TETRA TECH

NOR-02708

June 18, 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 VPB179 and Monitoring Wells
TT-MW179D, TT-MW179D1, and TT-MW179D2
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 VPB179 and Monitoring Wells TT-MW179D, TT-MW179D1, and TT-MW179D2, NWIRP Bethpage* to the New York State Department of Environmental Conservation (NYSDEC) for information. This report provides documentation for the installation of the subject vertical profile boring and associated groundwater monitoring wells. The Navy is issuing this document as a final. If no comments are received by July 19, 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 VPB179 and Monitoring Wells
TT-MW179D, TT-MW179D1, and TT-MW179D2
NWIRP Bethpage, New York

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Naval Facilities Engineering Systems Command
Norfolk, Virginia

**Final**

# 2020 Operable Unit 2 Groundwater Investigation Data Summary Report

## VPB179 and Monitoring Wells TT-MW179D, TT-MW179D1, and TT-MW179D2

Naval Weapons Industrial Reserve Plant
Bethpage, New York

June 2021

**Approved for public release; distribution is unlimited.**

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**FINAL**

# 2020 OPERABLE UNIT 2 GROUNDWATER INVESTIGATION DATA SUMMARY REPORT

## VPB179 AND MONITORING WELLS TT-MW179D, TT-MW179D1, AND TT-MW179D2

## 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**
**9324 Virginia Avenue**
**Norfolk, VA 23511-3095**

**Submitted by:**
**Tetra Tech**
**5700 Lake Wright Drive, Suite 102**
**Norfolk, Virginia 23502**

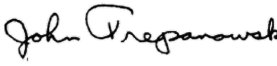
**CONTRACT NUMBER N62470D9008**
**CONTRACT TASK ORDER WE13**

**JUNE 2021**


**PREPARED UNDER THE DIRECTION OF:**

**ERNIE WU**
**PROJECT MANAGER**
**TETRA TECH**
**NORFOLK, VIRGINIA**

**APPROVED FOR SUBMISSION BY:**



**STEVEN H. RUFFING, P.E.**
**PROGRAM MANAGER**
**TETRA TECH, INC.**
**NORFOLK, VIRGINIA**

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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 VPB179 and Monitoring Wells TT-MW179D, TT-MW179D1, and TT-MW179D2, 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 Varricchio

Date: 6/17/2021

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Appendix C Survey Data Report

# 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 |
| 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 | Nephelometric 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 |
| 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 VPB179 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 VPB179 and three associated monitoring wells (TT-MW179D, TT-MW179D1, and TT-MW179D2). 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. The VPB and MW locations are shown in Figure 2. VPB179 was completed to 848 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 VPB179 and Appendix B contains the summary packet for the associated wells TT-MW179D and TT-MW179D1, and TT-MW179D2. 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 VPB179, the bottom of the Magothy (top of the Raritan Clay) is encountered at approximately 820 feet bgs, respectively. 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 VPB179 consisted of drilling, groundwater and soil 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 MW screen intervals at the 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 VPB179 was completed during this field effort between July and August 2020. The total depth of VPB179 was 848 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 location. 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 VPB179. A change in geology was observed by the field geologist at 820 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 VPB179 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 760 ft bgs and 800 ft bgs 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 VPB179 are included in Appendix A.

During drilling, air sampling was conducted under a Community Air Monitoring Plan (CAMP). At each 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 VPB179 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 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 VPB179 are included in Appendix A.

### 2.1.3 Geophysics

At the VPB179 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 VPB179 are included in Appendix A.

## 2.2 Monitoring Well Installation

Three monitoring wells were installed at the site between September 2020 and October 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 237ft bgs to 425 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 VPB179. The borings log for VPB179 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 VPB groundwater grab 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-MW179D and TT-MW179D1, and TT-MW179D2 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 New York State Department of Environmental Conservation (NYSDEC) policy, wells were developed until turbidity was less than 50 nephelometric 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-MW179D and TT-MW179D1, and TT-MW179D2 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 and 1,4-dioxane using Methods SW846-8260B and SW846-8270 SIM, respectively. 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 table for TT-MW179D and TT-MW179D1, and TT-MW179D2 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 were 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 EPA Method 624.1, PCBs via Method 8082A and Total Metals via Method 6010. 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| VPB179 | 7/21/2020 | 8/14/2020 | 119 | 848 | 52 | 3 | 848 | 35 / 39 | 8/6/2020 | TT-MW179D, TT-MW179D1, TT-MW179D2 |

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-MW179D | VPB179 | 10/2/2020 | 118.8 | 253 | 52 | 212 - 232 | 232 - 237 | 253 |
| TT-MW179D1 | | 9/10/2020 | 119.7 | 343 | 52 | 305 - 325 | 325 - 330 | 343 |
| TT-MW179D2 | | 9/22/2020 | 119.4 | 438 | 52 | 400 - 420 | 420 - 425 | 438 |

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-MW179D | VPB179 | 10/12/2020 | 2,496 | 10/15/2020 | 232 | 4,660 | 7,156 | 4.75 |
| TT-MW179D1 | | 10/14/2020 | 4,160 | 10/19/2020 | 325 | 5,731 | 9,891 | 1.03 |
| TT-MW179D2 | | 10/13/2020 | 4,827 | 10/16/2020 | 420 | 5,731 | 10,558 | 1.37 |

GAL - gallon

FT - feet

NTUs - Nephelometric Turbidity Units

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# Figures

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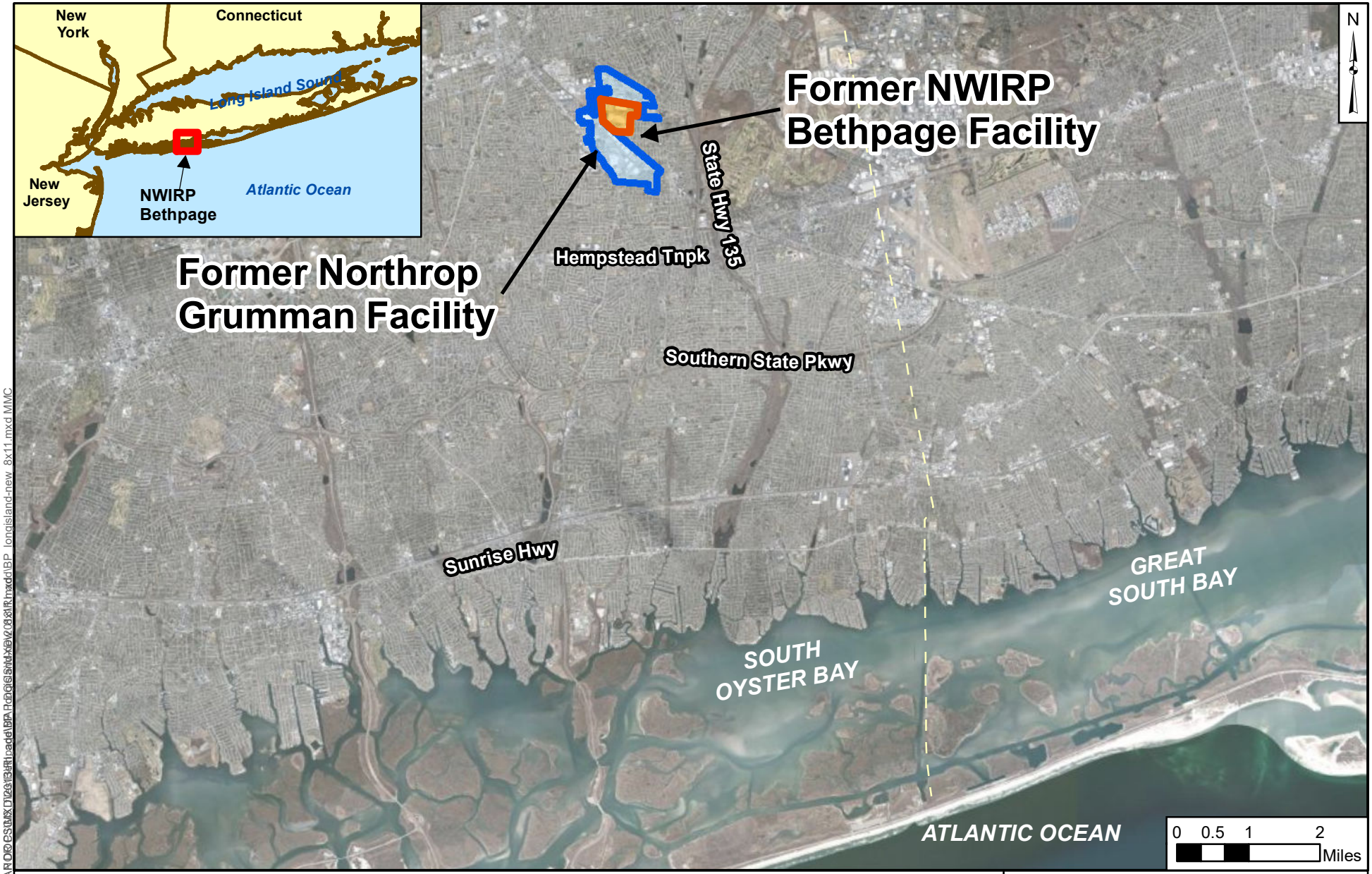


**GENERAL LOCATION MAP**
**NWIRP BETHPAGE, NEW YORK**

NAVFAC Naval Facilities Engineering Systems Command

| DRAWN BY | DATE | CTO |
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| MS | 02/12/21 | 112G08005-WE13 |
| CHECKED BY | DATE | FIGURE NUMBER |
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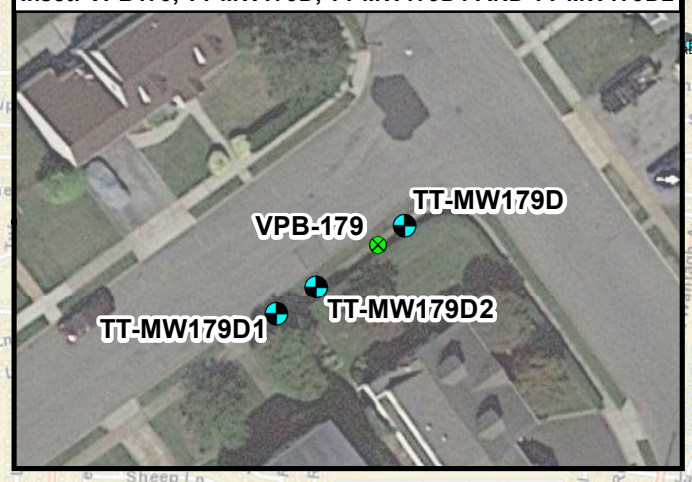
Former Northrop Grumman Facility

Former NWIRP Bethpage Facility

TT-MW179D2
TT-MW179D1
VPB-179
TT-MW179D

Inset: VPB179, TT-MW179D, TT-MW179D1 AND TT-MW179D2




N

RW-21

Bethpage

Plainedge

Levittown

**Legend**

- Monitoring Well
- Vertical Profile Boring
- Water Supply Well

0 1,500 3,000 Feet

**VPB179, TT-MW179D, TT-MW179D1, AND TT-MW179D2 LOCATION MAP**
**2020 OU2 GROUNDWATER INVESTIGATION**
**DATA SUMMARY REPORT VPB179 AND MONITORING WELLS TT-MW179D, TT-MW179D1, AND TT-MW179D2**
**NWIRP BETHPAGE, NEW YORK**

Naval Facilities Engineering Systems Command

| DRAWN BY | DATE | CTO |
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| MC | 06/09/21 | WE13 |
| CHECKED BY | DATE | FIGURE NUMBER |
| EW | 06/09/21 | 2 |

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# Appendices

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## Appendix A

## VPB179

1. **VPB179 Boring and Gamma Log**
2. **VPB179 Gamma and PCE/TCE/Freon-113 Plot**
3. **VPB179 Groundwater Sample Log Sheets**
4. **VPB179 Groundwater Analytical Data Validation**
   - Validation Letter
   - Chain of Custody Records
   - Analytical Data Sheets
5. **VPB179 Groundwater Analytical Data Validation Table**
6. **VPB179 Air Sample Analytical Data Validation**
   - Validation Letter
   - Chain of Custody Records
   - Analytical Data Sheets
7. **VPB179 Air Sample Analytical Data Validated Table**

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## 1. VPB179 Boring and Gamma Log

