile Organic Compounds (VOC) Semivolatile Organic Compounds (SVOC)*
DATA VALIDATION DATE:	October 15, 2020
DATA REVIEWER(S):	Amy L. Hogan
SDG NUMBER:	L3783
SAMPLING DATE(S):	August 19-21, 2020

SAMPLES:

Client Sample ID	Laboratory ID	VOC	SVOC*
BP-VPB181-TB-20200819	L3783-01	X	
BP-VPB181-GW-498-500	L3783-02	X	
BP-VPB181-GW-498-500MS	L3783-03	X	
BP-VPB181-GW-498-500MSD	L3783-04	X	
BP-VPB181-GW-518-520	L3783-05	X	X
BP-VPB181-GW-538-540	L3783-06	X	
BP-VPB181-EB-20200821	L3783-07	X	
BP-VPB181-GW-588-590	L3783-08	X	X

Suffix Codes: DL= DILUTION, MS = MATRIX SPIKE,
MSD = MATRIX SPIKE DUPLICATE, RE = REANALYSIS

* SVOC analyses reported 1,4-dioxane only.

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

CHEMTECH – SDG: L3783 – Organic Chemistry

VOLATILE ORGANICS

SUMMARY

I.) General:

The analyses for Volatile Organics were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8260C.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

The Percent Difference (%D) for the standards run on 8/26/20 at 12:39 on instrument MSVOA_N was -20.4% for carbon disulfide, which exceeded the QC limit. Since the associated samples were laboratory QC samples, no data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blanks for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

Acetone (4.50 ug/L) and toluene (4.20 ug/L) were detected in associated equipment blank BP-VPB181-EB-20200821 for this SDG. Since the blank result was less than the LOQ, the positive acetone result for associated sample BP-VPB-181-GW-588-590, which was less than the LOQ, was qualified as undetected (U) with the result being raised to the LOQ and reason code B.

Field Blank:

There were no associated field blanks for this SDG. No data qualification was necessary.

Trip Blank:

There were no detections in associated trip blank BP-VPB181-TB-20200819. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

Two LCS were analyzed by the laboratory for this SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses were performed using SDG sample BP-VPB181-GW-498-500. The Percent Recoveries (%Rs) for methylcyclohexane (71%, 71%) were below the QC limits. The non-detect result for this compound in the parent sample was qualified as estimated (UJ) with reason code D.

VIII.) Field Duplicates:

There were no field duplicate samples identified for this SDG. No data qualification was

necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD area count criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All forty-three requested compounds for groundwater samples were reported with acceptable LOD and LOQ results as determined by the SAP.

The validator has noted that the non-detect results for the following compounds were reported at the LOD, which exceeds the PAL limit of 0.17 ug/L for the groundwater samples : carbon disulfide, carbon tetrachloride, chlorobenzene, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene , 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene and 1,1,2-trichlorotrifluoroethane.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

SEMIVOLATILE ORGANICS (1,4-DIOXANE ONLY)

SUMMARY

I.) General:

The analyses for Semivolatile Organics (1,4-dioxane only) were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8270SIM.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank. No data qualification was necessary.

V.) Surrogate Recoveries:

The Percent Recoveries (%Rs) for several surrogate compounds were outside the established QC limits for both samples. Since the surrogate compounds were not associated with the target compound, no data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

One LCS / LCSD set was analyzed by the laboratory for this fraction of the SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data was not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified as part of this fraction of the SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

1,4-dioxane was reported with acceptable LOD and LOQ results as determined by the SAP.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

Appendix A

Data Qualification Summary Table (DQST) with Qualification Codes

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DATA QUALIFICATION SUMMARY TABLE (DQST) WITH QUALIFICATION CODES

VOC								
Client Sample ID	Date Collected	Lab Sample ID	Analyte	Lab Qual	Val Result	VAL_RES ERROR	Val Qual	Val Reason
BP-VPB181-GW-498-500	8/19/2020 0:00	L3783-02	METHYLCYCLOHEXANE	U	0.5		UJ	D
BP-VPB181-GW-588-590	8/21/2020 0:00	L3783-08	ACETONE	J	6.7	25.0	U	B

SVOC								
Client Sample ID	Date Collected	Lab Sample ID	Analyte	Lab Qual	Val Result	VAL_RES ERROR	Val Qual	Val Reason
N/A	N/A	N/A	N/A	No qualifications were made				

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Appendix B

Laboratory Sample Results

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/19/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-TB-20200819	SDG No.:	L3783
Lab Sample ID:	L3783-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063108.D	1		08/25/20 12:28	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/19/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-TB-20200819	SDG No.:	L3783
Lab Sample ID:	L3783-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063108.D	1		08/25/20 12:28	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	51.3		81 - 118		103%	SPK: 50
1868-53-7	Dibromofluoromethane	52.2		80 - 119		104%	SPK: 50
2037-26-5	Toluene-d8	52.0		89 - 112		104%	SPK: 50
460-00-4	4-Bromofluorobenzene	52.2		85 - 114		104%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	138000	7.63				
540-36-3	1,4-Difluorobenzene	223000	8.55				
3114-55-4	Chlorobenzene-d5	236000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	97300	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/19/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-GW-498-500	SDG No.:	L3783
Lab Sample ID:	L3783-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063110.D	1		08/25/20 13:16	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40		2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	UM UJ	0.11	D	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82		3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/19/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-GW-498-500	SDG No.:	L3783
Lab Sample ID:	L3783-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063110.D	1		08/25/20 13:16	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	51.4		81 - 118		103%	SPK: 50
1868-53-7	Dibromofluoromethane	50.7		80 - 119		101%	SPK: 50
2037-26-5	Toluene-d8	52.4		89 - 112		105%	SPK: 50
460-00-4	4-Bromofluorobenzene	50.5		85 - 114		101%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	141000	7.63				
540-36-3	1,4-Difluorobenzene	232000	8.55				
3114-55-4	Chlorobenzene-d5	246000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	96000	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/19/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-GW-518-520	SDG No.:	L3783
Lab Sample ID:	L3783-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063111.D	1		08/25/20 13:40	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/19/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-GW-518-520	SDG No.:	L3783
Lab Sample ID:	L3783-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063111.D	1		08/25/20 13:40	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	52.9		81 - 118		106%	SPK: 50
1868-53-7	Dibromofluoromethane	51.0		80 - 119		102%	SPK: 50
2037-26-5	Toluene-d8	51.8		89 - 112		104%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.8		85 - 114		98%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	144000	7.62				
540-36-3	1,4-Difluorobenzene	237000	8.55				
3114-55-4	Chlorobenzene-d5	242000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	94600	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/19/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-GW-538-540	SDG No.:	L3783
Lab Sample ID:	L3783-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063112.D	1		08/25/20 14:04	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/19/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-GW-538-540	SDG No.:	L3783
Lab Sample ID:	L3783-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063112.D	1		08/25/20 14:04	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	57.7		81 - 118		115%	SPK: 50
1868-53-7	Dibromofluoromethane	53.6		80 - 119		107%	SPK: 50
2037-26-5	Toluene-d8	51.4		89 - 112		103%	SPK: 50
460-00-4	4-Bromofluorobenzene	51.5		85 - 114		103%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	134000	7.62				
540-36-3	1,4-Difluorobenzene	220000	8.55				
3114-55-4	Chlorobenzene-d5	233000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	97400	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/21/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-EB-20200821	SDG No.:	L3783
Lab Sample ID:	L3783-07	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063109.D	1		08/25/20 12:52	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	4.50	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	4.20	J	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/21/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-EB-20200821	SDG No.:	L3783
Lab Sample ID:	L3783-07	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063109.D	1		08/25/20 12:52	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	55.8		81 - 118		112%	SPK: 50
1868-53-7	Dibromofluoromethane	49.9		80 - 119		100%	SPK: 50
2037-26-5	Toluene-d8	51.0		89 - 112		102%	SPK: 50
460-00-4	4-Bromofluorobenzene	50.8		85 - 114		102%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	141000	7.62				
540-36-3	1,4-Difluorobenzene	235000	8.55				
3114-55-4	Chlorobenzene-d5	243000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	97500	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/21/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-GW-588-590	SDG No.:	L3783
Lab Sample ID:	L3783-08	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063113.D	1		08/25/20 14:27	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	25.0 ~~6.70~~	~~J~~ U	1.40	B	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82		3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/21/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-GW-588-590	SDG No.:	L3783
Lab Sample ID:	L3783-08	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063113.D	1		08/25/20 14:27	VN082520

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	56.6		81 - 118		113%	SPK: 50
1868-53-7	Dibromofluoromethane	52.4		80 - 119		105%	SPK: 50
2037-26-5	Toluene-d8	51.2		89 - 112		102%	SPK: 50
460-00-4	4-Bromofluorobenzene	52.3		85 - 114		105%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	134000	7.63				
540-36-3	1,4-Difluorobenzene	222000	8.55				
3114-55-4	Chlorobenzene-d5	235000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	96500	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/19/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-GW-518-520	SDG No.:	L3783
Lab Sample ID:	L3783-05	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	740 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011652.D	1	08/25/20 08:30	08/26/20 19:21	PB131185

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.14	U	0.12	0.14	0.14	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.23		30 - 150		57%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.32		30 - 150		80%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.28		55 - 111		69%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.26		53 - 106		66%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.33		58 - 132		82%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2580	7.75				
1146-65-2	Naphthalene-d8	10500	10.53				
15067-26-2	Acenaphthene-d10	6280	14.38				
1517-22-2	Phenanthrene-d10	13700	17.13				
1719-03-5	Chrysene-d12	15500	21.32				
1520-96-3	Perylene-d12	16700	23.58				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/21/20
Project:	CTO WE13	Date Received:	08/22/20
Client Sample ID:	BP-VPB181-GW-588-590	SDG No.:	L3783
Lab Sample ID:	L3783-08	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	790 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011671.D	1	08/25/20 08:30	08/27/20 19:19	PB131185

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.13	U	0.12	0.13	0.13	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.15		30 - 150		37%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.14		30 - 150		35%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.18	*	55 - 111		44%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.16	*	53 - 106		41%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.15	*	58 - 132		37%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2050	7.75				
1146-65-2	Naphthalene-d8	7770	10.53				
15067-26-2	Acenaphthene-d10	4510	14.38				
1517-22-2	Phenanthrene-d10	9740	17.13				
1719-03-5	Chrysene-d12	10700	21.32				
1520-96-3	Perylene-d12	12400	23.58				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Appendix C

Support Documents

A. Documents Supporting Qualifications

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CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L3783 SAS No.: L3783 SDG No.: L3783

Instrument ID: MSVOA_N Calibration Date/Time: 08/26/2020 12:39

Lab File ID: VN063127.D Init. Calib. Date(s): 08/18/2020 08/18/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:41 20:42

GC Column: RXI-624 ID: 0.25 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
Chloromethane	0.686	0.632	0.1	-7.87	20
Vinyl Chloride	0.663	0.631		-4.83	20
Bromomethane	0.394	0.364		-7.61	20
Chloroethane	0.391	0.378		-3.33	20
Trichlorofluoromethane	0.827	0.799		-3.39	20
1,1,2-Trichlorotrifluoroethane	0.446	0.415		-6.95	20
1,1-Dichloroethene	0.424	0.364		-14.15	20
Acetone	0.202	0.154		-23.76	20
Carbon Disulfide	1.112	0.885		-20.41	20
Methyl tert-butyl Ether	1.480	1.435		-3.04	20
Methylene Chloride	0.665	0.482		-27.52	20
trans-1,2-Dichloroethene	0.444	0.406		-8.56	20
1,1-Dichloroethane	0.949	0.876	0.1	-7.69	20
2-Butanone	0.315	0.256		-18.73	20
Carbon Tetrachloride	0.445	0.410		-7.86	20
cis-1,2-Dichloroethene	0.557	0.519		-6.82	20
Chloroform	0.956	0.852		-10.88	20
1,1,1-Trichloroethane	0.780	0.702		-10	20
Methylcyclohexane	0.521	0.546		4.8	20
Benzene	1.398	1.278		-8.58	20
1,2-Dichloroethane	0.469	0.418		-10.87	20
Trichloroethene	0.348	0.332		-4.6	20
1,2-Dichloropropane	0.404	0.391		-3.22	20
Bromodichloromethane	0.511	0.499		-2.35	20
4-Methyl-2-Pentanone	0.432	0.376		-12.96	20
Toluene	0.843	0.840		-0.36	20
t-1,3-Dichloropropene	0.529	0.537		1.51	20
cis-1,3-Dichloropropene	0.580	0.598		3.1	20
1,1,2-Trichloroethane	0.360	0.347		-3.61	20
2-Hexanone	0.302	0.276		-8.61	20
Dibromochloromethane	0.399	0.388		-2.76	20
Tetrachloroethene	0.329	0.359		9.12	20
Chlorobenzene	1.004	0.969	0.3	-3.49	20
Ethyl Benzene	1.697	1.741		2.59	20
m/p-Xylenes	0.631	0.661		4.75	20
o-Xylene	0.606	0.632		4.29	20
Styrene	1.039	1.143		10.01	20
Bromoform	0.311	0.290	0.1	-6.75	20
Isopropylbenzene	3.424	3.299		-3.65	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L3783 SAS No.: L3783 SDG No.: L3783

Instrument ID: MSVOA_N Calibration Date/Time: 08/26/2020 12:39

Lab File ID: VN063127.D Init. Calib. Date(s): 08/18/2020 08/18/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 18:41 20:42

GC Column: RXI-624 ID: 0.25 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
1,1,2,2-Tetrachloroethane	1.222	0.949	0.3	-22.34	20
1,3-Dichlorobenzene	1.618	1.608		-0.62	20
1,4-Dichlorobenzene	1.643	1.605		-2.31	20
1,2-Dichlorobenzene	1.563	1.567		0.26	20
1,2-Dichloroethane-d4	0.593	0.540		-8.94	20
Dibromofluoromethane	0.326	0.333		2.15	20
Toluene-d8	1.251	1.327		6.07	20
4-Bromofluorobenzene	0.442	0.475		7.47	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH

Matrix Spike/Matrix Spike Duplicate Summary
SW-846

SDG No.: L3783

Client: Tetra Tech NUS, Inc.

Analytical Method: SW8260C

Parameter	Spike	Sample Result	Result	Units	Rec	Rec Qual	RPD	RPD Qual	Limits Low	Limits High	Limits RPD
Lab Sample ID : L3783-03MS		**Client Sample ID : BP-VPB181-GW-498-500MS**						**Datafile :** VN063143.D			
Chloromethane	50	0	46.9	ug/L	94				50	139	
Vinyl chloride	50	0	48.6	ug/L	97				58	137	
Bromomethane	50	0	47.2	ug/L	94				53	141	
Chloroethane	50	0	49.7	ug/L	99				60	138	
Trichlorofluoromethane	50	0	48.2	ug/L	96				65	141	
1,1,2-Trichlorotrifluoroethane	50	0	45.7	ug/L	91				70	136	
1,1-Dichloroethene	50	0	44.6	ug/L	89				71	131	
Acetone	250	0	230	ug/L	92				39	160	
Carbon disulfide	50	0	39.8	ug/L	80				64	133	
Methyl tert-butyl Ether	50	0	49.0	ug/L	98				71	124	
Methylene Chloride	50	0	44.5	ug/L	89				74	124	
trans-1,2-Dichloroethene	50	0	44.7	ug/L	89				75	124	
1,1-Dichloroethane	50	0	45.0	ug/L	90				77	125	
2-Butanone	250	0	220	ug/L	88				56	143	
Carbon Tetrachloride	50	0	45.0	ug/L	90				72	136	
cis-1,2-Dichloroethene	50	0	47.7	ug/L	95				78	123	
Chloroform	50	0	47.7	ug/L	95				79	124	
1,1,1-Trichloroethane	50	0	47.3	ug/L	95				74	131	
Methylcyclohexane	50	0	35.6	ug/L	71	*			72	132	
Benzene	50	0	46.2	ug/L	92				79	120	
1,2-Dichloroethane	50	0	45.4	ug/L	91				73	128	
Trichloroethene	50	0	46.4	ug/L	93				79	123	
1,2-Dichloropropane	50	0	47.4	ug/L	95				78	122	
Bromodichloromethane	50	0	48.0	ug/L	96				79	125	
4-Methyl-2-Pentanone	250	0	230	ug/L	92				67	130	
Toluene	50	0	47.9	ug/L	96				80	121	
t-1,3-Dichloropropene	50	0	49.2	ug/L	98				73	127	
cis-1,3-Dichloropropene	50	0	48.4	ug/L	97				75	124	
1,1,2-Trichloroethane	50	0	47.5	ug/L	95				80	119	
2-Hexanone	250	0	230	ug/L	92				57	139	
Dibromochloromethane	50	0	47.5	ug/L	95				74	126	
Tetrachloroethene	50	0	52.2	ug/L	104				74	129	
Chlorobenzene	50	0	48.3	ug/L	97				82	118	
Ethyl Benzene	50	0	50.2	ug/L	100				79	121	
m/p-Xylenes	100	0	99.8	ug/L	100				80	121	
o-Xylene	50	0	50.9	ug/L	102				78	122	
Styrene	50	0	44.8	ug/L	90				78	123	
Bromoform	50	0	48.9	ug/L	98				66	130	
Isopropylbenzene	50	0	48.7	ug/L	97				72	131	
1,1,2,2-Tetrachloroethane	50	0	48.5	ug/L	97				71	121	
1,3-Dichlorobenzene	50	0	48.5	ug/L	97				80	119	
1,4-Dichlorobenzene	50	0	48.4	ug/L	97				79	118	
1,2-Dichlorobenzene	50	0	50.0	ug/L	100				80	119	

CHEMTECH

Matrix Spike/Matrix Spike Duplicate Summary
SW-846

SDG No.: L3783

Client: Tetra Tech NUS, Inc.

Analytical Method: SW8260C

Parameter	Spike	Sample Result	Result	Units	Rec	Rec Qual	RPD	RPD Qual	Limits Low	Limits High	Limits RPD
Lab Sample ID : L3783-04MSD	**Client Sample ID :** BP-VPB181-GW-498-500MSD							**Datafile :** VN063144.D			
Chloromethane	50	0	42.6	ug/L	85		10		50	139	20
Vinyl chloride	50	0	48.6	ug/L	97		0		58	137	20
Bromomethane	50	0	50.0	ug/L	100		6		53	141	20
Chloroethane	50	0	49.6	ug/L	99		0		60	138	20
Trichlorofluoromethane	50	0	48.8	ug/L	98		1		65	141	20
1,1,2-Trichlorotrifluoroethane	50	0	42.8	ug/L	86		7		70	136	20
1,1-Dichloroethene	50	0	42.5	ug/L	85		5		71	131	20
Acetone	250	0	210	ug/L	84		9		39	160	20
Carbon disulfide	50	0	37.1	ug/L	74		7		64	133	20
Methyl tert-butyl Ether	50	0	49.1	ug/L	98		0		71	124	20
Methylene Chloride	50	0	44.9	ug/L	90		1		74	124	20
trans-1,2-Dichloroethene	50	0	44.2	ug/L	88		1		75	124	20
1,1-Dichloroethane	50	0	45.3	ug/L	91		1		77	125	20
2-Butanone	250	0	220	ug/L	88		0		56	143	20
Carbon Tetrachloride	50	0	45.5	ug/L	91		1		72	136	20
cis-1,2-Dichloroethene	50	0	48.1	ug/L	96		1		78	123	20
Chloroform	50	0	48.0	ug/L	96		1		79	124	20
1,1,1-Trichloroethane	50	0	48.1	ug/L	96		2		74	131	20
Methylcyclohexane	50	0	35.7	ug/L	71	*	0		72	132	20
Benzene	50	0	46.0	ug/L	92		0		79	120	20
1,2-Dichloroethane	50	0	45.8	ug/L	92		1		73	128	20
Trichloroethene	50	0	46.8	ug/L	94		1		79	123	20
1,2-Dichloropropane	50	0	46.8	ug/L	94		1		78	122	20
Bromodichloromethane	50	0	47.0	ug/L	94		2		79	125	20
4-Methyl-2-Pentanone	250	0	230	ug/L	92		0		67	130	20
Toluene	50	0	47.2	ug/L	94		1		80	121	20
t-1,3-Dichloropropene	50	0	48.9	ug/L	98		1		73	127	20
cis-1,3-Dichloropropene	50	0	48.2	ug/L	96		0		75	124	20
1,1,2-Trichloroethane	50	0	47.5	ug/L	95		0		80	119	20
2-Hexanone	250	0	230	ug/L	92		0		57	139	20
Dibromochloromethane	50	0	47.3	ug/L	95		0		74	126	20
Tetrachloroethene	50	0	50.9	ug/L	102		3		74	129	20
Chlorobenzene	50	0	47.7	ug/L	95		1		82	118	20
Ethyl Benzene	50	0	49.5	ug/L	99		1		79	121	20
m/p-Xylenes	100	0	99.7	ug/L	100		0		80	121	20
o-Xylene	50	0	50.8	ug/L	102		0		78	122	20
Styrene	50	0	44.0	ug/L	88		2		78	123	20
Bromoform	50	0	49.1	ug/L	98		0		66	130	20
Isopropylbenzene	50	0	47.8	ug/L	96		2		72	131	20
1,1,2,2-Tetrachloroethane	50	0	47.9	ug/L	96		1		71	121	20
1,3-Dichlorobenzene	50	0	48.2	ug/L	96		1		80	119	20
1,4-Dichlorobenzene	50	0	48.9	ug/L	98		1		79	118	20
1,2-Dichlorobenzene	50	0	49.2	ug/L	98		2		80	119	20

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Surrogate Summary

SW-846

SDG No.: L3783

Client: Tetra Tech NUS, Inc.

Analytical Method: 8270-Modified

Lab Sample ID	Client ID	Parameter	Spike (PPM)	Result (PPM)	Recovery (%)	Qual	Limits (%) Low	Limits (%) High
L3783-05	BP-VPB181-GW-518-520	2-Methylnaphthalene-d10	0.4	0.23	57		30	150
		Fluoranthene-d10	0.4	0.32	80		30	150
		Nitrobenzene-d5	0.4	0.28	69		55	111
		2-Fluorobiphenyl	0.4	0.26	66		53	106
		Terphenyl-d14	0.4	0.33	82		58	132
L3783-08	BP-VPB181-GW-588-590	2-Methylnaphthalene-d10	0.4	0.15	37		30	150
		Fluoranthene-d10	0.4	0.14	35		30	150
		Nitrobenzene-d5	0.4	0.18	44	*	55	111
		2-Fluorobiphenyl	0.4	0.16	41	*	53	106
		Terphenyl-d14	0.4	0.15	37	*	58	132
PB131185BL	PB131185BL	2-Methylnaphthalene-d10	0.4	0.30	76		30	150
		Fluoranthene-d10	0.4	0.30	74		30	150
		Nitrobenzene-d5	0.4	0.44	109		55	111
		2-Fluorobiphenyl	0.4	0.43	108	*	53	106
		Terphenyl-d14	0.4	0.42	106		58	132
PB131185BS	PB131185BS	2-Methylnaphthalene-d10	0.4	0.39	97		30	150
		Fluoranthene-d10	0.4	0.38	95		30	150
		Nitrobenzene-d5	0.4	0.43	106		55	111
		2-Fluorobiphenyl	0.4	0.42	104		53	106
		Terphenyl-d14	0.4	0.41	103		58	132
PB131185BSD	PB131185BSD	2-Methylnaphthalene-d10	0.4	0.38	95		30	150
		Fluoranthene-d10	0.4	0.39	96		30	150
		Nitrobenzene-d5	0.4	0.46	114	*	55	111
		2-Fluorobiphenyl	0.4	0.42	105		53	106
		Terphenyl-d14	0.4	0.39	98		58	132

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Appendix C

Support Documents

B. Chain of Custody (COC)

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CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax: (908) 78-8922
www.chemtech.net

Chemtech Project Number: L3783

COC Number:

CLIENT INFORMATION	PROJECT INFORMATION	BILLING INFORMATION
COMPANY: Tetra Tech	PROJECT NAME: NWIRP Bethpage	BILL TO: SEE CONTRACT PO#
ADDRESS: 5700 Lake Wright Dr., Suite 102	PROJECT #: 112G08005-WE13 LOCATION: VPB-181	ADDRESS:
CITY: Norfolk STATE: VA ZIP: 23502	PROJECT MANAGER: Dave Brayack	CITY: STATE: ZIP:
ATTENTION: Dave Brayack	E-MAIL: david.brayack@tetratech.com	ATTENTION: PHONE:
PHONE: 757-466-4909 FAX: 757-461-4148	PHONE: 757-466-4909 FAX: 757-461-4148	

DATA TURNAROUND INFORMATION

FAX: 2 & 10 DAYS*
HARD COPY: 2 & 10 DAYS*
EDD 2 & 10 DAYS*
* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ☐ RESEULTS ONLY
- ☐ RESULTS + QC
- ☐ New Jersey REDUCED
- ☐ New Jersey CLP
- ☐ USEPA CLP
- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other
- ☐ EDD Format

ANALYSIS

	1	2	3	4	5	6	7	8	9
	VOC(SW846-8260B)	1,4 Dioxane (8270 SIM)							

PRESERVATIVES

	A								
	1	2	3	4	5	6	7	8	9

COMMENTS

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-Other

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# of Bottles	Comments
1.	BP-VPB181-TB-20200819	QA		X	8/19/20	8:00	2	Trip Blank
2.	BP-VPB181-GW-498-500	AQ		X	8/19/20	10:00	6	Run MS/MSD
3.	BP-VPB181-GW-518-520	AQ		X	8/19/20	13:25	3	
4.	BP-VPB181-GW-538-540	AQ		X	8/19/20	15:15	2	
5.	BP-VPB181-EB-20200821	QA		X	8/21/20	10:15	2	
6.	BP-VPB181-GW-588-590	AQ		X	8/21/20	12:00	3	
7.								
8.								
9.								
10.								

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1.	8/21/20 1600	1.
RELINQUISHED BY 2.	DATE/TIME 8/22/20 9:30	RECEIVED BY 2.
RELINQUISHED BY 3.	DATE/TIME	RECEIVED FOR LAB BY 3.

Conditions of bottles or coolers at receipt: ☐ Compliant ☐ Non Compliant ☑ Cooler Temp 2.1°
MeOH extraction requires an additional 4oz. Jar for percent solid ☑ Ice in Cooler?: Yes

Comments: **48hr TAT** - For VOC's see worksheet #15 of SAP 2018 for VPB program VOC list
10-DAY TAT - For 1,4 Dioxane (8270 SIM)

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ Overnight
CHEMTECH: ☐ Picked Up ☐ Overnight

Shipment Complete ☐ YES ☐ NO

WHITE - CHEMTECH COPYFOR RETURN TO CLIENT **YELLOW** - CHEMTECH COPY **PINK** - SAMPLER COPY

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Appendix C

Support Documents

C. Calculations for Stage 4 Data Validation

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SDG L3783

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

VOC (8260) SAMPLE QUANTITATION

Sample # toluene for BP-VPB181-EB-20200821

Cpd. Concentration = Areac(ConcISTD)(Vf)(Dl)(UnitF)/(Areast)(Vi)

Calc. Concentration = 4.2

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL	UnitF
16785	235150	50	0.843	5000	5000	1	1

Reported Concentration = 4.2

SDG L3783

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

SVOC (8270) SAMPLE QUANTITATION

Sample # 1,4-dioxane for LCS

Cpd. Concentration = $\frac{(Area_c)(Conc_{istd})(Vf)(DL)}{(Area_{st})(\overline{RRF_c})(Vi)}$

Calc. Concentration = 0.42

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL
1368	2081	0.4	0.62	1000	1000	1

Reported Concentration = 0.42

VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com

DATA VALIDATION SUMMARY REPORT - CHEMISTRY

COMPANY:	Tetra Tech, Inc., Norfolk, VA
PROJECT NAME:	Basewide Groundwater Investigation, Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, N62470-16-D-9008
SITE NAME:	CTO-WE13
CONTRACTED LAB:	CHEMTECH, Mountainside, NJ
JOB NO./ACCOUNTING CODE:	112G08005-WE13
QA/QC LEVEL:	EPA Stage 4
ANALYTICAL METHOD(S):	SW846 Methods 8260C and 8270SIM
VALIDATION GUIDELINES:	Tier II Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Vertical Profile Boring and Monitoring Well Installation Program Site 0001 – Former Drum Marshalling Area Operable Unit 2 Plume Naval Weapons Industrial Reserve Plant Bethpage, New York, March 2019, DOD QSM 5.0; July 2013, DOD Data Validation Guidance, February 2018, Method criteria, Laboratory limits and Professional Judgment
SAMPLE MATRICES:	Soil & Groundwater
TYPES OF ANALYSES:	Volatile Organic Compounds (VOC) Semivolatile Organic Compounds (SVOC)*
DATA VALIDATION DATE:	October 15, 2020
DATA REVIEWER(S):	Amy L. Hogan
SDG NUMBER:	L3820
SAMPLING DATE(S):	August 24-26, 2020

SAMPLES:

Client Sample ID	Laboratory ID	VOC	SVOC*
BP-VPB181-GW-598-600	L3820-01	X	
BP-VPB181-TB-20200824	L3820-02	X	
BP-VPB181-GW-618-620	L3820-03	X	X
BP-VPB181-GW-638-640	L3820-04	X	
BP-VPB181-DUP-20200825	L3820-05	X	
BP-VPB181-GW-658-660	L3820-06	X	X
BP-VPB181-GW-678-680	L3820-07	X	
BP-VPB181-GW-703-705	L3820-08	X	X

Suffix Codes: DL= DILUTION, MS = MATRIX SPIKE,
MSD = MATRIX SPIKE DUPLICATE, RE = REANALYSIS

* SVOC analyses reported 1,4-dioxane only.

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

CHEMTECH – SDG: L3820 – Organic Chemistry

VOLATILE ORGANICS

SUMMARY

I.) General:

The analyses for Volatile Organics were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8260C.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blanks for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank for this SDG. No data qualification was necessary.

Field Blank:

There were no associated field blanks for this SDG. No data qualification was necessary.

Trip Blank:

There were no detections in associated trip blank BP-VPB181-TB-20200824. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

Two LCS / LCSD sets were analyzed by the laboratory for this SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data were not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required. No data qualification was necessary.

VIII.) Field Duplicates:

One set of field duplicate samples (BP-VPB181-GW-638-640 / BP-VPB181-DUP-20200825) was identified for this fraction of the SDG. The calculable Differences for acetone and carbon disulfide were less than 2X the LOQ, so no data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD area count criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All forty-three requested compounds for groundwater samples and all forty-four requested compounds for soils were reported with acceptable LOD and LOQ results as determined by the SAP.

The validator has noted that the non-detect results for the following compounds were reported at the LOD, which exceeds the PAL limit of 0.17 ug/L for the groundwater samples : carbon disulfide, carbon tetrachloride, chlorobenzene, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene , 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene and 1,1,2-trichlorotrifluoroethane.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

SEMIVOLATILE ORGANICS (1,4-DIOXANE ONLY)

SUMMARY

I.) General:

The analyses for Semivolatile Organics (1,4-dioxane only) were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8270SIM.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

One LCS / LCSD set was analyzed by the laboratory for this fraction of the SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data was not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified as part of this fraction of the SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

1,4-dioxane was reported with acceptable LOD and LOQ results as determined by the SAP.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

Appendix A

Data Qualification Summary Table (DQST) with Qualification Codes

There were no data qualifications for this SDG

Appendix B

Laboratory Sample Results

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/24/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-TB-20200824	SDG No.:	L3820
Lab Sample ID:	L3820-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018098.D	1		08/27/20 17:50	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/24/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-TB-20200824	SDG No.:	L3820
Lab Sample ID:	L3820-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018098.D	1		08/27/20 17:50	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	47.0		81 - 118		94%	SPK: 50
1868-53-7	Dibromofluoromethane	49.5		80 - 119		99%	SPK: 50
2037-26-5	Toluene-d8	48.5		89 - 112		97%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.7		85 - 114		91%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	598000	5.63				
540-36-3	1,4-Difluorobenzene	948000	6.83				
3114-55-4	Chlorobenzene-d5	898000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	422000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/25/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-618-620	SDG No.:	L3820
Lab Sample ID:	L3820-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018099.D	1		08/27/20 18:13	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	4.90	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/25/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-618-620	SDG No.:	L3820
Lab Sample ID:	L3820-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018099.D	1		08/27/20 18:13	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.4		81 - 118		97%	SPK: 50
1868-53-7	Dibromofluoromethane	48.4		80 - 119		97%	SPK: 50
2037-26-5	Toluene-d8	48.1		89 - 112		96%	SPK: 50
460-00-4	4-Bromofluorobenzene	44.8		85 - 114		90%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	600000	5.63				
540-36-3	1,4-Difluorobenzene	992000	6.83				
3114-55-4	Chlorobenzene-d5	932000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	431000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/25/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-638-640	SDG No.:	L3820
Lab Sample ID:	L3820-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018100.D	1		08/27/20 18:36	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	6.90	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.45	J	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/25/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-638-640	SDG No.:	L3820
Lab Sample ID:	L3820-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018100.D	1		08/27/20 18:36	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.3		81 - 118		97%	SPK: 50
1868-53-7	Dibromofluoromethane	48.3		80 - 119		97%	SPK: 50
2037-26-5	Toluene-d8	49.4		89 - 112		99%	SPK: 50
460-00-4	4-Bromofluorobenzene	46.6		85 - 114		93%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	594000	5.64				
540-36-3	1,4-Difluorobenzene	956000	6.84				
3114-55-4	Chlorobenzene-d5	917000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	426000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/25/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-DUP-20200825	SDG No.:	L3820
Lab Sample ID:	L3820-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018101.D	1		08/27/20 18:59	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	6.60	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.45	J	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/25/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-DUP-20200825	SDG No.:	L3820
Lab Sample ID:	L3820-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018101.D	1		08/27/20 18:59	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.7		81 - 118		97%	SPK: 50
1868-53-7	Dibromofluoromethane	47.7		80 - 119		95%	SPK: 50
2037-26-5	Toluene-d8	48.6		89 - 112		97%	SPK: 50
460-00-4	4-Bromofluorobenzene	46.4		85 - 114		93%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	624000	5.64				
540-36-3	1,4-Difluorobenzene	1040000	6.84				
3114-55-4	Chlorobenzene-d5	981000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	451000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/25/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-658-660	SDG No.:	L3820
Lab Sample ID:	L3820-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018102.D	1		08/27/20 19:22	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	4.60	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/25/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-658-660	SDG No.:	L3820
Lab Sample ID:	L3820-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018102.D	1		08/27/20 19:22	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	49.1		81 - 118		98%	SPK: 50
1868-53-7	Dibromofluoromethane	46.9		80 - 119		94%	SPK: 50
2037-26-5	Toluene-d8	48.1		89 - 112		96%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.5		85 - 114		91%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	625000	5.64				
540-36-3	1,4-Difluorobenzene	1060000	6.83				
3114-55-4	Chlorobenzene-d5	1010000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	449000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/26/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-678-680	SDG No.:	L3820
Lab Sample ID:	L3820-07	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018103.D	1		08/27/20 19:45	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	14.2	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.30	J	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/26/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-678-680	SDG No.:	L3820
Lab Sample ID:	L3820-07	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018103.D	1		08/27/20 19:45	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.2		81 - 118		96%	SPK: 50
1868-53-7	Dibromofluoromethane	48.4		80 - 119		97%	SPK: 50
2037-26-5	Toluene-d8	48.3		89 - 112		97%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.6		85 - 114		91%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	629000	5.63				
540-36-3	1,4-Difluorobenzene	1030000	6.84				
3114-55-4	Chlorobenzene-d5	984000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	449000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/26/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-703-705	SDG No.:	L3820
Lab Sample ID:	L3820-08	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018104.D	1		08/27/20 20:08	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	5.00	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/26/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-703-705	SDG No.:	L3820
Lab Sample ID:	L3820-08	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018104.D	1		08/27/20 20:08	VX082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	50.1		81 - 118		100%	SPK: 50
1868-53-7	Dibromofluoromethane	48.1		80 - 119		96%	SPK: 50
2037-26-5	Toluene-d8	48.3		89 - 112		97%	SPK: 50
460-00-4	4-Bromofluorobenzene	46.2		85 - 114		92%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	616000	5.64				
540-36-3	1,4-Difluorobenzene	1040000	6.84				
3114-55-4	Chlorobenzene-d5	980000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	449000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/24/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-598-600	SDG No.:	L3820
Lab Sample ID:	L3820-01	Matrix:	SOIL
Analytical Method:	SW8260	% Moisture:	86.9
Sample Wt/Vol:	5.05 Units: g	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group3
GC Column:	RTX-VMS ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VD066434.D	1		08/27/20 14:01	VD082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units(Dry Weight)
TARGETS							
75-71-8	Dichlorodifluoromethane	30.2	U	11.1	30.2	37.8	ug/Kg
74-87-3	Chloromethane	30.2	U	16.8	30.2	37.8	ug/Kg
75-01-4	Vinyl Chloride	30.2	U	10.5	30.2	37.8	ug/Kg
74-83-9	Bromomethane	30.2	U	9.90	30.2	37.8	ug/Kg
75-00-3	Chloroethane	30.2	U	12.4	30.2	37.8	ug/Kg
75-69-4	Trichlorofluoromethane	30.2	U	11.3	30.2	37.8	ug/Kg
76-13-1	1,1,2-Trichlorotrifluoroethane	30.2	U	12.4	30.2	37.8	ug/Kg
75-35-4	1,1-Dichloroethene	30.2	U	10.7	30.2	37.8	ug/Kg
67-64-1	Acetone	81.6	J	46.0	150	190	ug/Kg
75-15-0	Carbon Disulfide	18.9	U	7.40	18.9	37.8	ug/Kg
1634-04-4	Methyl tert-butyl Ether	30.2	U	10.7	30.2	37.8	ug/Kg
75-09-2	Methylene Chloride	60.5	U	43.2	60.5	75.6	ug/Kg
156-60-5	trans-1,2-Dichloroethene	30.2	U	12.0	30.2	37.8	ug/Kg
75-34-3	1,1-Dichloroethane	18.9	U	7.10	18.9	37.8	ug/Kg
78-93-3	2-Butanone	150	U	62.7	150	190	ug/Kg
56-23-5	Carbon Tetrachloride	18.9	U	6.70	18.9	37.8	ug/Kg
156-59-2	cis-1,2-Dichloroethene	30.2	U	10.5	30.2	37.8	ug/Kg
67-66-3	Chloroform	30.2	U	9.60	30.2	37.8	ug/Kg
71-55-6	1,1,1-Trichloroethane	18.9	U	5.80	18.9	37.8	ug/Kg
108-87-2	Methylcyclohexane	18.9	U	3.50	18.9	37.8	ug/Kg
71-43-2	Benzene	18.9	U	6.50	18.9	37.8	ug/Kg
107-06-2	1,2-Dichloroethane	18.9	U	6.90	18.9	37.8	ug/Kg
79-01-6	Trichloroethene	18.9	U	6.40	18.9	37.8	ug/Kg
78-87-5	1,2-Dichloropropane	18.9	U	6.70	18.9	37.8	ug/Kg
75-27-4	Bromodichloromethane	18.9	U	6.80	18.9	37.8	ug/Kg
108-10-1	4-Methyl-2-Pentanone	150	U	52.8	150	190	ug/Kg
108-88-3	Toluene	18.9	U	6.50	18.9	37.8	ug/Kg
10061-02-6	t-1,3-Dichloropropene	18.9	U	8.10	18.9	37.8	ug/Kg
10061-01-5	cis-1,3-Dichloropropene	18.9	U	7.40	18.9	37.8	ug/Kg
79-00-5	1,1,2-Trichloroethane	18.9	U	7.50	18.9	37.8	ug/Kg
591-78-6	2-Hexanone	150	U	66.7	150	190	ug/Kg
124-48-1	Dibromochloromethane	18.9	U	8.00	18.9	37.8	ug/Kg