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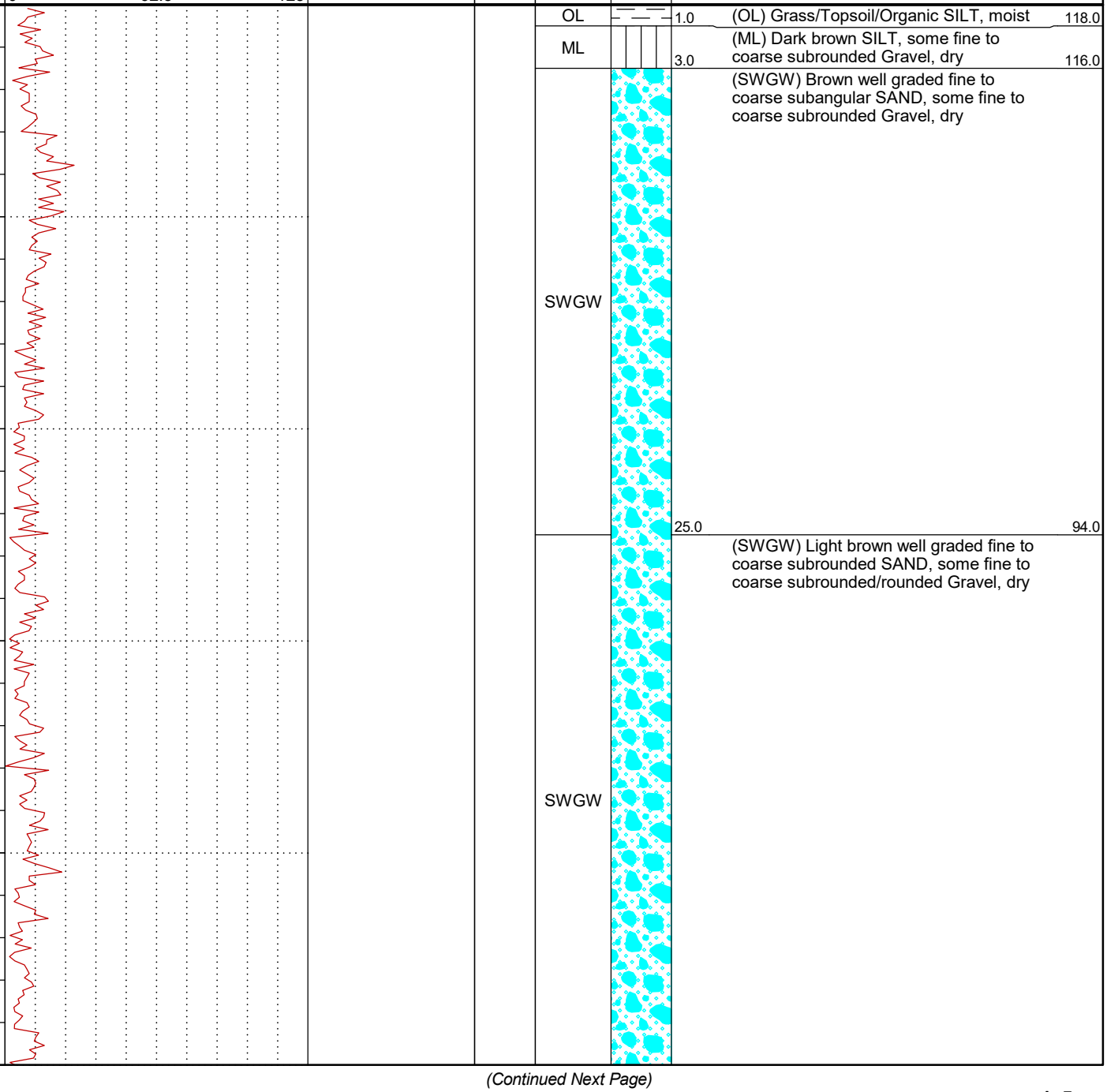
# BORING NUMBER VPB-179



**Tetra Tech**

**CLIENT** NAVFAC MIDLANT
**PROJECT NAME** NWIRP Bethpage OU2
**PROJECT NUMBER** 112G08005-WE13
**PROJECT LOCATION** BETHPAGE
**DATE STARTED** 7/21/20 **COMPLETED** 8/14/20
**TOTAL DEPTH (ft):** 848 **HOLE SIZE** 8.625 inches
**DRILLINGCONTRACTOR** DELTA WELL & PUMP
**LOGGED BY** V Varricchio
**DRILLINGMETHOD** MUD ROTARY
**NORTHING** 213549.6 ft **EASTING** 1120933.2 ft
**GROUND ELEVATION** 119.0 ft NVD 88
**NOTES** hole size 12.25 from 0 to 50 HSA




VPB-GAMMA LOG - GINT STD US.GDT - 6/16/21 10:47 - 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 | | | | SWGW | | (SWGW) Light brown well graded fine to coarse subrounded SAND, some fine to coarse subrounded/rounded Gravel, dry *(continued)* |
| 60 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | | | 65.0 54.0 |
| 70 | | | | SP | | (SP) Brownish yellow poorly graded fine SAND, few well graded fine to coarse subrounded Gravel, wet |
| 80 | | | | SP | | 75.0 44.0 |
| 90 | | | | | | (SP) Brownish yellow poorly graded fine SAND, few well graded fine to coarse subrounded Gravel, trace silt, wet |
| 100 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | SPGP | | 90.0 29.0 |
| | | | | | | (SPGP) Brownish yellow poorly graded fine SAND with well graded fine to coarse subrounded Gravel, trace 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 |
|---|---|---|---|---|---|---|
| 110 | | | | SPGP | | (SPGP) Brownish yellow poorly graded fine SAND with well graded fine to coarse subrounded Gravel, trace silt, wet *(continued)* 110.0 / 9.0 |
| 120 | | | | SPCL | | (SPCL) Brownish yellow poorly graded fine SAND, few lean Clay, wet |
| 130 | | | | | | 135.0 / -16.0 |
| 140 | | | | | | (SWGW) Brownish yellow well graded fine to coarse subangular SAND, some well graded fine to coarse subangular Gravel, wet |
| 150 | | | | SWGW | | |
| 160 | | Freon-113 = 0.1<br>PCE = 0.31<br>TCE = 0.1 | | | | |

VPB-GAMMA LOG - GINT STD US.GDT - 6/16/21 10:47 - 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 |
|---|---|---|---|---|---|---|
| 165.0 | | | | | | -46.0 |
| | | | | GWSW | | (GWSW) Yellowish brown well graded fine to coarse subrounded GRAVEL, few well graded medium to coarse subrounded Sand and iron nodules, wet |
| 185.0 | | | | | | -66.0 |
| | | | | SP | | (SP) Brown poorly graded fine SAND, trace iron nodules, wet |
| 205.0 | | Freon-113 = 0.1<br>PCE = 15.1<br>TCE = 140 | | | | -86.0 |
| | | | | SCCL | | (SCCL) White Sandy lean CLAY, few poorly graded fine subrounded gravel and iron nodules, wet |
| 215.0 | | | | | | -96.0 |
| | | | | SCCL | | (SCCL) Yellowish orange Sandy lean CLAY, few iron nodules, wet |
| 220.0 | | Freon-113 = 0.1 | | | | -101.0 |
| | | | | SPCL | | |

170 180 190 200 210 220

VPB-GAMMA LOG - GINT STD US.GDT - 6/16/21 10:47 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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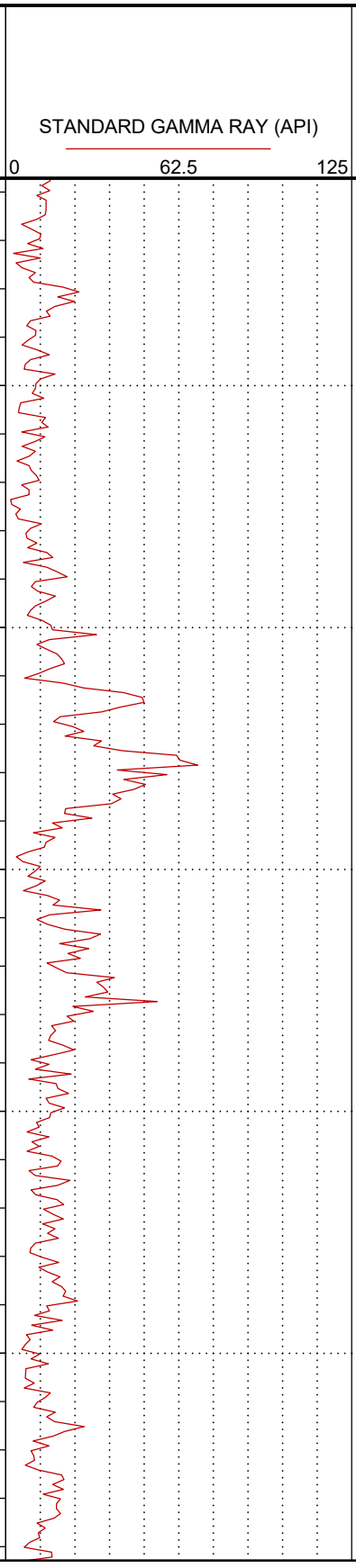
Tetra Tech

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

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




| DEPTH (ft) | ENVIRONMENTAL DATA (µg/L) | FORMATION | U.S.C.S. | GRAPHIC LOG | MATERIAL DESCRIPTION |
|---|---|---|---|---|---|
| 230 | PCE = 17<br>TCE = 76.7 | | SPCL | | (SPCL) Yellowish brown poorly graded fine SAND, trace white lean Clay and iron nodules, wet *(continued)* |
| 240 | Freon-113 = 0.1<br>PCE = 3.2<br>TCE = 24.2 | | | | |
| 250 | | | | | 250.0 -131.0 |
| | | | CLSP | | (CLSP) White Sandy lean CLAY with iron nodules, wet |
| 260 | Freon-113 = 0.1<br>PCE = 14.9<br>TCE = 32.8 | | | | 260.0 -141.0 |
| | | | SP | | (SP) Yellowish brown poorly graded fine SAND, some iron nodules, wet |
| 270 | | | | | |

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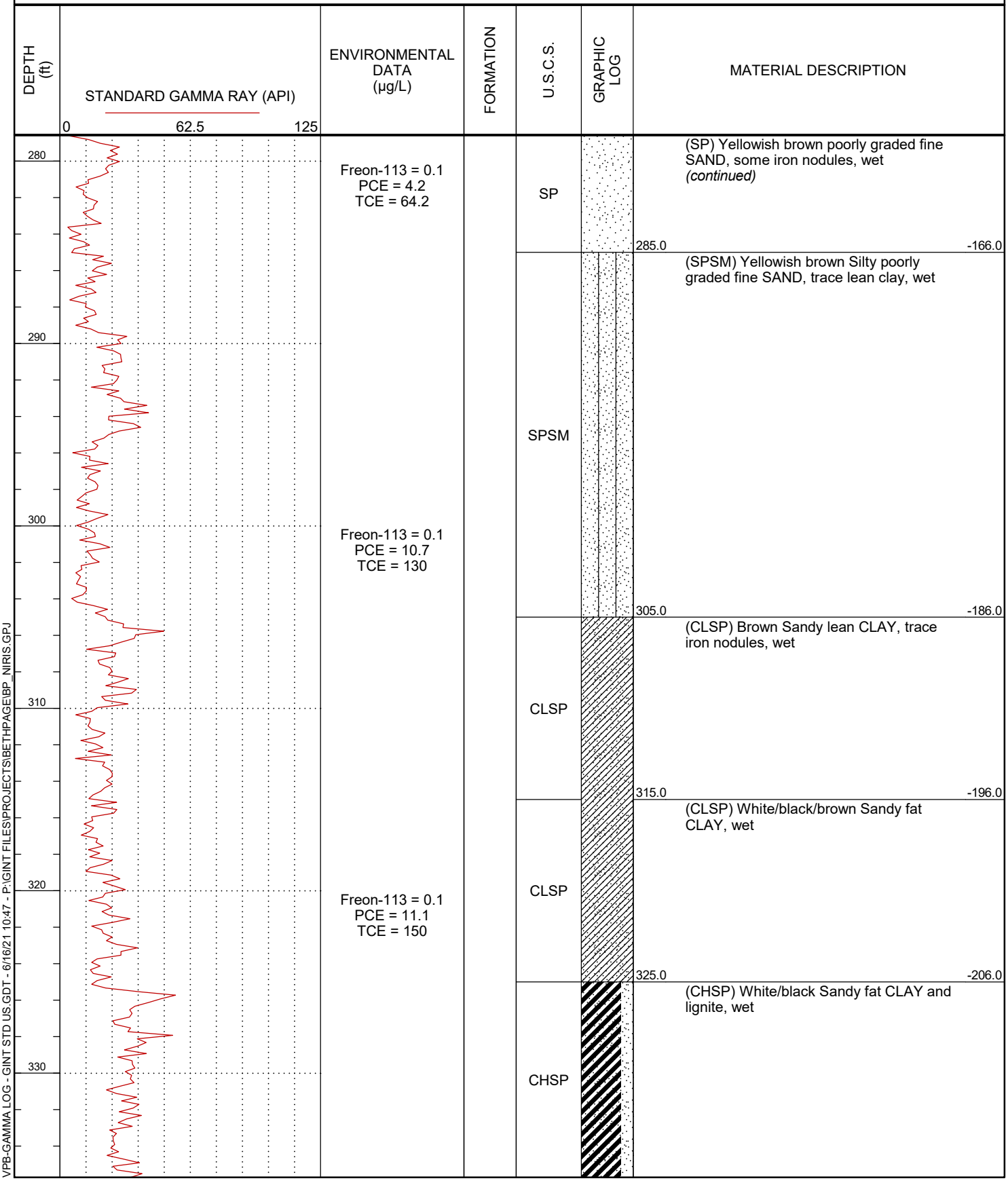
Tetra Tech