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/24/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-598-600	SDG No.:	L3820
Lab Sample ID:	L3820-01	Matrix:	SOIL
Analytical Method:	SW8260	% Moisture:	86.9
Sample Wt/Vol:	5.05 Units: g	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group3
GC Column:	RTX-VMS ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VD066434.D	1		08/27/20 14:01	VD082720

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units(Dry Weight)
127-18-4	Tetrachloroethene	18.9	U	6.60	18.9	37.8	ug/Kg
108-90-7	Chlorobenzene	18.9	U	6.80	18.9	37.8	ug/Kg
100-41-4	Ethyl Benzene	18.9	U	7.80	18.9	37.8	ug/Kg
179601-23-1	m/p-Xylenes	37.8	U	16.4	37.8	75.6	ug/Kg
95-47-6	o-Xylene	18.9	U	7.50	18.9	37.8	ug/Kg
100-42-5	Styrene	30.2	U	10.4	30.2	37.8	ug/Kg
75-25-2	Bromoform	30.2	U	9.10	30.2	37.8	ug/Kg
98-82-8	Isopropylbenzene	18.9	U	8.60	18.9	37.8	ug/Kg
79-34-5	1,1,2,2-Tetrachloroethane	18.9	U	8.10	18.9	37.8	ug/Kg
541-73-1	1,3-Dichlorobenzene	30.2	U	9.80	30.2	37.8	ug/Kg
106-46-7	1,4-Dichlorobenzene	18.9	U	6.40	18.9	37.8	ug/Kg
95-50-1	1,2-Dichlorobenzene	30.2	U	7.90	30.2	37.8	ug/Kg
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	54.6		71 - 136		109%	SPK: 50
1868-53-7	Dibromofluoromethane	48.7		78 - 119		97%	SPK: 50
2037-26-5	Toluene-d8	49.4		85 - 116		99%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.3		79 - 119		91%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	157000	7.97				
540-36-3	1,4-Difluorobenzene	225000	8.86				
3114-55-4	Chlorobenzene-d5	196000	11.64				
3855-82-1	1,4-Dichlorobenzene-d4	100000	13.58				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/Kg

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/25/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-618-620	SDG No.:	L3820
Lab Sample ID:	L3820-03	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	930 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011676.D	1	08/27/20 12:25	08/27/20 22:56	PB131252

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.11	U	0.10	0.11	0.11	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.25		30 - 150		63%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.28		30 - 150		70%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.27		55 - 111		68%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.30		53 - 106		76%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.31		58 - 132		77%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	1970	7.75				
1146-65-2	Naphthalene-d8	7450	10.53				
15067-26-2	Acenaphthene-d10	4420	14.38				
1517-22-2	Phenanthrene-d10	9860	17.13				
1719-03-5	Chrysene-d12	11300	21.32				
1520-96-3	Perylene-d12	11700	23.58				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/25/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-658-660	SDG No.:	L3820
Lab Sample ID:	L3820-06	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	920 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011677.D	1	08/27/20 12:25	08/27/20 23:32	PB131252

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.11	U	0.10	0.11	0.11	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.22		30 - 150		55%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.24		30 - 150		61%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.23		55 - 111		58%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.25		53 - 106		63%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.27		58 - 132		68%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2030	7.75				
1146-65-2	Naphthalene-d8	7710	10.53				
15067-26-2	Acenaphthene-d10	4610	14.38				
1517-22-2	Phenanthrene-d10	10300	17.13				
1719-03-5	Chrysene-d12	12000	21.32				
1520-96-3	Perylene-d12	12300	23.58				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/26/20
Project:	CTO WE13	Date Received:	08/27/20
Client Sample ID:	BP-VPB181-GW-703-705	SDG No.:	L3820
Lab Sample ID:	L3820-08	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	830 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011678.D	1	08/27/20 12:25	08/28/20 00:08	PB131252

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.12	U	0.11	0.12	0.12	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.27		30 - 150		68%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.27		30 - 150		68%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.28		55 - 111		69%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.32		53 - 106		80%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.31		58 - 132		77%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2100	7.75				
1146-65-2	Naphthalene-d8	8020	10.53				
15067-26-2	Acenaphthene-d10	4790	14.38				
1517-22-2	Phenanthrene-d10	10900	17.13				
1719-03-5	Chrysene-d12	13000	21.32				
1520-96-3	Perylene-d12	14000	23.57				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Appendix C

Support Documents

A. Documents Supporting Qualifications

No Support documentation was necessary for this SDG

Appendix C

Support Documents

B. Chain of Custody (COC)

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CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax: (908) 78-8922
www.chemtech.net

Chemtech Project Number: L3820

COC Number:

CLIENT INFORMATION	PROJECT INFORMATION	BILLING INFORMATION
COMPANY: Tetra Tech	PROJECT NAME: NWIRP Bethpage	BILL TO: SEE CONTRACT PO#
ADDRESS: 5700 Lake Wright Dr., Suite 102	PROJECT #: 112G08005-WE13 LOCATION: VPB-181	ADDRESS:
CITY: Norfolk STATE: VA ZIP: 23502	PROJECT MANAGER: Dave Brayack	CITY: STATE: ZIP:
ATTENTION: Dave Brayack	E-MAIL: david.brayack@tetratech.com	ATTENTION: PHONE:
PHONE: 757-466-4909 FAX: 757-461-4148	PHONE: 757-466-4909 FAX: 757-461-4148	

DATA TURNAROUND INFORMATION

FAX: 2 & 10 DAYS*
HARD COPY: 2 & 10 DAYS*
EDD 2 & 10 DAYS*
* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ☐ RESEULTS ONLY
- ☐ RESULTS + QC
- ☐ New Jersey REDUCED
- ☐ New Jersey CLP
- ☐ EDD Format
- ☐ USEPA CLP
- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other

ANALYSIS

	1	2	3	4	5	6	7	8	9
	VOC(SW846-8260B)	1,4 Dioxane (8270 SIM)							

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# of Bottles	PRESERVATIVES A	1	2	3	4	5	6	7	8	9	COMMENTS
1.	BP-VPB181-TB-20200824	QA		X	8/24/20	8:15	2		2									Trip Blank
2.	BP-VPB181-GW-598-600	AQ		X	8/24/20	15:00	8		8									Very turbid
3.	BP-VPB181-GW-618-620	AQ		X	8/25/20	10:05	3		2	1								
4.	BP-VPB181-GW-638-640	AQ		X	8/25/20	12:20	2		2									
5.	BP-VPB181-DUP-20200825	AQ		X	8/25/20	11:00	2		2									
6.	BP-VPB181-GW-658-660	AQ		X	8/25/20	14:30	3		2	1								
7.	BP-VPB181-GW-678-680	AQ		X	8/26/20	10:05	2		2									
8.	BP-VPB181-GW-703-705	AQ		X	8/26/20	14:00	3		2	1								
9.																		
10.																		

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-Other

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1.	8/26/20 1700	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2. FedEx	8/27/2020 1010	2.
RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY
3.		3.

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant ☐ Cooler Temp 3.3°C
MeOH extraction requires an additional 4oz. Jar for percent solid ☐ Ice in Cooler?:

Comments: **48hr TAT** - For VOC's see worksheet #15 of SAP 2018 for VPB program VOC list
10-DAY TAT - For 1,4 Dioxane (8270 SIM)

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☒ Overnight
CHEMTECH: ☐ Picked Up ☒ Overnight

Shipment Complete ☒ YES ☐ NO

WHITE - CHEMTECH COPYFOR RETURN TO CLIENT YELLOW - CHEMTECH COPY PINK - SAMPLER COPY

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Appendix C

Support Documents

C. Calculations for Stage 4 Data Validation

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SDG L3820

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

VOC (8260) SAMPLE QUANTITATION

Sample # acetone for BP-VPB181-GW-598-600

Cpd. Concentration = Areac(ConcISTD)(Vf)(Dl)/(Areast)(Vi)(UnitF)(S)

Calc. Concentration = 81.9

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL	UnitF	S
2988	156605	50	0.088	5000	5.05	1	1000	0.131

Reported Concentration = 81.6

SDG L3820

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

SVOC (8270) SAMPLE QUANTITATION

Sample # 1,4-dioxane for LCS

Cpd. Concentration = $\frac{(Area_c)(Conc_{istd})(Vf)(DL)}{(Area_{st})(\overline{RRF_c})(Vi)}$

Calc. Concentration = 0.36

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL
1121	1920	0.4	0.643	1000	1000	1

Reported Concentration = 0.36

VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com

DATA VALIDATION SUMMARY REPORT - CHEMISTRY

COMPANY:	Tetra Tech, Inc., Norfolk, VA
PROJECT NAME:	Basewide Groundwater Investigation, Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, N62470-16-D-9008
SITE NAME:	CTO-WE13
CONTRACTED LAB:	CHEMTECH, Mountainside, NJ
JOB NO./ACCOUNTING CODE:	112G08005-WE13
QA/QC LEVEL:	EPA Stage 4
ANALYTICAL METHOD(S):	SW846 Methods 8260C and 8270SIM
VALIDATION GUIDELINES:	Tier II Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Vertical Profile Boring and Monitoring Well Installation Program Site 0001 – Former Drum Marshalling Area Operable Unit 2 Plume Naval Weapons Industrial Reserve Plant Bethpage, New York, March 2019, DOD QSM 5.0; July 2013, DOD Data Validation Guidance, February 2018, Method criteria, Laboratory limits and Professional Judgment
SAMPLE MATRICES:	Soil & Groundwater
TYPES OF ANALYSES:	Volatile Organic Compounds (VOC) Semivolatile Organic Compounds (SVOC)*
DATA VALIDATION DATE:	October 15, 2020
DATA REVIEWER(S):	Amy L. Hogan
SDG NUMBER:	L3846
SAMPLING DATE(S):	August 27, 2020

SAMPLES:

Client Sample ID	Laboratory ID	VOC	SVOC*
BP-VPB181-TB-20200827	L3846-01	X	
BP-VPB181-GW-738-740	L3846-03	X	X
BP-VPB181-EB-20200828	L3846-04	X	
BP-VPB181-GW-723-725	L3846-05	X	

Suffix Codes: DL= DILUTION, MS = MATRIX SPIKE,
MSD = MATRIX SPIKE DUPLICATE, RE = REANALYSIS

* SVOC analyses reported 1,4-dioxane only.

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

CHEMTECH – SDG: L3846 – Organic Chemistry

VOLATILE ORGANICS

SUMMARY

I.) General:

The analyses for Volatile Organics were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8260C.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blanks for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

Acetone (9.70 ug/L), carbon disulfide (0.28 ug/L), chloromethane (0.79 ug/L) and toluene (2.60 ug/L) were detected in associated equipment blank BP-VPB181-EB-20200828 for this SDG. Since the blank result for acetone was less than the LOQ, the positive acetone results for the samples, which were less than the LOQ, were qualified as undetected (U) with the results being raised to the LOQ and reason code B. Since there were no positive results for the other listed compounds in the samples, no further data qualification was necessary.

Field Blank:

There were no associated field blanks for this SDG. No data qualification was necessary.

Trip Blank:

There were no detections in associated trip blank BP-VPB181-TB-20200827. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

One LCS and one LCS / LCSD set were analyzed by the laboratory for this SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

Batch MS / MSD analyses data were submitted for this fraction of the SDG. All criteria were met. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified for this fraction of the SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD area count criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All forty-three requested compounds for groundwater samples and all forty-four requested compounds for soils were reported with acceptable LOD and LOQ results as determined by the SAP.

The validator has noted that the non-detect results for the following compounds were reported at the LOD, which exceeds the PAL limit of 0.17 ug/L for the groundwater samples : carbon disulfide, carbon tetrachloride, chlorobenzene, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene , 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene and 1,1,2-trichlorotrifluoroethane.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

SEMIVOLATILE ORGANICS (1,4-DIOXANE ONLY)

SUMMARY

I.) General:

The analyses for Semivolatile Organics (1,4-dioxane only) were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8270SIM.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

One LCS / LCSD set was analyzed by the laboratory for this fraction of the SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data was not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified as part of this fraction of the SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

1,4-dioxane was reported with acceptable LOD and LOQ results as determined by the SAP.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

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Appendix A

Data Qualification Summary Table (DQST) with Qualification Codes

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DATA QUALIFICATION SUMMARY TABLE (DQST) WITH QUALIFICATION CODES

VOC								
Client Sample ID	Date Collected	Lab Sample ID	Analyte	Lab Qual	Val Result	VAL_RES ERROR	Val Qual	Val Reason
BP-VPB181-GW-723-725	8/27/2020 0:00	L3846-05	ACETONE	J	56.3	140.0	U	B
BP-VPB181-GW-738-740	8/27/2020 0:00	L3846-03	ACETONE	J	3.4	25.0	U	B

SVOC								
Client Sample ID	Date Collected	Lab Sample ID	Analyte	Lab Qual	Val Result	VAL_RES ERROR	Val Qual	Val Reason
N/A	N/A	N/A	N/A	No qualifications were made				

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Appendix B

Laboratory Sample Results

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/27/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-TB-20200827	SDG No.:	L3846
Lab Sample ID:	L3846-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018141.D	1		08/31/20 12:51	VX083120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/27/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-TB-20200827	SDG No.:	L3846
Lab Sample ID:	L3846-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018141.D	1		08/31/20 12:51	VX083120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.3		81 - 118		97%	SPK: 50
1868-53-7	Dibromofluoromethane	48.4		80 - 119		97%	SPK: 50
2037-26-5	Toluene-d8	47.4		89 - 112		95%	SPK: 50
460-00-4	4-Bromofluorobenzene	44.1		85 - 114		88%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	593000	5.64				
540-36-3	1,4-Difluorobenzene	967000	6.83				
3114-55-4	Chlorobenzene-d5	887000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	436000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/27/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-GW-738-740	SDG No.:	L3846
Lab Sample ID:	L3846-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018152.D	1		08/31/20 17:02	VX083120

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	25.0 ~~3.40~~	~~J~~ U	1.40	B	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82		3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/27/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-GW-738-740	SDG No.:	L3846
Lab Sample ID:	L3846-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018152.D	1		08/31/20 17:02	VX083120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	50.2		81 - 118		100%	SPK: 50
1868-53-7	Dibromofluoromethane	50.4		80 - 119		101%	SPK: 50
2037-26-5	Toluene-d8	47.3		89 - 112		95%	SPK: 50
460-00-4	4-Bromofluorobenzene	44.7		85 - 114		89%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	489000	5.64				
540-36-3	1,4-Difluorobenzene	791000	6.84				
3114-55-4	Chlorobenzene-d5	734000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	361000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/28/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-EB-20200828	SDG No.:	L3846
Lab Sample ID:	L3846-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018140.D	1		08/31/20 12:28	VX083120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.79	J	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	9.70	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.28	J	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	2.60	J	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/28/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-EB-20200828	SDG No.:	L3846
Lab Sample ID:	L3846-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018140.D	1		08/31/20 12:28	VX083120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	49.3		81 - 118		99%	SPK: 50
1868-53-7	Dibromofluoromethane	49.7		80 - 119		99%	SPK: 50
2037-26-5	Toluene-d8	48.8		89 - 112		98%	SPK: 50
460-00-4	4-Bromofluorobenzene	44.2		85 - 114		88%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	616000	5.63				
540-36-3	1,4-Difluorobenzene	1010000	6.83				
3114-55-4	Chlorobenzene-d5	946000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	435000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/27/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-GW-723-725	SDG No.:	L3846
Lab Sample ID:	L3846-05	Matrix:	SOIL
Analytical Method:	SW8260	% Moisture:	82
Sample Wt/Vol:	5.04 Units: g	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group3
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VW016408.D	1		08/31/20 13:51	VW083120

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units(Dry Weight)
TARGETS								
75-71-8	Dichlorodifluoromethane	22.0	U	8.10		22.0	27.6	ug/Kg
74-87-3	Chloromethane	22.0	U	12.3		22.0	27.6	ug/Kg
75-01-4	Vinyl Chloride	22.0	U	7.60		22.0	27.6	ug/Kg
74-83-9	Bromomethane	22.0	U	7.20		22.0	27.6	ug/Kg
75-00-3	Chloroethane	22.0	U	9.00		22.0	27.6	ug/Kg
75-69-4	Trichlorofluoromethane	22.0	U	8.20		22.0	27.6	ug/Kg
76-13-1	1,1,2-Trichlorotrifluoroethane	22.0	U	9.10		22.0	27.6	ug/Kg
75-35-4	1,1-Dichloroethene	22.0	U	7.80		22.0	27.6	ug/Kg
67-64-1	Acetone	140 ~~56.3~~	~~J~~ U	33.5	B	110	140	ug/Kg
75-15-0	Carbon Disulfide	13.8	U	5.40		13.8	27.6	ug/Kg
1634-04-4	Methyl tert-butyl Ether	22.0	U	7.80		22.0	27.6	ug/Kg
75-09-2	Methylene Chloride	44.1	U	31.5		44.1	55.1	ug/Kg
156-60-5	trans-1,2-Dichloroethene	22.0	U	8.80		22.0	27.6	ug/Kg
75-34-3	1,1-Dichloroethane	13.8	U	5.20		13.8	27.6	ug/Kg
78-93-3	2-Butanone	110	U	45.7		110	140	ug/Kg
56-23-5	Carbon Tetrachloride	13.8	U	4.90		13.8	27.6	ug/Kg
156-59-2	cis-1,2-Dichloroethene	22.0	U	7.70		22.0	27.6	ug/Kg
67-66-3	Chloroform	22.0	U	7.00		22.0	27.6	ug/Kg
71-55-6	1,1,1-Trichloroethane	13.8	U	4.20		13.8	27.6	ug/Kg
108-87-2	Methylcyclohexane	13.8	U	2.50		13.8	27.6	ug/Kg
71-43-2	Benzene	13.8	U	4.70		13.8	27.6	ug/Kg
107-06-2	1,2-Dichloroethane	13.8	U	5.00		13.8	27.6	ug/Kg
79-01-6	Trichloroethene	13.8	U	4.70		13.8	27.6	ug/Kg
78-87-5	1,2-Dichloropropane	13.8	U	4.90		13.8	27.6	ug/Kg
75-27-4	Bromodichloromethane	13.8	U	5.00		13.8	27.6	ug/Kg
108-10-1	4-Methyl-2-Pentanone	110	U	38.5		110	140	ug/Kg
108-88-3	Toluene	13.8	U	4.70		13.8	27.6	ug/Kg
10061-02-6	t-1,3-Dichloropropene	13.8	U	5.90		13.8	27.6	ug/Kg
10061-01-5	cis-1,3-Dichloropropene	13.8	U	5.40		13.8	27.6	ug/Kg
79-00-5	1,1,2-Trichloroethane	13.8	U	5.50		13.8	27.6	ug/Kg
591-78-6	2-Hexanone	110	U	48.6		110	140	ug/Kg
124-48-1	Dibromochloromethane	13.8	U	5.90		13.8	27.6	ug/Kg

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/27/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-GW-723-725	SDG No.:	L3846
Lab Sample ID:	L3846-05	Matrix:	SOIL
Analytical Method:	SW8260	% Moisture:	82
Sample Wt/Vol:	5.04 Units: g	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group3
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VW016408.D	1		08/31/20 13:51	VW083120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units(Dry Weight)
127-18-4	Tetrachloroethene	13.8	U	4.80	13.8	27.6	ug/Kg
108-90-7	Chlorobenzene	13.8	U	4.90	13.8	27.6	ug/Kg
100-41-4	Ethyl Benzene	13.8	U	5.70	13.8	27.6	ug/Kg
179601-23-1	m/p-Xylenes	27.6	U	12.0	27.6	55.1	ug/Kg
95-47-6	o-Xylene	13.8	U	5.50	13.8	27.6	ug/Kg
100-42-5	Styrene	22.0	U	7.60	22.0	27.6	ug/Kg
75-25-2	Bromoform	22.0	U	6.60	22.0	27.6	ug/Kg
98-82-8	Isopropylbenzene	13.8	U	6.30	13.8	27.6	ug/Kg
79-34-5	1,1,2,2-Tetrachloroethane	13.8	U	5.90	13.8	27.6	ug/Kg
541-73-1	1,3-Dichlorobenzene	22.0	U	7.10	22.0	27.6	ug/Kg
106-46-7	1,4-Dichlorobenzene	13.8	U	4.70	13.8	27.6	ug/Kg
95-50-1	1,2-Dichlorobenzene	22.0	U	5.70	22.0	27.6	ug/Kg
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	59.5		71 - 136		119%	SPK: 50
1868-53-7	Dibromofluoromethane	52.9		78 - 119		106%	SPK: 50
2037-26-5	Toluene-d8	50.4		85 - 116		101%	SPK: 50
460-00-4	4-Bromofluorobenzene	49.9		79 - 119		100%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	130000	7.95				
540-36-3	1,4-Difluorobenzene	212000	8.85				
3114-55-4	Chlorobenzene-d5	198000	11.63				
3855-82-1	1,4-Dichlorobenzene-d4	87500	13.56				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/Kg

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/27/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-GW-738-740	SDG No.:	L3846
Lab Sample ID:	L3846-03	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	910 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011693.D	1	08/31/20 11:30	09/03/20 11:59	PB131363

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.11	U	0.10	0.11	0.11	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.23		30 - 150		57%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.28		30 - 150		69%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.25		55 - 111		63%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.27		53 - 106		67%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.31		58 - 132		77%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	1850	7.74				
1146-65-2	Naphthalene-d8	6850	10.53				
15067-26-2	Acenaphthene-d10	4010	14.38				
1517-22-2	Phenanthrene-d10	9130	17.13				
1719-03-5	Chrysene-d12	10300	21.32				
1520-96-3	Perylene-d12	9960	23.58				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Appendix C

Support Documents

A. Documents Supporting Qualifications

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/28/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-EB-20200828	SDG No.:	L3846
Lab Sample ID:	L3846-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018140.D	1		08/31/20 12:28	VX083120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.79	J	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	9.70	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.28	J	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	2.60	J	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/28/20
Project:	CTO WE13	Date Received:	08/29/20
Client Sample ID:	BP-VPB181-EB-20200828	SDG No.:	L3846
Lab Sample ID:	L3846-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX018140.D	1		08/31/20 12:28	VX083120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	49.3		81 - 118		99%	SPK: 50
1868-53-7	Dibromofluoromethane	49.7		80 - 119		99%	SPK: 50
2037-26-5	Toluene-d8	48.8		89 - 112		98%	SPK: 50
460-00-4	4-Bromofluorobenzene	44.2		85 - 114		88%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	616000	5.63				
540-36-3	1,4-Difluorobenzene	1010000	6.83				
3114-55-4	Chlorobenzene-d5	946000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	435000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Appendix C

Support Documents

B. Chain of Custody (COC)

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CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax: (908) 78-8922
www.chemtech.net

Chemtech Project Number: L3846

COC Number:

CLIENT INFORMATION

COMPANY: Tetra Tech
ADDRESS: 5700 Lake Wright Dr., Suite 102
CITY: Norfolk STATE: VA ZIP: 23502
ATTENTION: Dave Brayack
PHONE: 757-466-4909 FAX: 757-461-4148

PROJECT INFORMATION

PROJECT NAME: NWIRP Bethpage
PROJECT #: 112G08005-WE13 LOCATION: VPB-181
PROJECT MANAGER: Dave Brayack
E-MAIL: david.brayack@tetratech.com
PHONE: 757-466-4909 FAX: 757-461-4148

BILLING INFORMATION

BILL TO: SEE CONTRACT PO#
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: 2 & 10 DAYS*
HARD COPY: 2 & 10 DAYS*
EDD 2 & 10 DAYS*
* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ☐ RESEULTS ONLY
- ☐ RESULTS + QC
- ☐ New Jersey REDUCED
- ☐ New Jersey CLP
- ☐ USEPA CLP
- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other
- ☐ EDD Format

ANALYSIS

	1	2	3	4	5	6	7	8	9
	VOC(SW846-8260B)	1,4 Dioxane (8270 SIM)							

PRESERVATIVES

COMMENTS

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-Other

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# of Bottles	A 1	2	3	4	5	6	7	8	9	COMMENTS
1.	BP-VPB181-TB-20200827	QA		X	8/27/20	8:00	2	2									Trip Blank
2.	BP-VPB181-GW-723-725	AQ		X	8/27/20	12:15	2	2									Very turbid
3.	BP-VPB181-GW-738-740	AQ		X	8/27/20	14:45	3	2	1								
4.	BP-VPB181-EB-20200828	QA		X	8/28/20	13:20	2	2									
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1.	8/28/20 1400	1.
RELINQUISHED BY 2.	DATE/TIME 8/29/20 1:20 PM	RECEIVED BY 2.
RELINQUISHED BY 3.	DATE/TIME	RECEIVED FOR LAB BY 3.

Conditions of bottles or coolers at receipt: ☑ Compliant ☐ Non Compliant ☐ Cooler Temp 2.1°C ☐ Ice in Cooler?:
MeOH extraction requires an additional 4oz. Jar for percent solid
Comments: 48hr TAT - For VOC's see worksheet #15 of SAP 2018 for VPB program VOC list
10-DAY TAT - For 1,4 Dioxane (8270 SIM)

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ Overnight
CHEMTECH: ☐ Picked Up ☐ Overnight

Shipment Complete ☑ YES ☐ NO

WHITE - CHEMTECH COPYFOR RETURN TO CLIENT **YELLOW** - CHEMTECH COPY **PINK** - SAMPLER COPY

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Appendix C

Support Documents

C. Calculations for Stage 4 Data Validation

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SDG L3846

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

VOC (8260) SAMPLE QUANTITATION

Sample # acetone for BP-VPB181-GW-723-725

Cpd. Concentration = Areac(ConcISTD)(Vf)(Dl)/(Areast)(Vi)(UnitF)(S)

Calc. Concentration = 56.3

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL	UnitF	S
2254	129837	50	0.085	5000	5.04	1	1000	0.18

Reported Concentration = 56.3

SDG L3846

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

SVOC (8270) SAMPLE QUANTITATION

Sample # 1,4-dioxane for LCS

Cpd. Concentration = $\frac{(Area_c)(Conc_{istd})(Vf)(DL)}{(Area_{st})(\overline{RRF_c})(Vi)}$

Calc. Concentration = 0.35

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL
1114	1958	0.4	0.643	1000	1000	1

Reported Concentration = 0.35

VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com

DATA VALIDATION SUMMARY REPORT - CHEMISTRY

COMPANY:	Tetra Tech, Inc., Norfolk, VA
PROJECT NAME:	Basewide Groundwater Investigation, Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, N62470-16-D-9008
SITE NAME:	CTO-WE13
CONTRACTED LAB:	CHEMTECH, Mountainside, NJ
JOB NO./ACCOUNTING CODE:	112G08005-WE13
QA/QC LEVEL:	EPA Stage 4
ANALYTICAL METHOD(S):	SW846 Methods 8260C and 8270SIM
VALIDATION GUIDELINES:	Tier II Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Vertical Profile Boring and Monitoring Well Installation Program Site 0001 – Former Drum Marshalling Area Operable Unit 2 Plume Naval Weapons Industrial Reserve Plant Bethpage, New York, March 2019, DOD QSM 5.0; July 2013, DOD Data Validation Guidance, February 2018, Method criteria, Laboratory limits and Professional Judgment
SAMPLE MATRICES:	Soil & Groundwater
TYPES OF ANALYSES:	Volatile Organic Compounds (VOC) Semivolatile Organic Compounds (SVOC)*
DATA VALIDATION DATE:	October 19, 2020
DATA REVIEWER(S):	Amy L. Hogan
SDG NUMBER:	L3889
SAMPLING DATE(S):	August 31 – September 1, 2020

SAMPLES:

Client Sample ID	Laboratory ID	VOC	SVOC*
BP-VPB181-TB-20200831	L3889-01	X	
BP-VPB181-GW-783-785	L3889-02	X	
BP-VPB181-GW-783-785MS	L3889-03	X	
BP-VPB181-GW-783-785MSD	L3889-04	X	
BP-VPB181-GW-798-800	L3889-05	X	X
BP-VPB181-DUP20200831	L3889-06	X	
BP-VPB181-GW-823-825	L3889-07	X	
BP-VPB181-GW-843-845	L3889-08	X	

Suffix Codes: DL= DILUTION, MS = MATRIX SPIKE,
MSD = MATRIX SPIKE DUPLICATE, RE = REANALYSIS

* SVOC analyses reported 1,4-dioxane only.

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

CHEMTECH – SDG: L3889 – Organic Chemistry

VOLATILE ORGANICS

SUMMARY

I.) General:

The analyses for Volatile Organics were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8260C.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

The Percent Difference (%D) for the standards run on 9/2/20 at 09:27 on instrument MSVOA_N was 20.7% for 2-hexanone, which exceeded the 20% QC limit. The results for this compound in all SDG samples, which consisted entirely of non-detects, were qualified as estimated (UJ) with reason code C.

IV.) Blanks:

Method Blanks:

There were no detections in the method blanks for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank for this SDG. No data qualification was necessary.

Field Blank:

There were no associated field blanks for this SDG. No data qualification was necessary.

Trip Blank:

There were no detections in associated trip blank BP-VPB181-TB-20200831. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

One LCS was analyzed by the laboratory for this SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses were performed using sample BP-VPB181-GW-783-785. All criteria were met. No data qualification was necessary.

VIII.) Field Duplicates:

One set of field duplicate samples (BP-VPB181-GW-783-785 / BP-VPB181-DUP-20200831) was identified for this fraction of the SDG. There were no calculable Relative Percent Differences (RPDs) or differences for this set. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD area count criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All forty-three requested compounds for groundwater samples were reported with acceptable LOD and LOQ results as determined by the SAP.

The validator has noted that the non-detect results for the following compounds were reported at the LOD, which exceeds the PAL limit of 0.17 ug/L for the groundwater samples : carbon disulfide, carbon tetrachloride, chlorobenzene, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene , 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene and 1,1,2-trichlorotrifluoroethane.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

SEMIVOLATILE ORGANICS (1,4-DIOXANE ONLY)

SUMMARY

I.) General:

The analyses for Semivolatile Organics (1,4-dioxane only) were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8270SIM.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank. No data qualification was necessary.