**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 |
|---|---|---|---|---|---|---|
| 340 | | Freon-113 = 0.1<br>PCE = 0.26<br>TCE = 1.5 | | CHSP | | (CHSP) White/black Sandy fat CLAY and lignite, wet *(continued)* |
| 350 | | | | | | |
| 360 | | Freon-113 = 0.1<br>PCE = 13.2<br>TCE = 75.5 | | | | |
| 365.0 | | | | | | -246.0 |
| 370 | | | | SPCH | | (SPCH) Light brown poorly graded fine SAND and lignite, few white fat Clay, wet |
| 380 | | Freon-113 = 0.1<br>PCE = 8.1<br>TCE = 67.1 | | | | |
| 380.0 | | | | | | -261.0 |
| 390 | | | | SP | | (SP) Light brown poorly graded fine SAND 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) | STANDARD GAMMA RAY (API) 0 62.5 125 | ENVIRONMENTAL DATA (µg/L) | FORMATION | U.S.C.S. | GRAPHIC LOG | MATERIAL DESCRIPTION |
|---|---|---|---|---|---|---|
| 400 | | Freon-113 = 0.1<br>PCE = 17.9<br>TCE = 280 | | SP | | (SP) Light brown poorly graded fine SAND and lignite, wet *(continued)*<br>400.0 -281.0 |
| 410 | | | | SMML | | (SMML) Brown Silty poorly graded fine SAND, some lignite, wet |
| 420 | | Freon-113 = 0.1<br>PCE = 25<br>TCE = 270 | | | | 425.0 -306.0 |
| 430 | | | | SWCL | | (SWCL) Brown well graded fine to medium subangular SAND, few white lean Clay and lignite, wet |
| 440 | | Freon-113 = 0.1<br>PCE = 0.93<br>TCE = 7.9 | | | | |
| 450 | | | | | | |

VPB-GAMMA LOG - GINT STD US.GDT - 6/16/21 10:47 - 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 |
|---|---|---|---|---|---|---|
| 450 | | | | SWCL | | (SWCL) Brown well graded fine to medium subangular SAND, few white lean Clay and lignite, wet *(continued)* |
| | | | | | | 455.0 -336.0 |
| | | | | CHSM | | (CHSM) White fat CLAY, few silty fine SAND, wet |
| 460 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | | | 460.0 -341.0 |
| | | | | SPCL | | (SPCL) Brown poorly graded fine SAND, few white lean Clay and lignite, wet |
| 470 | | | | | | |
| 480 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | | | |
| 490 | | | | | | 490.0 -371.0 |
| | | | | SWCL | | (SWCL) Brown well graded fine to coarse subangular SAND, some Silt, trace white/dark grey lean clay and lignite, wet |
| 500 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | | | |

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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 |
|---|---|---|---|---|---|---|
| 510 | | | | SWCL | | (SWCL) Brown well graded fine to coarse subangular SAND, some Silt, trace white/dark grey lean clay and lignite, wet *(continued)* |
| 520 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | | | 520.0 -401.0 |
| 530 | | | | SPCL | | (SPCL) Brown poorly graded medium subangular SAND, few white/red lean Clay, wet |
| 540 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | | | 540.0 -421.0 |
| 550 | | | | SWCL | | (SWCL) Brown well graded fine to coarse subangular SAND, little Silt, trace lean clay and iron nodules, wet |
| 560 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | | | |

VPB-GAMMA LOG - GINT STD US.GDT - 6/16/21 10:47 - 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 |
|---|---|---|---|---|---|---|
| 570 | | | | | | (SWCL) Brown well graded fine to coarse subangular SAND, little Silt, trace lean clay and iron nodules, wet *(continued)* |
| 580 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | SWCL | | |
| 590 | | | | | | |
| 600 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | | | 600.0 -481.0 |
| | | | | CLSP | | (CLSP) Brown Sandy lean CLAY, wet |
| | | | | | | 605.0 -486.0 |
| | | | | CLSP | | (CLSP) White Sandy lean CLAY, wet |
| 610 | | | | | | 610.0 -491.0 |
| | | | | GPCH | | (GPCH) Light brown/white poorly graded fine angular GRAVEL, few white fat Clay, wet |
| 620 | | Freon-113 = 0.1 | | | | |

VPB-GAMMA LOG - GINT STD US.GDT - 6/16/21 10:47 - 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 |
|---|---|---|---|---|---|---|
| | | PCE = 0.1<br>TCE = 0.1 | | GPCH | | (GPCH) Light brown/white poorly graded fine angular GRAVEL, few white fat Clay, wet *(continued)* |
| 625.0 | | | | | | -506.0 |
| 630 | | | | GWSW | | (GWSW) Light brown/white well graded fine to coarse angular/subangular GRAVEL, few well graded medium to coarse subangular Sand, wet |
| 640 | | | | | | |
| 645.0 | | | | | | -526.0 |
| | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | GPCH | | (GPCH) Light brown/white Clayey poorly graded fine subangular GRAVEL, few poorly graded coarse subangular sand, wet |
| 650 | | | | | | |
| 660 | | | | | | |
| 660.0 | | | | | | -541.0 |
| | | | | CHGP | | (CHGP) Grey fat CLAY, some poorly graded fine subangular Gravel, feww poorly graded coarse subangular sand, wet |
| 665.0 | | | | | | -546.0 |
| | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | CHSP | | (CHSP) Grey fat CLAY, some poorly graded coarse subangular Sand, few poorly graded fine sub angular gravel |
| 670 | | | | | | |

VPB-GAMMA LOG - GINT STD US.GDT - 6/16/21 10:47 - 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 |
|---|---|---|---|---|---|---|
| 680 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | | | (CHSP) Grey fat CLAY, some poorly graded coarse subangular Sand, few poorly graded fine sub angular gravel *(continued)* |
| 690 | | | | | | |
| 700 | | | | CHSP | | |
| 710 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | | | |
| 720 | | | | | | 720.0 -601.0 |
| | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | CHSP | | (CHSP) Grey fat CLAY, few poorly graded coarse sub angular Sand, little poorly graded fine sub angulr gravel |
| 730 | | | | | | |

VPB-GAMMA LOG - GINT STD US.GDT - 6/16/21 10:47 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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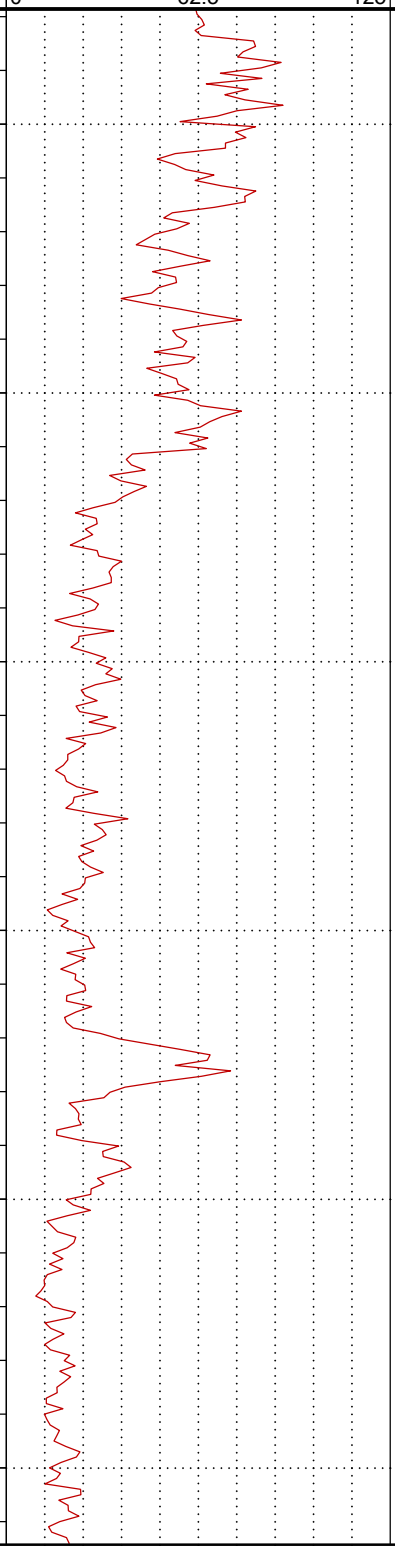
Tetra Tech

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

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




| DEPTH (ft) | ENVIRONMENTAL DATA (µg/L) | FORMATION | U.S.C.S. | GRAPHIC LOG | MATERIAL DESCRIPTION |
|---|---|---|---|---|---|
| | | | CHSP | | (CHSP) Grey fat CLAY, few poorly graded coarse sub angular Sand, little poorly graded fine sub angulr gravel *(continued)* |
| 745.0 | | | | | -626.0 |
| | | | CHSP | | (CHSP) Grey fat CLAY, few poorly graded carse sub angular Sand |
| 755.0 | | | | | -636.0 |
| | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | CHSP | | (CHSP) Grey/brown fat CLAY, few coarse-fine poorly graded sub angular Sand and lignite |
| 770.0 | | | | | -651.0 |
| | | | CHSP | | (CHSP) Grey/brown sandy fat CLAY |
| 785.0 | | | | | -666.0 |
| | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | SWCH | | (SWCH) Light brown/white/black well graded coarse sub angular SAND, little grey fat Clay |

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VPB-GAMMA LOG - GINT STD US.GDT - 6/16/21 10:47 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

# BORING NUMBER VPB-179



**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 |
|---|---|---|---|---|---|---|
| 795.0 | | | | SWCH | | -676.0 |
| 800 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | SWGP | | (SWGP) Light brown/white/black well graded coarse sub angular SAND, little fine poorly graded sub angular Gravel, trace grey fat clay |
| 805.0 | | | | | | -686.0 |
| 810 | | | | SWGP | | (SWGP) Light brown/white/black well graded coarse sub angular SAND, little poorly graded fine sub angular Gravel, trace grey/white fat clay |
| 820.0 | | | | | | -701.0 |
| 820 | | Freon-113 = 0.1<br>PCE = 0.1<br>TCE = 0.1 | | CH | | (CH) Grey/reddish brown mottled fat CLAY, moist |
| 830 | | | | | | |
| 840 | | | | | | |
| 850.0 | | | | | | -731.0 |

Bottom of borehole at 848.0 feet.