V.) Surrogate Recoveries:

The Percent Recovery (%R) for one surrogate compound was outside the established QC limits for the sample. Since the surrogate compound was not associated with the target compound, no data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

One LCS / LCSD set was analyzed by the laboratory for this fraction of the SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data was not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified as part of this fraction of the SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

1,4-dioxane was reported with acceptable LOD and LOQ results as determined by the SAP.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

Appendix A

Data Qualification Summary Table (DQST) with Qualification Codes

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DATA QUALIFICATION SUMMARY TABLE (DQST) WITH QUALIFICATION CODES

VOC								
Client Sample ID	Date Collected	Lab Sample ID	Analyte	Lab Qual	Val Result	VAL_RES ERROR	Val Qual	Val Reason
BP-VPB181-DUP-20200831	8/31/2020 0:00	L3889-06	2-HEXANONE	U	3.8		UJ	C
BP-VPB181-GW-783-785	8/31/2020 0:00	L3889-02	2-HEXANONE	U	3.8		UJ	C
BP-VPB181-GW-798-800	8/31/2020 0:00	L3889-05	2-HEXANONE	U	3.8		UJ	C
BP-VPB181-GW-823-825	9/1/2020 0:00	L3889-07	2-HEXANONE	U	3.8		UJ	C
BP-VPB181-GW-843-845	9/1/2020 0:00	L3889-08	2-HEXANONE	U	3.8		UJ	C
BP-VPB181-TB-20200831	8/31/2020 0:00	L3889-01	2-HEXANONE	U	3.8		UJ	C

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Appendix B

Laboratory Sample Results

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/31/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-TB-20200831	SDG No.:	L3889
Lab Sample ID:	L3889-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063195.D	1		09/02/20 15:05	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40		2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U UJ	0.82	C	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/31/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-TB-20200831	SDG No.:	L3889
Lab Sample ID:	L3889-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063195.D	1		09/02/20 15:05	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.2		81 - 118		96%	SPK: 50
1868-53-7	Dibromofluoromethane	49.0		80 - 119		98%	SPK: 50
2037-26-5	Toluene-d8	50.7		89 - 112		101%	SPK: 50
460-00-4	4-Bromofluorobenzene	50.1		85 - 114		100%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	343000	7.63				
540-36-3	1,4-Difluorobenzene	672000	8.55				
3114-55-4	Chlorobenzene-d5	649000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	259000	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/31/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-GW-783-785	SDG No.:	L3889
Lab Sample ID:	L3889-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063188.D	1		09/02/20 12:17	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	1.10	J	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	6.10	J	1.40		2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U UJ	0.82	C	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/31/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-GW-783-785	SDG No.:	L3889
Lab Sample ID:	L3889-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063188.D	1		09/02/20 12:17	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	49.4		81 - 118		99%	SPK: 50
1868-53-7	Dibromofluoromethane	49.4		80 - 119		99%	SPK: 50
2037-26-5	Toluene-d8	51.3		89 - 112		103%	SPK: 50
460-00-4	4-Bromofluorobenzene	50.8		85 - 114		102%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	348000	7.63				
540-36-3	1,4-Difluorobenzene	677000	8.55				
3114-55-4	Chlorobenzene-d5	666000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	257000	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/31/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-GW-798-800	SDG No.:	L3889
Lab Sample ID:	L3889-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063197.D	1		09/02/20 15:53	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	4.80	J	1.40		2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U UJ	0.82	C	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/31/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-GW-798-800	SDG No.:	L3889
Lab Sample ID:	L3889-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063197.D	1		09/02/20 15:53	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.5		81 - 118		97%	SPK: 50
1868-53-7	Dibromofluoromethane	49.0		80 - 119		98%	SPK: 50
2037-26-5	Toluene-d8	50.6		89 - 112		101%	SPK: 50
460-00-4	4-Bromofluorobenzene	51.0		85 - 114		102%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	327000	7.63				
540-36-3	1,4-Difluorobenzene	637000	8.55				
3114-55-4	Chlorobenzene-d5	627000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	245000	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/31/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-DUP-20200831	SDG No.:	L3889
Lab Sample ID:	L3889-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063198.D	1		09/02/20 16:17	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40		2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U UJ	0.82	C	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/31/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-DUP-20200831	SDG No.:	L3889
Lab Sample ID:	L3889-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063198.D	1		09/02/20 16:17	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	49.0		81 - 118		98%	SPK: 50
1868-53-7	Dibromofluoromethane	48.8		80 - 119		98%	SPK: 50
2037-26-5	Toluene-d8	50.6		89 - 112		101%	SPK: 50
460-00-4	4-Bromofluorobenzene	50.6		85 - 114		101%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	320000	7.63				
540-36-3	1,4-Difluorobenzene	625000	8.55				
3114-55-4	Chlorobenzene-d5	614000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	237000	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/01/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-GW-823-825	SDG No.:	L3889
Lab Sample ID:	L3889-07	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063199.D	1		09/02/20 16:41	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40		2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U UJ	0.82	C	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/01/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-GW-823-825	SDG No.:	L3889
Lab Sample ID:	L3889-07	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063199.D	1		09/02/20 16:41	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	49.4		81 - 118		99%	SPK: 50
1868-53-7	Dibromofluoromethane	49.0		80 - 119		98%	SPK: 50
2037-26-5	Toluene-d8	51.4		89 - 112		103%	SPK: 50
460-00-4	4-Bromofluorobenzene	50.1		85 - 114		100%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	307000	7.63				
540-36-3	1,4-Difluorobenzene	602000	8.55				
3114-55-4	Chlorobenzene-d5	587000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	224000	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/01/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-GW-843-845	SDG No.:	L3889
Lab Sample ID:	L3889-08	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063200.D	1		09/02/20 17:05	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units
TARGETS								
74-87-3	Chloromethane	0.50	U	0.22		0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17		0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10		3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33		0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24		0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19		0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27		0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40		2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23		0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19		0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32		0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14		0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15		0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00		2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26		0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24		0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19		0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15		0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11		0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13		0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27		0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13		0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11		0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11		0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65		2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20		0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23		0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15		0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19		0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U UJ	0.82	C	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13		0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13		0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/01/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-GW-843-845	SDG No.:	L3889
Lab Sample ID:	L3889-08	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063200.D	1		09/02/20 17:05	VN090220

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	50.6		81 - 118		101%	SPK: 50
1868-53-7	Dibromofluoromethane	49.8		80 - 119		100%	SPK: 50
2037-26-5	Toluene-d8	51.4		89 - 112		103%	SPK: 50
460-00-4	4-Bromofluorobenzene	51.4		85 - 114		103%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	308000	7.63				
540-36-3	1,4-Difluorobenzene	610000	8.55				
3114-55-4	Chlorobenzene-d5	600000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	233000	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/31/20
Project:	CTO WE13	Date Received:	09/02/20
Client Sample ID:	BP-VPB181-GW-798-800	SDG No.:	L3889
Lab Sample ID:	L3889-05	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	900 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011768.D	1	09/04/20 08:25	09/09/20 15:20	PB131431

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.11	U	0.10	0.11	0.11	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.21		30 - 150		53%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.25		30 - 150		63%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.23		55 - 111		58%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.22		53 - 106		56%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.63	*	58 - 132		157%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2270	7.73				
1146-65-2	Naphthalene-d8	8510	10.52				
15067-26-2	Acenaphthene-d10	5130	14.37				
1517-22-2	Phenanthrene-d10	11700	17.11				
1719-03-5	Chrysene-d12	12300	21.31				
1520-96-3	Perylene-d12	12000	23.56				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Appendix C

Support Documents

A. Documents Supporting Qualifications

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CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L3889 SAS No.: L3889 SDG No.: L3889

Instrument ID: MSVOA_N Calibration Date/Time: 09/02/2020 09:27

Lab File ID: VN063182.D Init. Calib. Date(s): 08/31/2020 08/31/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 12:54 14:59

GC Column: RXI-624 ID: 0.25 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
Chloromethane	0.717	0.615	0.1	-14.23	20
Vinyl Chloride	0.792	0.735		-7.2	20
Bromomethane	0.667	0.660		-1.05	20
Chloroethane	0.630	0.628		-0.32	20
Trichlorofluoromethane	1.185	1.140		-3.8	20
1,1,2-Trichlorotrifluoroethane	0.538	0.538		0	20
1,1-Dichloroethene	0.549	0.529		-3.64	20
Acetone	0.232	0.266		14.65	20
Carbon Disulfide	1.633	1.479		-9.43	20
Methyl tert-butyl Ether	2.035	1.932		-5.06	20
Methylene Chloride	0.705	0.624		-11.49	20
trans-1,2-Dichloroethene	0.606	0.604		-0.33	20
1,1-Dichloroethane	1.204	1.161	0.1	-3.57	20
2-Butanone	0.360	0.388		7.78	20
Carbon Tetrachloride	0.487	0.525		7.8	20
cis-1,2-Dichloroethene	0.737	0.709		-3.8	20
Chloroform	1.259	1.232		-2.14	20
1,1,1-Trichloroethane	1.085	1.097		1.11	20
Methylcyclohexane	0.540	0.589		9.07	20
Benzene	1.413	1.512		7.01	20
1,2-Dichloroethane	0.528	0.570		7.95	20
Trichloroethene	0.343	0.393		14.58	20
1,2-Dichloropropane	0.374	0.387		3.48	20
Bromodichloromethane	0.531	0.567		6.78	20
4-Methyl-2-Pentanone	0.426	0.476		11.74	20
Toluene	0.880	0.973		10.57	20
t-1,3-Dichloropropene	0.581	0.621		6.89	20
cis-1,3-Dichloropropene	0.610	0.654		7.21	20
1,1,2-Trichloroethane	0.337	0.361		7.12	20
2-Hexanone	0.299	0.361		20.74	20
Dibromochloromethane	0.373	0.417		11.8	20
Tetrachloroethene	0.359	0.425		18.38	20
Chlorobenzene	1.007	1.066	0.3	5.86	20
Ethyl Benzene	1.837	2.022		10.07	20
m/p-Xylenes	0.680	0.743		9.27	20
o-Xylene	0.657	0.706		7.46	20
Styrene	1.130	1.240		9.73	20
Bromoform	0.254	0.274	0.1	7.87	20
Isopropylbenzene	3.835	4.135		7.82	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L3889 SAS No.: L3889 SDG No.: L3889

Instrument ID: MSVOA_N Calibration Date/Time: 09/02/2020 09:27

Lab File ID: VN063182.D Init. Calib. Date(s): 08/31/2020 08/31/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 12:54 14:59

GC Column: RXI-624 ID: 0.25 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
1,1,2,2-Tetrachloroethane	1.106	1.071	0.3	-3.16	20
1,3-Dichlorobenzene	1.593	1.733		8.79	20
1,4-Dichlorobenzene	1.650	1.719		4.18	20
1,2-Dichlorobenzene	1.546	1.693		9.51	20
1,2-Dichloroethane-d4	0.817	0.759		-7.1	20
Dibromofluoromethane	0.321	0.317		-1.25	20
Toluene-d8	1.235	1.268		2.67	20
4-Bromofluorobenzene	0.432	0.441		2.08	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Surrogate Summary

SW-846

SDG No.: L3889

Client: Tetra Tech NUS, Inc.

Analytical Method: 8270-Modified

Lab Sample ID	Client ID	Parameter	Spike (PPM)	Result (PPM)	Recovery (%)	Qual	Limits (%) Low	Limits (%) High
L3889-05	BP-VPB181-GW-798-800	2-Methylnaphthalene-d10	0.4	0.21	53		30	150
		Fluoranthene-d10	0.4	0.25	63		30	150
		Nitrobenzene-d5	0.4	0.23	58		55	111
		2-Fluorobiphenyl	0.4	0.22	56		53	106
		Terphenyl-d14	0.4	0.63	157	*	58	132
PB131431BL	PB131431BL	2-Methylnaphthalene-d10	0.4	0.29	73		30	150
		Fluoranthene-d10	0.4	0.28	70		30	150
		Nitrobenzene-d5	0.4	0.34	85		55	111
		2-Fluorobiphenyl	0.4	0.33	82		53	106
		Terphenyl-d14	0.4	0.33	83		58	132
PB131431BS	PB131431BS	2-Methylnaphthalene-d10	0.4	0.36	89		30	150
		Fluoranthene-d10	0.4	0.34	85		30	150
		Nitrobenzene-d5	0.4	0.38	95		55	111
		2-Fluorobiphenyl	0.4	0.38	94		53	106
		Terphenyl-d14	0.4	0.36	91		58	132
PB131431BSD	PB131431BSD	2-Methylnaphthalene-d10	0.4	0.36	90		30	150
		Fluoranthene-d10	0.4	0.33	82		30	150
		Nitrobenzene-d5	0.4	0.39	97		55	111
		2-Fluorobiphenyl	0.4	0.37	93		53	106
		Terphenyl-d14	0.4	0.38	96		58	132

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Appendix C

Support Documents

B. Chain of Custody (COC)

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CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax: (908) 78-8922
www.chemtech.net

Chemtech Project Number: L3889

COC Number:

CLIENT INFORMATION	PROJECT INFORMATION	BILLING INFORMATION
COMPANY: Tetra Tech	PROJECT NAME: NWIRP Bethpage	BILL TO: SEE CONTRACT PO#
ADDRESS: 5700 Lake Wright Dr., Suite 102	PROJECT #: 112G08005-WE13 LOCATION: VPB-181	ADDRESS:
CITY: Norfolk STATE: VA ZIP: 23502	PROJECT MANAGER: Dave Brayack	CITY: STATE: ZIP:
ATTENTION: Dave Brayack	E-MAIL: david.brayack@tetratech.com	ATTENTION: PHONE:
PHONE: 757-466-4909 FAX: 757-461-4148	PHONE: 757-466-4909 FAX: 757-461-4148	

DATA TURNAROUND INFORMATION

FAX: 2 & 10 DAYS*
HARD COPY: 2 & 10 DAYS*
EDD 2 & 10 DAYS*
* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ☐ RESULTS ONLY
- ☐ RESULTS + QC
- ☐ New Jersey REDUCED
- ☐ New Jersey CLP
- ☐ EDD Format
- ☐ USEPA CLP
- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other

ANALYSIS

	1	2	3	4	5	6	7	8	9
	VOC(SW846-8260B)	1,4 Dioxane (8270 SIM)							

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# of Bottles	PRESERVATIVES A	1	2	3	4	5	6	7	8	9	COMMENTS
1.	BP-VPB181-TB-20200831	QA		X	8/31/20	8:00	2	2										Trip Blank
2.	BP-VPB181-GW-783-785	AQ		X	8/31/20	10:40	6	6										Run MS/MSD
3.	BP-VPB181-GW-798-800	AQ		X	8/31/20	12:45	3	2	1									
4.	BP-VPB181-DUP-20200831	AQ		X	8/31/20	11:00	2	2										
5.	BP-VPB181-GW-823-825	AQ		X	9/1/20	10:20	2	2										
6.	BP-VPB181-GW-843-845	AQ		X	9/1/20	14:05	2	2										
7.																		
8.																		
9.																		
10.																		

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-Other

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1.	9/1/20 1400	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2.		2.
RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY
3.	9:45 9-2-20	3.

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant ☐ Cooler Temp 3.1 °C
MeOH extraction requires an additional 4oz. Jar for percent solid ☐ Ice in Cooler?: YES
Comments: **48hr TAT** - For VOC's see worksheet #15 of SAP 2018 for VPB program VOC list
10-DAY TAT - For 1,4 Dioxane (8270 SIM)

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ Overnight
CHEMTECH: ☐ Picked Up ☐ Overnight

Shipment Complete ☐ YES ☐ NO

WHITE - CHEMTECH COPYFOR RETURN TO CLIENT YELLOW - CHEMTECH COPY PINK - SAMPLER COPY

FR-Cour #1

Appendix C

Support Documents

C. Calculations for Stage 4 Data Validation

SDG L3889

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

VOC (8260) SAMPLE QUANTITATION

Sample # acetone for BP-VPB181-GW-783-785

Cpd. Concentration = Areac(ConcISTD)(Vf)(Dl)(UnitF)/(Areast)(Vi)

Calc. Concentration = 6.10

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL	UnitF
9845	348043	50	0.232	5000	5000	1	1

Reported Concentration = 6.10

SDG L3889

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

SVOC (8270) SAMPLE QUANTITATION

Sample # 1,4-dioxane for LCS

Cpd. Concentration = $\frac{(Area_c)(Conc_{istd})(Vf)(DL)}{(Area_{st})(\overline{RRF_c})(Vi)}$

Calc. Concentration = 0.36

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL
1302	2234	0.4	0.643	1000	1000	1

Reported Concentration = 0.36

VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com

DATA VALIDATION SUMMARY REPORT - CHEMISTRY

COMPANY:	Tetra Tech, Inc., Norfolk, VA
PROJECT NAME:	Basewide Groundwater Investigation, Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, N62470-16-D-9008
SITE NAME:	CTO-WE13
CONTRACTED LAB:	CHEMTECH, Mountainside, NJ
JOB NO./ACCOUNTING CODE:	112G08005-WE13
QA/QC LEVEL:	EPA Stage 4
ANALYTICAL METHOD(S):	SW846 Methods 8260C and 8270SIM
VALIDATION GUIDELINES:	Tier II Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Vertical Profile Boring and Monitoring Well Installation Program Site 0001 – Former Drum Marshalling Area Operable Unit 2 Plume Naval Weapons Industrial Reserve Plant Bethpage, New York, March 2019, DOD QSM 5.0; July 2013, DOD Data Validation Guidance, February 2018, Method criteria, Laboratory limits and Professional Judgment
SAMPLE MATRICES:	Soil & Groundwater
TYPES OF ANALYSES:	Volatile Organic Compounds (VOC) Semivolatile Organic Compounds (SVOC)*
DATA VALIDATION DATE:	October 19, 2020
DATA REVIEWER(S):	Amy L. Hogan
SDG NUMBER:	L3923
SAMPLING DATE(S):	September 1-2, 2020

SAMPLES:

Client Sample ID	Laboratory ID	VOC	SVOC*
BP-VPB181-GW-858-860	L3923-01	X	
BP-VPB181-TB-20200902	L3923-02	X	
BP-VPB181-EB-20200902	L3923-03	X	
BP-VPB181-GW-843-845	L3923-04		X
BP-VPB181-GW-878-880	L3923-05		X
BP-VPB181-GW-989-900	L3923-06	X	
BP-VPB181-GW-878-880	L3923-07	X	

Suffix Codes: DL= DILUTION, MS = MATRIX SPIKE,
MSD = MATRIX SPIKE DUPLICATE, RE = REANALYSIS

* SVOC analyses reported 1,4-dioxane only.

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

CHEMTECH – SDG: L3846 – Organic Chemistry

VOLATILE ORGANICS

SUMMARY

I.) General:

The analyses for Volatile Organics were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8260C.

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualifications.

It was noted that due to the high level of sediment in the sample, with the client's permission, samples BP-VPB181-GW-858-860 and BP-VPB181-GW-878-880 were analyzed as a soil.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blanks for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

Acetone (8.40 ug/L) and toluene (2.80 ug/L) were detected in associated equipment blank BP-VPB181-EB-20200902 for this SDG. Since the blank result for acetone was less than the LOQ, the positive acetone results for the samples, which were less than the LOQ, were qualified as undetected (U) with the results being raised to the LOQ and reason code B. Since there were no positive results for toluene in the samples, no further data qualification was necessary.

Field Blank:

There were no associated field blanks for this SDG. No data qualification was necessary.

Trip Blank:

There were no detections in associated trip blank BP-VPB181-TB-20200902. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

Two LCS and one LCS / LCSD set were analyzed by the laboratory for this SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

Batch MS / MSD analyses data were submitted for this fraction of the SDG. All criteria were met. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified for this fraction of the SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD area count criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All forty-three requested compounds for groundwater samples and all forty-four requested compounds for soils were reported with acceptable LOD and LOQ results as determined by the SAP.

The validator has noted that the non-detect results for the following compounds were reported at the LOD, which exceeds the PAL limit of 0.17 ug/L for the groundwater samples : carbon disulfide, carbon tetrachloride, chlorobenzene, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene , 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene and 1,1,2-trichlorotrifluoroethane.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

SEMIVOLATILE ORGANICS (1,4-DIOXANE ONLY)

SUMMARY

I.) General:

The analyses for Semivolatile Organics (1,4-dioxane only) were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per SW846 Method 8270SIM.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank for this SDG. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no associated equipment blank. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

One LCS / LCSD set was analyzed by the laboratory for this fraction of the SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data was not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified as part of this fraction of the SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

1,4-dioxane was reported with acceptable LOD and LOQ results as determined by the SAP.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

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Appendix A

Data Qualification Summary Table (DQST) with Qualification Codes

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DATA QUALIFICATION SUMMARY TABLE (DQST) WITH QUALIFICATION CODES

VOC								
Client Sample ID	Date Collected	Lab Sample ID	Analyte	Lab Qual	Val Result	VAL_RES ERROR	Val Qual	Val Reason
BP-VPB181-GW-858-860	9/2/2020 0:00	L3923-01	ACETONE	J	110	120	U	B
BP-VPB181-GW-878-880	9/2/2020 0:00	L3923-07	ACETONE	J	120	210	U	B
BP-VPB181-GW-898-900	9/3/2020 0:00	L3923-06	ACETONE	J	10.5	25	U	B

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Appendix B

Laboratory Sample Results

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-TB-20200902	SDG No.:	L3923
Lab Sample ID:	L3923-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063239.D	1		09/04/20 11:49	VN090420

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-TB-20200902	SDG No.:	L3923
Lab Sample ID:	L3923-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063239.D	1		09/04/20 11:49	VN090420

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.5		81 - 118		97%	SPK: 50
1868-53-7	Dibromofluoromethane	49.9		80 - 119		100%	SPK: 50
2037-26-5	Toluene-d8	52.0		89 - 112		104%	SPK: 50
460-00-4	4-Bromofluorobenzene	51.3		85 - 114		103%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	276000	7.63				
540-36-3	1,4-Difluorobenzene	529000	8.55				
3114-55-4	Chlorobenzene-d5	526000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	209000	13.32				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-EB-20200902	SDG No.:	L3923
Lab Sample ID:	L3923-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063240.D	1		09/04/20 12:13	VN090420

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	8.40	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	2.80	J	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-EB-20200902	SDG No.:	L3923
Lab Sample ID:	L3923-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063240.D	1		09/04/20 12:13	VN090420

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.7		81 - 118		97%	SPK: 50
1868-53-7	Dibromofluoromethane	50.2		80 - 119		100%	SPK: 50
2037-26-5	Toluene-d8	50.7		89 - 112		101%	SPK: 50
460-00-4	4-Bromofluorobenzene	49.2		85 - 114		98%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	261000	7.63				
540-36-3	1,4-Difluorobenzene	509000	8.55				
3114-55-4	Chlorobenzene-d5	496000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	195000	13.32				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/03/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-GW-898-900	SDG No.:	L3923
Lab Sample ID:	L3923-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063243.D	1		09/04/20 13:25	VN090420

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone 25.0 ~~10.5~~ ~~J~~ U			1.40 B	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/03/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-GW-898-900	SDG No.:	L3923
Lab Sample ID:	L3923-06	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063243.D	1		09/04/20 13:25	VN090420

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	49.1		81 - 118		98%	SPK: 50
1868-53-7	Dibromofluoromethane	50.1		80 - 119		100%	SPK: 50
2037-26-5	Toluene-d8	51.1		89 - 112		102%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.5		85 - 114		97%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	268000	7.63				
540-36-3	1,4-Difluorobenzene	527000	8.55				
3114-55-4	Chlorobenzene-d5	522000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	200000	13.32				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-GW-858-860	SDG No.:	L3923
Lab Sample ID:	L3923-01	Matrix:	SOIL
Analytical Method:	SW8260	% Moisture:	78.6
Sample Wt/Vol:	5.03 Units: g	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group3
GC Column:	RTX-VMS ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VD066569.D	1		09/04/20 18:02	VD090420

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units(Dry Weight)
TARGETS								
75-71-8	Dichlorodifluoromethane	18.6	U	6.80		18.6	23.2	ug/Kg
74-87-3	Chloromethane	18.6	U	10.3		18.6	23.2	ug/Kg
75-01-4	Vinyl Chloride	18.6	U	6.40		18.6	23.2	ug/Kg
74-83-9	Bromomethane	18.6	U	6.10		18.6	23.2	ug/Kg
75-00-3	Chloroethane	18.6	U	7.60		18.6	23.2	ug/Kg
75-69-4	Trichlorofluoromethane	18.6	U	6.90		18.6	23.2	ug/Kg
76-13-1	1,1,2-Trichlorotrifluoroethane	18.6	U	7.60		18.6	23.2	ug/Kg
75-35-4	1,1-Dichloroethene	18.6	U	6.60		18.6	23.2	ug/Kg
67-64-1	Acetone	120 ~~110~~	~~J~~ U	28.3	B	92.9	120	ug/Kg
75-15-0	Carbon Disulfide	11.6	U	4.50		11.6	23.2	ug/Kg
1634-04-4	Methyl tert-butyl Ether	18.6	U	6.60		18.6	23.2	ug/Kg
75-09-2	Methylene Chloride	37.2	U	26.5		37.2	46.5	ug/Kg
156-60-5	trans-1,2-Dichloroethene	18.6	U	7.40		18.6	23.2	ug/Kg
75-34-3	1,1-Dichloroethane	11.6	U	4.40		11.6	23.2	ug/Kg
78-93-3	2-Butanone	92.9	U	38.6		92.9	120	ug/Kg
56-23-5	Carbon Tetrachloride	11.6	U	4.10		11.6	23.2	ug/Kg
156-59-2	cis-1,2-Dichloroethene	18.6	U	6.50		18.6	23.2	ug/Kg
67-66-3	Chloroform	18.6	U	5.90		18.6	23.2	ug/Kg
71-55-6	1,1,1-Trichloroethane	11.6	U	3.50		11.6	23.2	ug/Kg
108-87-2	Methylcyclohexane	11.6	U	2.10		11.6	23.2	ug/Kg
71-43-2	Benzene	6.30	J	4.00		11.6	23.2	ug/Kg
107-06-2	1,2-Dichloroethane	11.6	U	4.20		11.6	23.2	ug/Kg
79-01-6	Trichloroethene	11.6	U	3.90		11.6	23.2	ug/Kg
78-87-5	1,2-Dichloropropane	11.6	U	4.10		11.6	23.2	ug/Kg
75-27-4	Bromodichloromethane	11.6	U	4.20		11.6	23.2	ug/Kg
108-10-1	4-Methyl-2-Pentanone	92.9	U	32.4		92.9	120	ug/Kg
108-88-3	Toluene	11.6	U	4.00		11.6	23.2	ug/Kg
10061-02-6	t-1,3-Dichloropropene	11.6	U	5.00		11.6	23.2	ug/Kg
10061-01-5	cis-1,3-Dichloropropene	11.6	U	4.60		11.6	23.2	ug/Kg
79-00-5	1,1,2-Trichloroethane	11.6	U	4.60		11.6	23.2	ug/Kg
591-78-6	2-Hexanone	92.9	U	41.0		92.9	120	ug/Kg
124-48-1	Dibromochloromethane	11.6	U	4.90		11.6	23.2	ug/Kg

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-GW-858-860	SDG No.:	L3923
Lab Sample ID:	L3923-01	Matrix:	SOIL
Analytical Method:	SW8260	% Moisture:	78.6
Sample Wt/Vol:	5.03 Units: g	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group3
GC Column:	RTX-VMS ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VD066569.D	1		09/04/20 18:02	VD090420

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units(Dry Weight)
127-18-4	Tetrachloroethene	11.6	U	4.10	11.6	23.2	ug/Kg
108-90-7	Chlorobenzene	11.6	U	4.20	11.6	23.2	ug/Kg
100-41-4	Ethyl Benzene	11.6	U	4.80	11.6	23.2	ug/Kg
179601-23-1	m/p-Xylenes	23.2	U	10.1	23.2	46.5	ug/Kg
95-47-6	o-Xylene	11.6	U	4.60	11.6	23.2	ug/Kg
100-42-5	Styrene	18.6	U	6.40	18.6	23.2	ug/Kg
75-25-2	Bromoform	18.6	U	5.60	18.6	23.2	ug/Kg
98-82-8	Isopropylbenzene	11.6	U	5.30	11.6	23.2	ug/Kg
79-34-5	1,1,2,2-Tetrachloroethane	11.6	U	5.00	11.6	23.2	ug/Kg
541-73-1	1,3-Dichlorobenzene	18.6	U	6.00	18.6	23.2	ug/Kg
106-46-7	1,4-Dichlorobenzene	11.6	U	4.00	11.6	23.2	ug/Kg
95-50-1	1,2-Dichlorobenzene	18.6	U	4.80	18.6	23.2	ug/Kg
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	55.8		71 - 136		112%	SPK: 50
1868-53-7	Dibromofluoromethane	52.2		78 - 119		104%	SPK: 50
2037-26-5	Toluene-d8	51.0		85 - 116		102%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.4		79 - 119		97%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	318000	7.97				
540-36-3	1,4-Difluorobenzene	566000	8.86				
3114-55-4	Chlorobenzene-d5	515000	11.64				
3855-82-1	1,4-Dichlorobenzene-d4	193000	13.58				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/Kg

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-GW-878-880	SDG No.:	L3923
Lab Sample ID:	L3923-07	Matrix:	SOIL
Analytical Method:	SW8260	% Moisture:	88.2
Sample Wt/Vol:	5.05 Units: g	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group3
GC Column:	RTX-VMS ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VD066578.D	1		09/09/20 12:57	VD090920

CAS Number	Parameter	Conc.	Qualifier	MDL		LOD	LOQ / CRQL	Units(Dry Weight)
TARGETS								
75-71-8	Dichlorodifluoromethane	33.6	U	12.3		33.6	42.0	ug/Kg
74-87-3	Chloromethane	33.6	U	18.7		33.6	42.0	ug/Kg
75-01-4	Vinyl Chloride	33.6	U	11.6		33.6	42.0	ug/Kg
74-83-9	Bromomethane	33.6	U	10.9		33.6	42.0	ug/Kg
75-00-3	Chloroethane	33.6	U	13.8		33.6	42.0	ug/Kg
75-69-4	Trichlorofluoromethane	33.6	U	12.5		33.6	42.0	ug/Kg
76-13-1	1,1,2-Trichlorotrifluoroethane	33.6	U	13.8		33.6	42.0	ug/Kg
75-35-4	1,1-Dichloroethene	33.6	U	11.9		33.6	42.0	ug/Kg
67-64-1	Acetone	210 ~~120~~ ---	~~J~~ U	51.1	B	170	210	ug/Kg
75-15-0	Carbon Disulfide	11.0	J	8.20		21.0	42.0	ug/Kg
1634-04-4	Methyl tert-butyl Ether	33.6	U	11.9		33.6	42.0	ug/Kg
75-09-2	Methylene Chloride	67.1	U	47.9		67.1	83.9	ug/Kg
156-60-5	trans-1,2-Dichloroethene	33.6	U	13.3		33.6	42.0	ug/Kg
75-34-3	1,1-Dichloroethane	21.0	U	7.90		21.0	42.0	ug/Kg
78-93-3	2-Butanone	170	U	69.6		170	210	ug/Kg
56-23-5	Carbon Tetrachloride	21.0	U	7.50		21.0	42.0	ug/Kg
156-59-2	cis-1,2-Dichloroethene	33.6	U	11.7		33.6	42.0	ug/Kg
67-66-3	Chloroform	33.6	U	10.7		33.6	42.0	ug/Kg
71-55-6	1,1,1-Trichloroethane	21.0	U	6.40		21.0	42.0	ug/Kg
108-87-2	Methylcyclohexane	21.0	U	3.90		21.0	42.0	ug/Kg
71-43-2	Benzene	21.0	U	7.20		21.0	42.0	ug/Kg
107-06-2	1,2-Dichloroethane	21.0	U	7.60		21.0	42.0	ug/Kg
79-01-6	Trichloroethene	21.0	U	7.10		21.0	42.0	ug/Kg
78-87-5	1,2-Dichloropropane	21.0	U	7.40		21.0	42.0	ug/Kg
75-27-4	Bromodichloromethane	21.0	U	7.60		21.0	42.0	ug/Kg
108-10-1	4-Methyl-2-Pentanone	170	U	58.6		170	210	ug/Kg
108-88-3	Toluene	21.0	U	7.20		21.0	42.0	ug/Kg
10061-02-6	t-1,3-Dichloropropene	21.0	U	9.00		21.0	42.0	ug/Kg
10061-01-5	cis-1,3-Dichloropropene	21.0	U	8.20		21.0	42.0	ug/Kg
79-00-5	1,1,2-Trichloroethane	21.0	U	8.30		21.0	42.0	ug/Kg
591-78-6	2-Hexanone	170	U	74.0		170	210	ug/Kg
124-48-1	Dibromochloromethane	21.0	U	8.90		21.0	42.0	ug/Kg

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-GW-878-880	SDG No.:	L3923
Lab Sample ID:	L3923-07	Matrix:	SOIL
Analytical Method:	SW8260	% Moisture:	88.2
Sample Wt/Vol:	5.05 Units: g	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group3
GC Column:	RTX-VMS ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VD066578.D	1		09/09/20 12:57	VD090920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units(Dry Weight)
127-18-4	Tetrachloroethene	21.0	U	7.30	21.0	42.0	ug/Kg
108-90-7	Chlorobenzene	21.0	U	7.50	21.0	42.0	ug/Kg
100-41-4	Ethyl Benzene	21.0	U	8.70	21.0	42.0	ug/Kg
179601-23-1	m/p-Xylenes	42.0	U	18.2	42.0	83.9	ug/Kg
95-47-6	o-Xylene	21.0	U	8.40	21.0	42.0	ug/Kg
100-42-5	Styrene	33.6	U	11.6	33.6	42.0	ug/Kg
75-25-2	Bromoform	33.6	U	10.1	33.6	42.0	ug/Kg
98-82-8	Isopropylbenzene	21.0	U	9.50	21.0	42.0	ug/Kg
79-34-5	1,1,2,2-Tetrachloroethane	21.0	U	8.90	21.0	42.0	ug/Kg
541-73-1	1,3-Dichlorobenzene	33.6	U	10.8	33.6	42.0	ug/Kg
106-46-7	1,4-Dichlorobenzene	21.0	U	7.10	21.0	42.0	ug/Kg
95-50-1	1,2-Dichlorobenzene	33.6	U	8.70	33.6	42.0	ug/Kg
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	54.4		71 - 136		109%	SPK: 50
1868-53-7	Dibromofluoromethane	52.4		78 - 119		105%	SPK: 50
2037-26-5	Toluene-d8	49.8		85 - 116		100%	SPK: 50
460-00-4	4-Bromofluorobenzene	50.5		79 - 119		101%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	292000	7.98				
540-36-3	1,4-Difluorobenzene	514000	8.86				
3114-55-4	Chlorobenzene-d5	468000	11.64				
3855-82-1	1,4-Dichlorobenzene-d4	193000	13.58				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/Kg

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
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D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/01/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-GW-843-845	SDG No.:	L3923
Lab Sample ID:	L3923-04	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011770.D	1	09/08/20 08:30	09/09/20 16:32	PB131470

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.090	J	0.090	0.10	0.10	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.28		30 - 150		70%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.32		30 - 150		79%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.32		55 - 111		79%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.31		53 - 106		79%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.43		58 - 132		108%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2500	7.73				
1146-65-2	Naphthalene-d8	9300	10.52				
15067-26-2	Acenaphthene-d10	5240	14.37				
1517-22-2	Phenanthrene-d10	11500	17.11				
1719-03-5	Chrysene-d12	11000	21.31				
1520-96-3	Perylene-d12	10700	23.56				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-GW-878-880	SDG No.:	L3923
Lab Sample ID:	L3923-05	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	440 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN011771.D	1	09/08/20 08:30	09/09/20 17:09	PB131470

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.23	U	0.21	0.23	0.23	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.17		30 - 150		42%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.13		30 - 150		33%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.11	*	55 - 111		27%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.18	*	53 - 106		44%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.16	*	58 - 132		41%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	2360	7.73				
1146-65-2	Naphthalene-d8	9120	10.52				
15067-26-2	Acenaphthene-d10	5500	14.37				
1517-22-2	Phenanthrene-d10	11900	17.11				
1719-03-5	Chrysene-d12	12100	21.31				
1520-96-3	Perylene-d12	12900	23.56				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
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Appendix C

Support Documents

A. Documents Supporting Qualifications

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-EB-20200902	SDG No.:	L3923
Lab Sample ID:	L3923-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063240.D	1		09/04/20 12:13	VN090420

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	8.40	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	2.80	J	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/02/20
Project:	CTO WE13	Date Received:	09/04/20
Client Sample ID:	BP-VPB181-EB-20200902	SDG No.:	L3923
Lab Sample ID:	L3923-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN063240.D	1		09/04/20 12:13	VN090420

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	48.7		81 - 118		97%	SPK: 50
1868-53-7	Dibromofluoromethane	50.2		80 - 119		100%	SPK: 50
2037-26-5	Toluene-d8	50.7		89 - 112		101%	SPK: 50
460-00-4	4-Bromofluorobenzene	49.2		85 - 114		98%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	261000	7.63				
540-36-3	1,4-Difluorobenzene	509000	8.55				
3114-55-4	Chlorobenzene-d5	496000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	195000	13.32				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Surrogate Summary

SW-846

SDG No.: L3923

Client: Tetra Tech NUS, Inc.