VPB-GAMMA LOG - GINT STD US.GDT - 6/16/21 10:47 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

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## 2. VPB179 Gamma and PCE/TCE/Freon-113 Plot

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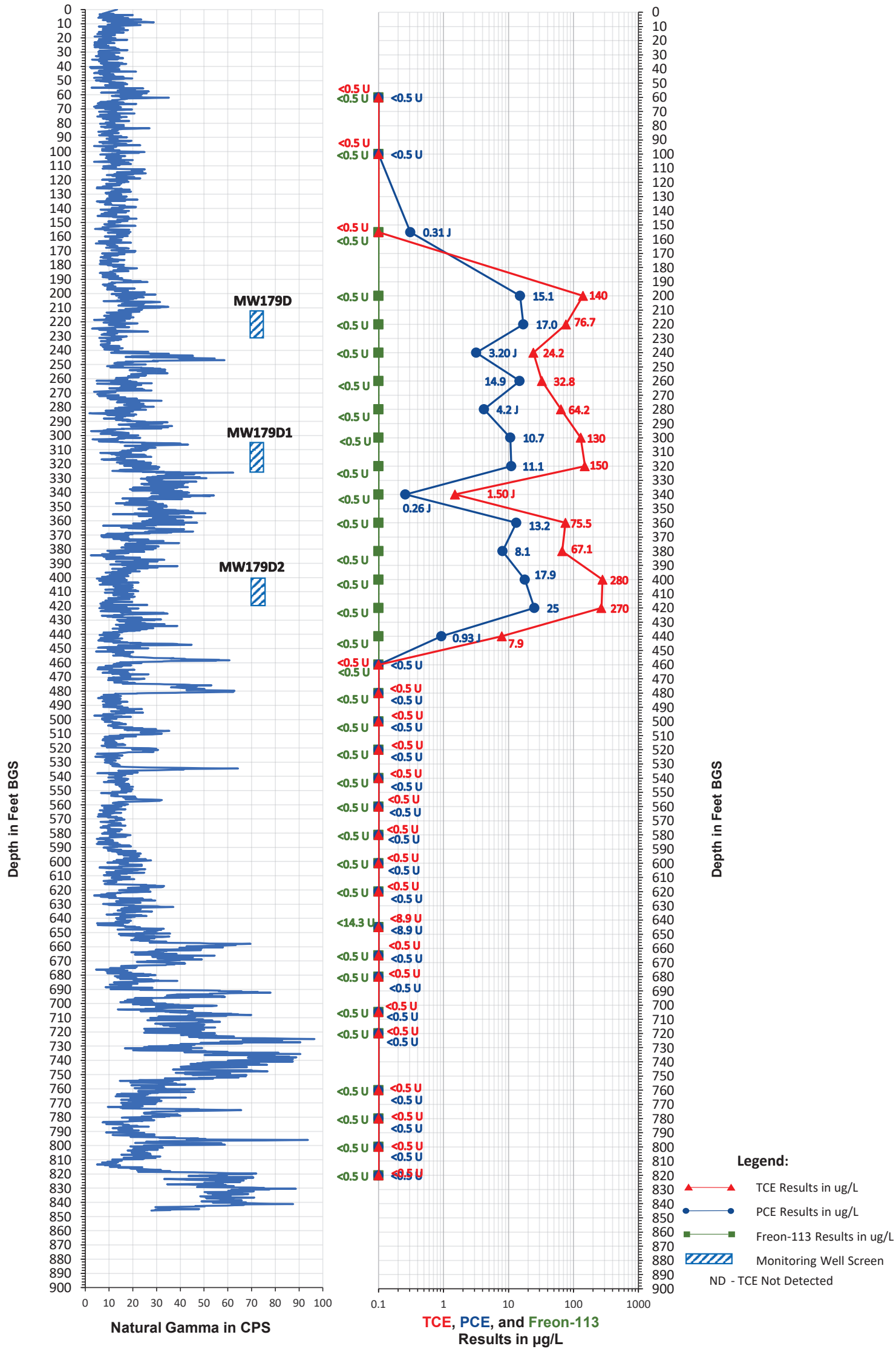
**Vertical Profile Boring VPB-179**
**Downward Run - 8/17/2020**
**Validated Data**



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## 3. VPB179 Groundwater Sample Log Sheets

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# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-58-60 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 07/28/20 |
| **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 | - | - | Brown | 7.25 | 645 | 0.44 | OR | 25.8 | -124.9 | - | |
| | | | | | | | | | | | |
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**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 | 4 | 40 ml | VOA | x |
| | | | | | | |
| | | | | | | |
| | | | | | | |
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| | | | | | | |
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| | | | | | | |
| | | | | | | |

**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-98-100 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 07/28/20 |
| **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 | - | - | Cloudy | 6.2 | 328.1 | 3.78 | 759 | 28.5 | 24.9 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-153-155 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 07/29/20 |
| **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 | - | - | Cloudy | 6.45 | 279.6 | 1.58 | 617 | 25.5 | -8.5 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

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|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-198-200 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 07/29/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 11:45 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:45 | - | - | Slightly Cloud | 6.25 | 320.3 | 3.9 | 195 | 27 | 5.4 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

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|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-218-220 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 07/29/20 |
| **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 | - | - | Slightly Cloud | 6.3 | 322.5 | 3.93 | 356 | 28 | -19 | - | |
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**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
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**ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS**

| Analysis | Method | Preservative | Number | Vol. | Bottle Type | Collected |
|---|---|---|---|---|---|---|
| VOC | SW846-8260B | HCl | 2 | 40 ml | VOA | x |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

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|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-238-240 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 07/29/20 |
| **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 | - | - | Cloudy | 6.43 | 260.3 | 3.84 | 583 | 27.6 | -32.3 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-258-260 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 07/30/20 |
| **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 | - | - | Slightly cloudy | 6.6 | 302.7 | 2.72 | 270 | 24.1 | -14.8 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

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|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-278-280 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | BP-VPB179-DUP-20200730 | **Sample Date:** | 07/30/20 |
| **MS/MSD Collected:** | YES / NO | **Sample Time:** | 11:30 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:30 | - | - | Brown | 6.71 | 233.2 | 0.76 | OR | 24.5 | -70.6 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-298-300 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 07/30/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 13:10 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:10 | - | - | Slightly cloudy | 6.37 | 268 | 2.98 | 245 | 25.7 | -23.4 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-318-320 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 07/31/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 12:30 |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:30 | - | - | Brown | 7.16 | 341.5 | 2.83 | 994 | 22.9 | -5.1 | - | |
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**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
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**ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS**

| Analysis | Method | Preservative | Number | Vol. | Bottle Type | Collected |
|---|---|---|---|---|---|---|
| VOC | SW846-8260B | HCl | 2 | 40 ml | VOA | X |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-338-340 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 07/31/20 |
| **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 | 6.03 | 145.5 | 4.65 | 625 | 23.6 | 67.9 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-358-360 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/03/20 |
| **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 | - | - | Cloudy | 6.44 | 217.2 | 3.62 | 582 | 23 | 35.6 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-378-380 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/03/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 11:20 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:20 | - | - | Slightly cloudy | 6.31 | 194.5 | 5.3 | 259 | 24.6 | 24 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-398-400 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/03/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 13:00 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:00 | - | - | Slightly cloudy | 6.15 | 181.1 | 5.5 | 232 | 25.5 | 38.2 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-418-420 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/03/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 14:40 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14:40 | - | - | Slightly cloudy | 6.26 | 224.3 | 5.19 | 274 | 25.1 | 45.3 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-438-440 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/04/20 |
| **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 | - | - | Slightly cloudy | 6.71 | 220 | 3.4 | 415 | 22.5 | -24.4 | - | |
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**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 |
| | | | | | | |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-458-460 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/04/20 |
| **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 | - | - | Clear | 6.29 | 173.7 | 5.32 | 151 | 22.4 | 42.2 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-478-480 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/05/20 |
| **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 | - | - | Brown | NOT ENOUGH RECOVERY FOR WQ PARAMETERS | | | | | | | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

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|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-498-500 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | BP-VPB179-DUP-20200805 | **Sample Date:** | 08/05/20 |
| **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 | - | - | Cloudy | 6.38 | 151.5 | 4.91 | 628 | 23.4 | 40.8 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
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| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-518-520 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/05/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 13:40 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:40 | - | - | Slightly cloudy | 6.36 | 163.5 | 5.93 | 235 | 24.7 | 29.3 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-538-540 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/06/20 |
| **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 | - | - | Slightly cloudy | 6.84 | 234.3 | 3.79 | 220 | 20.4 | 12.7 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-558-560 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/06/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 11:40 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:40 | - | - | Slightly cloudy | 7.06 | 252 | 3.49 | 286 | 20.6 | -34.2 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-578-580 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/06/20 |
| **MS/MSD Collected:** | YES / NO | **Sample Time:** | 13:30 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:30 | - | - | Brown | 6.95 | 267 | 3.97 | 596 | 21.4 | -4 | - | |
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**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 |
| | | | | | | |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-598-600 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/07/20 |
| **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 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:30 | - | - | Dark brown | NOT ENOUGH RECOVERY FOR WQ PARAMETERS | | | | | | | |
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**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 |
| | | | | | | |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-618-620 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/07/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 11:30 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:30 | - | - | Dark brown | NOT ENOUGH RECOVERY FOR WQ PARAMETERS | | | | | | | |
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**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 | 4 | 40 ml | VOA | X |
| | | | | | | |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-643-645 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/10/20 |
| **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 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:55 | - | - | Dark brown | NOT ENOUGH RECOVERY FOR WQ PARAMETERS | | | | | | | |
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**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 | 4 | 40 ml | VOA | X |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-663-665 | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/10/20 |
| **MS/MSD Collected:** | YES / NO | **Sample Time:** | 13:45 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:45 | - | - | Dark brown | NOT ENOUGH RECOVERY FOR WQ PARAMETERS | | | | | | | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
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| | | | *Vincent Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-678-680 | **Sampled By:** | D. Albanese |
| **QA/QC Duplicate ID:** | BP-VPB179-DUP-20200811 | **Sample Date:** | 08/11/20 |
| **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 | 6.39 | 66.1 | 6.14 | 94.3 | 23.8 | 72.8 | | |
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**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 | 4 | 40 ml | VOA | X |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
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| | | | *Daniel Albanese* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-698-700 | **Sampled By:** | D. Albanese |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/11/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 11:50 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:50 | - | - | Dark brown | NOT ENOUGH RECOVERY FOR WQ PARAMETERS | | | | | | | |
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**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 | no |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Daniel Albanese* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-703-705 | **Sampled By:** | D. Albanese |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/11/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 13:35 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:35 | - | - | Lt. Brown | 6.43 | 77 | 7.13 | 238 | 25.3 | 66.9 | | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Daniel Albanese* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-678-680 | **Sampled By:** | D. Albanese |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/11/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 15:35 |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15:35 | - | - | lt. Brown | 6.85 | 280.6 | 4.22 | 286 | 24.8 | 0.4 | | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Daniel Albanese* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-738-740 | **Sampled By:** | D. Albanese |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/12/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 10:07 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10:07 | - | - | Dark brown | NOT ENOUGH RECOVERY FOR WQ PARAMETERS | | | | | | | |
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**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 |
| | | | | | | |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Daniel Albanese* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-758-760 | **Sampled By:** | D. Albanese |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/12/20 |
| **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 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:25 | - | - | Brown | 6.55 | 88.1 | 4.01 | 628 | 21.5 | 1.4 | | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Daniel Albanese* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-778-780 | **Sampled By:** | D. Albanese |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/13/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 10:15 |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10:15 | - | - | Dark Brown | 6.78 | 124.3 | 4.54 | OR | 22.3 | 15 | | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Daniel Albanese* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** VPB-179 Hydropunch
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-798-800 | **Sampled By:** | D. Albanese |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/13/20 |
| **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 | - | - | Dark Brown | NOT ENOUGH RECOVERY FOR WQ PARAMETERS | | | | | | | |
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**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 |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Daniel Albanese* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | VPB-179 Hydropunch |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-VPB179-GW-818-820 | **Sampled By:** | D. Albanese |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 08/13/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 14:20 |
| **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14:20 | - | - | Dark Brown | 6.36 | 82.1 | 5.35 | OR | 22.2 | 21.1 | | |
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**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 |
| | | | | | | |
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**OBSERVATIONS / NOTES:**

OR - Over Range

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Daniel Albanese* |

## 4. VPB179 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 MATRIX: | Groundwater |
| TYPES OF ANALYSES: | Volatile Organic Compounds (VOC) |
| DATA VALIDATION DATE: | September 21, 2020 |
| DATA REVIEWER(S): | Amy L. Hogan |
| SDG NUMBER: | L3526 |
| SAMPLING DATE(S): | July 28-30, 2020 |

SAMPLES:

| Client Sample ID | Laboratory ID | VOC |
|---|---|---|
| BP-VPB179-TB-20200728 | L3526-01 | X |
| BP-VPB179-GW-58-60 | L3526-02 | X |
| BP-VPB179-GW-98-100 | L3526-03 | X |
| BP-VPB179-GW-153-155 | L3526-04 | X |
| BP-VPB179-GW-198-200 | L3526-05 | X |
| BP-VPB179-EB-20200729 | L3526-06 | X |
| BP-VPB179-GW-218-220 | L3526-07 | X |
| BP-VPB179-GW-238-240 | L3526-08 | X |
| BP-VPB179-GW-258-260 | L3526-09 | X |
| BP-VPB179-GW-278-280 | L3526-10 | X |
| BP-VPB179-DUP-20200730 | L3526-11 | X |
| BP-VPB179-GW-298-300 | L3526-12 | 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: L3526 – 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:

Acetone (10.4 ug/L) and toluene (2.8 ug/L) were detected in associated equipment blank BP-VPB179-EB-20200729. Since the blank results were less than the LOQ, 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-VPB179-TB-20200728. 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 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-VPB179-GW-278-280 / BP-VPB179-DUP-20200730) was identified as part of this SDG. The calculable Relative Percent Differences (RPDs) for cis-1,2-dichloroethene (25%) and trichloroethene (18%) were within the QC limit and the calculable differences for 1,1-dichloroethene, acetone, MTBE and tetrachloroethene were all 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.

# Appendix A

## Data Qualification Summary Table (DQST) with Qualification Codes

## DATA QUALIFICATION SUMMARY TABLE (DQST) WITH QUALIFICATION CODES

| Client Sample ID | Lab Sample ID | Date Collected | Analyte | Lab Qual | Val Result | Val Qual | Val Reason |
|---|---|---|---|---|---|---|---|
| N/A | N/A | N/A | N/A | No qualifications were made | | | |

# Appendix B

## Laboratory Sample Results

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/28/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-TB-20200728 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-01 | 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 |
|---|---|---|---|---|
| VX017700.D | 1 | | 07/31/20 14:44 | VX073120 |

| 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: | 07/28/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-TB-20200728 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-01 | 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 |
|---|---|---|---|---|
| VX017700.D | 1 | | 07/31/20 14:44 | VX073120 |

| 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 | 53.5 | | 80 - 119 | | 107% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.4 | | 89 - 112 | | 97% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 53.2 | | 85 - 114 | | 106% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 455000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 734000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 775000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 417000 | 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: | 07/28/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-58-60 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-02 | 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 |
|---|---|---|---|---|
| VX017745.D | 1 | | 08/03/20 15:00 | VX080320 |

| 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 | 22.3 | 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 | 6.60 | 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 | 1.90 | 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 | 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 | 7.20 | | 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 | 2.20 | J | 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: | 07/28/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-58-60 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-02 | 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 |
|---|---|---|---|---|
| VX017745.D | 1 | | 08/03/20 15:00 | VX080320 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 0.76 | J | 0.12 | 0.50 | 5.00 | ug/L |
| 100-41-4 | Ethyl Benzene | 1.60 | J | 0.12 | 0.50 | 5.00 | ug/L |
| 179601-23-1 | m/p-Xylenes | 4.00 | J | 0.25 | 1.00 | 10.0 | ug/L |
| 95-47-6 | o-Xylene | 2.90 | 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 | 0.21 | J | 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 | 50.5 | | 81 - 118 | | 101% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 47.9 | | 80 - 119 | | 96% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 46.4 | | 89 - 112 | | 93% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 45.7 | | 85 - 114 | | 91% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 612000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 930000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 795000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 398000 | 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: | 07/28/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-98-100 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-03 | 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 |
|---|---|---|---|---|
| VX017703.D | 1 | | 07/31/20 15:52 | VX073120 |

| 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 | 14.3 | 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 | 3.40 | 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 | 0.88 | 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 | 0.78 | 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 | 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 | 11.9 | | 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: | 07/28/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-98-100 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-03 | 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 |
|---|---|---|---|---|
| VX017703.D | 1 | | 07/31/20 15:52 | VX073120 |

| 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 | 2.10 | J | 0.12 | 0.50 | 5.00 | ug/L |
| 179601-23-1 | m/p-Xylenes | 7.10 | J | 0.25 | 1.00 | 10.0 | ug/L |
| 95-47-6 | o-Xylene | 4.30 | 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 | 57.4 | | 81 - 118 | | 115% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.7 | | 80 - 119 | | 101% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.5 | | 89 - 112 | | 97% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 56.7 | | 85 - 114 | | 113% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 449000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 779000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 794000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 438000 | 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: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-153-155 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-04 | 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 |
|---|---|---|---|---|
| VX017746.D | 1 | | 08/03/20 15:23 | VX080320 |

| 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 | 45.2 | | 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 | 9.80 | 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 | 0.68 | 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 | 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 | 5.70 | | 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 | 1.10 | J | 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 | 0.31 | J | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-153-155 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-04 | 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 |
|---|---|---|---|---|
| VX017746.D | 1 | | 08/03/20 15:23 | VX080320 |

| 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 | 1.70 | J | 0.12 | 0.50 | 5.00 | ug/L |
| 179601-23-1 | m/p-Xylenes | 5.80 | J | 0.25 | 1.00 | 10.0 | ug/L |
| 95-47-6 | o-Xylene | 3.20 | 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 | 0.27 | J | 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 | 49.6 | | 81 - 118 | | 99% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.8 | | 80 - 119 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.0 | | 89 - 112 | | 98% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 45.8 | | 85 - 114 | | 92% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 623000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 929000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 833000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 405000 | 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: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-198-200 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-05 | 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 |
|---|---|---|---|---|
| VX017705.D | 1 | | 07/31/20 16:38 | VX073120 |

| 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 | 6.80 | 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 | 49.0 | | 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 | 140 | | 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 | 0.31 | 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 | 15.1 | | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-198-200 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-05 | 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 |
|---|---|---|---|---|
| VX017705.D | 1 | | 07/31/20 16:38 | VX073120 |

| 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 | 0.27 | J | 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 | 54.0 | | 81 - 118 | | 108% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.4 | | 80 - 119 | | 101% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 51.0 | | 89 - 112 | | 102% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 57.2 | | 85 - 114 | | 114% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 479000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 822000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 878000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 482000 | 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: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-EB-20200729 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-06 | 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 |
|---|---|---|---|---|
| VX017701.D | 1 | | 07/31/20 15:07 | VX073120 |

| 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 | 10.4 | 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: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-EB-20200729 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-06 | 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 |
|---|---|---|---|---|
| VX017701.D | 1 | | 07/31/20 15:07 | VX073120 |

| 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 | 55.5 | | 81 - 118 | | 111% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.4 | | 80 - 119 | | 103% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 50.5 | | 89 - 112 | | 101% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 50.0 | | 85 - 114 | | 100% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 456000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 779000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 752000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 405000 | 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: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-218-220 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-07 | 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 |
|---|---|---|---|---|
| VX017747.D | 1 | | 08/03/20 15:46 | VX080320 |

| 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 | 5.50 | 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 | 17.8 | | 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 | 76.7 | | 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 | 17.0 | | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-218-220 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-07 | 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 |
|---|---|---|---|---|
| VX017747.D | 1 | | 08/03/20 15:46 | VX080320 |

| 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 | 49.2 | | 81 - 118 | | 98% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 48.7 | | 80 - 119 | | 97% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.1 | | 89 - 112 | | 96% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 44.7 | | 85 - 114 | | 89% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 592000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 875000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 781000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 390000 | 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: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-238-240 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-08 | 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 |
|---|---|---|---|---|
| VX017707.D | 1 | | 07/31/20 17:24 | VX073120 |

| 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 | 8.30 | 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 | 0.97 | 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 | 10.1 | | 0.24 | 0.50 | 5.00 | ug/L |
| 67-66-3 | Chloroform | 0.52 | 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 | 24.2 | | 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 | 3.20 | J | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-238-240 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-08 | 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 |
|---|---|---|---|---|
| VX017707.D | 1 | | 07/31/20 17:24 | VX073120 |

| 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 | 54.3 | | 81 - 118 | | 109% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 53.0 | | 80 - 119 | | 106% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 47.5 | | 89 - 112 | | 95% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 54.8 | | 85 - 114 | | 110% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 473000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 778000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 778000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 429000 | 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: | 07/30/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-258-260 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-09 | 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 |
|---|---|---|---|---|
| VX017748.D | 1 | | 08/03/20 16:09 | VX080320 |

| 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 | 18.9 | 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 | 0.55 | 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 | 4.00 | 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 | 5.80 | | 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 | 32.8 | | 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 | 0.35 | 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 | 14.9 | | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/30/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-258-260 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-09 | 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 |
|---|---|---|---|---|
| VX017748.D | 1 | | 08/03/20 16:09 | VX080320 |

| 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 | 0.38 | J | 0.25 | 1.00 | 10.0 | ug/L |
| 95-47-6 | o-Xylene | 0.21 | 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 | 49.7 | | 81 - 118 | | 99% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.6 | | 80 - 119 | | 101% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.7 | | 89 - 112 | | 99% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 45.7 | | 85 - 114 | | 91% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 601000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 890000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 833000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 407000 | 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: | 07/30/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-278-280 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-10 | 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 |
|---|---|---|---|---|
| VX017749.D | 1 | | 08/03/20 16:32 | VX080320 |

| 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 | 0.82 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 6.30 | 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 | 1.20 | 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 | 0.43 | 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 | 8.30 | | 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 | 53.5 | | 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 | 4.10 | J | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/30/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-278-280 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-10 | 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 |
|---|---|---|---|---|
| VX017749.D | 1 | | 08/03/20 16:32 | VX080320 |

| 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 | 49.9 | | 81 - 118 | | 100% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.4 | | 80 - 119 | | 101% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.0 | | 89 - 112 | | 96% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 46.1 | | 85 - 114 | | 92% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 606000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 898000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 821000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 406000 | 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: | 07/30/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-DUP-20200730 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-11 | 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 |
|---|---|---|---|---|
| VX017710.D | 1 | | 07/31/20 18:32 | VX073120 |

| 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 | 1.20 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 7.00 | 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 | 1.50 | 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 | 10.7 | | 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 | 64.2 | | 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 | 4.20 | J | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/30/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-DUP-20200730 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-11 | 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 |
|---|---|---|---|---|
| VX017710.D | 1 | | 07/31/20 18:32 | VX073120 |

| 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 | 53.9 | | 81 - 118 | | 108% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 48.5 | | 80 - 119 | | 97% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 51.8 | | 89 - 112 | | 104% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 52.4 | | 85 - 114 | | 105% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 452000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 785000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 840000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 416000 | 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: | 07/30/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-298-300 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-12 | 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 |
|---|---|---|---|---|
| VX017750.D | 1 | | 08/03/20 16:54 | VX080320 |

| 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 | 4.20 | 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 | 0.21 | 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 | 13.6 | | 0.24 | 0.50 | 5.00 | ug/L |
| 67-66-3 | Chloroform | 0.32 | 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 | 130 | | 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 | 10.7 | | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/30/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-GW-298-300 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-12 | 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 |
|---|---|---|---|---|
| VX017750.D | 1 | | 08/03/20 16:54 | VX080320 |

| 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 | 50.5 | | 81 - 118 | | 101% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.7 | | 80 - 119 | | 101% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 47.3 | | 89 - 112 | | 95% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 44.8 | | 85 - 114 | | 90% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 592000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 874000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 790000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 408000 | 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

### A. Documents Supporting Qualifications

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-EB-20200729 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-06 | 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 |
|---|---|---|---|---|
| VX017701.D | 1 | | 07/31/20 15:07 | VX073120 |

| 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 | 10.4 | 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: | 07/29/20 |
| Project: | CTO WE13 | Date Received: | 07/31/20 |
| Client Sample ID: | BP-VPB179-EB-20200729 | SDG No.: | L3526 |
| Lab Sample ID: | L3526-06 | 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 |
|---|---|---|---|---|
| VX017701.D | 1 | | 07/31/20 15:07 | VX073120 |

| 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 | 55.5 | | 81 - 118 | | 111% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.4 | | 80 - 119 | | 103% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 50.5 | | 89 - 112 | | 101% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 50.0 | | 85 - 114 | | 100% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 456000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 779000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 752000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 405000 | 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)

**CHEMTECH**
CHAIN OF CUSTODY RECORD

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

Chemtech Project Number: L3526

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-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

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

## 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-VPB179-TB-20200728 | QA | | X | 7/28/20 | 9:00 | 2 | Trip Blank |
| 2. | BP-VPB179-GW-58-60 | AQ | | X | 7/28/20 | 10:00 | 4 | Very turbid |
| 3. | BP-VPB179-GW-98-100 | AQ | | X | 7/28/20 | 12:00 | 2 | |
| 4. | BP-VPB179-GW-153-155 | AQ | | X | 7/29/20 | 9:40 | 2 | |
| 5. | BP-VPB179-GW-198-200 | AQ | | X | 7/29/20 | 11:45 | 2 | |
| 6. | BP-VPB179-EB-20200729 | QA | | X | 7/29/20 | 12:45 | 2 | Equipment Blank |
| 7. | BP-VPB179-GW-218-220 | AQ | | X | 7/29/20 | 13:20 | 2 | |
| 8. | BP-VPB179-GW-238-240 | AQ | | X | 7/29/20 | 15:00 | 2 | |
| 9. | BP-VPB179-GW-258-260 | AQ | | X | 7/30/20 | 10:00 | 2 | |
| 10. | BP-VPB179-GW-278-280 | AQ | | X | 7/30/20 | 11:30 | 2 | |