Analytical Method: 8270-Modified

Lab Sample ID	Client ID	Parameter	Spike (PPM)	Result (PPM)	Recovery (%)	Qual	Limits (%) Low	Limits (%) High
L3923-04	BP-VPB181-GW-843-845	2-Methylnaphthalene-d10	0.4	0.28	70		30	150
		Fluoranthene-d10	0.4	0.32	79		30	150
		Nitrobenzene-d5	0.4	0.32	79		55	111
		2-Fluorobiphenyl	0.4	0.31	79		53	106
		Terphenyl-d14	0.4	0.43	108		58	132
L3923-05	BP-VPB181-GW-878-880	2-Methylnaphthalene-d10	0.4	0.17	42		30	150
		Fluoranthene-d10	0.4	0.13	33		30	150
		Nitrobenzene-d5	0.4	0.11	27	*	55	111
		2-Fluorobiphenyl	0.4	0.18	44	*	53	106
		Terphenyl-d14	0.4	0.16	41	*	58	132
PB131470BL	PB131470BL	2-Methylnaphthalene-d10	0.4	0.31	77		30	150
		Fluoranthene-d10	0.4	0.31	76		30	150
		Nitrobenzene-d5	0.4	0.44	109		55	111
		2-Fluorobiphenyl	0.4	0.44	110	*	53	106
		Terphenyl-d14	0.4	0.48	121		58	132
PB131470BS	PB131470BS	2-Methylnaphthalene-d10	0.4	0.36	90		30	150
		Fluoranthene-d10	0.4	0.33	83		30	150
		Nitrobenzene-d5	0.4	0.38	95		55	111
		2-Fluorobiphenyl	0.4	0.38	94		53	106
		Terphenyl-d14	0.4	0.38	94		58	132
PB131470BSD	PB131470BSD	2-Methylnaphthalene-d10	0.4	0.36	89		30	150
		Fluoranthene-d10	0.4	0.33	83		30	150
		Nitrobenzene-d5	0.4	0.39	97		55	111
		2-Fluorobiphenyl	0.4	0.37	94		53	106
		Terphenyl-d14	0.4	0.38	95		58	132

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Appendix C

Support Documents

B. Chain of Custody (COC)

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CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax: (908) 78-8922
www.chemtech.net

Chemtech Project Number: L3923

COC Number:

CLIENT INFORMATION

COMPANY: Tetra Tech
ADDRESS: 5700 Lake Wright Dr., Suite 102
CITY: Norfolk STATE: VA ZIP: 23502
ATTENTION: Dave Brayack
PHONE: 757-466-4909 FAX: 757-461-4148

PROJECT INFORMATION

PROJECT NAME: NWIRP Bethpage
PROJECT #: 112G08005-WE13 LOCATION: VPB-181
PROJECT MANAGER: Dave Brayack
E-MAIL: david.brayack@tetratech.com
PHONE: 757-466-4909 FAX: 757-461-4148

BILLING INFORMATION

BILL TO: SEE CONTRACT PO#
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: 2 & 10 DAYS*
HARD COPY: 2 & 10 DAYS*
EDD 2 & 10 DAYS*
* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ☐ RESEULTS ONLY
- ☐ RESULTS + QC
- ☐ New Jersey REDUCED
- ☐ New Jersey CLP
- ☐ USEPA CLP
- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other
- ☐ EDD Format

ANALYSIS

1	2	3	4	5	6	7	8	9
VOC(SW846-8260B)	1,4 Dioxane (8270 SIM)							

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# of Bottles	PRESERVATIVES A	1	2	3	4	5	6	7	8	9	COMMENTS
1.	BP-VPB181-TB-20200902	QA		X	9/2/20	8:15	2		2									Trip Blank
2.	BP-VPB181-EB-20200902	QA		X	9/2/20	8:25	2		2									
3.	BP-VPB181-GW-843-845	AQ		X	9/1/20	14:05	1		0	1								
4.	BP-VPB181-GW-858-860	AQ		X	9/2/20	12:10	6		2	2								Very turbid
5.	BP-VPB181-GW-878-880	AQ		X	9/2/20	14:15	3		2	1								
6.	BP-VPB181-GW-898-900	AQ		X	9/3/20	10:20	2		2									
7.	~~BP-VPB181-GW-933-935~~	AQ		X	9/3/20	15:00	3		2	1								
8.																		
9.																		
10.																		

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-Other

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1.	9/3/20 1630	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2. FedEx	9/4/20 0950	2.
RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY
3.		3.

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant ☐ Cooler Temp 4.9°C
MeOH extraction requires an additional 4oz. Jar for percent solid ☐ Ice in Cooler?:
Comments: **48hr TAT** - For VOC's see worksheet #15 of SAP 2018 for VPB program VOC list
10-DAY TAT - For 1,4 Dioxane (8270 SIM)

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ Overnight
CHEMTECH: ☐ Picked Up ☐ Overnight

Shipment Complete ☐ YES ☐ NO

WHITE - CHEMTECH COPYFOR RETURN TO CLIENT **YELLOW** - CHEMTECH COPY **PINK** - SAMPLER COPY

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Appendix C

Support Documents

C. Calculations for Stage 4 Data Validation

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SDG L3923

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

VOC (8260) SAMPLE QUANTITATION

Sample # acetone for BP-VPB181-GW-898-900

Cpd. Concentration = Areac(ConcISTD)(Vf)(Dl)(UnitF)/(Areast)(Vi)

Calc. Concentration = 10.50

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL	UnitF
13082	268490	50	0.232	5000	5000	1	1

Reported Concentration = 10.50

SDG L3923

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

SVOC (8270) SAMPLE QUANTITATION

Sample # 1,4-dioxane for BP-VPB181-GW-843-845

Cpd. Concentration = $\frac{(Area_c)(Conc_{istd})(Vf)(DL)}{(Area_{st})(\overline{RRF_c})(Vi)}$

Calc. Concentration = 0.09

AREA c	AREA st	CONC istd	RRF	Vf	Vi	DL
343	2496	0.4	0.643	1000	1000	1

Reported Concentration = 0.09

5. VPB181 Groundwater Analytical Data Validation Table

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LOCATION	NYSDEC Groundwater Guidance or Standard Value (1)	VPB181	VPB181	VPB181	VPB181	VPB181	VPB181
SAMPLE ID		BP-VPB181-GW-58-60	BP-VPB181-GW-98-100	BP-VPB181-GW-198-200	BP-VPB181-GW-218-220	BP-VPB181-GW-218-220-D	BP-VPB181-GW-238-240
SAMPLE DATE		20200810	20200811	20200812	20200812	20200812	20200812
TOP DEPTH		58	98	198	218	218	238
BOTTOM DEPTH		60	100	200	220	220	240
VOLATILES (UG/L)							
1,1,1-TRICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
1,1,2,2-TETRACHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROTRIFLUOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	1.9 J	0.5 U
1,2-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
1,2-DICHLOROPROPANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	50	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-HEXANONE	50	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
4-METHYL-2-PENTANONE	NC	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
ACETONE	5	**5.7** J	**5.6** J	25 U	2.5 U	2.5 U	2.5 U
BENZENE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMODICHLOROMETHANE	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOFORM	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOMETHANE	5	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
CARBON DISULFIDE	60	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON TETRACHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	7	0.5 U	0.5 U	0.5 U	0.86 J	0.87 J	0.58 J
CHLOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**9.8**
CIS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	5	0.5 U	0.5 U	0.35 J	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
M+P-XYLENES	NC	1 U	1 U	1.3 J	1 U	1 U	1 U
METHYL CYCLOHEXANE	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYL TERT-BUTYL ETHER	10	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYLENE CHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
O-XYLENE	NC	0.5 U	0.5 U	0.69 J	0.5 U	0.5 U	0.5 U
STYRENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRACHLOROETHENE	5	0.5 U	0.5 U	0.65 J	0.72 J	0.57 J	0.5 U
TOLUENE	5	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	5	0.5 U	0.5 U	1.5 J	4.3 J	3.8 J	2.3 J
TRICHLOROFLUOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
SEMIVOLATILES (UG/L)							
1,4-DIOXANE	1[(2)]	--	--	0.11 J	--	--	0.29 J

LOCATION	NYSDEC Groundwater Guidance or Standard Value (1)	VPB181	VPB181	VPB181	VPB181	VPB181	VPB181
SAMPLE ID		BP-VPB181-GW-258-260	BP-VPB181-GW-278-280	BP-VPB181-GW-298-300	BP-VPB181-GW-318-320	BP-VPB181-GW-338-340	BP-VPB181-GW-368-370
SAMPLE DATE		20200813	20200813	20200813	20200813	20200814	20200817
TOP DEPTH		258	278	298	318	338	368
BOTTOM DEPTH		260	280	300	320	340	370
VOLATILES (UG/L)							
1,1,1-TRICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
1,1,2,2-TETRACHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROTRIFLUOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHANE	5	0.5 U	1.6 J	3.1 J	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHENE	5	0.5 U	1.3 J	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
1,2-DICHLOROPROPANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-DICHLOROBENZENE	3	0.22 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	3	0.29 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	50	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-HEXANONE	50	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
4-METHYL-2-PENTANONE	NC	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
ACETONE	5	25 U	25 U	25 U	25 U	25 U	3 J
BENZENE	1	0.24 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMODICHLOROMETHANE	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOFORM	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOMETHANE	5	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
CARBON DISULFIDE	60	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON TETRACHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	7	0.5 U	0.57 J	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	5	4.3 J	**5.2**	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	5	0.24 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
M+P-XYLENES	NC	0.75 J	1 UJ	1 UJ	1 UJ	1 UJ	1 U
METHYL CYCLOHEXANE	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYL TERT-BUTYL ETHER	10	0.4 J	0.51 J	0.73 J	0.5 U	0.5 U	0.5 U
METHYLENE CHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
O-XYLENE	NC	0.37 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
STYRENE	5	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U
TETRACHLOROETHENE	5	0.72 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOLUENE	5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	5	1.9 J	0.74 J	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROFLUOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
SEMIVOLATILES (UG/L)							
1,4-DIOXANE	1[(2)]	--	0.24 J	--	0.78 J	--	0.1 U

LOCATION	NYSDEC Groundwater Guidance or Standard Value (1)	VPB181	VPB181	VPB181	VPB181	VPB181	VPB181
SAMPLE ID		BP-VPB181-GW-378-380	BP-VPB181-GW-398-400	BP-VPB181-GW-418-420	BP-VPB181-GW-438-440	BP-VPB181-GW-458-460	BP-VPB181-GW-458-460-D
SAMPLE DATE		20200817	20200817	20200817	20200818	20200818	20200818
TOP DEPTH		378	398	418	438	458	458
BOTTOM DEPTH		380	400	420	440	460	460
VOLATILES (UG/L)							
1,1,1-TRICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
1,1,2,2-TETRACHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROTRIFLUOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
1,2-DICHLOROPROPANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	50	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-HEXANONE	50	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
4-METHYL-2-PENTANONE	NC	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
ACETONE	5	3.1 J	**5.1** J	3.2 J	2.5 U	2.5 U	2.5 U
BENZENE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMODICHLOROMETHANE	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOFORM	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOMETHANE	5	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
CARBON DISULFIDE	60	0.5 U	0.5 U	1.5 J	0.5 U	0.5 U	0.5 U
CARBON TETRACHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
M+P-XYLENES	NC	1 U	1 U	1 U	1 U	1 U	1 U
METHYL CYCLOHEXANE	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYL TERT-BUTYL ETHER	10	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYLENE CHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
O-XYLENE	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
STYRENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRACHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOLUENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROFLUOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
SEMIVOLATILES (UG/L)							
1,4-DIOXANE	1[(2)]	--	0.21	--	0.1 U	--	--

LOCATION	NYSDEC Groundwater Guidance or Standard Value (1)	VPB181	VPB181	VPB181	VPB181	VPB181	VPB181
SAMPLE ID		BP-VPB181-GW-478-480	BP-VPB181-GW-498-500	BP-VPB181-GW-518-520	BP-VPB181-GW-538-540	BP-VPB181-GW-588-590	BP-VPB181-GW-618-620
SAMPLE DATE		20200818	20200819	20200819	20200819	20200821	20200825
TOP DEPTH		478	498	518	538	588	618
BOTTOM DEPTH		480	500	520	540	590	620
VOLATILES (UG/L)							
1,1,1-TRICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
1,1,2,2-TETRACHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROTRIFLUOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
1,2-DICHLOROPROPANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	50	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-HEXANONE	50	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
4-METHYL-2-PENTANONE	NC	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
ACETONE	5	2.9 J	2.5 U	2.5 U	2.5 U	25 U	4.9 J
BENZENE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMODICHLOROMETHANE	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOFORM	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOMETHANE	5	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
CARBON DISULFIDE	60	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON TETRACHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
M+P-XYLENES	NC	1 U	1 U	1 U	1 U	1 U	1 U
METHYL CYCLOHEXANE	NC	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
METHYL TERT-BUTYL ETHER	10	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYLENE CHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
O-XYLENE	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
STYRENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRACHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOLUENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROFLUOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
SEMIVOLATILES (UG/L)							
1,4-DIOXANE	1[(2)]	0.1 U	--	0.14 U	--	0.13 U	0.11 U

LOCATION	NYSDEC Groundwater Guidance or Standard Value (1)	VPB181	VPB181	VPB181	VPB181	VPB181	VPB181
SAMPLE ID		BP-VPB181-GW-638-640	BP-VPB181-GW-638-640-D	BP-VPB181-GW-658-660	BP-VPB181-GW-678-680	BP-VPB181-GW-703-705	BP-VPB181-GW-738-740
SAMPLE DATE		20200825	20200825	20200825	20200826	20200826	20200827
TOP DEPTH		638	638	658	678	703	738
BOTTOM DEPTH		640	640	660	680	705	740
VOLATILES (UG/L)							
1,1,1-TRICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
1,1,2,2-TETRACHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROTRIFLUOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
1,2-DICHLOROPROPANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	50	2.5 U	2.5 U	2.5 U	2.3 J	2.5 U	2.5 U
2-HEXANONE	50	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
4-METHYL-2-PENTANONE	NC	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
ACETONE	5	**6.9** J	**6.6** J	4.6 J	**14.2** J	5 J	25 U
BENZENE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMODICHLOROMETHANE	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOFORM	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOMETHANE	5	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
CARBON DISULFIDE	60	0.45 J	0.45 J	0.5 U	0.5 U	0.5 U	0.5 U
CARBON TETRACHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
M+P-XYLENES	NC	1 U	1 U	1 U	1 U	1 U	1 U
METHYL CYCLOHEXANE	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYL TERT-BUTYL ETHER	10	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYLENE CHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
O-XYLENE	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
STYRENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRACHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOLUENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROFLUOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
SEMIVOLATILES (UG/L)							
1,4-DIOXANE	1[(2)]	--	--	0.11 U	--	0.12 U	0.11 U

LOCATION	NYSDEC Groundwater Guidance or Standard Value (1)	VPB181	VPB181	VPB181	VPB181	VPB181	VPB181
SAMPLE ID		BP-VPB181-GW-783-785	BP-VPB181-GW-783-785-D	BP-VPB181-GW-798-800	BP-VPB181-GW-823-825	BP-VPB181-GW-843-845	BP-VPB181-GW-878-880
SAMPLE DATE		20200831	20200831	20200831	20200901	20200901	20200902
TOP DEPTH		783	783	798	823	843	878
BOTTOM DEPTH		785	785	800	825	845	880
VOLATILES (UG/L)							
1,1,1-TRICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	--
1,1,2,2-TETRACHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
1,1,2-TRICHLOROETHANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
1,1,2-TRICHLOROTRIFLUOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
1,1-DICHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
1,1-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
1,2-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
1,2-DICHLOROETHANE	5	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	--
1,2-DICHLOROPROPANE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
1,3-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
1,4-DICHLOROBENZENE	3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
2-BUTANONE	50	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	--
2-HEXANONE	50	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ	--
4-METHYL-2-PENTANONE	NC	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	--
ACETONE	5	**6.1** J	2.5 U	4.8 J	2.5 U	2.5 U	--
BENZENE	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
BROMODICHLOROMETHANE	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
BROMOFORM	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
BROMOMETHANE	5	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	--
CARBON DISULFIDE	60	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
CARBON TETRACHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
CHLOROBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
CHLORODIBROMOMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
CHLOROETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
CHLOROFORM	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
CHLOROMETHANE	5	1.1 J	0.5 U	0.5 U	0.5 U	0.5 U	--
CIS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
CIS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
ETHYLBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
ISOPROPYLBENZENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
M+P-XYLENES	NC	1 U	1 U	1 U	1 U	1 U	--
METHYL CYCLOHEXANE	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
METHYL TERT-BUTYL ETHER	10	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
METHYLENE CHLORIDE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
O-XYLENE	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
STYRENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
TETRACHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
TOLUENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
TRANS-1,2-DICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
TRANS-1,3-DICHLOROPROPENE	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
TRICHLOROETHENE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
TRICHLOROFLUOROMETHANE	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
VINYL CHLORIDE	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--
SEMIVOLATILES (UG/L)							
1,4-DIOXANE	1[(2)]	--	--	0.11 U	--	0.09 J	0.23 U

LOCATION	NYSDEC Groundwater Guidance or Standard Value (1)	**VPB181**
SAMPLE ID		**BP-VPB181-GW-898-900**
SAMPLE DATE		**20200903**
TOP DEPTH		**898**
BOTTOM DEPTH		**900**
VOLATILES (UG/L)		
1,1,1-TRICHLOROETHANE	5	0.75 U
1,1,2,2-TETRACHLOROETHANE	5	0.5 U
1,1,2-TRICHLOROETHANE	1	0.5 U
1,1,2-TRICHLOROTRIFLUOROETHANE	5	0.5 U
1,1-DICHLOROETHANE	5	0.5 U
1,1-DICHLOROETHENE	5	0.5 U
1,2-DICHLOROBENZENE	3	0.5 U
1,2-DICHLOROETHANE	5	0.75 U
1,2-DICHLOROPROPANE	1	0.5 U
1,3-DICHLOROBENZENE	3	0.5 U
1,4-DICHLOROBENZENE	3	0.5 U
2-BUTANONE	50	2.5 U
2-HEXANONE	50	3.8 U
4-METHYL-2-PENTANONE	NC	2.5 U
ACETONE	5	25 U
BENZENE	1	0.5 U
BROMODICHLOROMETHANE	50	0.5 U
BROMOFORM	50	0.5 U
BROMOMETHANE	5	3.8 U
CARBON DISULFIDE	60	0.5 U
CARBON TETRACHLORIDE	5	0.5 U
CHLOROBENZENE	5	0.5 U
CHLORODIBROMOMETHANE	5	0.5 U
CHLOROETHANE	5	0.5 U
CHLOROFORM	7	0.5 U
CHLOROMETHANE	5	0.5 U
CIS-1,2-DICHLOROETHENE	5	0.5 U
CIS-1,3-DICHLOROPROPENE	0.4	0.5 U
ETHYLBENZENE	5	0.5 U
ISOPROPYLBENZENE	5	0.5 U
M+P-XYLENES	NC	1 U
METHYL CYCLOHEXANE	NC	0.5 U
METHYL TERT-BUTYL ETHER	10	0.5 U
METHYLENE CHLORIDE	5	0.5 U
O-XYLENE	NC	0.5 U
STYRENE	5	0.5 U
TETRACHLOROETHENE	5	0.5 U
TOLUENE	5	0.5 U
TRANS-1,2-DICHLOROETHENE	5	0.5 U
TRANS-1,3-DICHLOROPROPENE	0.4	0.5 U
TRICHLOROETHENE	5	0.5 U
TRICHLOROFLUOROMETHANE	5	0.5 U
VINYL CHLORIDE	2	0.5 U
SEMIVOLATILES (UG/L)		
1,4-DIOXANE	1[(2)]	--

Notes:
1 - New York State Department of Environmental Conservation Division of Water. Technical and Operation Guidance series (6 NYCRR 700-706, Part 703.5 summarized in TOGS 1.1.1). Ambient water quality standards and groundwater effluent limitations, class GA.
2 - 1,4-dioxane screened against New York State Department of Health Drinking Water Standard maximum contaminant level of 1 microgram per liter (UG/L).
https://www.health.ny.gov/environmental/water/drinking/docs/water_supplier_fact_sheet_new_mcls.pdf

ft bgs = feet below ground surface
NC = No criteria
UG/L = micrograms per Liter
UG/KG = micrograms per kilogram
Bold = Exceeds NYS Groundwater Standards or guidance value.
U = Undetected. The parameter was analyzed but undetected at the listed limit of quantitation or was qualified as undetected during data review due to blank artifacts.
J = Estimated value. One or more quality control parameters were outside control limits or the analyte concentration was less than the limit of quantitation
UJ = Undetected and estimated. The analyte was analyzed but undetected at the listed limit of quantitation; one or more quality control parameters were outside control limits.

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6. VPB181 Air Sample Analytical Data Validation

Validation Letter

Chain of Custody Records

Analytical Data Sheets

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VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com

DATA VALIDATION SUMMARY REPORT - CHEMISTRY

COMPANY:	Tetra Tech, Inc., Norfolk, VA
PROJECT NAME:	Basewide Groundwater Investigation, Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, N62470-16-D-9008
SITE NAME:	CTO-WE13
CONTRACTED LAB:	Eurofins Air Toxics, Inc.
JOB NO./ACCOUNTING CODE:	112G08005-WE13
QA/QC LEVEL:	EPA Stage 4
ANALYTICAL METHOD(S):	US EPA Method TO-15
VALIDATION GUIDELINES:	Draft Tier II Sampling and Analysis Plan, (Field Sampling Plan and Quality Assurance Project Plan) for Vertical Profile Boring and Monitoring Well Instillation Program, March 2019, DOD QSM 5.0; July 2013, DOD Data Validation Guidance, February 2018, Method criteria, Laboratory limits and Professional Judgment
SAMPLE MATRIX:	Air
TYPES OF ANALYSES:	Volatile Organic Compounds (VOC)
DATA VALIDATION DATE:	October 19, 2020
DATA REVIEWER(S):	Amy L. Hogan
SDG NUMBER:	2008728
SAMPLING DATE(S):	August 26, 2020

SAMPLES:

Client Sample ID	Laboratory ID	VOC
BP-VPB181-AIR-UW-20200826	2008728-01	X
BP-VPB181-AIR-UW-20200826MD	2008728-01MD	X
BP-VPB181-AIR-DW-20200826	2008728-02	X

Suffix Codes: DL= DILUTION, MD = MATRIX DUPLICATE, MS = MATRIX SPIKE
MSD = MATRIX SPIKE DUPLICATE, RE = REANALYSIS

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA VALIDATION SUMMARY

Air Toxics, Inc – SDG: 2008728 – Organic Chemistry

VOLATILE ORGANICS

SUMMARY

I.) General:

The analyses for Volatile Organics were performed by Gas Chromatography / Mass Spectrometry (GC / MS) per EPA Method TO-15.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no Major Issues for this SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the associated method blank. No data qualification was necessary.

Equipment and Rinsate Blanks:

There was no equipment or rinsate blank associated with this SDG. No data qualification was necessary.

Field Blank:

There was no associated field blank for this SDG. No data qualification was necessary.

Trip Blank:

There was no associated trip blank for this SDG. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

Two LCS / LCSD sets were analyzed by the laboratory for this SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Duplicate (MD):

MD analysis was performed using SDG sample BP-VPB181-AIR-UW-20200826. All criteria were met. No data qualification was necessary.

VIII.) Field Duplicates:

There were no field duplicate samples identified as part of this SDG. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD area count criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All CRQL criteria were met. No data qualification was necessary.

XII.) Sample Calculation Verification (Stage 4):

No discrepancies were noted in the sample calculation verification process.

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Appendix A

Data Qualification Summary Table (DQST) with Qualification Codes

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DATA QUALIFICATION SUMMARY TABLE (DQST) WITH QUALIFICATION CODES

VOC								
Client Sample ID	Date Collected	Lab Sample ID	Analyte	Lab Qual	Val Result	VAL_RES ERROR	Val Qual	Val Reason
N/A	N/A	N/A	N/A	No qualifications were made				

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Appendix B

Laboratory Sample Results

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MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

eurofins | Air Toxics

Client ID:	BP-VPB181-AIR-UW-20200826		
Lab ID:	2008728-01A	**Date/Time Analyzed:**	9/2/20 12:29 PM
Date/Time Collected:	8/26/20 03:41 PM	**Dilution Factor:**	1.68
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msdv.i / v090207

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,2,4-Trichlorobenzene	120-82-1	2.8	5.0	6.2	5.0 U
1,2,4-Trimethylbenzene	95-63-6	0.35	0.66	0.82	2.4
1,2-Dichlorobenzene	95-50-1	0.60	0.81	1.0	0.81 U
1,2-Dichloropropane	78-87-5	0.36	0.62	0.78	0.62 U
1,3,5-Trimethylbenzene	108-67-8	0.42	0.66	0.82	0.70 J
1,3-Butadiene	106-99-0	0.15	0.30	0.37	0.30 U
1,3-Dichlorobenzene	541-73-1	0.30	0.81	1.0	0.81 U
1,4-Dioxane	123-91-1	0.34	0.48	0.60	0.48 U
2,2,4-Trimethylpentane	540-84-1	0.86	3.1	3.9	52
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.40	2.0	2.5	1.1 J
2-Hexanone	591-78-6	0.50	2.8	3.4	2.8 U
2-Propanol	67-63-0	0.45	1.6	2.1	2.8
3-Chloropropene	107-05-1	1.3	2.1	2.6	2.1 U
4-Ethyltoluene	622-96-8	0.32	0.66	0.82	2.8
4-Methyl-2-pentanone	108-10-1	0.15	0.55	0.69	0.55 U
Acetone	67-64-1	0.71	1.6	4.0	13
alpha-Chlorotoluene	100-44-7	0.54	0.70	0.87	0.70 U
Bromodichloromethane	75-27-4	0.35	0.90	1.1	0.90 U
Bromoform	75-25-2	0.54	1.4	1.7	1.4 U
Bromomethane	74-83-9	0.64	2.6	3.3	2.6 U
Carbon Disulfide	75-15-0	0.39	2.1	2.6	2.1 U
Chlorobenzene	108-90-7	0.24	0.62	0.77	0.62 U
cis-1,3-Dichloropropene	10061-01-5	0.29	0.61	0.76	0.61 U
Cumene	98-82-8	0.11	0.66	0.82	0.16 J

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

Client ID:	BP-VPB181-AIR-UW-20200826		
Lab ID:	2008728-01A	**Date/Time Analyzed:**	9/2/20 12:29 PM
Date/Time Collected:	8/26/20 03:41 PM	**Dilution Factor:**	1.68
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msdv.i / v090207

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Cyclohexane	110-82-7	0.23	0.46	2.9	3.7
Dibromochloromethane	124-48-1	0.57	1.1	1.4	1.1 U
Ethanol	64-17-5	0.46	1.3	3.2	42
Freon 11	75-69-4	0.21	0.76	0.94	1.2
Freon 113	76-13-1	0.53	1.0	1.3	1.0 U
Heptane	142-82-5	0.64	2.8	3.4	7.2
Hexachlorobutadiene	87-68-3	2.8	7.2	9.0	7.2 U
Hexane	110-54-3	0.50	2.4	3.0	9.6
Methylene Chloride	75-09-2	0.29	0.47	1.2	0.47 U
Propylbenzene	103-65-1	0.49	0.66	0.82	0.52 J
Styrene	100-42-5	0.20	0.57	0.72	0.57 U
Tetrahydrofuran	109-99-9	0.85	2.0	2.5	1.5 J
trans-1,3-Dichloropropene	10061-02-6	0.32	0.61	0.76	0.61 U

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-136	103
4-Bromofluorobenzene	460-00-4	71-124	95
Toluene-d8	2037-26-5	89-112	94

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

Client ID:	BP-VPB181-AIR-UW-20200826		
Lab ID:	2008728-01B	**Date/Time Analyzed:**	9/2/20 12:29 PM
Date/Time Collected:	8/26/20 03:41 PM	**Dilution Factor:**	1.68
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msdv.i / v090207sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.052	0.17	0.18	0.17 U
1,1,2,2-Tetrachloroethane	79-34-5	0.13	0.22	0.23	0.22 U
1,1,2-Trichloroethane	79-00-5	0.070	0.17	0.18	0.17 U
1,1-Dichloroethane	75-34-3	0.041	0.13	0.14	0.13 U
1,1-Dichloroethene	75-35-4	0.057	0.061	0.067	0.061 U
1,2-Dibromoethane (EDB)	106-93-4	0.10	0.24	0.64	0.24 U
1,2-Dichloroethane	107-06-2	0.055	0.13	0.14	0.065 J
1,4-Dichlorobenzene	106-46-7	0.19	0.19	0.50	0.19 U
Benzene	71-43-2	0.036	0.10	0.27	2.8
Carbon Tetrachloride	56-23-5	0.13	0.20	0.21	0.41
Chloroethane	75-00-3	0.034	0.084	0.22	0.059 J
Chloroform	67-66-3	0.070	0.16	0.16	0.18
Chloromethane	74-87-3	0.048	0.066	1.7	0.89 J
cis-1,2-Dichloroethene	156-59-2	0.044	0.13	0.13	0.13 U
Ethyl Benzene	100-41-4	0.048	0.14	0.14	2.2
Freon 114	76-14-2	0.063	0.22	0.23	0.12 J
Freon 12	75-71-8	0.066	0.16	0.42	2.1
m,p-Xylene	108-38-3	0.047	0.14	0.29	8.2
Methyl tert-butyl ether	1634-04-4	0.034	0.12	0.60	0.12 U
o-Xylene	95-47-6	0.040	0.14	0.14	3.1
Tetrachloroethene	127-18-4	0.093	0.22	0.23	0.099 J
Toluene	108-88-3	0.060	0.12	0.32	12
trans-1,2-Dichloroethene	156-60-5	0.051	0.13	0.67	0.13 U
Trichloroethene	79-01-6	0.069	0.17	0.18	0.17 U

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

Client ID:	BP-VPB181-AIR-UW-20200826		
Lab ID:	2008728-01B	**Date/Time Analyzed:**	9/2/20 12:29 PM
Date/Time Collected:	8/26/20 03:41 PM	**Dilution Factor:**	1.68
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msdv.i / v090207sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	75-01-4	0.023	0.040	0.086	0.040 U

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-131	96
4-Bromofluorobenzene	460-00-4	80-117	96
Toluene-d8	2037-26-5	87-114	92

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

Client ID:	BP-VPB181-AIR-DW-20200826		
Lab ID:	2008728-02A	**Date/Time Analyzed:**	9/2/20 02:30 PM
Date/Time Collected:	8/26/20 03:43 PM	**Dilution Factor:**	1.71
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msdv.i / v090209

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,2,4-Trichlorobenzene	120-82-1	2.8	5.1	6.3	5.1 U
1,2,4-Trimethylbenzene	95-63-6	0.35	0.67	0.84	0.67 U
1,2-Dichlorobenzene	95-50-1	0.61	0.82	1.0	0.82 U
1,2-Dichloropropane	78-87-5	0.37	0.63	0.79	0.63 U
1,3,5-Trimethylbenzene	108-67-8	0.43	0.67	0.84	0.67 U
1,3-Butadiene	106-99-0	0.16	0.30	0.38	0.30 U
1,3-Dichlorobenzene	541-73-1	0.31	0.82	1.0	0.82 U
1,4-Dioxane	123-91-1	0.35	0.49	0.62	0.49 U
2,2,4-Trimethylpentane	540-84-1	0.88	3.2	4.0	2.6 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.41	2.0	2.5	0.90 J
2-Hexanone	591-78-6	0.50	2.8	3.5	2.8 U
2-Propanol	67-63-0	0.46	1.7	2.1	5.3
3-Chloropropene	107-05-1	1.3	2.1	2.7	2.1 U
4-Ethyltoluene	622-96-8	0.32	0.67	0.84	0.67 U
4-Methyl-2-pentanone	108-10-1	0.15	0.56	0.70	0.56 U
Acetone	67-64-1	0.73	1.6	4.1	18
alpha-Chlorotoluene	100-44-7	0.55	0.71	0.88	0.71 U
Bromodichloromethane	75-27-4	0.35	0.92	1.1	0.92 U
Bromoform	75-25-2	0.55	1.4	1.8	1.4 U
Bromomethane	74-83-9	0.65	2.6	3.3	2.6 U
Carbon Disulfide	75-15-0	0.39	2.1	2.7	2.1 U
Chlorobenzene	108-90-7	0.24	0.63	0.79	0.63 U
cis-1,3-Dichloropropene	10061-01-5	0.29	0.62	0.78	0.62 U
Cumene	98-82-8	0.11	0.67	0.84	0.67 U

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

Client ID:	BP-VPB181-AIR-DW-20200826		
Lab ID:	2008728-02A	**Date/Time Analyzed:**	9/2/20 02:30 PM
Date/Time Collected:	8/26/20 03:43 PM	**Dilution Factor:**	1.71
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msdv.i / v090209

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Cyclohexane	110-82-7	0.23	0.47	2.9	0.78 J
Dibromochloromethane	124-48-1	0.58	1.2	1.4	1.2 U
Ethanol	64-17-5	0.46	1.3	3.2	4.7
Freon 11	75-69-4	0.21	0.77	0.96	1.3
Freon 113	76-13-1	0.54	1.0	1.3	1.0 U
Heptane	142-82-5	0.65	2.8	3.5	0.98 J
Hexachlorobutadiene	87-68-3	2.9	7.3	9.1	7.3 U
Hexane	110-54-3	0.51	2.4	3.0	2.4 J
Methylene Chloride	75-09-2	0.29	0.48	1.2	0.48 J
Propylbenzene	103-65-1	0.50	0.67	0.84	0.67 U
Styrene	100-42-5	0.21	0.58	0.73	0.58 U
Tetrahydrofuran	109-99-9	0.86	2.0	2.5	2.0 U
trans-1,3-Dichloropropene	10061-02-6	0.33	0.62	0.78	0.62 U

U = The analyte was not detected above the MDL.
J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	82-136	104
4-Bromofluorobenzene	460-00-4	71-124	104
Toluene-d8	2037-26-5	89-112	94

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

Client ID:	BP-VPB181-AIR-DW-20200826		
Lab ID:	2008728-02B	**Date/Time Analyzed:**	9/2/20 02:30 PM
Date/Time Collected:	8/26/20 03:43 PM	**Dilution Factor:**	1.71
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msdv.i / v090209sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.053	0.18	0.19	0.18 U
1,1,2,2-Tetrachloroethane	79-34-5	0.13	0.22	0.23	0.22 U
1,1,2-Trichloroethane	79-00-5	0.072	0.18	0.19	0.18 U
1,1-Dichloroethane	75-34-3	0.041	0.13	0.14	0.13 U
1,1-Dichloroethene	75-35-4	0.058	0.062	0.068	0.062 U
1,2-Dibromoethane (EDB)	106-93-4	0.10	0.25	0.66	0.25 U
1,2-Dichloroethane	107-06-2	0.056	0.13	0.14	0.13 U
1,4-Dichlorobenzene	106-46-7	0.19	0.20	0.51	0.20 U
Benzene	71-43-2	0.036	0.10	0.27	0.62
Carbon Tetrachloride	56-23-5	0.14	0.20	0.22	0.43
Chloroethane	75-00-3	0.035	0.086	0.22	0.077 J
Chloroform	67-66-3	0.072	0.16	0.17	0.11 J
Chloromethane	74-87-3	0.049	0.067	1.8	0.80 J
cis-1,2-Dichloroethene	156-59-2	0.045	0.13	0.14	0.076 J
Ethyl Benzene	100-41-4	0.049	0.14	0.15	0.17
Freon 114	76-14-2	0.064	0.23	0.24	0.12 J
Freon 12	75-71-8	0.067	0.16	0.42	2.1
m,p-Xylene	108-38-3	0.048	0.14	0.30	0.60
Methyl tert-butyl ether	1634-04-4	0.035	0.12	0.62	0.12 U
o-Xylene	95-47-6	0.040	0.14	0.15	0.25
Tetrachloroethene	127-18-4	0.095	0.22	0.23	1.2
Toluene	108-88-3	0.061	0.12	0.32	1.0
trans-1,2-Dichloroethene	156-60-5	0.052	0.13	0.68	0.13 U
Trichloroethene	79-01-6	0.070	0.17	0.18	0.17 U

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

Client ID:	BP-VPB181-AIR-DW-20200826		
Lab ID:	2008728-02B	**Date/Time Analyzed:**	9/2/20 02:30 PM
Date/Time Collected:	8/26/20 03:43 PM	**Dilution Factor:**	1.71
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msdv.i / v090209sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	75-01-4	0.024	0.040	0.087	0.040 U

J = Estimated value.
U = The analyte was not detected above the MDL.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	78-131	94
4-Bromofluorobenzene	460-00-4	80-117	102
Toluene-d8	2037-26-5	87-114	94

Appendix C

Support Documents

A. Documents Supporting Qualifications

Support Documentation was necessary for this SDG

Appendix C

Support Documents

B. Chain of Custody (COC)

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Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2008728

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

page--of ---

Client: Tetra Tech
Project Name: NWIRP Bethpage
Project Manager: Ernie Wu
Project # 112608005-WF13
Sampler: Beau Benfield
Site Name: NWIRP Bethpage

Special Instructions/Notes:

Turnaround Time (Rush surcharges may apply)
Standard _____ Rush _____ (specify)

Lab ID	Field Sample Identification(Location)	Can #	Flow Controller #	Start Sampling Information Date	Start Sampling Information Time	Stop Sampling Information Date	Stop Sampling Information Time	Canister Vacuum/Pressure Initial (in Hg)	Canister Vacuum/Pressure Final (in Hg)	Lab Use Only Receipt	Lab Use Only Final (psig) Gas: N_2 / He	Requested Analyses TO-15			
01A	BP-VPB181-AIR-DW-20200826	N2414	23733	8/26/20	0741	8/26/20	1541	28	5.5			✓			
02A	BP-VPB181-AIR-DW-20200826	N4418	23138	8/26/20	0743	8/26/20	1543	28.5	5.5			✓			

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
[signature] Tetra Tech	8/26/20	1700	[signature] EATL	8/27/20	1024
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: FEDEX | Custody Seals Intact? Yes No None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

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Appendix C

Support Documents

C. Calculations for Stage 4 Data Validation

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SDG 2008728

Verification calculations follow the written formula with the verification results compared to the reported value, verification value vs. reported value.

VOC (TO-15) SAMPLE QUANTITATION

acetone for BP-VPB181-AIR-UW-20200826

Areac(Concistd)(DL)(MW)/Areast(

Calc. Concentration = 13.3

AREA c	AREA st	CONC istd	RRF	DL	Mw	GasC
35956	91446	5	0.59186	1.68	58.08	24.45

Reported Concentration = 13

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7. VPB181 Air Sample Analytical Data Validated Table

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Vertical Profile Boring 181, Air Analytical Data Table
Naval Weapons Industrial Reserve Plant
Bethpage - Bethpage, New York

Tetra Tech

LOCATION	VPB181	VPB181
SAMPLE ID	BP-VPB181-AIR-DW-20200826	BP-VPB181-AIR-UW-20200826
SAMPLE DATE	8/26/2020	8/26/2020
SAMPLE TYPE	Downwind	Upwind
VOLATILE ORGANICS (UG/M3)		
1,1,1-TRICHLOROETHANE	0.18 U	0.17 U
1,1,2,2-TETRACHLOROETHANE	0.22 U	0.22 U
1,1,2-TRICHLOROETHANE	0.18 U	0.17 U
1,1,2-TRICHLOROTRIFLUOROETHANE	1 U	1 U
1,1-DICHLOROETHANE	0.13 U	0.13 U
1,1-DICHLOROETHENE	0.062 U	0.061 U
1,2-DICHLOROETHANE	0.13 U	0.065 J
1,2-DICHLOROPROPANE	0.63 U	0.62 U
1,4-DIOXANE	0.49 U	0.48 U
2-BUTANONE	0.9 J	1.1 J
2-HEXANONE	2.8 U	2.8 U
4-METHYL-2-PENTANONE	0.56 U	0.55 U
ACETONE	18	13
BENZENE	0.62	2.8
BROMODICHLOROMETHANE	0.92 U	0.9 U
BROMOFORM	1.4 U	1.4 U
BROMOMETHANE	2.6 U	2.6 U
CARBON DISULFIDE	2.1 U	2.1 U
CARBON TETRACHLORIDE	0.43	0.41
CHLOROBENZENE	0.63 U	0.62 U
CHLORODIBROMOMETHANE	1.2 U	1.1 U
CHLOROETHANE	0.077 J	0.059 J
CHLOROFORM	0.11 J	0.18
CHLOROMETHANE	0.8 J	0.89 J
CIS-1,2-DICHLOROETHENE	0.076 J	0.13 U
DICHLORODIFLUOROMETHANE	2.1	2.1
ETHYLBENZENE	0.17	2.2
ISOPROPYLBENZENE	0.67 U	0.16 J
M+P-XYLENES	0.6	8.2
METHYL TERT-BUTYL ETHER	0.12 U	0.12 U
METHYLENE CHLORIDE	0.48 J	0.47 U
O-XYLENE	0.25	3.1
STYRENE	0.58 U	0.57 U
TETRACHLOROETHENE	1.2	0.099 J
TOLUENE	1	12
TRANS-1,2-DICHLOROETHENE	0.17 U	0.13 U
TRANS-1,3-DICHLOROPROPENE	0.62 U	0.61 U
TRICHLOROETHENE	0.17 U	0.17 U
TRICHLOROFLUOROMETHANE	1.3	1.2
VINYL CHLORIDE	0.04 U	0.04 U

Notes:

UG/M3 = micrograms per meter cubed

U = Undetected. The parameter was analyzed but undetected at the listed limit of quantitation or was qualified as undetected during data review due to blank artifacts.

J = Estimated value. One or more quality control parameters were outside control limits or the analyte concentration was less than the limit of quantitation

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Appendix B

TT-MW181S, BPOW1-7, and BPOW1-8

TT-MW181S, BPOW1-7, and BPOW1-8

1. **TT-MW181S, BPOW1-7, and BPOW1-8 Boring Logs**
2. **TT-MW181S, BPOW1-7, and BPOW1-8 Well Construction Logs**
3. **TT-MW181S, BPOW1-7, and BPOW1-8 Well Development/Groundwater Sample Log Sheets**
4. **TT-MW181S, BPOW1-7, and BPOW1-8 Analytical Data Unvalidated**
5. **TT-MW181S, BPOW1-7, and BPOW1-8 Analytical Data Table Unvalidated**

1. TT-MW181S, BPOW1-7, and BPOW1-8 Boring Logs

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WELL NUMBER TT-MW181S

Tetra Tech

CLIENT NAVFAC MIDLANT
PROJECT NAME NWIRP Bethpage OU2
PROJECT NUMBER 112G08005-WE13
PROJECT LOCATION BETHPAGE
DATE STARTED 9/17/20 **COMPLETED** 11/5/20
GROUND ELEVATION 73.1 **HOLE SIZE** 8.625 inches
DRILLING CONTRACTOR DELTA WELL & PUMP
DRILLING METHOD MUD ROTARY
GROUND WATER LEVEL ---
LOGGED BY Beau Benfield
NORTHING 201927.7 ft **EASTING** 1130767.7 ft **DATUM:** NVD 88
NOTES 0 to 50 HSA

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0						0 to 213 ft bgs; See VPB-181 for descriptions	Casing Top Elev: 72.75 (ft) Casing Type: PVC Top of Casing 10 inch diameter Steel Surface Casing Bentonite Cement Grout Schedule 80 PVC

TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 5/25/21 12:40 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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WELL NUMBER TT-MW181S

Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION		WELL DIAGRAM
						0 to 213 ft bgs; See VPB-181 for descriptions *(continued)*		Bentonite Seal
170								
								Secondary Sand Pack #0
180								
190								
								Primary Sand Pack #1
200								
210						213.0	-139.9	
	SS	17	5-7-8-10/0"	SM		214.0 (SM) Gray silty SAND, wet	-140.9	
				SPSM		215.0 (SPSM) Gray poorly graded fine SAND, some Silt and bands of mafic minerals	-141.9	
	SS	9	3-5-8-12/0"	SM		(SM) Gray silty fine SAND, some banding of mafic		
220						220.0 minerals	-146.9	4" Diameter Schedule 80

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TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 5/25/21 12:42 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

WELL NUMBER TT-MW181S

Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
225.0	SS	15	6-12-18-15/0"	SM		(SM) Gray silty fine SAND, some banding of mafic minerals -151.9	PVC, 10 Slot Well Screen (210-230 ft bgs)
230.0	SS	13	8-6-8-10/0"	SM		(SM) Gray silty fine SAND, some banding of mafic minerals -156.9	Sand to Bottom
240							Bottom of Borehole

Bottom of borehole at 248.0 feet.

TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 5/25/21 12:42 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

WELL NUMBER BPOW 1-7

Tetra Tech

CLIENT NAVFAC MIDLANT
PROJECT NAME NWIRP Bethpage OU2
PROJECT NUMBER 112G08005-WE13
PROJECT LOCATION BETHPAGE
DATE STARTED 9/21/20 **COMPLETED** 10/27/20
GROUND ELEVATION 73.2 **HOLE SIZE** 8.625 inches
DRILLING CONTRACTOR DELTA WELL & PUMP
DRILLING METHOD MUD ROTARY
GROUND WATER LEVEL ---
LOGGED BY Beau Benfield
NORTHING 201917.5 ft **EASTING** 1130763.6 ft **DATUM:** NVD 88
NOTES 0 to 50 HSA

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							Casing Top Elev: 72.83 (ft) Casing Type: PVC
10						0 to 603 ft bgs; See VPB-181 for descriptions	Top of Casing
20							10 inch diameter Steel Surface Casing
30							
40							
50							
60							
70							
80							
90							
100							
110							
120							
130							
140							
150							
160							
170							
180							
190							
200							
210							
220							
230							
240							
250							
260							
270							
280							Bentonite Cement Grout
290							
300							Schedule 80 PVC
310							
320							
330							
340							
350							
360							
370							
380							
390							
400							
410							
420							
430							
440							
450							
460							
470							
480							
490							
500							
510							
520							
530							
540							
550							Bentonite Seal
560							

TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 5/25/21 12:47 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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WELL NUMBER BPOW 1-7

Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
						0 to 603 ft bgs; See VPB-181 for descriptions *(continued)*	Sand Pack #0
570							
580							
590							Primary Sand Pack #1
600						603.0 -529.8	
	SS	7	2-9-21-42/0"	SP		(SP) Light gray poorly graded fine SAND, wet 605.0 -531.8	
	SS	5	3-7-12-19/0"	SP		(SP) Gray poorly graded fine to medium SAND, wet 610.0 -536.8	
610	SS	5	6-9-13-20/0"	SP		(SP) Light gray poorly graded fine SAND, wet 615.0 -541.8	
	SS	15	5-8-19-13/0"	SP		(SP) Gray poorly graded fine to medium SAND, wet 620.0 -546.8	
620							4" Diameter Schedule 80

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TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 5/25/21 12:48 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

WELL NUMBER BPOW 1-7

Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
	SS	15	3-5-6-8/0"	SPSM		(SPSM) Gray silty fine SAND, some Mica 625.0 -551.8	PVC, 10 Slot Well Screen (600-640 ft bgs)
630	SS	13	3-6-5-7/0"	SP		(SP) Gray poorly graded fine SAND, little Silt, wet 630.0 -556.8	
	SS	9	3-4-5-10/0"	SP		(SP) Gray poorly graded fine SAND, trace Mica, wet 635.0 -561.8	
640	SS	6	4-7-9-6/0"	SP		(SP) Gray poorly graded fine to medium SAND, wet 640.0 -566.8	Sand to Bottom
650							Bottom of Borehole

Bottom of borehole at 658.0 feet.

TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 5/25/21 12:48 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

WELL NUMBER BPOW 1-8

Tetra Tech

CLIENT NAVFAC MIDLANT
PROJECT NAME NWIRP Bethpage OU2
PROJECT NUMBER 112G08005-WE13
PROJECT LOCATION BETHPAGE
DATE STARTED 9/18/20 **COMPLETED** 10/7/20
GROUND ELEVATION 73.4 **HOLE SIZE** 8.625 inches
DRILLING CONTRACTOR DELTA WELL & PUMP
DRILLING METHOD MUD ROTARY
GROUND WATER LEVEL ---
LOGGED BY Beau Benfield
NORTHING 201893.5 ft **EASTING** 1130748.6 ft **DATUM:** NVD 88
NOTES 0 to 50 HSA

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0							Casing Top Elev: 72.91 (ft) Casing Type: PVC
10						0 to 728 ft bgs; See VPB-181 for descriptions	Top of Casing
20							10 inch diameter Steel Surface Casing
30							
40							
50							
60							
70							
80							
90							
100							
110							
120							
130							
140							
150							
160							
170							
180							
190							
200							
210							
220							
230							
240							
250							
260							
270							
280							
290							
300							
310							
320							
330							
340							
350							Bentonite Cement Grout
360							
370							Schedule 80 PVC
380							
390							
400							
410							
420							
430							
440							
450							
460							
470							
480							
490							
500							
510							
520							
530							
540							
550							
560							
570							
580							
590							
600							
610							
620							
630							
640							
650							
660							
670							

TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 5/25/21 12:47 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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WELL NUMBER BPOW 1-8

Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
680						0 to 728 ft bgs; See VPB-181 for descriptions *(continued)*	Bentonite Seal
690							Secondary Sand Pack #0
700							
710							Primary Sand Pack #1
720							
						728.0 -654.6	
730	SS	5	6-8-10-14/0"	SM		(SM) Light gray silty fine SAND, some iron banding, wet 730.0 -656.6	

TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 5/25/21 12:48 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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WELL NUMBER BPOW 1-8

Tetra Tech

CLIENT NAVFAC MIDLANT **PROJECT NAME** NWIRP Bethpage OU2

PROJECT NUMBER 112G08005-WE13 **PROJECT LOCATION** BETHPAGE

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY (in)	BLOW COUNTS (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
740	SS	4	11-12-19-10/0"	MLSP		740.0 (MLSP) White to light tan fine to medium sandy SILT, some large subrounded Pebbles, wet -666.6	4" Diameter Schedule 80 PVC, 10 Slot Well Screen (725-755 ft bgs)
750	SS	6	6-9-15-17/0"	SPGP		755.0 (SPGP) Light gray fine to medium sandy subangular GRAVEL, some Silt, wet -681.6	Sand to Bottom
760							
770							Bottom of Borehole

Bottom of borehole at 773.0 feet.

TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 5/25/21 12:48 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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2. TT-MW181S, BPOW1-7, and BPOW1-8 Well Construction Logs

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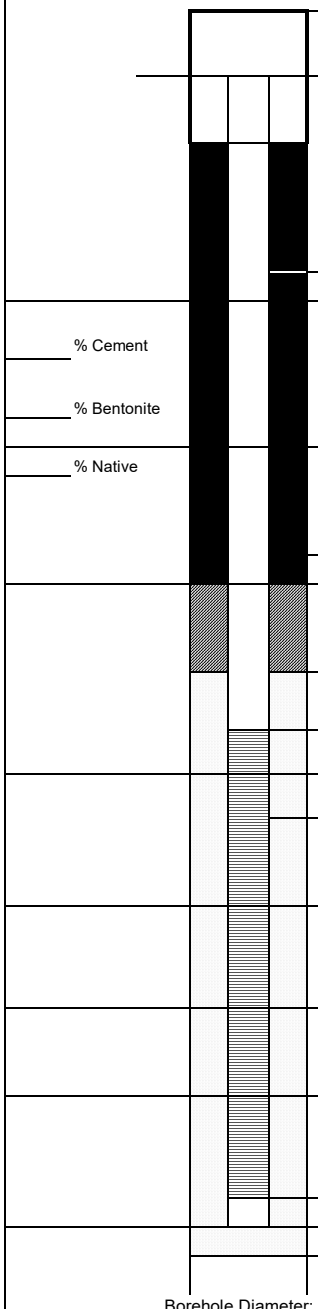
TETRA TECH	*Client:*	NAVFAC	***WELL ID: MW181S***
	Project Number:	112G08005-WE13	
	Site Location:	*NWIRP BETHPAGE, NY*	*Date Installed:* *11/5/2020*
	Well Location:	*On-Site*	*Inspector:* *Benfield*
	Method:	*Hollow Stem Auger (0'-50') Mud Rotary (>50')*	*Contractor:* *Delta Well & Pump*

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet)
Top of Flush Mount Well Cap	0.0	73.1
Top of Riser Pipe	0.35	72.75
Riser Pipe:		
Length 210		
Inside Diameter (ID) 4"		
% Cement — Type of Material PVC Sch. 80		
% Bentonite		
Bottom of 10 inch diameter Steel Surface Casing	52.0	21.1
% Native		
Top of Bentonie Seal	164.0	-90.9
Top of Secondary Sand Pack #0 Sand	168.0	-94.9
Top of Primary Sand Pack #1 Sand	185.0	-111.9
Top of Screen	210.00	-136.90
▲ Stabilized Water Level		
Screen:		
Length 20'		
Inside Diameter (ID) 4"		
Type of Material PVC Sch. 80		
Bottom of Screen	230.00	-156.90
Bottom of Sump	235.00	-161.90
Bottom of Borehole	248.00	-174.90

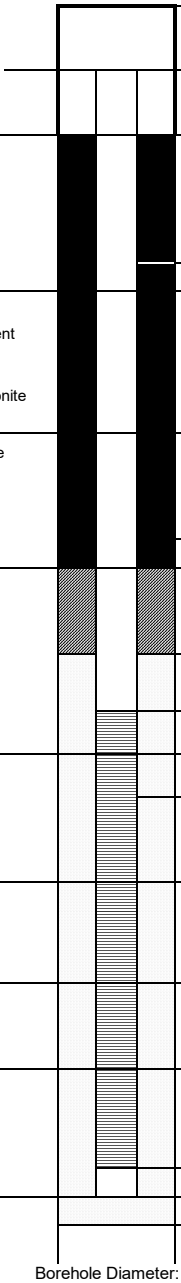
Borehole Diameter: 8.75"

B Benfield — 11/5/2020

Date

TETRA TECH	Client:	NAVFAC	**WELL ID: BPOW1-7**
	Project Number:	112G08005-WE13	
	Site Location:	NWIRP BETHPAGE, NY	Date Installed: 10/27/2020
	Well Location:	On-Site	Inspector: Benfield
	Method:	Hollow Stem Auger (0'-50') Mud Rotary (>50')	Contractor: Delta Well & Pump

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet)
Top of Flush Mount Well Cap	0.0	73.19
Top of Riser Pipe	0.36	72.83
Riser Pipe:		
Length 600		
Inside Diameter (ID) 4"		
Type of Material PVC Sch. 80		
Bottom of 10 inch diameter Steel Surface Casing	52.0	21.2
Top of Bentonie Seal	548.0	-474.8
Top of Secondary Sand Pack #0 Sand	552.0	-478.8
Top of Primary Sand Pack #1 Sand	575.0	-501.8
Top of Screen	600.00	-526.81
▲ Stabilized Water Level		
Screen:		
Length 40'		
Inside Diameter (ID) 4"		
Type of Material PVC Sch. 80		
Bottom of Screen	640.00	-566.81
Bottom of Sump	645.00	-571.81
Bottom of Borehole	658.00	-584.81

% Cement
% Bentonite
% Native

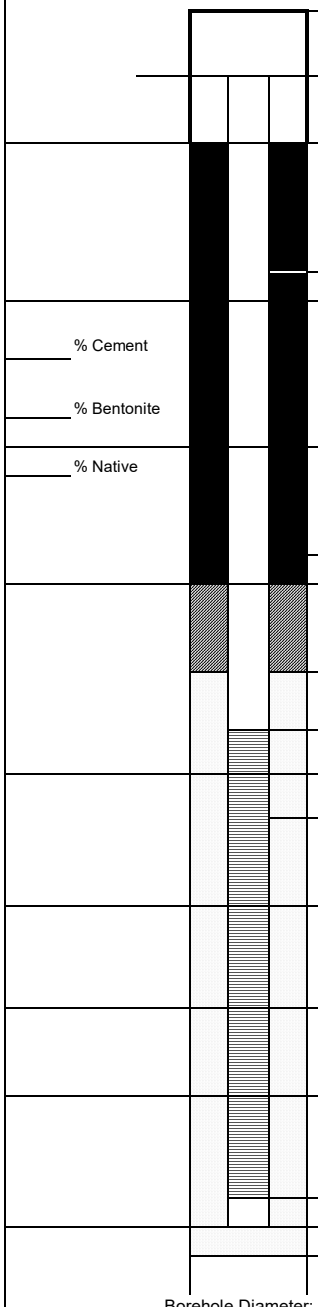
Borehole Diameter: 8.75"

B Benfield

10/27/2020
Date

TETRA TECH	*Client:* NAVFAC		***WELL ID: BPOW1-8***
	Project Number: 112G08005-WE13		
	Site Location: *NWIRP BETHPAGE, NY*	*Date Installed:*	*10/7/2020*
	Well Location: *On-Site*	*Inspector:*	*Benfield*
	Method: *Hollow Stem Auger (0'-50') Mud Rotary (>50')*	*Contractor:*	*Delta Well & Pump*

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet)
Top of Flush Mount Well Cap	0.0	73.37
Top of Riser Pipe	0.46	72.91
Riser Pipe:		
Length 720		
Inside Diameter (ID) 4"		
% Cement — Type of Material PVC Sch. 80		
% Bentonite		
Bottom of 10 inch diameter Steel Surface Casing	52.0	21.4
% Native		
Top of Bentonie Seal	678.0	-604.6
Top of Secondary Sand Pack #0 Sand	682.0	-608.6
Top of Primary Sand Pack #1 Sand	700.0	-626.6
Top of Screen	725.00	-651.63
▲ Stabilized Water Level		
Screen:		
Length 30'		
Inside Diameter (ID) 4"		
Type of Material PVC Sch. 80		
Bottom of Screen	755.00	-681.63
Bottom of Sump	760.00	-686.63
Bottom of Borehole	773.00	-699.63

Borehole Diameter: 8.75"

B Benfield — 10/7/2020

Date

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3. TT-MW181S, BPOW1-7, and BPOW1-8 Well Development/Groundwater Sample Log Sheets

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GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: MW181S Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	210'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/17/20
MS/MSD Collected:	YES / NO	**Sample Time:**	9:55
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
9:55	-	-	Clear	6.2	206.2	4.08	6.23	12.4	135.2	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: MW181S Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	215'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/17/20
MS/MSD Collected:	YES NO	**Sample Time:**	10:40
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:40	-	-	Clear	5.85	179.3	4.3	4.58	12.8	169.7	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: MW181S Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	220'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/17/20
MS/MSD Collected:	YES NO	**Sample Time:**	11:25
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
11:25	-	-	Clear	5.71	177.5	4.71	4.34	13	186.1	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: MW181S Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	225'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/17/20
MS/MSD Collected:	YES / NO	**Sample Time:**	12:10
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:10	-	-	Clear	5.68	176.2	4.74	5.87	13.1	182.5	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: MW181S Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	BP-TT-MW181S-GW-20201117	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/17/20
MS/MSD Collected:	YES NO	**Sample Time:**	12:55
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:55	-	-	Clear	5.64	175.3	4.07	4.63	13	189.8	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	Yes
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	Yes

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: BPOW1-7 Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	BP-TT-BPOW1-7-GW-20201116 (640')	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/16/20
MS/MSD Collected:	YES / NO	**Sample Time:**	12:25
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:25	-	-	Clear	5.95	33.1	3.97	5.91	11.6	187.7	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	Yes
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	Yes

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	BPOW1-7 Well Development
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	600'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/16/20
MS/MSD Collected:	YES / NO	**Sample Time:**	9:05
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
9:05	-	-	Clear	8.67	96.4	5.47	32	11.8	166.9	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: BPOW1-7 Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	605'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/16/20
MS/MSD Collected:	YES / NO	**Sample Time:**	9:30
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
9:30	-	-	Clear	6.49	39.5	2.92	21.4	11.5	188.2	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	BPOW1-7 Well Development
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	610'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/16/20
MS/MSD Collected:	YES / NO	**Sample Time:**	9:55
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
9:55	-	-	Clear	6.13	35.1	3.92	12.1	11.5	185.1	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: BPOW1-7 Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	615'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/16/20
MS/MSD Collected:	YES / NO	**Sample Time:**	10:20
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:20	-	-	Clear	6.09	34.1	3.66	11.2	11.5	187.1	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: BPOW1-7 Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	620'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/16/20
MS/MSD Collected:	YES / NO	**Sample Time:**	10:45
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:45	-	-	Clear	6.09	33.8	3.37	8.4	11.5	185	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	BPOW1-7 Well Development
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	625'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/16/20
MS/MSD Collected:	YES / NO	**Sample Time:**	11:10
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
11:10	-	-	Clear	6.03	33.5	2.63	10.7	11.6	187.4	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	X
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	X

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	BPOW1-7 Well Development
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	630'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/16/20
MS/MSD Collected:	YES / NO	**Sample Time:**	11:35
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
11:35	-	-	Clear	6.01	33.2	3.23	8.59	11.6	187.5	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	BPOW1-7 Well Development
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	635'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/16/20
MS/MSD Collected:	YES / NO	**Sample Time:**	12:00
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:00	-	-	Clear	5.97	33.3	2.75	8.04	11.6	188.1	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	X
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	X

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: BPPOW1-8 Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	725'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/13/20
MS/MSD Collected:	YES NO	**Sample Time:**	9:55
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
9:55	-	-	Clear	7.44	284.7	3.97	48.9	12.7	60.7	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: BPOW1-8 Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	730'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/13/20
MS/MSD Collected:	YES / NO	**Sample Time:**	10:25
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:25	-	-	Clear	7.48	36.1	4.61	28.3	12.2	88.2	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: BPOW1-8 Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	735'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/13/20
MS/MSD Collected:	YES / NO	**Sample Time:**	10:55

WELL INFORMATION:

Well ID :	**Purge Date:**
Well Diameter (in):	**Static Water Level (ft-BTOR):**
Top of Screen (ft-BTOR):	**PID Monitor Reading:**
Bottom of Screen (ft-BTOR):	**Purge Method:**
Total Well Depth (ft-BTOR):	**Sample Method:**

EQUIPMENT INFORMATION:

Water Quality Instrument: YSI 556	**Pump Controller:**
Turbidity Meter: Hanna 98703	

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
10:55	-	-	Clear	6.58	23.9	5.16	47.8	12.1	127.9	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: BPOW1-8 Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	740'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/13/20
MS/MSD Collected:	YES / NO	**Sample Time:**	11:25
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
11:25	-	-	Clear	6.51	21.1	5.32	38.6	12.2	138.3	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: BPOW1-8 Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	745'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/13/20
MS/MSD Collected:	YES / NO	**Sample Time:**	11:55
WELL INFORMATION:			
Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	
EQUIPMENT INFORMATION:			
Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
11:55	-	-	Clear	6.37	21	4.72	41	12.2	144	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	x
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	x

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event:	BPOW1-8 Well Development
Project Site Name:	NWIRP Bethpage
Project No.:	112G08005-WE13

Sample ID:	750'	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/13/20
MS/MSD Collected:	YES / NO	**Sample Time:**	12:25

WELL INFORMATION:

Well ID :	**Purge Date:**
Well Diameter (in):	**Static Water Level (ft-BTOR):**
Top of Screen (ft-BTOR):	**PID Monitor Reading:**
Bottom of Screen (ft-BTOR):	**Purge Method:**
Total Well Depth (ft-BTOR):	**Sample Method:**

EQUIPMENT INFORMATION:

Water Quality Instrument: YSI 556	**Pump Controller:**
Turbidity Meter: Hanna 98703	

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:25	-	-	Clear	6.42	20.7	4.62	45.6	12.2	148.4	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	X
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	X

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: BPOW1-8 Well Development
Project Site Name: NWIRP Bethpage
Project No.: 112G08005-WE13

Sample ID:	BP-TT-BPOW1-8-GW-20201113 (755')	**Sampled By:**	Benfield
QA/QC Duplicate ID:		**Sample Date:**	11/13/20
MS/MSD Collected:	YES / NO	**Sample Time:**	12:55

WELL INFORMATION:

Well ID :		**Purge Date:**	
Well Diameter (in):		**Static Water Level (ft-BTOR):**	
Top of Screen (ft-BTOR):		**PID Monitor Reading:**	
Bottom of Screen (ft-BTOR):		**Purge Method:**	
Total Well Depth (ft-BTOR):		**Sample Method:**	

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI 556	**Pump Controller:**	
Turbidity Meter:	Hanna 98703		

WATER QUALITY DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (uS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
12:55	-	-	Clear	6.31	20.1	4.37	27.8	12.3	150.5	-	

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOC	8260	HCl	2	40 ml	VOA	Yes
1,4-dioxane	8270-SIM	None	1	1 Liter	Amber	Yes

OBSERVATIONS / NOTES:

Coordinates:	N	E	Signature(s):
			B Benfield

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4. TT-MW181S, BPOW1-7, and BPOW1-8 Analytical Data Unvalidated

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CHEMTECH

ANALYTICAL RESULTS SUMMARY

VOLATILE ORGANICS
SEMI-VOLATILE ORGANICS

PROJECT NAME : CTO WE13

TETRA TECH NUS, INC.

661 Andersen Drive

Suite 200

Pittsburgh, PA - 15220-2745

Phone No: 412-921-7090

ORDER ID : L4788

ATTENTION : David Brayack

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7.4) Internal COC 88

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Cover Page

Order ID : L4788

Project ID : CTO WE13

Client : Tetra Tech NUS, Inc.

Lab Sample Number	Client Sample Number
L4788-01	BP-TB-20201113
L4788-02	BP-TT-BPOW1-8-GW-20201113
L4788-03	BP-TT-BPOW1-7-GW-20201116
L4788-04	BP-TT-MW181S-GW-20201117

I certify that the data package is in compliance with the terms and conditions of the contract,both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Signature : N. N. Pandya

APPROVED
By Nimisha Pandya, QA/QC Supervisor at 3:05 pm, Dec 02, 2020

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012

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CASE NARRATIVE

Tetra Tech NUS, Inc.
Project Name: CTO WE13
Project Manager : David Barayack
Chemtech Project # L4788
Test Name: VOCMS Group1

A. Number of Samples and Date of Receipt:
4 Water samples were received on 11/18/2020.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: SVOC-SIMGroup1 and VOCMS Group1. This data package contains results for VOCMS Group1.

C. Analytical Techniques:
The analysis performed on instrument MSVOA_N were done using GC column RXI-624SIL MS 30m 0.25mm 1.4 um. Cat#13868.The analysis performed on instrument MSVOA_X were done using GC column DB-624UI 20m 0.18mm 1.0 um. Cat#121-1324UIThe analysis of VOCMS Group1 was based on method 8260D.

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.

The RPD for {VN1119WBSD02} with File ID: VN064755.D met criteria except for 1,1,2,2-Tetrachloroethane[30%], Bromomethane[32%], Chloroethane[31%], Isopropylbenzene[28%], Trichlorofluoromethane[38%] and Vinyl chloride[21%] .

The Blank Spike for {VN1119WBS02} with File ID: VN064754.D met requirements for all samples except for 1,1,2,2-Tetrachloroethane[70%], 1,3-Dichlorobenzene[79%] and Isopropylbenzene[69%] .As associated sample has no positive hit for these compounds,therefore no corrective action was taken

The Blank Spike Duplicate met requirements for all samples .
The Blank analysis did not indicate the presence of lab contamination.

The % RSD is greater than 15% in the Initial Calibration method (82N111820W.M) for Acetone, Carbon Disulfide, 4-Methyl-2-Pentanone, 2-Hexanone, m/p-Xylenes, Styrene, Bromoform these compounds are passing on Linear Regression.

The % RSD is greater than 15% in the Initial Calibration method (82X112120W.M) for Chloroethane,Styrene,Bromoform these compounds are passing on Linear Regression.
The Continuous Calibration met the requirements .

The Tuning criteria met requirements.

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Sample-2 PH was more than 2.

E. Additional Comments:
The laboratory certifies that the all-electronic diskette deliverable exactly match the data summary forms (i.e. Form Is).

Samples for MS/MSD for VOC analysis were not provided with this set of samples therefore lab used from another project.

The not QT review data is reported in the Miscellaneous.
The soil samples results are based on a dry weight basis.

Please use %D calculated based on Avg RF and CCRF for all compounds using Average Response Factor when the %RSD value for a compound is <15% for the Initial Calibration curve and use %D calculated based on Amount added and Calculated amount for all compounds using Linear Regression when the %RSD value for a compound is > 15% for the Initial Calibration curve for SW-846 analysis.

F. Manual Integration Comments:
Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature N. N. Pandya

APPROVED
By Nimisha Pandya, QA/QC Supervisor at 3:05 pm, Dec 02, 2020

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CASE NARRATIVE

Tetra Tech NUS, Inc.
Project Name: CTO WE13
Project # David Brayack
Chemtech Project # L4788
Test Name: SVOC-SIMGroup1

A. Number of Samples and Date of Receipt:
4 Water samples were received on 11/18/2020.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: SVOC-SIMGroup1 and VOCMS Group1. This data package contains results for SVOC-SIMGroup1.

C. Analytical Techniques:
The samples were analyzed on instrument BNA_N using GC Column ZB-SemiVolatiles Guardian which is 30 meters, 0.25 mm ID, 0.5 um df, Catalog # 7HG-G027-17-GGAThe analysis of SVOC-SIMGroup1 was based on method 8270-Modified and extraction was done based on method 3510.

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria except for,
BP-TT-BPOW1-8-GW-20201113 [2-Fluorobiphenyl - 115%, Terphenyl-d14 - 150%],
BP-TT-BPOW1-7-GW-20201116 [2-Fluorobiphenyl - 115%, Terphenyl-d14 - 145%],
BP-TT-MW181S-GW-20201117 [2-Fluorobiphenyl - 120%, Terphenyl-d14 - 168%],
PB133106BL [2-Fluorobiphenyl - 127%, Nitrobenzene-d5 - 125% and Terphenyl-d14 -162%].The above failure surrogates are not associated with the target list, as per criteria affected surrogates were passing,therefore no corrective action was taken.

The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The RPD met criteria .
The Blank Spike met requirements for all samples .
The Blank Spike Duplicate met requirements for all samples .
The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements .
The Continuous Calibration met the requirements .
The Tuning criteria met requirements.

E. Additional Comments:
The Form 6 is not included in the data package because the Initial Calibration was performed using 7 points.
The not QT review data is reported in the Miscellaneous.

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The laboratory certifies that the all-electronic diskette deliverable exactly match the data summary forms (i.e. Form Is).

Please use %D calculated based on Avg RF and CCRF for all compounds using Average Response Factor when the %RSD value for a compound is <20% for the Initial Calibration curve and use %D calculated based on Amount added and Calculated amount for all compounds using Linear Regression when the %RSD value for a compound is > 20% for the Initial Calibration curve for SW-846 analysis.