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

| | DATE/TIME | | |
|---|---|---|---|
| 1. RELINQUISHED BY SAMPLER | 7/30/20/1500 | 1. RECEIVED BY | |
| 2. RELINQUISHED BY | DATE/TIME 9:15 7.31.20 | 2. RECEIVED BY | |
| 3. RELINQUISHED BY | DATE/TIME | 3. RECEIVED FOR LAB BY | |

**Conditions of bottles or coolers at receipt:** ☒ Compliant ☐ Non Compliant ☐ Cooler Temp 2.3 °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

IK-Cert #1

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: L3526

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-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
- ☐ 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) | | | | | | | | | |

## 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-VPB179-DUP-20200730 | QA | | X | 7/30/20 | - | 2 |
| 2. | BP-VPB179-GW-298-300 | AQ | | X | 7/30/20 | 13:10 | 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. | 7/30/20 1700 | 1. |
| RELINQUISHED BY | DATE/TIME | RECEIVED BY |
| 2. | 9:55 7-31-20 | 2. |
| RELINQUISHED BY | DATE/TIME | RECEIVED FOR LAB BY |
| 3. | | 3. |

Conditions of bottles or coolers at receipt: ☑ Compliant ☐ Non Compliant ☐ Cooler Temp 2.3
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 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

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 # cis-1,2-dichloroethene for BP-VPB179-GW-198-200

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

Calc. Concentration = 49

| AREA c | AREA st | CONC istd | RRF | Vf | Vi | DL | UnitF |
|---|---|---|---|---|---|---|---|
| 281637 | 478510 | 50 | 0.601 | 5000 | 5000 | 1 | 1 |

Reported Concentration = 49

**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 MATRIX: | Groundwater |
| TYPES OF ANALYSES: | Volatile Organic Compounds (VOC) |
| DATA VALIDATION DATE: | September 21, 2020 |
| DATA REVIEWER(S): | Amy L. Hogan |
| SDG NUMBER: | L3556 |
| SAMPLING DATE(S): | July 31 – August 1, 2020 |

SAMPLES:

| Client Sample ID | Laboratory ID | VOC |
|---|---|---|
| BP-VPB179-TB-20200731 | L3556-01 | X |
| BP-VPB179-GW-318-320 | L3556-02 | X |
| BP-VPB179-GW-338-340 | L3556-03 | X |
| BP-VPB179-GW-358-360 | L3556-04 | X |
| BP-VPB179-GW-378-380 | L3556-05 | X |
| BP-VPB179-GW-398-400 | L3556-06 | X |
| BP-VPB179-GW-398-400DL | L3556-06DL | X |
| BP-VPB179-GW-418-420 | L3556-07 | X |
| BP-VPB179-GW-418-420DL | L3556-07DL | 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: L3556 – 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 8/7/20 at 09:22 on instrument MSVOA_X was -20.4% for carbon disulfide, which exceeded the 20% QC limit. The results for these compounds in all samples except the dilution analyses for BP-VPB179-GW-398-400 and BP-VPB179-GW-418-20, which were all non-detect, 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 were no associated equipment blanks 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-VPB179-TB-20200731. 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 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):

The results for trichloroethene in the initial analyses for samples BP-VPB179-GW-398-400 and BP-VPB179-GW-418-420 exceeded the linear calibration range. A dilution analysis was performed for the each of the listed samples with all calibration criteria met. Citing the CRQL criteria and professional judgment, the validator has determined that the reanalysis results for the listed compound in the samples to be of preferable data quality to the initial analysis results and the initial analysis results for all other compounds in the samples to be of preferable data quality to the reanalysis results for the samples.

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.

# 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-VPB179-GW-318-320 | 7/31/2020 0:00 | L3556-02 | CARBON DISULFIDE | U | 0.5 | | UJ | C |
| BP-VPB179-GW-338-340 | 7/31/2020 0:00 | L3556-03 | CARBON DISULFIDE | U | 0.5 | | UJ | C |
| BP-VPB179-GW-358-360 | 8/3/2020 0:00 | L3556-04 | CARBON DISULFIDE | U | 0.5 | | UJ | C |
| BP-VPB179-GW-378-380 | 8/3/2020 0:00 | L3556-05 | CARBON DISULFIDE | U | 0.5 | | UJ | C |
| BP-VPB179-GW-398-400 | 8/3/2020 0:00 | L3556-06 | CARBON DISULFIDE | U | 0.5 | | UJ | C |
| BP-VPB179-GW-418-420 | 8/3/2020 0:00 | L3556-07 | CARBON DISULFIDE | U | 0.5 | | UJ | C |
| BP-VPB179-TB-20200731 | 7/31/2020 0:00 | L3556-01 | CARBON DISULFIDE | U | 0.5 | | UJ | C |

# Appendix B

## Laboratory Sample Results

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/31/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-TB-20200731 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-01 | 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 |
|---|---|---|---|---|
| VX017766.D | 1 | | 08/04/20 13:30 | VX080420 |

| 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: | 07/31/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-TB-20200731 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-01 | 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 |
|---|---|---|---|---|
| VX017766.D | 1 | | 08/04/20 13:30 | VX080420 |

| 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 | 51.5 | | 81 - 118 | | 103% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 49.7 | | 80 - 119 | | 99% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.2 | | 89 - 112 | | 98% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 46.3 | | 85 - 114 | | 93% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 572000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 873000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 823000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 405000 | 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: | 07/31/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-318-320 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-02 | 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 |
|---|---|---|---|---|
| VX017767.D | 1 | | 08/04/20 13:53 | VX080420 |

| 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 | 0.61 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 15.0 | 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 | 0.31 | 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 | 22.3 | | 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 | 150 | | 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 | 11.1 | | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/31/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-318-320 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-02 | 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 |
|---|---|---|---|---|
| VX017767.D | 1 | | 08/04/20 13:53 | VX080420 |

| 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 | 49.5 | | 81 - 118 | | 99% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 47.2 | | 80 - 119 | | 94% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.8 | | 89 - 112 | | 100% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 46.5 | | 85 - 114 | | 93% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 595000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 892000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 808000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 403000 | 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: | 07/31/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-338-340 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-03 | 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 |
|---|---|---|---|---|
| VX017768.D | 1 | | 08/04/20 14:16 | VX080420 |

| 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 | 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 | 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 | 0.26 | J | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 07/31/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-338-340 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-03 | 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 |
|---|---|---|---|---|
| VX017768.D | 1 | | 08/04/20 14:16 | VX080420 |

| 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 | 49.9 | | 80 - 119 | | 100% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.4 | | 89 - 112 | | 97% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.6 | | 85 - 114 | | 95% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 605000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 878000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 825000 | 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: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-358-360 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-04 | 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 |
|---|---|---|---|---|
| VX017769.D | 1 | | 08/04/20 14:39 | VX080420 |

| 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 | 1.10 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 13.5 | 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 | 0.46 | 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 | 10.3 | | 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 | 75.5 | | 0.13 | 0.50 | 5.00 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 0.95 | J | 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 | 0.23 | 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 | 13.2 | | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-358-360 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-04 | 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 |
|---|---|---|---|---|
| VX017769.D | 1 | | 08/04/20 14:39 | VX080420 |

| 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 | 0.30 | J | 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 | 50.4 | | 81 - 118 | | 101% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 52.0 | | 80 - 119 | | 104% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.1 | | 89 - 112 | | 98% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.0 | | 85 - 114 | | 94% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 590000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 867000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 809000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 411000 | 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: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-378-380 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-05 | 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 |
|---|---|---|---|---|
| VX017770.D | 1 | | 08/04/20 15:02 | VX080420 |

| 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 | 0.55 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 4.30 | 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 | 0.45 | 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 | 0.33 | 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 | 5.00 | | 0.24 | 0.50 | 5.00 | ug/L |
| 67-66-3 | Chloroform | 0.20 | 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 | 67.1 | | 0.13 | 0.50 | 5.00 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 0.49 | J | 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 | 8.10 | | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-378-380 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-05 | 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 |
|---|---|---|---|---|
| VX017770.D | 1 | | 08/04/20 15:02 | VX080420 |

| 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 | 50.4 | | 81 - 118 | | 101% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 49.4 | | 80 - 119 | | 99% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.0 | | 89 - 112 | | 98% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.7 | | 85 - 114 | | 95% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 584000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 863000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 841000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 408000 | 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: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-398-400 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-06 | 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 |
|---|---|---|---|---|
| VX017771.D | 1 | | 08/04/20 15:25 | VX080420 |

| 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 | 0.90 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 4.40 | 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 | 0.58 | J | 0.14 | 0.50 | 5.00 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 0.53 | 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 | 29.1 | | 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 | 0.28 | J | 0.27 | 0.75 | 5.00 | ug/L |
| 79-01-6 | Trichloroethene | 260 | E | 0.13 | 0.50 | 5.00 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1.70 | J | 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 | 0.28 | J | 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 | 17.9 | | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-398-400 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-06 | 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 |
|---|---|---|---|---|
| VX017771.D | 1 | | 08/04/20 15:25 | VX080420 |

| 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 | 49.1 | | 80 - 119 | | 98% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.5 | | 89 - 112 | | 97% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 45.2 | | 85 - 114 | | 90% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 582000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 892000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 821000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 412000 | 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: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-398-400DL | SDG No.: | L3556 |
| Lab Sample ID: | L3556-06DL | 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 |
|---|---|---|---|---|
| VX017802.D | 5 | | 08/06/20 12:37 | VX080620 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 74-87-3 | Chloromethane | 2.50 | UD | 1.10 | 2.50 | 25.0 | ug/L |
| 75-01-4 | Vinyl Chloride | 2.50 | UD | 0.84 | 2.50 | 25.0 | ug/L |
| 74-83-9 | Bromomethane | 18.8 | UD | 5.70 | 18.8 | 25.0 | ug/L |
| 75-00-3 | Chloroethane | 2.50 | UD | 1.70 | 2.50 | 25.0 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 2.50 | UD | 1.20 | 2.50 | 25.0 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 2.50 | UD | 0.95 | 2.50 | 25.0 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 2.50 | UD | 1.30 | 2.50 | 25.0 | ug/L |
| 67-64-1 | Acetone | 12.5 | UD | 6.90 | 12.5 | 130 | ug/L |
| 75-15-0 | Carbon Disulfide | 2.50 | UD | 1.20 | 2.50 | 25.0 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 2.50 | UD | 0.97 | 2.50 | 25.0 | ug/L |
| 75-09-2 | Methylene Chloride | 2.50 | UD | 1.60 | 2.50 | 25.0 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 2.50 | UD | 0.72 | 2.50 | 25.0 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 2.50 | UD | 0.75 | 2.50 | 25.0 | ug/L |
| 78-93-3 | 2-Butanone | 12.5 | UD | 5.00 | 12.5 | 130 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 2.50 | UD | 1.30 | 2.50 | 25.0 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 33.0 | D | 1.20 | 2.50 | 25.0 | ug/L |
| 67-66-3 | Chloroform | 2.50 | UD | 0.96 | 2.50 | 25.0 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 3.80 | UD | 0.75 | 3.80 | 25.0 | ug/L |
| 108-87-2 | Methylcyclohexane | 2.50 | UD | 0.54 | 2.50 | 25.0 | ug/L |
| 71-43-2 | Benzene | 2.50 | UD | 0.66 | 2.50 | 25.0 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 3.80 | UD | 1.40 | 3.80 | 25.0 | ug/L |
| 79-01-6 | Trichloroethene | 280 | D | 0.65 | 2.50 | 25.0 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 2.50 | UD | 0.54 | 2.50 | 25.0 | ug/L |
| 75-27-4 | Bromodichloromethane | 2.50 | UD | 0.57 | 2.50 | 25.0 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 12.5 | UD | 3.30 | 12.5 | 130 | ug/L |
| 108-88-3 | Toluene | 2.50 | UD | 0.98 | 2.50 | 25.0 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 2.50 | UD | 1.20 | 2.50 | 25.0 | ug/L |
| 10061-01-5 | cis-1,3-Dichloropropene | 2.50 | UD | 0.76 | 2.50 | 25.0 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 2.50 | UD | 0.96 | 2.50 | 25.0 | ug/L |
| 591-78-6 | 2-Hexanone | 18.8 | UD | 4.10 | 18.8 | 130 | ug/L |
| 124-48-1 | Dibromochloromethane | 2.50 | UD | 0.64 | 2.50 | 25.0 | ug/L |
| 127-18-4 | Tetrachloroethene | 17.2 | JD | 0.63 | 2.50 | 25.0 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-398-400DL | SDG No.: | L3556 |
| Lab Sample ID: | L3556-06DL | 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 |
|---|---|---|---|---|
| VX017802.D | 5 | | 08/06/20 12:37 | VX080620 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 2.50 | UD | 0.60 | 2.50 | 25.0 | ug/L |
| 100-41-4 | Ethyl Benzene | 2.50 | UD | 0.58 | 2.50 | 25.0 | ug/L |
| 179601-23-1 | m/p-Xylenes | 5.00 | UD | 1.20 | 5.00 | 50.0 | ug/L |
| 95-47-6 | o-Xylene | 2.50 | UD | 0.62 | 2.50 | 25.0 | ug/L |
| 100-42-5 | Styrene | 2.50 | UD | 0.78 | 2.50 | 25.0 | ug/L |
| 75-25-2 | Bromoform | 2.50 | UD | 0.89 | 2.50 | 25.0 | ug/L |
| 98-82-8 | Isopropylbenzene | 2.50 | UD | 1.00 | 2.50 | 25.0 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2.50 | UD | 1.40 | 2.50 | 25.0 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 2.50 | UD | 0.81 | 2.50 | 25.0 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 2.50 | UD | 0.66 | 2.50 | 25.0 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 2.50 | UD | 0.90 | 2.50 | 25.0 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 48.1 | | 81 - 118 | | 96% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.5 | | 80 - 119 | | 103% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 52.8 | | 89 - 112 | | 106% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 50.2 | | 85 - 114 | | 100% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 428000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 607000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 613000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 300000 | 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: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-418-420 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-07 | 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 |
|---|---|---|---|---|
| VX017772.D | 1 | | 08/04/20 15:48 | VX080420 |