F. Manual Integration Comments:
Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature N. N. Pandya

APPROVED
By Nimisha Pandya, QA/QC Supervisor at 3:06 pm, Dec 02, 2020

DATA REPORTING QUALIFIERS- ORGANIC

For reporting results, the following " Results Qualifiers" are used:

Value	If the result is a value greater than or equal to the detection limit, report the value
U	Indicates the compound was analyzed for but was not detected. Report the minimum detection limit for the sample with the U, i.e. "10 U". This is not necessarily the instrument detection limit attainable for this particular sample based on any concentration or dilution that may have been required.
ND	Indicates the analyte was analyzed for, but not detected
J	Indicates an estimated value**.** This flag is used: (1) When estimating a concentration for a tentatively identified compound (library search hits, where a 1:1 response is assumed.) (2) When the mass spectral data indicated the identification, however the result was less than the specified detection limit greater than zero. If the detection limit was 10ug/L and a concentration of 3 ug/L was calculated report as 3 J. This is flag is used when similar situation arise on any organic parameter i.e. Pest, PCB and others.
B	Indicates the analyte was found in the blank as well as the sample report as "12 B".
E	Indicates the analyte 's concentration exceeds the calibrated range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
P	This flag is used for Pesticide/PCB target analyte when there is >25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form 1 and flagged with a "P".
N	This flag indicates presumptive evidence of a compound. This is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It applies to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the flag is not used.
A	This flag indicates that a Tentatively Identified Compound is a suspected aldol-condensation product.
Q	Indicates the LCS did not meet the control limits requirements

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: L4788

	Completed
For thorough review, the report must have the following:	
GENERAL:	
Are all original paperwork present (chain of custody, record of communication,airbill, sample management lab chronicle, login page)	✓
Check chain-of-custody for proper relinquish/return of samples	✓
Is the chain of custody signed and complete	✓
Check internal chain-of-custody for proper relinquish/return of samples /sample extracts	✓
Collect information for each project id from server. Were all requirements followed	✓
COVER PAGE:	
Do numbers of samples correspond to the number of samples in the Chain of Custody on login page	✓
Do lab numbers and client Ids on cover page agree with the Chain of Custody	✓
CHAIN OF CUSTODY:	
Do requested analyses on Chain of Custody agree with form I results	✓
Do requested analyses on Chain of Custody agree with the log-in page	✓
Were the correct method log-in for analysis according to the Analytical Request and Chain of Castody	✓
Were the samples received within hold time	✓
Were any problems found with the samples at arrival recorded in the Sample Management Laboratory Chronicle	✓
ANALYTICAL:	
Was method requirement followed?	✓
Was client requirement followed?	✓
Does the case narrative summarize all QC failure?	✓
All runlogs and manual integration are reviewed for requirements	✓
All manual calculations and /or hand notations verified	✓

1st Level QA Review Signature: APARNA SONI **Date:** 12/02/2020

2nd Level QA Review Signature: N. N. Pandya

APPROVED
By Nimisha Pandya, QA/QC Supervisor at 3:07 pm, Dec 02, 2020

Date:

CHEMTECH

284 Sheffield Street, Mountainside, New Jersey - 07092

Phone: (908) 789 8900 Fax: (908) 789 8922

LAB CHRONICLE

OrderID:	L4788	**OrderDate:**	11/18/2020 10:22:00 AM
Client:	Tetra Tech NUS, Inc.	**Project:**	CTO WE13
Contact:	David Brayack	**Location:**	H21,VOA Ref. #3 Water

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
L4788-01	**BP-TB-20201113**	**Water**			**11/13/20**			**11/18/20**
			VOCMS Group1	8260D			11/20/20	
L4788-02	**BP-TT-BPOW1-8-GW-20201113**	**Water**			**11/13/20**			**11/18/20**
			VOCMS Group1	8260D			11/20/20	
L4788-03	**BP-TT-BPOW1-7-GW-20201116**	**Water**			**11/16/20**			**11/18/20**
			VOCMS Group1	8260D			11/20/20	
L4788-04	**BP-TT-MW181S-GW-20201117**	**Water**			**11/17/20**			**11/18/20**
			VOCMS Group1	8260D			11/21/20	

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Hit Summary Sheet
SW-846

SDG No.: L4788

Client: Tetra Tech NUS, Inc.

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	LOD	RDL	Units
Client ID:	**BP-TT-BPOW1-7-GW-20201116**								
L4788-03	BP-TT-BPOW1-7-GW-2(	Water	Chloromethane	1.20	J	0.22	0.50	5.00	ug/L
L4788-03	BP-TT-BPOW1-7-GW-2(	Water	Acetone	11.70	J	1.40	2.50	25.0	ug/L
			Total Voc :	12.9					
			Total Concentration:	12.9					
Client ID:	**BP-TT-MW181S-GW-20201117**								
L4788-04	BP-TT-MW181S-GW-20(	Water	1,1-Dichloroethene	1.30	J	0.27	0.50	5.00	ug/L
L4788-04	BP-TT-MW181S-GW-20(	Water	Acetone	2.90	J	1.40	2.50	25.0	ug/L
L4788-04	BP-TT-MW181S-GW-20(	Water	Carbon Disulfide	0.42	J	0.23	0.50	5.00	ug/L
L4788-04	BP-TT-MW181S-GW-20(	Water	Methyl tert-butyl Ether	0.53	J	0.19	0.50	5.00	ug/L
L4788-04	BP-TT-MW181S-GW-20(	Water	1,1-Dichloroethane	1.10	J	0.15	0.50	5.00	ug/L
L4788-04	BP-TT-MW181S-GW-20(	Water	cis-1,2-Dichloroethene	1.60	J	0.24	0.50	5.00	ug/L
L4788-04	BP-TT-MW181S-GW-20(	Water	Chloroform	0.56	J	0.19	0.50	5.00	ug/L
L4788-04	BP-TT-MW181S-GW-20(	Water	1,1,1-Trichloroethane	0.64	J	0.15	0.75	5.00	ug/L
L4788-04	BP-TT-MW181S-GW-20(	Water	Trichloroethene	2.00	J	0.13	0.50	5.00	ug/L
L4788-04	BP-TT-MW181S-GW-20(	Water	Tetrachloroethene	0.62	J	0.13	0.50	5.00	ug/L
			Total Voc :	11.67					
			Total Concentration:	11.67					

SAMPLE DATA

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/13/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TB-20201113	SDG No.:	L4788
Lab Sample ID:	L4788-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064758.D	1		11/20/20 04:19	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/13/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TB-20201113	SDG No.:	L4788
Lab Sample ID:	L4788-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064758.D	1		11/20/20 04:19	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	UQ	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	UQ	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	UQ	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	47.0		81 - 118		94%	SPK: 50
1868-53-7	Dibromofluoromethane	58.8		80 - 119		118%	SPK: 50
2037-26-5	Toluene-d8	48.9		89 - 112		98%	SPK: 50
460-00-4	4-Bromofluorobenzene	50.1		85 - 114		100%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	302000	7.63				
540-36-3	1,4-Difluorobenzene	601000	8.55				
3114-55-4	Chlorobenzene-d5	628000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	270000	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/13/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TT-BPOW1-8-GW-20201113	SDG No.:	L4788
Lab Sample ID:	L4788-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064759.D	1		11/20/20 04:43	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/13/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TT-BPOW1-8-GW-20201113	SDG No.:	L4788
Lab Sample ID:	L4788-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064759.D	1		11/20/20 04:43	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	UQ	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	UQ	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	UQ	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	49.6		81 - 118		99%	SPK: 50
1868-53-7	Dibromofluoromethane	57.2		80 - 119		114%	SPK: 50
2037-26-5	Toluene-d8	49.2		89 - 112		98%	SPK: 50
460-00-4	4-Bromofluorobenzene	50.3		85 - 114		101%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	290000	7.63				
540-36-3	1,4-Difluorobenzene	594000	8.55				
3114-55-4	Chlorobenzene-d5	617000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	265000	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/16/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TT-BPOW1-7-GW-20201116	SDG No.:	L4788
Lab Sample ID:	L4788-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064760.D	1		11/20/20 05:07	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	1.20	J	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	11.7	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/16/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TT-BPOW1-7-GW-20201116	SDG No.:	L4788
Lab Sample ID:	L4788-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064760.D	1		11/20/20 05:07	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	UQ	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	UQ	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	UQ	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	49.8		81 - 118		100%	SPK: 50
1868-53-7	Dibromofluoromethane	58.0		80 - 119		116%	SPK: 50
2037-26-5	Toluene-d8	49.6		89 - 112		99%	SPK: 50
460-00-4	4-Bromofluorobenzene	50.6		85 - 114		101%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	282000	7.63				
540-36-3	1,4-Difluorobenzene	567000	8.55				
3114-55-4	Chlorobenzene-d5	602000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	246000	13.32				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/17/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TT-MW181S-GW-20201117	SDG No.:	L4788
Lab Sample ID:	L4788-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX019527.D	1		11/21/20 05:07	VX112120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	1.30	J	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.90	J	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.42	J	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.53	J	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	1.10	J	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	1.60	J	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.56	J	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.64	J	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	2.00	J	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.62	J	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/17/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TT-MW181S-GW-20201117	SDG No.:	L4788
Lab Sample ID:	L4788-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX019527.D	1		11/21/20 05:07	VX112120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	45.1		81 - 118		90%	SPK: 50
1868-53-7	Dibromofluoromethane	47.1		80 - 119		94%	SPK: 50
2037-26-5	Toluene-d8	48.2		89 - 112		96%	SPK: 50
460-00-4	4-Bromofluorobenzene	49.8		85 - 114		100%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	349000	5.63				
540-36-3	1,4-Difluorobenzene	554000	6.83				
3114-55-4	Chlorobenzene-d5	483000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	234000	12.06				
TENTATIVE IDENTIFIED COMPOUNDS							
75-43-4	Dichlorofluoromethane	5.00	U			4.47	ug/L

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

QC SUMMARY

Surrogate Summary

SDG No.: L4788

Client: Tetra Tech NUS, Inc.

Analytical Method: SW8260D

Lab Sample ID	Client ID	Parameter	Spike	Result	RecoveryQual	Limits Low	Limits High
L4788-01	BP-TB-20201113	1,2-Dichloroethane-d4	50	47.0	94	81	118
		Dibromofluoromethane	50	58.8	118	80	119
		Toluene-d8	50	48.9	98	89	112
		4-Bromofluorobenzene	50	50.1	100	85	114
L4788-02	BP-TT-BPOW1-8-GW-20201113	1,2-Dichloroethane-d4	50	49.6	99	81	118
		Dibromofluoromethane	50	57.2	114	80	119
		Toluene-d8	50	49.2	98	89	112
		4-Bromofluorobenzene	50	50.3	101	85	114
L4788-03	BP-TT-BPOW1-7-GW-20201116	1,2-Dichloroethane-d4	50	49.8	100	81	118
		Dibromofluoromethane	50	58.0	116	80	119
		Toluene-d8	50	49.6	99	89	112
		4-Bromofluorobenzene	50	50.6	101	85	114
L4788-04	BP-TT-MW181S-GW-20201117	1,2-Dichloroethane-d4	50	45.1	90	81	118
		Dibromofluoromethane	50	47.1	94	80	119
		Toluene-d8	50	48.2	96	89	112
		4-Bromofluorobenzene	50	49.8	100	85	114
VN1119WBL02	VN1119WBL02	1,2-Dichloroethane-d4	50	58.5	117	81	118
		Dibromofluoromethane	50	59.6	119	80	119
		Toluene-d8	50	49.6	99	89	112
		4-Bromofluorobenzene	50	51.6	103	85	114
VN1119WBS02	VN1119WBS02	1,2-Dichloroethane-d4	50	49.7	99	81	118
		Dibromofluoromethane	50	51.2	102	80	119
		Toluene-d8	50	44.4	89	89	112
		4-Bromofluorobenzene	50	43.0	86	85	114
VN1119WBSD0	VN1119WBSD02	1,2-Dichloroethane-d4	50	42.4	85	81	118
		Dibromofluoromethane	50	54.5	109	80	119
		Toluene-d8	50	46.9	94	89	112
		4-Bromofluorobenzene	50	44.1	88	85	114
VX1121WBL02	VX1121WBL02	1,2-Dichloroethane-d4	50	47.3	95	81	118
		Dibromofluoromethane	50	46.8	94	80	119
		Toluene-d8	50	47.7	95	89	112
		4-Bromofluorobenzene	50	44.3	89	85	114
VX1121WBS02	VX1121WBS02	1,2-Dichloroethane-d4	50	51.8	103	81	118
		Dibromofluoromethane	50	49.4	99	80	119
		Toluene-d8	50	48.9	98	89	112
		4-Bromofluorobenzene	50	48.2	96	85	114

Laboratory Control Sample/Laboratory Control Sample Duplicate Summary
SW-846

SDG No.: L4788

Client: Tetra Tech NUS, Inc.

Analytical Method: SW8260D **Datafile :** VN064754.D

Lab Sample ID	Parameter	Spike	Result	Unit	Rec	RPD	Qual	Limits Low	Limits High	RPD
VN1119WBS02	Chloromethane	20	19.7	ug/L	99			50	139	
	Vinyl chloride	20	22.0	ug/L	110			58	137	
	Bromomethane	20	21.7	ug/L	109			53	141	
	Chloroethane	20	22.8	ug/L	114			60	138	
	Trichlorofluoromethane	20	20.6	ug/L	103			65	141	
	1,1,2-Trichlorotrifluoroethane	20	19.6	ug/L	98			70	136	
	1,1-Dichloroethene	20	18.7	ug/L	94			71	131	
	Acetone	100	110	ug/L	110			39	160	
	Carbon disulfide	20	19.2	ug/L	96			64	133	
	Methyl tert-butyl Ether	20	18.8	ug/L	94			71	124	
	Methylene Chloride	20	19.0	ug/L	95			74	124	
	trans-1,2-Dichloroethene	20	18.6	ug/L	93			75	124	
	1,1-Dichloroethane	20	19.4	ug/L	97			77	125	
	2-Butanone	100	96.7	ug/L	97			56	143	
	Carbon Tetrachloride	20	18.2	ug/L	91			72	136	
	cis-1,2-Dichloroethene	20	19.4	ug/L	97			78	123	
	Chloroform	20	19.6	ug/L	98			79	124	
	1,1,1-Trichloroethane	20	19.3	ug/L	97			74	131	
	Methylcyclohexane	20	15.9	ug/L	79			72	132	
	Benzene	20	17.8	ug/L	89			79	120	
	1,2-Dichloroethane	20	18.1	ug/L	91			73	128	
	Trichloroethene	20	18.6	ug/L	93			79	123	
	1,2-Dichloropropane	20	18.1	ug/L	91			78	122	
	Bromodichloromethane	20	17.9	ug/L	90			79	125	
	4-Methyl-2-Pentanone	100	80.4	ug/L	80			67	130	
	Toluene	20	18.0	ug/L	90			80	121	
	t-1,3-Dichloropropene	20	16.0	ug/L	80			73	127	
	cis-1,3-Dichloropropene	20	16.8	ug/L	84			75	124	
	1,1,2-Trichloroethane	20	17.8	ug/L	89			80	119	
	2-Hexanone	100	79.7	ug/L	80			57	139	
	Dibromochloromethane	20	17.3	ug/L	86			74	126	
	Tetrachloroethene	20	19.5	ug/L	98			74	129	
	Chlorobenzene	20	18.4	ug/L	92			82	118	
	Ethyl Benzene	20	18.0	ug/L	90			79	121	
	m/p-Xylenes	40	36.0	ug/L	90			80	121	
	o-Xylene	20	18.3	ug/L	92			78	122	
	Styrene	20	17.8	ug/L	89			78	123	
	Bromoform	20	17.8	ug/L	89			66	130	
	Isopropylbenzene	20	13.8	ug/L	69		*	72	131	
	1,1,2,2-Tetrachloroethane	20	13.9	ug/L	70		*	71	121	
	1,3-Dichlorobenzene	20	15.7	ug/L	79		*	80	119	
	1,4-Dichlorobenzene	20	18.1	ug/L	91			79	118	
	1,2-Dichlorobenzene	20	18.7	ug/L	94			80	119	

CHEMTECH

Laboratory Control Sample/Laboratory Control Sample Duplicate Summary
SW-846

SDG No.: L4788

Client: Tetra Tech NUS, Inc.

Analytical Method: SW8260D **Datafile :** VN064755.D

Lab Sample ID	Parameter	Spike	Result	Unit	Rec	RPD	Qual	Limits Low	Limits High	Limits RPD
VN1119WBSD02	Chloromethane	20	19.1	ug/L	96	3		50	139	20
	Vinyl chloride	20	17.7	ug/L	89	21	*	58	137	20
	Bromomethane	20	15.9	ug/L	79	32	*	53	141	20
	Chloroethane	20	16.6	ug/L	83	31	*	60	138	20
	Trichlorofluoromethane	20	14.0	ug/L	70	38	*	65	141	20
	1,1,2-Trichlorotrifluoroethane	20	18.8	ug/L	94	4		70	136	20
	1,1-Dichloroethene	20	18.1	ug/L	91	3		71	131	20
	Acetone	100	110	ug/L	110	0		39	160	20
	Carbon disulfide	20	18.5	ug/L	93	3		64	133	20
	Methyl tert-butyl Ether	20	18.2	ug/L	91	3		71	124	20
	Methylene Chloride	20	19.2	ug/L	96	1		74	124	20
	trans-1,2-Dichloroethene	20	18.2	ug/L	91	2		75	124	20
	1,1-Dichloroethane	20	19.1	ug/L	96	1		77	125	20
	2-Butanone	100	98.8	ug/L	99	2		56	143	20
	Carbon Tetrachloride	20	17.3	ug/L	86	6		72	136	20
	cis-1,2-Dichloroethene	20	18.5	ug/L	93	4		78	123	20
	Chloroform	20	17.8	ug/L	89	10		79	124	20
	1,1,1-Trichloroethane	20	16.8	ug/L	84	14		74	131	20
	Methylcyclohexane	20	17.6	ug/L	88	11		72	132	20
	Benzene	20	19.5	ug/L	98	10		79	120	20
	1,2-Dichloroethane	20	17.2	ug/L	86	6		73	128	20
	Trichloroethene	20	18.3	ug/L	92	1		79	123	20
	1,2-Dichloropropane	20	19.9	ug/L	100	9		78	122	20
	Bromodichloromethane	20	17.5	ug/L	88	2		79	125	20
	4-Methyl-2-Pentanone	100	87.0	ug/L	87	8		67	130	20
	Toluene	20	19.1	ug/L	96	6		80	121	20
	t-1,3-Dichloropropene	20	16.6	ug/L	83	4		73	127	20
	cis-1,3-Dichloropropene	20	18.6	ug/L	93	10		75	124	20
	1,1,2-Trichloroethane	20	18.6	ug/L	93	4		80	119	20
	2-Hexanone	100	84.6	ug/L	85	6		57	139	20
	Dibromochloromethane	20	18.1	ug/L	91	6		74	126	20
	Tetrachloroethene	20	19.2	ug/L	96	2		74	129	20
	Chlorobenzene	20	18.2	ug/L	91	1		82	118	20
	Ethyl Benzene	20	17.3	ug/L	86	5		79	121	20
	m/p-Xylenes	40	35.0	ug/L	88	2		80	121	20
	o-Xylene	20	17.7	ug/L	89	3		78	122	20
	Styrene	20	17.3	ug/L	86	3		78	123	20
	Bromoform	20	18.1	ug/L	91	2		66	130	20
	Isopropylbenzene	20	18.1	ug/L	91	28	*	72	131	20
	1,1,2,2-Tetrachloroethane	20	18.9	ug/L	95	30	*	71	121	20
	1,3-Dichlorobenzene	20	18.7	ug/L	94	17		80	119	20
	1,4-Dichlorobenzene	20	18.3	ug/L	92	1		79	118	20
	1,2-Dichlorobenzene	20	18.8	ug/L	94	0		80	119	20

CHEMTECH

Laboratory Control Sample/Laboratory Control Sample Duplicate Summary
SW-846

SDG No.: L4788

Client: Tetra Tech NUS, Inc.

Analytical Method: SW8260D **Datafile :** VX019513.D

Lab Sample ID	Parameter	Spike	Result	Unit	Rec	RPD	Qual	Limits Low	Limits High	RPD
VX1121WBS02	Chloromethane	20	18.6	ug/L	93			50	139	
	Vinyl chloride	20	19.4	ug/L	97			58	137	
	Bromomethane	20	18.9	ug/L	95			53	141	
	Chloroethane	20	19.3	ug/L	97			60	138	
	Trichlorofluoromethane	20	19.3	ug/L	97			65	141	
	1,1,2-Trichlorotrifluoroethane	20	19.1	ug/L	96			70	136	
	1,1-Dichloroethene	20	19.1	ug/L	96			71	131	
	Acetone	100	97.0	ug/L	97			39	160	
	Carbon disulfide	20	17.4	ug/L	87			64	133	
	Methyl tert-butyl Ether	20	19.9	ug/L	100			71	124	
	Methylene Chloride	20	18.7	ug/L	94			74	124	
	trans-1,2-Dichloroethene	20	18.8	ug/L	94			75	124	
	1,1-Dichloroethane	20	19.6	ug/L	98			77	125	
	2-Butanone	100	99.9	ug/L	100			56	143	
	Carbon Tetrachloride	20	18.1	ug/L	91			72	136	
	cis-1,2-Dichloroethene	20	19.3	ug/L	97			78	123	
	Chloroform	20	19.3	ug/L	97			79	124	
	1,1,1-Trichloroethane	20	19.4	ug/L	97			74	131	
	Methylcyclohexane	20	17.5	ug/L	88			72	132	
	Benzene	20	18.4	ug/L	92			79	120	
	1,2-Dichloroethane	20	18.8	ug/L	94			73	128	
	Trichloroethene	20	17.9	ug/L	90			79	123	
	1,2-Dichloropropane	20	18.9	ug/L	95			78	122	
	Bromodichloromethane	20	18.3	ug/L	92			79	125	
	4-Methyl-2-Pentanone	100	99.1	ug/L	99			67	130	
	Toluene	20	18.6	ug/L	93			80	121	
	t-1,3-Dichloropropene	20	17.4	ug/L	87			73	127	
	cis-1,3-Dichloropropene	20	17.8	ug/L	89			75	124	
	1,1,2-Trichloroethane	20	18.6	ug/L	93			80	119	
	2-Hexanone	100	97.9	ug/L	98			57	139	
	Dibromochloromethane	20	18.0	ug/L	90			74	126	
	Tetrachloroethene	20	18.3	ug/L	92			74	129	
	Chlorobenzene	20	18.5	ug/L	93			82	118	
	Ethyl Benzene	20	18.7	ug/L	94			79	121	
	m/p-Xylenes	40	37.7	ug/L	94			80	121	
	o-Xylene	20	18.8	ug/L	94			78	122	
	Styrene	20	18.2	ug/L	91			78	123	
	Bromoform	20	17.8	ug/L	89			66	130	
	Isopropylbenzene	20	19.4	ug/L	97			72	131	
	1,1,2,2-Tetrachloroethane	20	19.4	ug/L	97			71	121	
	1,3-Dichlorobenzene	20	18.4	ug/L	92			80	119	
	1,4-Dichlorobenzene	20	18.0	ug/L	90			79	118	
	1,2-Dichlorobenzene	20	18.6	ug/L	93			80	119	

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VN1119WBL02

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: VN064753.D Lab Sample ID: VN1119WBL02

Date Analyzed: 11/20/2020 Time Analyzed: 00:49

GC Column: RXI-624 ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: MSVOA_N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
VN1119WBS02	VN1119WBS02	VN064754.D	11/20/2020
VN1119WBSD02	VN1119WBSD02	VN064755.D	11/20/2020
BP-TB-20201113	L4788-01	VN064758.D	11/20/2020
BP-TT-BPOW1-8-GW-20201113	L4788-02	VN064759.D	11/20/2020
BP-TT-BPOW1-7-GW-20201116	L4788-03	VN064760.D	11/20/2020
BP-TT-MW181S-GW-20201117	L4788-04	VN064761.D	11/20/2020

COMMENTS:

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VX1121WBL02

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: VX019512.D Lab Sample ID: VX1121WBL02

Date Analyzed: 11/20/2020 Time Analyzed: 23:16

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: MSVOA_X

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
VX1121WBS02	VX1121WBS02	VX019513.D	11/20/2020
BP-TT-MW181S-GW-20201117	L4788-04	VX019527.D	11/21/2020

COMMENTS:

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: VN064698.D BFB Injection Date: 11/18/2020

Instrument ID: MSVOA_N BFB Injection Time: 09:31

GC Column: RXI-624 ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.8
75	30.0 - 60.0% of mass 95	56.6
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	1 (1.5) 1
174	50.0 - 100.0% of mass 95	67.5
175	5.0 - 9.0% of mass 174	5.9 (8.8) 1
176	95.0 - 101.0% of mass 174	64.9 (96.2) 1
177	5.0 - 9.0% of mass 176	5.3 (8.2) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTDICC005	VSTDICC005	VN064701.D	11/18/2020	12:13
VSTDICC020	VSTDICC020	VN064702.D	11/18/2020	12:37
VSTDICCC050	VSTDICCC050	VN064703.D	11/18/2020	13:01
VSTDICC100	VSTDICC100	VN064704.D	11/18/2020	13:25
VSTDICC150	VSTDICC150	VN064705.D	11/18/2020	13:49
VSTDICC001	VSTDICC001	VN064707.D	11/18/2020	14:40

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: VN064751.D BFB Injection Date: 11/19/2020

Instrument ID: MSVOA_N BFB Injection Time: 23:38

GC Column: RXI-624 ID: 0.25 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.6
75	30.0 - 60.0% of mass 95	55.5
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	1.1 (1.7) 1
174	50.0 - 100.0% of mass 95	66.1
175	5.0 - 9.0% of mass 174	5 (7.5) 1
176	95.0 - 101.0% of mass 174	66.7 (100.8) 1
177	5.0 - 9.0% of mass 176	4 (6) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTDCCC050	VSTDCCC050	VN064752.D	11/20/2020	00:14
VN1119WBL02	VN1119WBL02	VN064753.D	11/20/2020	00:49
VN1119WBS02	VN1119WBS02	VN064754.D	11/20/2020	02:16
VN1119WBSD02	VN1119WBSD02	VN064755.D	11/20/2020	03:07
BP-TB-20201113	L4788-01	VN064758.D	11/20/2020	04:19
BP-TT-BPOW1-8-GW-20201113	L4788-02	VN064759.D	11/20/2020	04:43
BP-TT-BPOW1-7-GW-20201116	L4788-03	VN064760.D	11/20/2020	05:07
VSTDCCC050EC	VSTDCCC050	VN064773.D	11/20/2020	10:19

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: VX019487.D BFB Injection Date: 11/20/2020

Instrument ID: MSVOA_X BFB Injection Time: 08:41

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.9
75	30.0 - 60.0% of mass 95	48.9
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.7 (0.8) 1
174	50.0 - 100.0% of mass 95	81.4
175	5.0 - 9.0% of mass 174	5.6 (6.9) 1
176	95.0 - 101.0% of mass 174	77.6 (95.3) 1
177	5.0 - 9.0% of mass 176	4.8 (6.2) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTDICC001	VSTDICC001	VX019488.D	11/20/2020	09:09
VSTDICC005	VSTDICC005	VX019489.D	11/20/2020	10:07
VSTDICC020	VSTDICC020	VX019490.D	11/20/2020	10:30
VSTDICCC050	VSTDICCC050	VX019491.D	11/20/2020	10:54
VSTDICC100	VSTDICC100	VX019492.D	11/20/2020	11:17
VSTDICC150	VSTDICC150	VX019493.D	11/20/2020	11:40

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VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: VX019510.D BFB Injection Date: 11/20/2020

Instrument ID: MSVOA_X BFB Injection Time: 21:43

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.8
75	30.0 - 60.0% of mass 95	49
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.4 (0.6) 1
174	50.0 - 100.0% of mass 95	78
175	5.0 - 9.0% of mass 174	5.4 (6.9) 1
176	95.0 - 101.0% of mass 174	76.6 (98.2) 1
177	5.0 - 9.0% of mass 176	5.3 (7) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTDCCC050	VSTDCCC050	VX019511.D	11/20/2020	22:06
VX1121WBL02	VX1121WBL02	VX019512.D	11/20/2020	23:16
VX1121WBS02	VX1121WBS02	VX019513.D	11/20/2020	23:40
BP-TT-MW181S-GW-20201117	L4788-04	VX019527.D	11/21/2020	05:07
VSTDCCC050EC	VSTDCCC050	VX019532.D	11/21/2020	07:04

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: VN064752.D Date Analyzed: 11/20/2020

Instrument ID: MSVOA_N Time Analyzed: 00:14

GC Column: RXI-624 ID: 0.25 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	270270	7.62	472703	8.55	441508	11.38
UPPER LIMIT	540540	8.12	945406	9.05	883016	11.88
LOWER LIMIT	135135	7.12	236352	8.05	220754	10.88
EPA SAMPLE NO.						
BP-TB-20201113	301993	7.63	600835	8.55	628333	11.38
BP-TT-BPOW1-8-GW-20201113	290187	7.63	594189	8.55	616782	11.38
BP-TT-BPOW1-7-GW-20201116	282216	7.63	567045	8.55	601844	11.38
BP-TT-MW181S-GW-20201117	206081	7.63	472531	8.55	440393	11.38
VN1119WBL02	194686	7.62	411997	8.55	430275	11.38
VN1119WBS02	252829	7.62	492230	8.55	419912	11.38
VN1119WBSD02	347344	7.62	603078	8.55	559641	11.38

IS1 = Pentafluorobenzene
IS2 = 1,4-Difluorobenzene
IS3 = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: VN064752.D Date Analyzed: 11/20/2020

Instrument ID: MSVOA_N Time Analyzed: 00:14

GC Column: RXI-624 ID: 0.25 (mm) Heated Purge: (Y/N) N

	IS4 AREA #	RT #				
12 HOUR STD	241259	13.32				
UPPER LIMIT	482518	13.82				
LOWER LIMIT	120630	12.82				
EPA SAMPLE NO.						
BP-TB-20201113	269936	13.32				
BP-TT-BPOW1-8-GW-20201113	265058	13.32				
BP-TT-BPOW1-7-GW-20201116	245998	13.32				
BP-TT-MW181S-GW-20201117	242477	13.32				
VN1119WBL02	176663	13.32				
VN1119WBS02	262151	13.32				
VN1119WBSD02	256395	13.32				

IS4 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: VX019511.D Date Analyzed: 11/20/2020

Instrument ID: MSVOA_X Time Analyzed: 22:06

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	255669	5.63	427312	6.83	381352	10.10
UPPER LIMIT	511338	6.13	854624	7.33	762704	10.6
LOWER LIMIT	127835	5.13	213656	6.33	190676	9.6
EPA SAMPLE NO.						
BP-TT-MW181S-GW-20201117	348676	5.63	553673	6.83	482899	10.10
VX1121WBL02	289820	5.63	472395	6.83	405889	10.10
VX1121WBS02	254676	5.62	435627	6.83	386699	10.10

IS1 = Pentafluorobenzene
IS2 = 1,4-Difluorobenzene
IS3 = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: VX019511.D Date Analyzed: 11/20/2020

Instrument ID: MSVOA_X Time Analyzed: 22:06

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: (Y/N) N

	IS4 AREA #	RT #				
12 HOUR STD	191334	12.06				
UPPER LIMIT	382668	12.56				
LOWER LIMIT	95667	11.56				
EPA SAMPLE NO.						
BP-TT-MW181S-GW-20201117	234204	12.06				
VX1121WBL02	170241	12.06				
VX1121WBS02	186431	12.06				

IS4 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

 # Column used to flag values outside QC limits with an asterisk.
*** Values outside of QC limits.**

QC SAMPLE DATA

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	VN1119WBL02	SDG No.:	L4788
Lab Sample ID:	VN1119WBL02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064753.D	1		11/20/20 00:49	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	VN1119WBL02	SDG No.:	L4788
Lab Sample ID:	VN1119WBL02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064753.D	1		11/20/20 00:49	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	58.5		81 - 118		117%	SPK: 50
1868-53-7	Dibromofluoromethane	59.6		80 - 119		119%	SPK: 50
2037-26-5	Toluene-d8	49.7		89 - 112		99%	SPK: 50
460-00-4	4-Bromofluorobenzene	51.6		85 - 114		103%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	195000	7.62				
540-36-3	1,4-Difluorobenzene	412000	8.55				
3114-55-4	Chlorobenzene-d5	430000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	177000	13.32				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	VX1121WBL02	SDG No.:	L4788
Lab Sample ID:	VX1121WBL02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX019512.D	1		11/20/20 23:16	VX112120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	0.50	U	0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	0.50	U	0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	3.80	U	1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	0.50	U	0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	0.50	U	0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	0.50	U	0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	0.50	U	0.27	0.50	5.00	ug/L
67-64-1	Acetone	2.50	U	1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	0.50	U	0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	0.50	U	0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	0.50	U	0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	0.50	U	0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	2.50	U	1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	0.50	U	0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.24	0.50	5.00	ug/L
67-66-3	Chloroform	0.50	U	0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	0.75	U	0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	0.50	U	0.11	0.50	5.00	ug/L
71-43-2	Benzene	0.50	U	0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	0.75	U	0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	0.50	U	0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	0.50	U	0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	0.50	U	0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	2.50	U	0.65	2.50	25.0	ug/L
108-88-3	Toluene	0.50	U	0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	0.50	U	0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	0.50	U	0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	3.80	U	0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	0.50	U	0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	0.50	U	0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	VX1121WBL02	SDG No.:	L4788
Lab Sample ID:	VX1121WBL02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX019512.D	1		11/20/20 23:16	VX112120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	0.50	U	0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	0.50	U	0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	1.00	U	0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	0.50	U	0.12	0.50	5.00	ug/L
100-42-5	Styrene	0.50	U	0.16	0.50	5.00	ug/L
75-25-2	Bromoform	0.50	U	0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	0.50	U	0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	0.50	U	0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	0.50	U	0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	0.50	U	0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	47.3		81 - 118		95%	SPK: 50
1868-53-7	Dibromofluoromethane	46.8		80 - 119		94%	SPK: 50
2037-26-5	Toluene-d8	47.7		89 - 112		95%	SPK: 50
460-00-4	4-Bromofluorobenzene	44.3		85 - 114		89%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	290000	5.63				
540-36-3	1,4-Difluorobenzene	472000	6.83				
3114-55-4	Chlorobenzene-d5	406000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	170000	12.06				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	VN1119WBS02	SDG No.:	L4788
Lab Sample ID:	VN1119WBS02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064754.D	1		11/20/20 02:16	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	19.7		0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	22.0		0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	21.7		1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	22.8		0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	20.6		0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	19.6		0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	18.7		0.27	0.50	5.00	ug/L
67-64-1	Acetone	110		1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	19.2		0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	18.8		0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	19.0		0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	18.6		0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	19.4		0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	96.7		1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	18.2		0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	19.4		0.24	0.50	5.00	ug/L
67-66-3	Chloroform	19.6		0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	19.3		0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	15.9		0.11	0.50	5.00	ug/L
71-43-2	Benzene	17.8		0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	18.1		0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	18.6		0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	18.1		0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	17.9		0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	80.4		0.65	2.50	25.0	ug/L
108-88-3	Toluene	18.0		0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	16.0		0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	16.8		0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	17.8		0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	79.7		0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	17.3		0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	19.5		0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	VN1119WBS02	SDG No.:	L4788
Lab Sample ID:	VN1119WBS02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064754.D	1		11/20/20 02:16	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	18.4		0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	18.0		0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	36.0		0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	18.3		0.12	0.50	5.00	ug/L
100-42-5	Styrene	17.8		0.16	0.50	5.00	ug/L
75-25-2	Bromoform	17.8		0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	13.8		0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	13.9		0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	15.7		0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	18.1		0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	18.7		0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	49.7		81 - 118		99%	SPK: 50
1868-53-7	Dibromofluoromethane	51.2		80 - 119		102%	SPK: 50
2037-26-5	Toluene-d8	44.4		89 - 112		89%	SPK: 50
460-00-4	4-Bromofluorobenzene	43.0		85 - 114		86%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	253000	7.62				
540-36-3	1,4-Difluorobenzene	492000	8.55				
3114-55-4	Chlorobenzene-d5	420000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	262000	13.32				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	VX1121WBS02	SDG No.:	L4788
Lab Sample ID:	VX1121WBS02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX019513.D	1		11/20/20 23:40	VX112120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	18.6		0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	19.4		0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	18.9		1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	19.3		0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	19.3		0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	19.1		0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	19.1		0.27	0.50	5.00	ug/L
67-64-1	Acetone	97.0		1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	17.4		0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	19.9		0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	18.7		0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	18.8		0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	19.6		0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	99.9		1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	18.1		0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	19.3		0.24	0.50	5.00	ug/L
67-66-3	Chloroform	19.3		0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	19.4		0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	17.5		0.11	0.50	5.00	ug/L
71-43-2	Benzene	18.4		0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	18.8		0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	17.9		0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	18.9		0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	18.3		0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	99.1		0.65	2.50	25.0	ug/L
108-88-3	Toluene	18.6		0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	17.4		0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	17.8		0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	18.6		0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	97.9		0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	18.0		0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	18.3		0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	VX1121WBS02	SDG No.:	L4788
Lab Sample ID:	VX1121WBS02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX019513.D	1		11/20/20 23:40	VX112120

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	18.5		0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	18.7		0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	37.7		0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	18.8		0.12	0.50	5.00	ug/L
100-42-5	Styrene	18.2		0.16	0.50	5.00	ug/L
75-25-2	Bromoform	17.8		0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	19.4		0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	19.4		0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	18.4		0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	18.0		0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	18.6		0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	51.7		81 - 118		103%	SPK: 50
1868-53-7	Dibromofluoromethane	49.4		80 - 119		99%	SPK: 50
2037-26-5	Toluene-d8	48.9		89 - 112		98%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.2		85 - 114		96%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	255000	5.62				
540-36-3	1,4-Difluorobenzene	436000	6.83				
3114-55-4	Chlorobenzene-d5	387000	10.1				
3855-82-1	1,4-Dichlorobenzene-d4	186000	12.06				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	VN1119WBSD02	SDG No.:	L4788
Lab Sample ID:	VN1119WBSD02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064755.D	1		11/20/20 03:07	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
74-87-3	Chloromethane	19.1		0.22	0.50	5.00	ug/L
75-01-4	Vinyl Chloride	17.7		0.17	0.50	5.00	ug/L
74-83-9	Bromomethane	15.9		1.10	3.80	5.00	ug/L
75-00-3	Chloroethane	16.6		0.33	0.50	5.00	ug/L
75-69-4	Trichlorofluoromethane	14.0		0.24	0.50	5.00	ug/L
76-13-1	1,1,2-Trichlorotrifluoroethane	18.8		0.19	0.50	5.00	ug/L
75-35-4	1,1-Dichloroethene	18.1		0.27	0.50	5.00	ug/L
67-64-1	Acetone	110		1.40	2.50	25.0	ug/L
75-15-0	Carbon Disulfide	18.5		0.23	0.50	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	18.2		0.19	0.50	5.00	ug/L
75-09-2	Methylene Chloride	19.2		0.32	0.50	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	18.2		0.14	0.50	5.00	ug/L
75-34-3	1,1-Dichloroethane	19.1		0.15	0.50	5.00	ug/L
78-93-3	2-Butanone	98.8		1.00	2.50	25.0	ug/L
56-23-5	Carbon Tetrachloride	17.3		0.26	0.50	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	18.5		0.24	0.50	5.00	ug/L
67-66-3	Chloroform	17.8		0.19	0.50	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	16.8		0.15	0.75	5.00	ug/L
108-87-2	Methylcyclohexane	17.6		0.11	0.50	5.00	ug/L
71-43-2	Benzene	19.5		0.13	0.50	5.00	ug/L
107-06-2	1,2-Dichloroethane	17.2		0.27	0.75	5.00	ug/L
79-01-6	Trichloroethene	18.3		0.13	0.50	5.00	ug/L
78-87-5	1,2-Dichloropropane	19.9		0.11	0.50	5.00	ug/L
75-27-4	Bromodichloromethane	17.5		0.11	0.50	5.00	ug/L
108-10-1	4-Methyl-2-Pentanone	87.0		0.65	2.50	25.0	ug/L
108-88-3	Toluene	19.1		0.20	0.50	5.00	ug/L
10061-02-6	t-1,3-Dichloropropene	16.6		0.23	0.50	5.00	ug/L
10061-01-5	cis-1,3-Dichloropropene	18.6		0.15	0.50	5.00	ug/L
79-00-5	1,1,2-Trichloroethane	18.6		0.19	0.50	5.00	ug/L
591-78-6	2-Hexanone	84.6		0.82	3.80	25.0	ug/L
124-48-1	Dibromochloromethane	18.1		0.13	0.50	5.00	ug/L
127-18-4	Tetrachloroethene	19.2		0.13	0.50	5.00	ug/L

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	VN1119WBSD02	SDG No.:	L4788
Lab Sample ID:	VN1119WBSD02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	RXI-624 ID : 0.25	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VN064755.D	1		11/20/20 03:07	VN111920

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
108-90-7	Chlorobenzene	18.2		0.12	0.50	5.00	ug/L
100-41-4	Ethyl Benzene	17.3		0.12	0.50	5.00	ug/L
179601-23-1	m/p-Xylenes	35.0		0.25	1.00	10.0	ug/L
95-47-6	o-Xylene	17.7		0.12	0.50	5.00	ug/L
100-42-5	Styrene	17.3		0.16	0.50	5.00	ug/L
75-25-2	Bromoform	18.1		0.18	0.50	5.00	ug/L
98-82-8	Isopropylbenzene	18.1		0.21	0.50	5.00	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	18.9		0.27	0.50	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	18.7		0.16	0.50	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	18.3		0.13	0.50	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	18.8		0.18	0.50	5.00	ug/L
SURROGATES							
17060-07-0	1,2-Dichloroethane-d4	42.4		81 - 118		85%	SPK: 50
1868-53-7	Dibromofluoromethane	54.5		80 - 119		109%	SPK: 50
2037-26-5	Toluene-d8	46.9		89 - 112		94%	SPK: 50
460-00-4	4-Bromofluorobenzene	44.1		85 - 114		88%	SPK: 50
INTERNAL STANDARDS							
363-72-4	Pentafluorobenzene	347000	7.62				
540-36-3	1,4-Difluorobenzene	603000	8.55				
3114-55-4	Chlorobenzene-d5	560000	11.38				
3855-82-1	1,4-Dichlorobenzene-d4	256000	13.32				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CALIBRATION SUMMARY

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_N Calibration Date(s): 11/18/2020 11/18/2020

Heated Purge: (Y/N) N Calibration Time(s): 12:13 14:40

GC Column: RXI-624 ID: 0.25 (mm)

LAB FILE ID: RRF005 = VN064701.D RRF020 = VN064702.D RRF050 = VN064703.D
RRF100 = VN064704.D RRF150 = VN064705.D RRF001 = VN064707.D

COMPOUND	RRF005	RRF020	RRF050	RRF100	RRF150	RRF001	$\overline{RRF}$	% RSD
Chloromethane	0.643	0.643	0.663	0.694	0.680	0.823	0.691	9.8
Vinyl Chloride	0.706	0.676	0.707	0.750	0.747	0.738	0.721	4
Bromomethane	0.536	0.518	0.515	0.540	0.535		0.529	2.2
Chloroethane	0.498	0.463	0.490	0.502	0.499	0.467	0.486	3.5
Trichlorofluoromethane	1.313	1.244	1.274	1.283	1.238	1.395	1.291	4.5
1,1,2-Trichlorotrifluoroethane	0.575	0.537	0.553	0.545	0.533	0.604	0.558	4.8
1,1-Dichloroethene	0.511	0.504	0.530	0.540	0.516	0.624	0.538	8.3
Acetone	0.188	0.186	0.208	0.220	0.215	0.289	0.217	17.3
Carbon Disulfide	1.602	1.487	1.543	1.585	1.561	2.260	1.673	17.4
Methyl tert-butyl Ether	1.537	1.721	1.906	1.980	1.970	1.678	1.799	10
Methylene Chloride	0.641	0.607	0.630	0.642	0.620	0.768	0.651	9
trans-1,2-Dichloroethene	0.536	0.575	0.596	0.612	0.614	0.665	0.600	7.2
1,1-Dichloroethane	1.134	1.117	1.154	1.186	1.180	1.082	1.142	3.4
2-Butanone	0.293	0.321	0.352	0.383	0.377	0.292	0.336	12.1
Carbon Tetrachloride	0.510	0.516	0.571	0.597	0.596	0.491	0.547	8.5
cis-1,2-Dichloroethene	0.619	0.632	0.675	0.711	0.722	0.609	0.661	7.3
Chloroform	1.142	1.203	1.258	1.311	1.290	1.242	1.241	5
1,1,1-Trichloroethane	1.061	1.070	1.134	1.196	1.177	1.169	1.134	5.1
Methylcyclohexane	0.399	0.404	0.457	0.508	0.507	0.460	0.456	10.4
Benzene	1.366	1.375	1.469	1.586	1.549	1.256	1.433	8.7
1,2-Dichloroethane	0.578	0.599	0.626	0.660	0.641	0.596	0.617	5
Trichloroethene	0.398	0.388	0.397	0.433	0.417	0.436	0.411	4.9
1,2-Dichloropropane	0.343	0.370	0.394	0.420	0.409	0.357	0.382	8
Bromodichloromethane	0.525	0.529	0.589	0.628	0.608	0.536	0.569	7.9
4-Methyl-2-Pentanone	0.374	0.440	0.491	0.535	0.504	0.368	0.452	15.4
Toluene	0.750	0.834	0.939	1.024	1.001	0.749	0.883	13.9
t-1,3-Dichloropropene	0.542	0.561	0.642	0.719	0.695	0.497	0.609	14.7
cis-1,3-Dichloropropene	0.560	0.612	0.649	0.729	0.717	0.498	0.627	14.3
1,1,2-Trichloroethane	0.325	0.341	0.373	0.398	0.381	0.307	0.354	10
2-Hexanone	0.259	0.311	0.357	0.394	0.373	0.262	0.326	17.7
Dibromochloromethane	0.370	0.387	0.428	0.474	0.459	0.337	0.409	13
Tetrachloroethene	0.453	0.435	0.446	0.462	0.450	0.414	0.443	3.8
Chlorobenzene	0.976	0.991	1.080	1.138	1.129	1.067	1.064	6.4

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_N Calibration Date(s): 11/18/2020 11/18/2020

Heated Purge: (Y/N) N Calibration Time(s): 12:13 14:40

GC Column: RXI-624 ID: 0.25 (mm)

LAB FILE ID: RRF005 = VN064701.D RRF020 = VN064702.D RRF050 = VN064703.D
RRF100 = VN064704.D RRF150 = VN064705.D RRF001 = VN064707.D

COMPOUND	RRF005	RRF020	RRF050	RRF100	RRF150	RRF001	$\overline{RRF}$	% RSD
Ethyl Benzene	1.630	1.745	1.954	2.130	2.088	1.706	1.875	11.3
m/p-Xylenes	0.561	0.652	0.727	0.790	0.782	0.535	0.675	16.3
o-Xylene	0.548	0.605	0.691	0.751	0.752	0.578	0.654	13.6
Styrene	0.874	1.048	1.208	1.324	1.325	0.894	1.112	18.3
Bromoform	0.227	0.263	0.287	0.321	0.320	0.226	0.274	15.6
Isopropylbenzene	3.178	3.469	3.669	3.992	3.672	3.320	3.550	8.2
1,1,2,2-Tetrachloroethane	0.911	0.959	0.998	1.045	0.975	1.067	0.993	5.8
1,3-Dichlorobenzene	1.449	1.507	1.637	1.752	1.650	1.792	1.631	8.2
1,4-Dichlorobenzene	1.546	1.574	1.633	1.773	1.671	1.853	1.675	7.1
1,2-Dichlorobenzene	1.477	1.503	1.569	1.715	1.612	1.690	1.594	6.1
1,2-Dichloroethane-d4	0.990	0.771	0.844	0.880	0.913		0.880	9.2
Dibromofluoromethane	0.323	0.262	0.275	0.278	0.284		0.285	8.2
Toluene-d8	1.320	1.090	1.258	1.376	1.423		1.293	10
4-Bromofluorobenzene	0.457	0.391	0.476	0.534	0.560		0.483	13.7

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_X Calibration Date(s): 11/20/2020 11/20/2020

Heated Purge: (Y/N) N Calibration Time(s): 09:09 11:40

GC Column: DB-624UI ID: 0.18 (mm)

LAB FILE ID: RRF001 = VX019488.D RRF005 = VX019489.D RRF020 = VX019490.D
RRF050 = VX019491.D RRF100 = VX019492.D RRF150 = VX019493.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	RRF150	$\overline{RRF}$	% RSD
Chloromethane	0.589	0.561	0.535	0.565	0.555	0.543	0.558	3.4
Vinyl Chloride	0.582	0.603	0.562	0.609	0.620	0.628	0.601	4.1
Bromomethane		0.247	0.223	0.229	0.229	0.210	0.227	5.8
Chloroethane	0.192	0.171	0.198	0.160	0.138	0.137	0.166	15.7
Trichlorofluoromethane	0.874	0.905	0.797	0.856	0.879	0.891	0.867	4.4
1,1,2-Trichlorotrifluoroethane	0.460	0.505	0.447	0.489	0.499	0.501	0.484	5
1,1-Dichloroethene	0.493	0.526	0.450	0.490	0.502	0.518	0.496	5.4
Acetone	0.267	0.264	0.236	0.247	0.245	0.245	0.251	4.8
Carbon Disulfide	1.448	1.278	1.157	1.300	1.386	1.432	1.334	8.3
Methyl tert-butyl Ether	1.598	1.746	1.569	1.733	1.803	1.832	1.713	6.3
Methylene Chloride	0.751	0.646	0.566	0.598	0.602	0.597	0.627	10.6
trans-1,2-Dichloroethene	0.558	0.588	0.505	0.555	0.580	0.588	0.562	5.6
1,1-Dichloroethane	0.937	1.047	0.909	0.981	1.008	1.022	0.984	5.4
2-Butanone	0.362	0.381	0.370	0.385	0.382	0.380	0.377	2.3
Carbon Tetrachloride	0.400	0.461	0.406	0.465	0.497	0.493	0.454	9.2
cis-1,2-Dichloroethene	0.605	0.677	0.595	0.649	0.669	0.681	0.646	5.8
Chloroform	1.012	1.056	0.941	1.046	1.058	1.060	1.029	4.5
1,1,1-Trichloroethane	0.804	0.908	0.822	0.896	0.928	0.946	0.884	6.5
Methylcyclohexane	0.511	0.537	0.476	0.557	0.597	0.597	0.546	8.8
Benzene	1.444	1.495	1.301	1.448	1.490	1.464	1.440	5
1,2-Dichloroethane	0.490	0.518	0.452	0.498	0.506	0.498	0.494	4.5
Trichloroethene	0.372	0.385	0.340	0.377	0.395	0.394	0.377	5.3
1,2-Dichloropropane	0.340	0.361	0.328	0.363	0.370	0.365	0.355	4.7
Bromodichloromethane	0.425	0.451	0.427	0.497	0.517	0.509	0.471	8.8
4-Methyl-2-Pentanone	0.393	0.425	0.423	0.453	0.448	0.446	0.431	5.2
Toluene	0.807	0.898	0.835	0.916	0.925	0.905	0.881	5.5
t-1,3-Dichloropropene	0.428	0.464	0.468	0.553	0.570	0.568	0.509	12.2
cis-1,3-Dichloropropene	0.504	0.525	0.516	0.600	0.625	0.617	0.564	9.8
1,1,2-Trichloroethane	0.330	0.372	0.342	0.376	0.369	0.363	0.359	5.1
2-Hexanone	0.284	0.317	0.325	0.347	0.346	0.344	0.327	7.4
Dibromochloromethane	0.284	0.330	0.331	0.380	0.392	0.392	0.351	12.5
Tetrachloroethene	0.428	0.434	0.350	0.380	0.394	0.371	0.393	8.4
Chlorobenzene	0.991	1.070	0.926	1.044	1.093	1.044	1.028	5.9

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_X Calibration Date(s): 11/20/2020 11/20/2020

Heated Purge: (Y/N) N Calibration Time(s): 09:09 11:40

GC Column: DB-624UI ID: 0.18 (mm)

LAB FILE ID: RRF001 = VX019488.D RRF005 = VX019489.D RRF020 = VX019490.D
RRF050 = VX019491.D RRF100 = VX019492.D RRF150 = VX019493.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	RRF150	$\overline{RRF}$	% RSD
Ethyl Benzene	1.647	1.792	1.627	1.881	1.960	1.898	1.801	7.7
m/p-Xylenes	0.573	0.660	0.623	0.706	0.745	0.719	0.671	9.7
o-Xylene	0.551	0.636	0.587	0.675	0.709	0.689	0.641	9.6
Styrene	0.808	0.995	0.983	1.154	1.243	1.205	1.065	15.5
Bromoform	0.206	0.246	0.238	0.285	0.328	0.338	0.273	19.2
Isopropylbenzene	3.151	3.576	3.233	3.598	3.689	3.506	3.459	6.3
1,1,2,2-Tetrachloroethane	1.323	1.297	1.116	1.213	1.259	1.213	1.237	6
1,3-Dichlorobenzene	1.563	1.688	1.486	1.639	1.710	1.644	1.622	5.1
1,4-Dichlorobenzene	1.724	1.778	1.503	1.646	1.715	1.656	1.670	5.7
1,2-Dichlorobenzene	1.678	1.667	1.465	1.621	1.712	1.628	1.629	5.3
1,2-Dichloroethane-d4		0.757	0.570	0.622	0.630	0.663	0.648	10.7
Dibromofluoromethane		0.330	0.272	0.309	0.322	0.337	0.314	8.1
Toluene-d8		1.331	1.091	1.215	1.208	1.254	1.220	7.1
4-Bromofluorobenzene		0.429	0.390	0.442	0.453	0.480	0.439	7.6

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_N Calibration Date/Time: 11/20/2020 00:14

Lab File ID: VN064752.D Init. Calib. Date(s): 11/18/2020 11/18/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 12:13 14:40

GC Column: RXI-624 ID: 0.25 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
Chloromethane	0.691	0.651	0.1	-5.79	20
Vinyl Chloride	0.721	0.821		13.87	20
Bromomethane	0.529	0.570		7.75	20
Chloroethane	0.486	0.550		13.17	20
Trichlorofluoromethane	1.291	1.318		2.09	20
1,1,2-Trichlorotrifluoroethane	0.558	0.550		-1.43	20
1,1-Dichloroethene	0.538	0.523		-2.79	20
Acetone	0.217	0.240		10.6	20
Carbon Disulfide	1.673	1.507		-9.92	20
Methyl tert-butyl Ether	1.799	1.804		0.28	20
Methylene Chloride	0.651	0.617		-5.22	20
trans-1,2-Dichloroethene	0.600	0.571		-4.83	20
1,1-Dichloroethane	1.142	1.151	0.1	0.79	20
2-Butanone	0.336	0.362		7.74	20
Carbon Tetrachloride	0.547	0.575		5.12	20
cis-1,2-Dichloroethene	0.661	0.663		0.3	20
Chloroform	1.241	1.243		0.16	20
1,1,1-Trichloroethane	1.134	1.139		0.44	20
Methylcyclohexane	0.456	0.472		3.51	20
Benzene	1.433	1.466		2.3	20
1,2-Dichloroethane	0.617	0.628		1.78	20
Trichloroethene	0.411	0.404		-1.7	20
1,2-Dichloropropane	0.382	0.392		2.62	20
Bromodichloromethane	0.569	0.616		8.26	20
4-Methyl-2-Pentanone	0.452	0.477		5.53	20
Toluene	0.883	0.933		5.66	20
t-1,3-Dichloropropene	0.609	0.607		-0.33	20
cis-1,3-Dichloropropene	0.627	0.680		8.45	20
1,1,2-Trichloroethane	0.354	0.368		3.95	20
2-Hexanone	0.326	0.345		5.83	20
Dibromochloromethane	0.409	0.423		3.42	20
Tetrachloroethene	0.443	0.453		2.26	20
Chlorobenzene	1.064	1.053	0.3	-1.03	20
Ethyl Benzene	1.875	1.948		3.89	20
m/p-Xylenes	0.675	0.732		8.44	20
o-Xylene	0.654	0.678		3.67	20
Styrene	1.112	1.178		5.93	20
Bromoform	0.274	0.279	0.1	1.83	20
Isopropylbenzene	3.550	3.305		-6.9	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_N Calibration Date/Time: 11/20/2020 00:14

Lab File ID: VN064752.D Init. Calib. Date(s): 11/18/2020 11/18/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 12:13 14:40

GC Column: RXI-624 ID: 0.25 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
1,1,2,2-Tetrachloroethane	0.993	0.873	0.3	-12.09	20
1,3-Dichlorobenzene	1.631	1.609		-1.35	20
1,4-Dichlorobenzene	1.675	1.724		2.92	20
1,2-Dichlorobenzene	1.594	1.404		-11.92	20
1,2-Dichloroethane-d4	0.880	0.854		-2.95	20
Dibromofluoromethane	0.285	0.307		7.72	20
Toluene-d8	1.293	1.273		-1.55	20
4-Bromofluorobenzene	0.483	0.476		-1.45	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_N Calibration Date/Time: 11/20/2020 10:19

Lab File ID: VN064773.D Init. Calib. Date(s): 11/18/2020 11/18/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 12:13 14:40

GC Column: RXI-624 ID: 0.25 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
Chloromethane	0.691	0.713	0.1	3.18	50
Vinyl Chloride	0.721	0.720		-0.14	50
Bromomethane	0.529	0.436		-17.58	50
Chloroethane	0.486	0.431		-11.32	50
Trichlorofluoromethane	1.291	0.946		-26.72	50
1,1,2-Trichlorotrifluoroethane	0.558	0.541		-3.05	50
1,1-Dichloroethene	0.538	0.541		0.56	50
Acetone	0.217	0.244		12.44	50
Carbon Disulfide	1.673	1.559		-6.81	50
Methyl tert-butyl Ether	1.799	1.839		2.22	50
Methylene Chloride	0.651	0.638		-2	50
trans-1,2-Dichloroethene	0.600	0.590		-1.67	50
1,1-Dichloroethane	1.142	1.161	0.1	1.66	50
2-Butanone	0.336	0.371		10.42	50
Carbon Tetrachloride	0.547	0.513		-6.22	50
cis-1,2-Dichloroethene	0.661	0.676		2.27	50
Chloroform	1.241	1.175		-5.32	50
1,1,1-Trichloroethane	1.134	1.014		-10.58	50
Methylcyclohexane	0.456	0.466		2.19	50
Benzene	1.433	1.503		4.89	50
1,2-Dichloroethane	0.617	0.545		-11.67	50
Trichloroethene	0.411	0.407		-0.97	50
1,2-Dichloropropane	0.382	0.407		6.55	50
Bromodichloromethane	0.569	0.543		-4.57	50
4-Methyl-2-Pentanone	0.452	0.478		5.75	50
Toluene	0.883	0.916		3.74	50
t-1,3-Dichloropropene	0.609	0.569		-6.57	50
cis-1,3-Dichloropropene	0.627	0.597		-4.78	50
1,1,2-Trichloroethane	0.354	0.359		1.41	50
2-Hexanone	0.326	0.350		7.36	50
Dibromochloromethane	0.409	0.404		-1.22	50
Tetrachloroethene	0.443	0.446		0.68	50
Chlorobenzene	1.064	1.052	0.3	-1.13	50
Ethyl Benzene	1.875	1.876		0.05	50
m/p-Xylenes	0.675	0.696		3.11	50
o-Xylene	0.654	0.657		0.46	50
Styrene	1.112	1.159		4.23	50
Bromoform	0.274	0.275	0.1	0.37	50
Isopropylbenzene	3.550	3.543		-0.2	50

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

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VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_N Calibration Date/Time: 11/20/2020 10:19

Lab File ID: VN064773.D Init. Calib. Date(s): 11/18/2020 11/18/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 12:13 14:40

GC Column: RXI-624 ID: 0.25 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
1,1,2,2-Tetrachloroethane	0.993	0.977	0.3	-1.61	50
1,3-Dichlorobenzene	1.631	1.582		-3	50
1,4-Dichlorobenzene	1.675	1.580		-5.67	50
1,2-Dichlorobenzene	1.594	1.536		-3.64	50
1,2-Dichloroethane-d4	0.880	0.718		-18.41	50
Dibromofluoromethane	0.285	0.309		8.42	50
Toluene-d8	1.293	1.245		-3.71	50
4-Bromofluorobenzene	0.483	0.444		-8.07	50

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

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VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_X Calibration Date/Time: 11/20/2020 22:06

Lab File ID: VX019511.D Init. Calib. Date(s): 11/20/2020 11/20/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 09:09 11:40

GC Column: DB-624UI ID: 0.18 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
Chloromethane	0.558	0.548	0.1	-1.79	20
Vinyl Chloride	0.601	0.630		4.82	20
Bromomethane	0.227	0.216		-4.85	20
Chloroethane	0.166	0.150		-9.64	20
Trichlorofluoromethane	0.867	0.902		4.04	20
1,1,2-Trichlorotrifluoroethane	0.484	0.511		5.58	20
1,1-Dichloroethene	0.496	0.518		4.43	20
Acetone	0.251	0.255		1.59	20
Carbon Disulfide	1.334	1.307		-2.02	20
Methyl tert-butyl Ether	1.713	1.880		9.75	20
Methylene Chloride	0.627	0.623		-0.64	20
trans-1,2-Dichloroethene	0.562	0.588		4.63	20
1,1-Dichloroethane	0.984	1.051	0.1	6.81	20
2-Butanone	0.377	0.405		7.43	20
Carbon Tetrachloride	0.454	0.475		4.63	20
cis-1,2-Dichloroethene	0.646	0.689		6.66	20
Chloroform	1.029	1.093		6.22	20
1,1,1-Trichloroethane	0.884	0.948		7.24	20
Methylcyclohexane	0.546	0.558		2.2	20
Benzene	1.440	1.490		3.47	20
1,2-Dichloroethane	0.494	0.512		3.64	20
Trichloroethene	0.377	0.387		2.65	20
1,2-Dichloropropane	0.355	0.373		5.07	20
Bromodichloromethane	0.471	0.496		5.31	20
4-Methyl-2-Pentanone	0.431	0.477		10.67	20
Toluene	0.881	0.916		3.97	20
t-1,3-Dichloropropene	0.509	0.531		4.32	20
cis-1,3-Dichloropropene	0.564	0.592		4.97	20
1,1,2-Trichloroethane	0.359	0.375		4.46	20
2-Hexanone	0.327	0.361		10.4	20
Dibromochloromethane	0.351	0.376		7.12	20
Tetrachloroethene	0.393	0.389		-1.02	20
Chlorobenzene	1.028	1.054	0.3	2.53	20
Ethyl Benzene	1.801	1.921		6.66	20
m/p-Xylenes	0.671	0.718		7	20
o-Xylene	0.641	0.692		7.96	20
Styrene	1.065	1.192		11.93	20
Bromoform	0.273	0.298	0.1	9.16	20
Isopropylbenzene	3.459	3.644		5.35	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

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VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_X Calibration Date/Time: 11/20/2020 22:06

Lab File ID: VX019511.D Init. Calib. Date(s): 11/20/2020 11/20/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 09:09 11:40

GC Column: DB-624UI ID: 0.18 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
1,1,2,2-Tetrachloroethane	1.237	1.307	0.3	5.66	20
1,3-Dichlorobenzene	1.622	1.652		1.85	20
1,4-Dichlorobenzene	1.670	1.676		0.36	20
1,2-Dichlorobenzene	1.629	1.700		4.36	20
1,2-Dichloroethane-d4	0.648	0.654		0.93	20
Dibromofluoromethane	0.314	0.315		0.32	20
Toluene-d8	1.220	1.193		-2.21	20
4-Bromofluorobenzene	0.439	0.437		-0.46	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

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VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_X Calibration Date/Time: 11/21/2020 07:04

Lab File ID: VX019532.D Init. Calib. Date(s): 11/20/2020 11/20/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 09:09 11:40

GC Column: DB-624UI ID: 0.18 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
Chloromethane	0.558	0.498	0.1	-10.75	50
Vinyl Chloride	0.601	0.588		-2.16	50
Bromomethane	0.227	0.153		-32.6	50
Chloroethane	0.166	0.146		-12.05	50
Trichlorofluoromethane	0.867	0.842		-2.88	50
1,1,2-Trichlorotrifluoroethane	0.484	0.458		-5.37	50
1,1-Dichloroethene	0.496	0.485		-2.22	50
Acetone	0.251	0.246		-1.99	50
Carbon Disulfide	1.334	1.275		-4.42	50
Methyl tert-butyl Ether	1.713	1.864		8.81	50
Methylene Chloride	0.627	0.595		-5.1	50
trans-1,2-Dichloroethene	0.562	0.559		-0.53	50
1,1-Dichloroethane	0.984	1.001	0.1	1.73	50
2-Butanone	0.377	0.387		2.65	50
Carbon Tetrachloride	0.454	0.447		-1.54	50
cis-1,2-Dichloroethene	0.646	0.665		2.94	50
Chloroform	1.029	1.048		1.85	50
1,1,1-Trichloroethane	0.884	0.925		4.64	50
Methylcyclohexane	0.546	0.485		-11.17	50
Benzene	1.440	1.396		-3.06	50
1,2-Dichloroethane	0.494	0.484		-2.02	50
Trichloroethene	0.377	0.359		-4.78	50
1,2-Dichloropropane	0.355	0.349		-1.69	50
Bromodichloromethane	0.471	0.483		2.55	50
4-Methyl-2-Pentanone	0.431	0.443		2.78	50
Toluene	0.881	0.875		-0.68	50
t-1,3-Dichloropropene	0.509	0.510		0.2	50
cis-1,3-Dichloropropene	0.564	0.552		-2.13	50
1,1,2-Trichloroethane	0.359	0.354		-1.39	50
2-Hexanone	0.327	0.335		2.45	50
Dibromochloromethane	0.351	0.368		4.84	50
Tetrachloroethene	0.393	0.344		-12.47	50
Chlorobenzene	1.028	1.005	0.3	-2.24	50
Ethyl Benzene	1.801	1.816		0.83	50
m/p-Xylenes	0.671	0.680		1.34	50
o-Xylene	0.641	0.653		1.87	50
Styrene	1.065	1.120		5.16	50
Bromoform	0.273	0.292	0.1	6.96	50
Isopropylbenzene	3.459	3.579		3.47	50

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

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VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: MSVOA_X Calibration Date/Time: 11/21/2020 07:04

Lab File ID: VX019532.D Init. Calib. Date(s): 11/20/2020 11/20/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 09:09 11:40

GC Column: DB-624UI ID: 0.18 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
1,1,2,2-Tetrachloroethane	1.237	1.258	0.3	1.7	50
1,3-Dichlorobenzene	1.622	1.612		-0.62	50
1,4-Dichlorobenzene	1.670	1.617		-3.17	50
1,2-Dichlorobenzene	1.629	1.628		-0.06	50
1,2-Dichloroethane-d4	0.648	0.662		2.16	50
Dibromofluoromethane	0.314	0.314		0	50
Toluene-d8	1.220	1.174		-3.77	50
4-Bromofluorobenzene	0.439	0.436		-0.68	50

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH

284 Sheffield Street, Mountainside, New Jersey - 07092

Phone: (908) 789 8900 Fax: (908) 789 8922

LAB CHRONICLE

OrderID:	L4788	**OrderDate:**	11/18/2020 10:22:00 AM
Client:	Tetra Tech NUS, Inc.	**Project:**	CTO WE13
Contact:	David Brayack	**Location:**	H21,VOA Ref. #3 Water

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
L4788-02	**BP-TT-BPOW1-8-GW-20201113**	**Water**			**11/13/20**			**11/18/20**
			SVOC-SIMGroup1	8270-Modified		11/19/20	11/23/20	
L4788-03	**BP-TT-BPOW1-7-GW-20201116**	**Water**			**11/16/20**			**11/18/20**
			SVOC-SIMGroup1	8270-Modified		11/19/20	11/23/20	
L4788-04	**BP-TT-MW181S-GW-20201117**	**Water**			**11/17/20**			**11/18/20**
			SVOC-SIMGroup1	8270-Modified		11/19/20	11/23/20	

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Hit Summary Sheet
SW-846

SDG No.: L4788

Client: Tetra Tech NUS, Inc.

Sample ID	Client ID	Parameter	Concentration	C	MDL	LOD	RDL	Units
Client ID :	**BP-TT-MW181S-GW-20201117**							
L4788-04	BP-TT-MW181S-GW-20 WATER	1,4-Dioxane	0.240		0.09	0.1	0.1	ug/L
		Total Svoc :			**0.24**			
		Total Concentration:			**0.24**			

SAMPLE DATA

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/13/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TT-BPOW1-8-GW-20201113	SDG No.:	L4788
Lab Sample ID:	L4788-02	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN012703.D	1	11/19/20 09:20	11/23/20 18:54	PB133106

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.10	U	0.090	0.10	0.10	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.28		30 - 150		70%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.37		30 - 150		93%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.43		55 - 111		108%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.46	*	53 - 106		115%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.60	*	58 - 132		150%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	613	7.441				
1146-65-2	Naphthalene-d8	2420	10.212				
15067-26-2	Acenaphthene-d10	1350	14.09				
1517-22-2	Phenanthrene-d10	2690	16.846				
1719-03-5	Chrysene-d12	3060	21.067				
1520-96-3	Perylene-d12	3480	23.183				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/16/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TT-BPOW1-7-GW-20201116	SDG No.:	L4788
Lab Sample ID:	L4788-03	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN012706.D	1	11/19/20 09:20	11/23/20 20:43	PB133106

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.10	U	0.090	0.10	0.10	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.28		30 - 150		70%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.35		30 - 150		88%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.42		55 - 111		105%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.46	*	53 - 106		115%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.58	*	58 - 132		145%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	463	7.441				
1146-65-2	Naphthalene-d8	1910	10.212				
15067-26-2	Acenaphthene-d10	1120	14.09				
1517-22-2	Phenanthrene-d10	2240	16.847				
1719-03-5	Chrysene-d12	2640	21.067				
1520-96-3	Perylene-d12	3100	23.183				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	11/17/20
Project:	CTO WE13	Date Received:	11/18/20
Client Sample ID:	BP-TT-MW181S-GW-20201117	SDG No.:	L4788
Lab Sample ID:	L4788-04	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN012704.D	1	11/19/20 09:20	11/23/20 19:30	PB133106

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.24		0.090	0.10	0.10	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.29		30 - 150		72%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.40		30 - 150		100%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.43		55 - 111		108%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.48	*	53 - 106		120%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.67	*	58 - 132		168%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	497	7.441				
1146-65-2	Naphthalene-d8	2080	10.212				
15067-26-2	Acenaphthene-d10	1190	14.09				
1517-22-2	Phenanthrene-d10	2360	16.846				
1719-03-5	Chrysene-d12	2750	21.067				
1520-96-3	Perylene-d12	3200	23.183				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

QC SUMMARY

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Surrogate Summary

SW-846

SDG No.: L4788

Client: Tetra Tech NUS, Inc.

Analytical Method: 8270-Modified

Lab Sample ID	Client ID	Parameter	Spike (PPM)	Result (PPM)	Recovery (%)	Qual	Limits (%) Low	Limits (%) High
L4788-02	BP-TT-BPOW1-8-GW-20201113	2-Methylnaphthalene-d10	0.4	0.28	70		30	150
		Fluoranthene-d10	0.4	0.37	93		30	150
		Nitrobenzene-d5	0.4	0.43	108		55	111
		2-Fluorobiphenyl	0.4	0.46	115	*	53	106
		Terphenyl-d14	0.4	0.60	150	*	58	132
L4788-03	BP-TT-BPOW1-7-GW-20201116	2-Methylnaphthalene-d10	0.4	0.28	70		30	150
		Fluoranthene-d10	0.4	0.35	88		30	150
		Nitrobenzene-d5	0.4	0.42	105		55	111
		2-Fluorobiphenyl	0.4	0.46	115	*	53	106
		Terphenyl-d14	0.4	0.58	145	*	58	132
L4788-04	BP-TT-MW181S-GW-20201117	2-Methylnaphthalene-d10	0.4	0.29	72		30	150
		Fluoranthene-d10	0.4	0.40	100		30	150
		Nitrobenzene-d5	0.4	0.43	108		55	111
		2-Fluorobiphenyl	0.4	0.48	120	*	53	106
		Terphenyl-d14	0.4	0.67	168	*	58	132
PB133106BL	PB133106BL	2-Methylnaphthalene-d10	0.4	0.35	88		30	150
		Fluoranthene-d10	0.4	0.37	93		30	150
		Nitrobenzene-d5	0.4	0.50	125	*	55	111
		2-Fluorobiphenyl	0.4	0.51	127	*	53	106
		Terphenyl-d14	0.4	0.65	162	*	58	132
PB133106BS	PB133106BS	2-Methylnaphthalene-d10	0.4	0.37	93		30	150
		Fluoranthene-d10	0.4	0.37	93		30	150
		Nitrobenzene-d5	0.4	0.37	93		55	111
		2-Fluorobiphenyl	0.4	0.37	93		53	106
		Terphenyl-d14	0.4	0.36	90		58	132
PB133106BSD	PB133106BSD	2-Methylnaphthalene-d10	0.4	0.36	90		30	150
		Fluoranthene-d10	0.4	0.36	90		30	150
		Nitrobenzene-d5	0.4	0.36	90		55	111
		2-Fluorobiphenyl	0.4	0.36	90		53	106
		Terphenyl-d14	0.4	0.37	93		58	132

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Laboratory Control Sample/Laboratory Control Sample Duplicate Summary
SW-846

SDG No.: L4788

Client: Tetra Tech NUS, Inc.