| 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 | 1.20 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 3.90 | 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 | 0.43 | J | 0.14 | 0.50 | 5.00 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 0.56 | 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 | 32.7 | | 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 | 250 | E | 0.13 | 0.50 | 5.00 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 0.67 | J | 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 | 0.27 | J | 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 | 25.0 | | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-418-420 | SDG No.: | L3556 |
| Lab Sample ID: | L3556-07 | 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 |
|---|---|---|---|---|
| VX017772.D | 1 | | 08/04/20 15:48 | VX080420 |

| 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 | 51.2 | | 80 - 119 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.7 | | 89 - 112 | | 99% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.1 | | 85 - 114 | | 94% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 614000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 879000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 825000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 411000 | 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: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-418-420DL | SDG No.: | L3556 |
| Lab Sample ID: | L3556-07DL | 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 |
|---|---|---|---|---|
| VX017803.D | 5 | | 08/06/20 13:01 | VX080620 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 74-87-3 | Chloromethane | 2.50 | UD | 1.10 | 2.50 | 25.0 | ug/L |
| 75-01-4 | Vinyl Chloride | 2.50 | UD | 0.84 | 2.50 | 25.0 | ug/L |
| 74-83-9 | Bromomethane | 18.8 | UD | 5.70 | 18.8 | 25.0 | ug/L |
| 75-00-3 | Chloroethane | 2.50 | UD | 1.70 | 2.50 | 25.0 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 2.50 | UD | 1.20 | 2.50 | 25.0 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 2.50 | UD | 0.95 | 2.50 | 25.0 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 2.50 | UD | 1.30 | 2.50 | 25.0 | ug/L |
| 67-64-1 | Acetone | 12.5 | UD | 6.90 | 12.5 | 130 | ug/L |
| 75-15-0 | Carbon Disulfide | 2.50 | UD | 1.20 | 2.50 | 25.0 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 2.50 | UD | 0.97 | 2.50 | 25.0 | ug/L |
| 75-09-2 | Methylene Chloride | 2.50 | UD | 1.60 | 2.50 | 25.0 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 2.50 | UD | 0.72 | 2.50 | 25.0 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 2.50 | UD | 0.75 | 2.50 | 25.0 | ug/L |
| 78-93-3 | 2-Butanone | 12.5 | UD | 5.00 | 12.5 | 130 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 2.50 | UD | 1.30 | 2.50 | 25.0 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 38.3 | D | 1.20 | 2.50 | 25.0 | ug/L |
| 67-66-3 | Chloroform | 2.50 | UD | 0.96 | 2.50 | 25.0 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 3.80 | UD | 0.75 | 3.80 | 25.0 | ug/L |
| 108-87-2 | Methylcyclohexane | 2.50 | UD | 0.54 | 2.50 | 25.0 | ug/L |
| 71-43-2 | Benzene | 2.50 | UD | 0.66 | 2.50 | 25.0 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 3.80 | UD | 1.40 | 3.80 | 25.0 | ug/L |
| 79-01-6 | Trichloroethene | 270 | D | 0.65 | 2.50 | 25.0 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 2.50 | UD | 0.54 | 2.50 | 25.0 | ug/L |
| 75-27-4 | Bromodichloromethane | 2.50 | UD | 0.57 | 2.50 | 25.0 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 12.5 | UD | 3.30 | 12.5 | 130 | ug/L |
| 108-88-3 | Toluene | 2.50 | UD | 0.98 | 2.50 | 25.0 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 2.50 | UD | 1.20 | 2.50 | 25.0 | ug/L |
| 10061-01-5 | cis-1,3-Dichloropropene | 2.50 | UD | 0.76 | 2.50 | 25.0 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 2.50 | UD | 0.96 | 2.50 | 25.0 | ug/L |
| 591-78-6 | 2-Hexanone | 18.8 | UD | 4.10 | 18.8 | 130 | ug/L |
| 124-48-1 | Dibromochloromethane | 2.50 | UD | 0.64 | 2.50 | 25.0 | ug/L |
| 127-18-4 | Tetrachloroethene | 23.9 | JD | 0.63 | 2.50 | 25.0 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 08/03/20 |
| Project: | CTO WE13 | Date Received: | 08/04/20 |
| Client Sample ID: | BP-VPB179-GW-418-420DL | SDG No.: | L3556 |
| Lab Sample ID: | L3556-07DL | 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 |
|---|---|---|---|---|
| VX017803.D | 5 | | 08/06/20 13:01 | VX080620 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 2.50 | UD | 0.60 | 2.50 | 25.0 | ug/L |
| 100-41-4 | Ethyl Benzene | 2.50 | UD | 0.58 | 2.50 | 25.0 | ug/L |
| 179601-23-1 | m/p-Xylenes | 5.00 | UD | 1.20 | 5.00 | 50.0 | ug/L |
| 95-47-6 | o-Xylene | 2.50 | UD | 0.62 | 2.50 | 25.0 | ug/L |
| 100-42-5 | Styrene | 2.50 | UD | 0.78 | 2.50 | 25.0 | ug/L |
| 75-25-2 | Bromoform | 2.50 | UD | 0.89 | 2.50 | 25.0 | ug/L |
| 98-82-8 | Isopropylbenzene | 2.50 | UD | 1.00 | 2.50 | 25.0 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2.50 | UD | 1.40 | 2.50 | 25.0 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 2.50 | UD | 0.81 | 2.50 | 25.0 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 2.50 | UD | 0.66 | 2.50 | 25.0 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 2.50 | UD | 0.90 | 2.50 | 25.0 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 49.2 | | 81 - 118 | | 98% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 52.1 | | 80 - 119 | | 104% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.9 | | 89 - 112 | | 100% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 45.3 | | 85 - 114 | | 91% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 477000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 700000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 657000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 303000 | 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

# Appendix C

## Support Documents

## A. Documents Supporting Qualifications

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.: L3556 SAS No.: L3556 SDG No.: L3556

Instrument ID: MSVOA_X Calibration Date/Time: 08/04/2020 09:22

Lab File ID: VX017758.D Init. Calib. Date(s): 07/23/2020 07/23/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 09:11 12:00

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

| COMPOUND | RRF | RRF050 | MIN RRF | %D | MAX%D |
|---|---|---|---|---|---|
| Chloromethane | 0.663 | 0.538 | 0.1 | -18.85 | 20 |
| Vinyl Chloride | 0.629 | 0.541 | | -13.99 | 20 |
| Bromomethane | 0.365 | 0.325 | | -10.96 | 20 |
| Chloroethane | 0.380 | 0.342 | | -10 | 20 |
| Trichlorofluoromethane | 0.990 | 0.937 | | -5.35 | 20 |
| 1,1,2-Trichlorotrifluoroethane | 0.543 | 0.499 | | -8.1 | 20 |
| 1,1-Dichloroethene | 0.516 | 0.457 | | -11.43 | 20 |
| Acetone | 0.283 | 0.235 | | -16.96 | 20 |
| Carbon Disulfide | 1.570 | 1.250 | | -20.38 | 20 |
| Methyl tert-butyl Ether | 1.788 | 1.591 | | -11.02 | 20 |
| Methylene Chloride | 0.622 | 0.525 | | -15.6 | 20 |
| trans-1,2-Dichloroethene | 0.553 | 0.486 | | -12.12 | 20 |
| 1,1-Dichloroethane | 0.993 | 0.899 | 0.1 | -9.47 | 20 |
| 2-Butanone | 0.402 | 0.362 | | -9.95 | 20 |
| Carbon Tetrachloride | 0.582 | 0.595 | | 2.23 | 20 |
| cis-1,2-Dichloroethene | 0.601 | 0.553 | | -7.99 | 20 |
| Chloroform | 1.015 | 0.984 | | -3.05 | 20 |
| 1,1,1-Trichloroethane | 0.957 | 0.933 | | -2.51 | 20 |
| Methylcyclohexane | 0.560 | 0.517 | | -7.68 | 20 |
| Benzene | 1.375 | 1.316 | | -4.29 | 20 |
| 1,2-Dichloroethane | 0.562 | 0.582 | | 3.56 | 20 |
| Trichloroethene | 0.402 | 0.411 | | 2.24 | 20 |
| 1,2-Dichloropropane | 0.381 | 0.358 | | -6.04 | 20 |
| Bromodichloromethane | 0.542 | 0.585 | | 7.93 | 20 |
| 4-Methyl-2-Pentanone | 0.517 | 0.498 | | -3.67 | 20 |
| Toluene | 0.882 | 0.885 | | 0.34 | 20 |
| t-1,3-Dichloropropene | 0.607 | 0.611 | | 0.66 | 20 |
| cis-1,3-Dichloropropene | 0.619 | 0.631 | | 1.94 | 20 |
| 1,1,2-Trichloroethane | 0.367 | 0.373 | | 1.63 | 20 |
| 2-Hexanone | 0.389 | 0.393 | | 1.03 | 20 |
| Dibromochloromethane | 0.467 | 0.481 | | 3 | 20 |
| Tetrachloroethene | 0.449 | 0.454 | | 1.11 | 20 |
| Chlorobenzene | 1.082 | 1.055 | 0.3 | -2.49 | 20 |
| Ethyl Benzene | 1.807 | 1.806 | | -0.05 | 20 |
| m/p-Xylenes | 0.700 | 0.697 | | -0.43 | 20 |
| o-Xylene | 0.673 | 0.622 | | -7.58 | 20 |
| Styrene | 1.145 | 1.096 | | -4.28 | 20 |
| Bromoform | 0.378 | 0.339 | 0.1 | -10.32 | 20 |
| Isopropylbenzene | 3.430 | 3.410 | | -0.58 | 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.: L3556 SAS No.: L3556 SDG No.: L3556

Instrument ID: MSVOA_X Calibration Date/Time: 08/04/2020 09:22

Lab File ID: VX017758.D Init. Calib. Date(s): 07/23/2020 07/23/2020

Heated Purge: (Y/N) N Init. Calib. Time(s): 09:11 12:00

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

| COMPOUND | RRF | RRF050 | MIN RRF | %D | MAX%D |
|---|---|---|---|---|---|
| 1,1,2,2-Tetrachloroethane | 1.071 | 0.957 | 0.3 | -10.64 | 20 |
| 1,3-Dichlorobenzene | 1.649 | 1.577 | | -4.37 | 20 |
| 1,4-Dichlorobenzene | 1.708 | 1.622 | | -5.03 | 20 |
| 1,2-Dichlorobenzene | 1.621 | 1.554 | | -4.13 | 20 |
| 1,2-Dichloroethane-d4 | 0.642 | 0.657 | | 2.34 | 20 |
| Dibromofluoromethane | 0.334 | 0.343 | | 2.69 | 20 |
| Toluene-d8 | 1.206 | 1.225 | | 1.58 | 20 |
| 4-Bromofluorobenzene | 0.483 | 0.471 | | -2.48 | 20 |