Analytical Method: 8270-Modified **DataFile:** BN012697.D

Lab Sample ID	Parameter	Spike	Result	Unit	Rec	RPD	Qual	RPD Qual	Limits Low	Limits High	RPD
PB133106BS	1,4-Dioxane	0.4	0.45	ug/L	113				70	130	

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Laboratory Control Sample/Laboratory Control Sample Duplicate Summary
SW-846

SDG No.: L4788

Client: Tetra Tech NUS, Inc.

Analytical Method: 8270-Modified **DataFile:** BN012698.D

Lab Sample ID	Parameter	Spike	Result	Unit	Rec	RPD	Qual	RPD Qual	Limits Low	Limits High	Limits RPD
PB133106BSD	1,4-Dioxane	0.4	0.41	ug/L	103	9			70	130	20

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4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PB133106BL

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

Lab File ID: BN012696.D Lab Sample ID: PB133106BL

Instrument ID: BNA_N Date Extracted: 11/19/2020

Matrix: (soil/water) Water Date Analyzed: 11/23/2020

Level: (low/med) LOW Time Analyzed: 14:41

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
PB133106BS	PB133106BS	BN012697.D	11/23/2020
PB133106BSD	PB133106BSD	BN012698.D	11/23/2020
BP-TT-MW181S-GW-20201117	L4788-04	BN012704.D	11/23/2020
BP-TT-BPOW1-8-GW-20201113	L4788-02	BN012703.D	11/23/2020
BP-TT-BPOW1-7-GW-20201116	L4788-03	BN012706.D	11/23/2020

COMMENTS:

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5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM SAS No.: L4788 SDG NO.: L4788

Lab File ID: BN012490.D DFTPP Injection Date: 11/04/2020

Instrument ID: BNA_N DFTPP Injection Time: 13:30

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	54.7
68	Less than 2.0% of mass 69	0.8 (1.5) 1
69	Mass 69 relative abundance	52.2
70	Less than 2.0% of mass 69	0.3 (0.5) 1
127	10.0 - 80.0% of mass 198	54.7
197	Less than 2.0% of mass 198	0.7
198	Base Peak, 100% relative abundance	100
199	5.0 to 9.0% of mass 198	7.6
275	10.0 - 60.0% of mass 198	29.5
365	Greater than 1% of mass 198	4.3
441	Present, but less than mass 443	15.3
442	Greater than 50% of mass 198	97.2
443	15.0 - 24.0% of mass 442	17.8 (18.3) 2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
SSTDICC0.1	SSTDICC0.1	BN012491.D	11/04/2020	16:32
SSTDICC0.2	SSTDICC0.2	BN012492.D	11/04/2020	17:08
SSTDICCC0.4	SSTDICCC0.4	BN012493.D	11/04/2020	17:44
SSTDICC0.8	SSTDICC0.8	BN012494.D	11/04/2020	18:20
SSTDICC1.6	SSTDICC1.6	BN012495.D	11/04/2020	18:56
SSTDICC3.2	SSTDICC3.2	BN012496.D	11/04/2020	19:32
SSTDICC5.0	SSTDICC5.0	BN012497.D	11/04/2020	20:08

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5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM SAS No.: L4788 SDG NO.: L4788

Lab File ID: BN012691.D DFTPP Injection Date: 11/23/2020

Instrument ID: BNA_N DFTPP Injection Time: 11:12

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	55.5
68	Less than 2.0% of mass 69	1 (1.9) 1
69	Mass 69 relative abundance	53.3
70	Less than 2.0% of mass 69	0.4 (0.7) 1
127	10.0 - 80.0% of mass 198	52.8
197	Less than 2.0% of mass 198	0.2
198	Base Peak, 100% relative abundance	100
199	5.0 to 9.0% of mass 198	7.3
275	10.0 - 60.0% of mass 198	28.2
365	Greater than 1% of mass 198	4.4
441	Present, but less than mass 443	14.6
442	Greater than 50% of mass 198	83.7
443	15.0 - 24.0% of mass 442	17.2 (20.6) 2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
SSTDCCC0.4	SSTDCCC0.4	BN012692.D	11/23/2020	11:48
PB133106BL	PB133106BL	BN012696.D	11/23/2020	14:41
PB133106BS	PB133106BS	BN012697.D	11/23/2020	15:17
PB133106BSD	PB133106BSD	BN012698.D	11/23/2020	15:54
BP-TT-BPOW1-8-GW-20201113	L4788-02	BN012703.D	11/23/2020	18:54
BP-TT-MW181S-GW-20201117	L4788-04	BN012704.D	11/23/2020	19:30
BP-TT-BPOW1-7-GW-20201116	L4788-03	BN012706.D	11/23/2020	20:43
SSTDCCC0.4EC	SSTDCCC0.4	BN012707.D	11/23/2020	21:19

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8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

EPA Sample No.: SSTDCCC0.4 Date Analyzed: 11/23/2020

Lab File ID: BN012692.D Time Analyzed: 11:48

Instrument ID: BNA_N GC Column: ZB-GR ID: 0.25 (mm)

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	533	7.441	2140	10.20	1212	14.09
	UPPER LIMIT	1066	7.941	4280	10.699	2424	14.59
	LOWER LIMIT	266.5	6.941	1070	9.699	606	13.59
	EPA SAMPLE NO.						
01	PB133106BL	504	7.44	1941	10.21	1120	14.09
02	PB133106BS	436	7.44	1844	10.20	1019	14.09
03	PB133106BSD	460	7.44	1974	10.20	1118	14.09
04	BP-TT-BPOW1-8-GW-20201113	613	7.44	2417	10.21	1351	14.09
05	BP-TT-BPOW1-7-GW-20201116	463	7.44	1910	10.21	1115	14.09
06	BP-TT-MW181S-GW-20201117	497	7.44	2082	10.21	1188	14.09

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT UPPER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

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8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG NO.: L4788

EPA Sample No.: SSTDCCC0.4 Date Analyzed: 11/23/2020

Lab File ID: BN012692.D Time Analyzed: 11:48

Instrument ID: BNA_N GC Column: ZB-GR ID: 0.25 (mm)

		IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
	12 HOUR STD	2402	16.847	2598	21.067	3121	23.183
	UPPER LIMIT	4804	17.347	5196	21.567	6242	23.683
	LOWER LIMIT	1201	16.347	1299	20.567	1560.5	22.683
	EPA SAMPLE NO.						
01	PB133106BL	2271	16.86	2417	21.07	2965	23.18
02	PB133106BS	2158	16.85	2322	21.07	2818	23.18
03	PB133106BSD	2348	16.85	2383	21.07	2866	23.18
04	BP-TT-BPOW1-8-GW-20201113	2686	16.85	3057	21.07	3481	23.18
05	BP-TT-BPOW1-7-GW-20201116	2242	16.85	2638	21.07	3097	23.18
06	BP-TT-MW181S-GW-20201117	2362	16.85	2749	21.07	3196	23.18

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT UPPER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

QC SAMPLE DATA

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	PB133106BL	SDG No.:	L4788
Lab Sample ID:	PB133106BL	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup : N	PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN012696.D	1	11/19/20 09:20	11/23/20 14:41	PB133106

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.10	U	0.090	0.10	0.10	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.35		30 - 150		88%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.37		30 - 150		93%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.50	*	55 - 111		125%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.51	*	53 - 106		127%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.65	*	58 - 132		162%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	504	7.441				
1146-65-2	Naphthalene-d8	1940	10.212				
15067-26-2	Acenaphthene-d10	1120	14.09				
1517-22-2	Phenanthrene-d10	2270	16.859				
1719-03-5	Chrysene-d12	2420	21.067				
1520-96-3	Perylene-d12	2970	23.183				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	PB133106BS	SDG No.:	L4788
Lab Sample ID:	PB133106BS	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN012697.D	1	11/19/20 09:20	11/23/20 15:17	PB133106

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.45		0.090	0.10	0.10	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.37		30 - 150		93%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.37		30 - 150		93%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.37		55 - 111		93%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.37		53 - 106		93%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.36		58 - 132		90%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	436	7.441				
1146-65-2	Naphthalene-d8	1840	10.199				
15067-26-2	Acenaphthene-d10	1020	14.09				
1517-22-2	Phenanthrene-d10	2160	16.846				
1719-03-5	Chrysene-d12	2320	21.067				
1520-96-3	Perylene-d12	2820	23.182				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	
Project:	CTO WE13	Date Received:	
Client Sample ID:	PB133106BSD	SDG No.:	L4788
Lab Sample ID:	PB133106BSD	Matrix:	Water
Analytical Method:	SW8270SIM	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOC-SIMGroup1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BN012698.D	1	11/19/20 09:20	11/23/20 15:54	PB133106

CAS Number	Parameter	Conc.	Qualifier	MDL	LOD	LOQ / CRQL	Units
TARGETS							
123-91-1	1,4-Dioxane	0.41		0.090	0.10	0.10	ug/L
SURROGATES							
7297-45-2	2-Methylnaphthalene-d10	0.36		30 - 150		90%	SPK: 0.4
93951-69-0	Fluoranthene-d10	0.36		30 - 150		90%	SPK: 0.4
4165-60-0	Nitrobenzene-d5	0.36		55 - 111		90%	SPK: 0.4
321-60-8	2-Fluorobiphenyl	0.36		53 - 106		90%	SPK: 0.4
1718-51-0	Terphenyl-d14	0.37		58 - 132		93%	SPK: 0.4
INTERNAL STANDARDS							
3855-82-1	1,4-Dichlorobenzene-d4	460	7.441				
1146-65-2	Naphthalene-d8	1970	10.199				
15067-26-2	Acenaphthene-d10	1120	14.09				
1517-22-2	Phenanthrene-d10	2350	16.846				
1719-03-5	Chrysene-d12	2380	21.067				
1520-96-3	Perylene-d12	2870	23.182				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CALIBRATION SUMMARY

Response Factor Report BNA_N

Method Path : Z:\SVOASRV\HPCHEM1\BNA_N\METHODS\
Method File : 8270-SIM-BN110420.M
Title : ASP BNA STANDARDS FOR 5 POINT CALIBRATION
Last Update : Thu Nov 05 05:46:47 2020
Response Via : Initial Calibration

Calibration Files
0.1 =BN012491.D 0.2 =BN012492.D 0.4 =BN012493.D 0.8 =BN012494.D 1.6 =BN012495.D 3.2 =BN012496.D 5 =BN012497.D

		Compound	0.1	0.2	0.4	0.8	1.6	3.2	5	Avg	%RSD
1)	I	1,4-Dichlorobenzen...	----------ISTD----------								
2)		1,4-Dioxane	0.804	0.595	0.591	0.618	0.622	0.598	0.550	0.626	13.11
3)		n-Nitrosodimet...		1.722	1.543	1.697	1.841	1.805	1.645	1.709	6.33
4)	S	2-Fluorophenol	1.607	1.520	1.311	1.343	1.398	1.344	1.265	1.398	8.75
5)	S	Phenol-d6	1.486	1.627	1.556	1.641	1.769	1.733	1.640	1.636	5.90
6)		bis(2-Chloroet...	1.019	0.944	0.976	1.143	1.286	1.251	1.189	1.115	12.23
7)	I	Naphthalene-d8	----------ISTD----------								
8)	S	Nitrobenzene-d5	0.399	0.454	0.422	0.488	0.527	0.522	0.501	0.473	10.48
9)		Naphthalene	1.187	1.120	1.001	1.133	1.188	1.147	1.080	1.122	5.83
10)		Hexachlorobuta...	0.288	0.248	0.223	0.245	0.249	0.239	0.223	0.245	8.98
11)	SURR	2-Methylnaphth...	0.658	0.627	0.569	0.653	0.703	0.688	0.647	0.649	6.75
12)		2-Methylnaphth...	0.685	0.686	0.642	0.739	0.797	0.781	0.735	0.724	7.73
13)	I	Acenaphthene-d10	----------ISTD----------								
14)	S	2,4,6-Tribromo...	0.299	0.308	0.249	0.282	0.304	0.305	0.286	0.290	7.11
15)	S	2-Fluorobiphenyl	1.553	1.534	1.412	1.600	1.672	1.640	1.506	1.560	5.62
16)		Acenaphthylene	2.093	1.932	1.737	2.020	2.143	2.130	1.983	2.005	7.06
17)		Acenaphthene	1.404	1.242	1.107	1.282	1.340	1.321	1.237	1.276	7.41
18)		Fluorene	1.703	1.582	1.416	1.653	1.713	1.726	1.597	1.627	6.68
19)	I	Phenanthrene-d10	----------ISTD----------								
20)		4,6-Dinitro-2-...	0.087	0.072	0.080	0.101	0.113	0.116	0.112	0.097	18.29
21)		4-Bromophenyl-...	0.236	0.214	0.202	0.235	0.254	0.247	0.232	0.231	7.90
22)		Hexachlorobenzene	0.321	0.307	0.273	0.302	0.318	0.301	0.286	0.301	5.71
23)		Atrazine	0.256	0.235	0.210	0.235	0.257	0.251	0.236	0.240	6.84
24)		Pentachlorophenol		0.141	0.117	0.137	0.153	0.152	0.146	0.141	9.45
25)		Phenanthrene	1.179	1.147	1.051	1.174	1.289	1.260	1.185	1.184	6.55
26)		Anthracene	1.086	0.992	0.955	1.080	1.211	1.201	1.145	1.096	8.95
27)	SURR	Fluoranthene-d10	1.312	1.167	1.087	1.224	1.332	1.314	1.244	1.240	7.23
28)		Fluoranthene	1.463	1.373	1.235	1.384	1.514	1.502	1.417	1.413	6.77
29)	I	Chrysene-d12	----------ISTD----------								
30)		Pyrene	1.465	1.323	1.202	1.348	1.428	1.374	1.270	1.344	6.69
31)	S	Terphenyl-d14	1.010	0.969	0.866	0.958	1.010	0.975	0.887	0.954	5.90
32)		Benzo(a)anthra...	1.233	1.233	1.148	1.311	1.355	1.353	1.281	1.273	5.87
33)		Chrysene	1.394	1.353	1.196	1.307	1.421	1.386	1.277	1.333	5.92
34)		Bis(2-ethylhex...	1.035	0.867	0.751	0.818	0.866	0.875	0.834	0.864	10.06
35)		Indeno(1,2,3-c...	2.091	2.095	1.936	2.003	2.083	2.002	1.830	2.006	4.85

Method Path : Z:\SVOASRV\HPCHEM1\BNA_N\METHODS\
Method File : 8270-SIM-BN110420.M

36)	I	Perylene-d12	----------ISTD----------							
37)		Benzo(b)fluora...	1.234	1.200	1.115	1.303	1.396	1.355	1.327	1.276	7.64
38)		Benzo(k)fluora...	1.524	1.261	1.220	1.361	1.466	1.387	1.300	1.360	8.05
39)	C	Benzo(a)pyrene	1.337	1.204	1.106	1.248	1.329	1.283	1.234	1.249	6.35
40)		Dibenzo(a,h)an...	1.393	1.358	1.331	1.428	1.541	1.463	1.398	1.416	4.94
41)		Benzo(g,h,i)pe...	1.522	1.495	1.374	1.468	1.531	1.442	1.376	1.458	4.42

(#) = Out of Range

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: BNA_N Calibration Date/Time: 11/23/2020 11:48

Lab File ID: BN012692.D Init. Calib. Date(s): 11/04/2020 11/04/2020

EPA Sample No.: SSTDCCC0.4 Init. Calib. Time(s): 16:32 20:08

GC Column: ZB-GR ID: 0.25 (mm)

COMPOUND	RRF	RRF0.4	MIN RRF	%D	MAX%D
2-Methylnaphthalene-d10	0.649	0.614		-5.4	20.0
Fluoranthene-d10	1.240	1.177		-5.1	20.0
2-Fluorophenol	1.398	1.244		-11.0	20.0
Phenol-d6	1.636	1.403		-14.2	20.0
Nitrobenzene-d5	0.473	0.432		-8.7	20.0
2-Fluorobiphenyl	1.560	1.384		-11.3	20.0
2,4,6-Tribromophenol	0.290	0.275		-5.2	20.0
Terphenyl-d14	0.954	0.883		-7.4	20.0
1,4-Dioxane	0.626	0.593		-5.3	20.0

All other compounds must meet a minimum RRF of 0.010.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: TETR06

Lab Code: CHEM Case No.: L4788 SAS No.: L4788 SDG No.: L4788

Instrument ID: BNA_N Calibration Date/Time: 11/23/2020 21:19

Lab File ID: BN012707.D Init. Calib. Date(s): 11/04/2020 11/04/2020

EPA Sample No.: SSTDCCC0.4EC Init. Calib. Time(s): 16:32 20:08

GC Column: ZB-GR ID: 0.25 (mm)

COMPOUND	RRF	RRF0.4	MIN RRF	%D	MAX%D
2-Methylnaphthalene-d10	0.649	0.613		-5.5	50.0
Fluoranthene-d10	1.240	1.118		-9.8	50.0
2-Fluorophenol	1.398	1.338		-4.3	50.0
Phenol-d6	1.636	1.541		-5.8	50.0
Nitrobenzene-d5	0.473	0.431		-8.9	50.0
2-Fluorobiphenyl	1.560	1.407		-9.8	50.0
2,4,6-Tribromophenol	0.290	0.256		-11.7	50.0
Terphenyl-d14	0.954	0.871		-8.7	50.0
1,4-Dioxane	0.626	0.594		-5.1	50.0

All other compounds must meet a minimum RRF of 0.010.

SHIPPING DOCUMENTS

CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax: (908) 78-8922
www.chemtech.net

Chemtech Project Number: L4788
COC Number:

CLIENT INFORMATION	PROJECT INFORMATION	BILLING INFORMATION
COMPANY: Tetra Tech	PROJECT NAME: NWIRP Bethpage	BILL TO: SEE CONTRACT PO#
ADDRESS: 5700 Lake Wright Dr., Suite 102	PROJECT #: 112G08005-WE13 LOCATION: VPB-181	ADDRESS:
CITY: Norfolk STATE: VA ZIP: 23502	PROJECT MANAGER: Dave Brayack	CITY: STATE: ZIP:
ATTENTION: Dave Brayack	E-MAIL: david.brayack@tetratech.com	ATTENTION: PHONE:
PHONE: 757-466-4909 FAX: 757-461-4148	PHONE: 757-466-4909 FAX: 757-461-4148	

DATA TURNAROUND INFORMATION

FAX: 10 DAYS*
HARD COPY: 10 DAYS*
EDD 10 DAYS*
* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ☐ RESULTS ONLY
- ☐ RESULTS + QC
- ☐ New Jersey REDUCED
- ☐ New Jersey CLP
- ☐ EDD Format
- ☐ USEPA CLP
- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other

ANALYSIS

	1	2	3	4	5	6	7	8	9
	VOC(SW846-8260B)	1,4 Dioxane (8270 SIM)							

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# of Bottles	PRESERVATIVES A	1	2	3	4	5	6	7	8	9	COMMENTS
1.	BP-TB-20201113	QA		X	11/13/20	9:00	2	2										Trip Blank
2.	BP-TT-BPOW1-8-GW-20201113	QA		X	11/13/20	12:55	2	2	1									
3.	BP-TT-BPOW1-7-GW-20201116	QA		X	11/16/20	12:25	2	2	1									
4.	BP-TT-MW181S-GW-20201117	QA		X	11/17/20	12:55	2	2	1									
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-Other

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1.	11/17/20 1500	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2.	9:45 11-18-20	2.
RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY
3.		3.

Conditions of bottles or coolers at receipt: ☑ Compliant ☐ Non Compliant ☐ Cooler Temp 3.7
MeOH extraction requires an additional 4oz. Jar for percent solid ☐ Ice in Cooler?: Yes
Comments: For VOC's see worksheet #15 of SAP 2018 for VPB program VOC list
For 1,4 Dioxane (8270 SIM)

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☑ Overnight
CHEMTECH: ☐ Picked Up ☐ Overnight

Shipment Complete ☑ YES ☐ NO

WHITE - CHEMTECH COPYFOR RETURN TO CLIENT **YELLOW** - CHEMTECH COPY **PINK** - SAMPLER COPY

ORIGIN ID:KPDA (610) 382-1530
N. SOMA
TETRA TECH
234 MALL BLVD
SUITE 260
KING OF PRUSSIA, PA 19406
UNITED STATES US

SHIP DATE: 17NOV20
ACTWGT: 36.00 LB
CAD: 111283035/INET4280
DIMS: 26x14x14 IN

BILL SENDER

TO SAMPLE RECEIVING
CHEMTECH
284 SHEFFIELD STREET

MOUNTAINSIDE NJ 07092
(908) 789-8900
REF: 112G08005-WE13 FI.FS
INV:
PO: DEPT:

56BJ5/BAB9/B766

FedEx Express

J202028071401uw

Ship Manager - Print Your Label(s)

WED – 18 NOV AA
PRIORITY OVERNIGHT

07092
NJ-US EWR

E2 KBCA

FedEx TRK# 7721 0566 2431
0201

#5182598 11/17 56BJ5/BAB9/B766

11/17/2020

CR
11-18-20
9:45
3.7

L7488

Laboratory Certification

Certified By	License No.
CAS EPA CLP Contract	EP-W-14-030
Connecticut	PH-0649
DOD ELAP (L-A-B)	L2219
Maine	2020021
Maryland	296
New Hampshire	255420
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	P330-18-00132
Texas	T104704488-20-13

CHEMTECH

LOGIN REPORT/SAMPLE TRANSFER

Order ID : L4788 TETR06
Client Name : Tetra Tech NUS, Inc.
Client Contact : David Brayack
Invoice Name : Tetra Tech NUS, Inc.
Invoice Contact : David Brayack

Order Date : 11/18/2020 10:22:00 AM
Project Name : CTO WE13
Receive DateTime : 11/18/2020 9:45:00 AM
Purchase Order :

Project Mgr :
Report Type : Level 4
EDD Type : ADAPT
Hard Copy Date :
Date Signoff :

LAB ID	CLIENT ID	MATRIX	SAMPLE DATE	SAMPLE TIME	TEST	TEST GROUP	METHOD	FAX DATE	DUE DATES
L4788-01	BP-TB-20201113	Water	11/13/2020	09:00					
					VOCMS Group1		8260D		10 Bus. Days
L4788-02	BP-TT-BPOW1-8-GW-20201113	Water	11/13/2020	12:55					
					VOCMS Group1		8260D		10 Bus. Days
L4788-03	BP-TT-BPOW1-7-GW-20201116	Water	11/16/2020	12:25					
					VOCMS Group1		8260D		10 Bus. Days
L4788-04	BP-TT-MW181S-GW-20201117	Water	11/17/2020	12:55					
					VOCMS Group1		8260D		10 Bus. Days

Relinguished By : [signature]
Date / Time : 11-18-20 14:00

Received By : [signature]
Date / Time : 11-18-20 14:60

Storage Area : VOA Refridgerator Room

5. TT-MW181S, BPOW1-7, and BPOW1-8 Analytical Data Table
Unvalidated

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SAMPLE ID SAMPLE DATE QC TYPE SDG		BP-TB-20201113 11/13/2020 NM L4788	BP-TT-BPOW1-7-GW-20201116 11/16/2020 NM L4788	BP-TT-BPOW1-8-GW-20201113 11/13/2020 NM L4788	BP-TT-MW181S-GW-20201117 11/17/2020 NM L4788
OS	**UNITS**				
1,4-DIOXANE	UG/L	--	0.1 U	0.1 U	0.24
OV	**UNITS**				
1,1,1-TRICHLOROETHANE	UG/L	0.75 U	0.75 U	0.75 U	0.64 J
1,1,2,2-TETRACHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROTRIFLUOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	1.1 J
1,1-DICHLOROETHENE	UG/L	0.5 U	0.5 U	0.5 U	1.3 J
1,2-DICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	UG/L	0.75 U	0.75 U	0.75 U	0.75 U
1,2-DICHLOROPROPANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
1,3-DICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	UG/L	2.5 U	2.5 U	2.5 U	2.5 U
2-HEXANONE	UG/L	3.8 U	3.8 U	3.8 U	3.8 U
4-METHYL-2-PENTANONE	UG/L	2.5 U	2.5 U	2.5 U	2.5 U
ACETONE	UG/L	2.5 U	11.7 J	2.5 U	2.9 J
BENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
BROMODICHLOROMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
BROMOFORM	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
BROMOMETHANE	UG/L	3.8 U	3.8 U	3.8 U	3.8 U
CARBON DISULFIDE	UG/L	0.5 U	0.5 U	0.5 U	0.42 J
CARBON TETRACHLORIDE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	UG/L	0.5 U	0.5 U	0.5 U	0.56 J
CHLOROMETHANE	UG/L	0.5 U	1.2 J	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	UG/L	0.5 U	0.5 U	0.5 U	1.6 J
CIS-1,3-DICHLOROPROPENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
M+P-XYLENES	UG/L	1 U	1 U	1 U	1 U
METHYL CYCLOHEXANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
METHYL TERT-BUTYL ETHER	UG/L	0.5 U	0.5 U	0.5 U	0.53 J
METHYLENE CHLORIDE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
O-XYLENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
STYRENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
TETRACHLOROETHENE	UG/L	0.5 U	0.5 U	0.5 U	0.62 J
TOLUENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,3-DICHLOROPROPENE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	UG/L	0.5 U	0.5 U	0.5 U	2 J
TRICHLOROFLUOROMETHANE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	UG/L	0.5 U	0.5 U	0.5 U	0.5 U

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Appendix C

Survey Data Report

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Borbas Surveying & Mapping, LLC

402 Main Street, Boonton, New Jersey 07005 Phone (973) 316-8743 www.borbas.com

MONITORING WELL CHART

Former Naval Weapons Industrial Reserve Plant (NWIRP)
999 S. Oyster Bay Road (Industrial Park)
Bethpage, New York, 11714
May 11, 2021

Well/Boring ID	Grade Elev	Outer Casing	Inner Casing	Northing	Easting	Latitude North	Longitude West	Survey Date
BPOW1-7	73.2	73.19	72.83	201917.5	1130763.6	40°43'10.85"	73°28'17.21"	3/19/2021
BPOW1-8	73.4	73.37	72.91	201893.5	1130748.6	40°43'10.61"	73°28'17.40"	3/19/2021
MW178I	115.1	115.15	114.75	211974.6	1120872.2	40°44'50.79"	73°30'24.93"	3/19/2021
MW178I1	114.3	114.28	113.88	211943.9	1120871.7	40°44'50.49"	73°30'24.94"	3/19/2021
MW178S	114.7	114.71	114.48	211958.8	1120872.3	40°44'50.64"	73°30'24.93"	3/19/2021
MW179D	118.8	118.82	118.48	213555.0	1120940.8	40°45'06.40"	73°30'23.92"	3/19/2021
MW179D1	119.7	119.70	119.31	213529.9	1120904.7	40°45'06.16"	73°30'24.39"	3/19/2021
MW179D2	119.4	119.40	119.00	213537.6	1120915.8	40°45'06.23"	73°30'24.25"	3/19/2021
MW180D	71.2	71.15	70.75	200999.3	1124946.4	40°43'02.12"	73°29'32.82"	3/19/2021
MW180D1	71.3	71.30	70.96	201013.9	1124945.6	40°43'02.26"	73°29'32.83"	3/19/2021
MW181S	73.1	73.10	72.75	201927.7	1130767.7	40°43'10.95"	73°28'17.15"	3/19/2021
MW18D2	71.0	71.04	70.67	200969.0	1124947.2	40°43'01.82"	73°29'32.81"	3/19/2021
VPB-178	113.7	-	-	211928.4	1120871.0	40°44'50.34"	73°30'24.95"	3/19/2021
VPB-179	119.0	-	-	213549.6	1120933.2	40°45'06.35"	73°30'24.02"	3/19/2021
VPB-180	70.9	-	-	200984.2	1124946.4	40°43'01.97"	73°29'32.83"	3/19/2021
VPB-181	72.9	-	-	201907.2	1130757.5	40°43'10.75"	73°28'17.29"	3/19/2021

Notes:

1. The horizontal datum is the New York, Long Island State Plane Coordinate System (NAD83) verified by differential GPS observations utilizing the NGS CORS System on March 18, 2021. Reference Stations: NYBR, NYCI, NYRH and RVDI
2. The vertical datum is the North American Vertical Datum of 1988 (NAVD88) GEOID12A, verified by differential GPS observations from the NGS CORS System on December 17, 2019. Benchmark Reference Stations: NYBR (orthometric height= 42.156'), NYCI (orthometric height= 56.453'), NYVH (orthometric height= 309.251') and SHK6 (orthometric height= 30.141').
3. All coordinates and elevations shown hereon are in U.S. Survey Feet.

John D. Beattie, P.L.S.
NY License # 050958-1
May 11, 2021

P:\LP\2019\11\191103\Documents\191103_2021-05-11_Monitoring Well Chart

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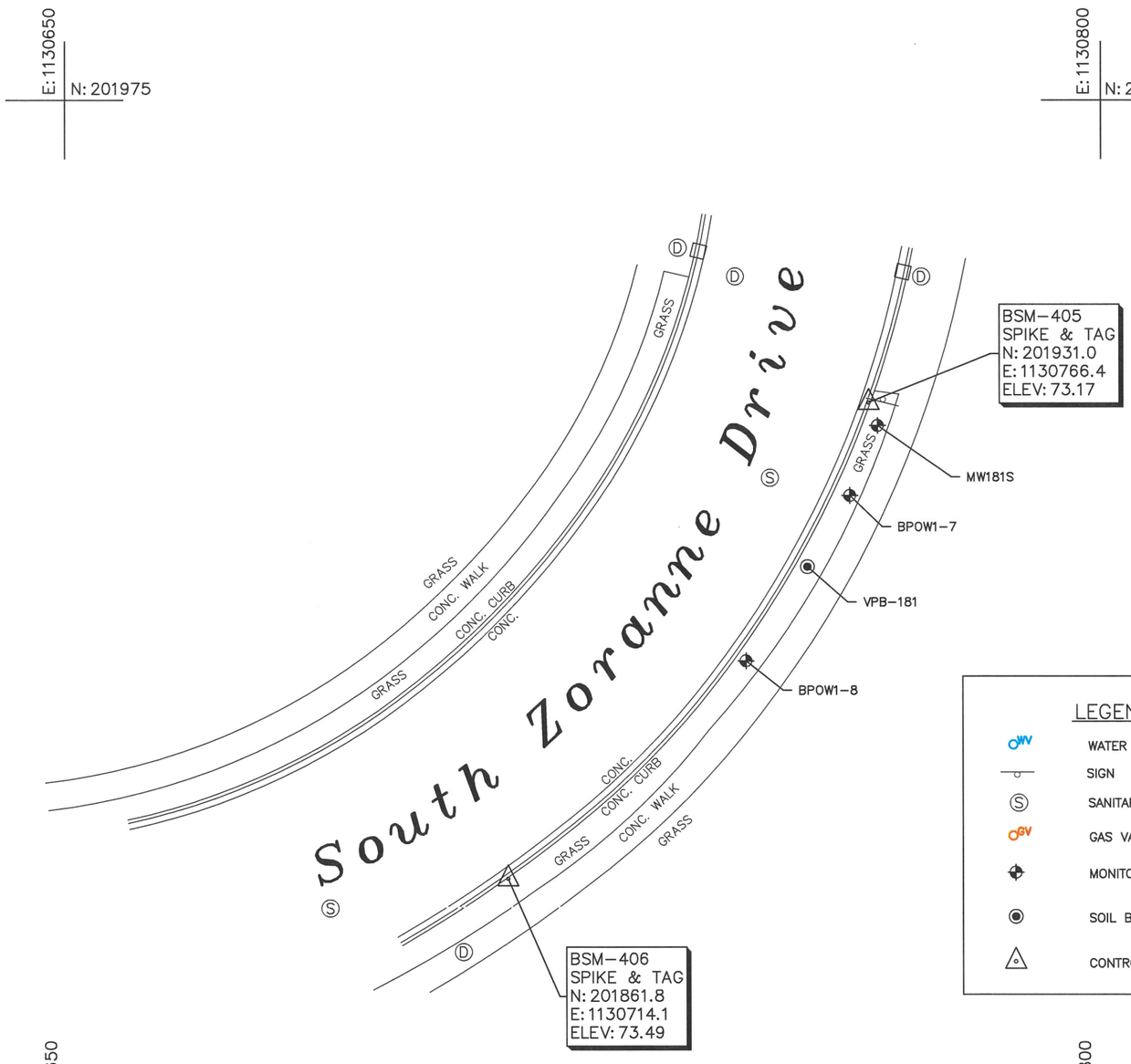

0 10 20 40

SCALE: 1"=20'

NORTH
NAD83 NYLISPCS

NOTES:

1. THE HORIZONTAL DATUM IS THE NEW YORK, LONG ISLAND STATE PLANE COORDINATE SYSTEM (NAD83) VERIFIED BY DIFFERENTIAL GPS OBSERVATIONS UTILIZING THE NGS CORS SYSTEM ON MARCH 18, 2021. REFERENCE STATIONS: NYBR, NYCI, NYRH AND RVDI

2. THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) GEOID12A, VERIFIED BY DIFFERENTIAL GPS OBSERVATIONS FROM THE NGS CORS SYSTEM ON DECEMBER 17, 2019. BENCHMARK REFERENCE STATIONS: NYBR (ORTHOMETRIC HEIGHT= 42.156'), NYCI (ORTHOMETRIC HEIGHT= 56.453'), NYVH (ORTHOMETRIC HEIGHT= 309.251') AND SHK6 (ORTHOMETRIC HEIGHT= 30.141').

3. THIS BASE MAP DEPICTS LIMITED PHYSICAL IMPROVEMENTS AS THEY EXISTED ON MARCH 18, 2021, IN THE AREA OF THE EXISTING GROUNDWATER MONITORING WELLS. NO ATTEMPT HAS BEEN MADE TO DETERMINE THE LOCATION OF PROPERTY LINES, EASEMENTS OR RIGHT–OF–WAY LINES.

4. ALL COORDINATES AND ELEVATIONS SHOWN HEREON ARE IN U.S. SURVEY FEET.

5. THE UTILITIES SHOWN HAVE BEEN LOCATED FROM EVIDENCE OBSERVED ON THE SURFACE ONLY. THE SURVEYOR MAKES NO GUARANTEES THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN–SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

DESCRIPTION	GROUND ELEVATION	OUTER CASING ELEVATION	INNER CASING ELEVATION	DATE SURVEYED
VPB–181	72.9	–	–	03/19/2021
MW–181S	73.1	73.10	72.75	03/19/2021
BPOW1–7	73.2	73.19	72.83	03/19/2021
BPOW1–8	73.4	73.37	72.91	03/19/2021

LEGEND

- WATER VALVE
- SIGN
- SANITARY SEWER MANHOLE
- GAS VALVE
- MONITORING WELL
- SOIL BORING_VPB–179
- CONTROL POINT

MONITORING WELL LOCATION MAP – VPB 181
FMR. NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
SOUTH ZORANNE DRIVE
BETHPAGE, NASSAU COUNTY, NEW YORK

BORBAS SURVEYING & MAPPING, LLC
402 MAIN STREET, BOONTON, NEW JERSEY 07005
Phone (973) 316–8743 www.borbas.com
A NEW YORK FOREIGN SERVICE CORPORATION
Environmental Site Mapping o Hazardous Materials and Waste Surveys
Aerial Control and GPS Surveys o Topographic and Existing Condition Surveys
Remote Sensing and GIS o Hydrographic/Bathymetric Surveys o ALTA/NSPS Certified Surveys
Transportation and Right of Way Surveys o Deformation and Structure Monitoring Surveys

		SCALE: 1"=20'
		SHEET NO.: 1 OF 1
		FIELD BOOK: 2021–1/45
		JOB NO.: 191103
MAY 11, 2021	ORIGINAL ISSUE	PROJECT NAME: 191103
ADDITIONS AND UPDATES		DRAWING NO.: 191103_2021–05–11_WELLS

JOHN D. BEATTIE
NY PROFESSIONAL LAND SURVEYOR 050958–1

Date: MAY 11, 2021

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