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

# Appendix C

## Support Documents

### B. Chain of Custody (COC)

**CHEMTECH**
CHAIN OF CUSTODY RECORD

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

Chemtech Project Number: L3556

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**

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**

| 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-VPB179-TB-20200731 | QA | | X | 7/31/20 | 9:00 | 2 | 2 | | | | | | | | | Trip Blank |
| 2. | BP-VPB179-GW-318-320 | AQ | | X | 7/31/20 | 12:30 | 2 | 2 | | | | | | | | | |
| 3. | BP-VPB179-GW-338-340 | AQ | | X | 7/31/20 | 14:10 | 2 | 2 | | | | | | | | | |
| 4. | BP-VPB179-GW-358-360 | AQ | | X | 8/3/20 | 9:40 | 2 | 2 | | | | | | | | | |
| 5. | BP-VPB179-GW-378-380 | AQ | | X | 8/3/20 | 11:20 | 2 | 2 | | | | | | | | | |
| 6. | BP-VPB179-GW-398-400 | AQ | | X | 8/3/20 | 13:00 | 2 | 2 | | | | | | | | | |
| 7. | BP-VPB179-GW-418-420 | AQ | | X | 8/3/20 | 14:40 | 2 | 2 | | | | | | | | | |
| 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. | 8/3/20 1530 | 1. |
| RELINQUISHED BY | DATE/TIME | RECEIVED BY |
| 2. FedEx | 8-4-2020 0938 | 2. |
| RELINQUISHED BY | DATE/TIME | RECEIVED FOR LAB BY |
| 3. | | 3. |

Conditions of bottles or coolers at receipt: ☑ Compliant ☐ Non Compliant ☐ Cooler Temp 2.6°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

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

# Appendix C

## Support Documents

### C. Calculations for Stage 4 Data Validation

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 # trichloroethene for BP-VPB-179-GW-398-400

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

Calc. Concentration = 275

| AREA c | AREA st | CONC istd | RRF | Vf | Vi | DL | UnitF |
|---|---|---|---|---|---|---|---|
| 268772 | 606818 | 50 | 0.402 | 5000 | 5000 | 5 | 1 |

Reported Concentration = 280

**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 MATRIX: | Groundwater |
| TYPES OF ANALYSES: | Volatile Organic Compounds (VOC) |
| DATA VALIDATION DATE: | September 21, 2020 |
| DATA REVIEWER(S): | Amy L. Hogan |
| SDG NUMBER: | L3618 |
| SAMPLING DATE(S): | August 4-6, 2020 |

SAMPLES:

| Client Sample ID | Laboratory ID | VOC |
|---|---|---|
| BP-VPB179-TB-20200804 | L3618-01 | X |
| BP-VPB179-GW-438-440 | L3618-02 | X |
| BP-VPB179-GW-458-460 | L3618-03 | X |
| BP-VPB179-GW-478-480 | L3618-04 | X |
| BP-VPB179-GW-498-500 | L3618-05 | X |
| BP-VPB179-DUP-20200805 | L3618-06 | X |
| BP-VPB179-EB-20200805 | L3618-07 | X |
| BP-VPB179-GW-518-520 | L3618-08 | X |
| BP-VPB179-GW-538-540 | L3618-09 | X |
| BP-VPB179-GW-558-560 | L3618-10 | X |
| BP-VPB179-GW-578-580 | L3618-11 | X |
| BP-VPB179-GW-498-500MS | L3618-12 | X |
| BP-VPB179-GW-498-500MSD | L3618-13 | 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: L3618 – 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 (6.30 ug/L) was detected in associated equipment blank BP-VPB179-EB-20200805. Since the blank concentration was less than the LOQ, 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-VPB179-TB-20200804. 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-VPB179-GW-498-500. The Relative Percent Difference (RPD) for vinyl chloride (24%) exceeded the QC limit. The non-detect vinyl chloride result for the parent sample was qualified as estimated (UJ) with reason code F.

VIII.) Field Duplicates:

One set of field duplicate samples (BP-VPB179-GW-498-500 / BP-VPB179-DUP-20200805) was identified as part of this SDG. The calculable difference for acetone was 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.

# 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-VPB179-GW-498-500 | 8/5/2020 0:00 | L3618-05 | VINYL CHLORIDE | U | 0.5 | | UJ | F |

# Appendix B

## Laboratory Sample Results

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 08/04/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-TB-20200804 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-01 | 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 |
|---|---|---|---|---|
| VN062804.D | 1 | | 08/10/20 13:18 | VN081020 |

| 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: | 08/04/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-TB-20200804 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-01 | 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 |
|---|---|---|---|---|
| VN062804.D | 1 | | 08/10/20 13:18 | VN081020 |

| 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 | 46.3 | | 81 - 118 | | 93% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 47.8 | | 80 - 119 | | 96% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 47.7 | | 89 - 112 | | 95% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.8 | | 85 - 114 | | 96% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 145000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 254000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 251000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 96400 | 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: | 08/04/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-438-440 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-02 | 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 |
|---|---|---|---|---|
| VN062807.D | 1 | | 08/10/20 14:32 | VN081020 |

| 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 | 12.3 | 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 | 7.90 | | 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 | 0.93 | J | 0.13 | 0.50 | 5.00 | ug/L |

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 08/04/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-438-440 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-02 | 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 |
|---|---|---|---|---|
| VN062807.D | 1 | | 08/10/20 14:32 | VN081020 |

| 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 | 48.5 | | 80 - 119 | | 97% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.1 | | 89 - 112 | | 96% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 48.8 | | 85 - 114 | | 98% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 157000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 274000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 273000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 112000 | 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: | 08/04/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-458-460 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-03 | 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 |
|---|---|---|---|---|
| VN062808.D | 1 | | 08/10/20 14:56 | VN081020 |

| 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: | 08/04/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-458-460 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-03 | 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 |
|---|---|---|---|---|
| VN062808.D | 1 | | 08/10/20 14:56 | VN081020 |

| 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 | 48.9 | | 80 - 119 | | 98% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 47.8 | | 89 - 112 | | 96% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 48.0 | | 85 - 114 | | 96% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 145000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 252000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 250000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 96100 | 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: | 08/05/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-478-480 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-04 | 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 |
|---|---|---|---|---|
| VN062806.D | 1 | | 08/10/20 14:07 | VN081020 |

| 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 | 15.5 | 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: | 08/05/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-478-480 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-04 | 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 |
|---|---|---|---|---|
| VN062806.D | 1 | | 08/10/20 14:07 | VN081020 |

| 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 | 47.5 | | 81 - 118 | | 95% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 48.5 | | 80 - 119 | | 97% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 47.4 | | 89 - 112 | | 95% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 49.1 | | 85 - 114 | | 98% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 159000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 281000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 281000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 109000 | 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: | 08/05/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-498-500 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-05 | 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 |
|---|---|---|---|---|
| VN062809.D | 1 | | 08/10/20 15:20 | VN081020 |

| 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: | 08/05/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-498-500 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-05 | 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 |
|---|---|---|---|---|
| VN062809.D | 1 | | 08/10/20 15:20 | VN081020 |

| 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 | 48.5 | | 80 - 119 | | 97% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.0 | | 89 - 112 | | 96% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 48.6 | | 85 - 114 | | 97% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 138000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 244000 | 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: | 08/05/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-DUP-20200805 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-06 | 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 |
|---|---|---|---|---|
| VN062810.D | 1 | | 08/10/20 15:45 | VN081020 |

| 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 | 5.50 | 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 | 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: | 08/05/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-DUP-20200805 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-06 | 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 |
|---|---|---|---|---|
| VN062810.D | 1 | | 08/10/20 15:45 | VN081020 |

| 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 | 48.4 | | 89 - 112 | | 97% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.4 | | 85 - 114 | | 95% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 139000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 244000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 244000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 88100 | 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: | 08/05/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-EB-20200805 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-07 | 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 |
|---|---|---|---|---|
| VN062805.D | 1 | | 08/10/20 13:43 | VN081020 |

| 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 | 6.30 | 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: | 08/05/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-EB-20200805 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-07 | 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 |
|---|---|---|---|---|
| VN062805.D | 1 | | 08/10/20 13:43 | VN081020 |

| 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 | 47.9 | | 81 - 118 | | 96% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 47.8 | | 80 - 119 | | 96% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 47.8 | | 89 - 112 | | 96% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.5 | | 85 - 114 | | 95% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 147000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 260000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 256000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 98800 | 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: | 08/05/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-518-520 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-08 | 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 |
|---|---|---|---|---|
| VN062811.D | 1 | | 08/10/20 16:10 | VN081020 |

| 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 | 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: | 08/05/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-518-520 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-08 | 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 |
|---|---|---|---|---|
| VN062811.D | 1 | | 08/10/20 16:10 | VN081020 |

| 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 | 49.8 | | 80 - 119 | | 100% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.8 | | 89 - 112 | | 98% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 48.2 | | 85 - 114 | | 96% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 136000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 239000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 236000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 92400 | 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: | 08/06/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-538-540 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-09 | 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 |
|---|---|---|---|---|
| VN062812.D | 1 | | 08/10/20 16:34 | VN081020 |

| 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 | 6.50 | 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 | 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: | 08/06/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-538-540 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-09 | 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 |
|---|---|---|---|---|
| VN062812.D | 1 | | 08/10/20 16:34 | VN081020 |

| 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 | 49.4 | | 80 - 119 | | 99% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.7 | | 89 - 112 | | 97% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 48.3 | | 85 - 114 | | 97% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 136000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 236000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 237000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 88100 | 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: | 08/06/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-558-560 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-10 | 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: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN062813.D | 1 | | 08/10/20 16:59 | VN081020 |

| 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 | 5.90 | 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 | 0.38 | 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: | 08/06/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-558-560 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-10 | 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: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN062813.D | 1 | | 08/10/20 16:59 | VN081020 |

| 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 | 49.7 | | 81 - 118 | | 99% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 49.8 | | 80 - 119 | | 100% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 47.8 | | 89 - 112 | | 96% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 48.5 | | 85 - 114 | | 97% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 137000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 239000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 241000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 89000 | 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: | 08/06/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-578-580 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-11 | 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: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN062814.D | 1 | | 08/10/20 17:23 | VN081020 |

| 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 | 0.49 | 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: | 08/06/20 |
| Project: | CTO WE13 | Date Received: | 08/07/20 |
| Client Sample ID: | BP-VPB179-GW-578-580 | SDG No.: | L3618 |
| Lab Sample ID: | L3618-11 | 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: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN062814.D | 1 | | 08/10/20 17:23 | VN081020 |

| 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 | 49.9 | | 80 - 119 | | 100% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.2 | | 89 - 112 | | 96% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 49.0 | | 85 - 114 | | 98% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 144000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 249000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 250000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 97200 | 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

# Appendix C

## Support Documents

## A. Documents Supporting Qualifications

CHEMTECH

## Matrix Spike/Matrix Spike Duplicate Summary
## SW-846

**SDG No.:** L3618

**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 :** L3618-12MS | **Client Sample ID :** BP-VPB179-GW-498-500MS | | | | | | | **Datafile :** VN062815.D | | | |
| Chloromethane | 50 | 0 | 39.9 | ug/L | 80 | | | | 50 | 139 | |
| Vinyl chloride | 50 | 0 | 42.7 | ug/L | 85 | | | | 58 | 137 | |
| Bromomethane | 50 | 0 | 43.8 | ug/L | 88 | | | | 53 | 141 | |
| Chloroethane | 50 | 0 | 47.1 | ug/L | 94 | | | | 60 | 138 | |
| Trichlorofluoromethane | 50 | 0 | 44.8 | ug/L | 90 | | | | 65 | 141 | |
| 1,1,2-Trichlorotrifluoroethane | 50 | 0 | 46.2 | ug/L | 92 | | | | 70 | 136 | |
| 1,1-Dichloroethene | 50 | 0 | 48.5 | ug/L | 97 | | | | 71 | 131 | |
| Acetone | 250 | 2.90 | 220 | ug/L | 87 | | | | 39 | 160 | |
| Carbon disulfide | 50 | 0 | 45.1 | ug/L | 90 | | | | 64 | 133 | |
| Methyl tert-butyl Ether | 50 | 0 | 48.7 | ug/L | 97 | | | | 71 | 124 | |
| Methylene Chloride | 50 | 0 | 48.8 | ug/L | 98 | | | | 74 | 124 | |
| trans-1,2-Dichloroethene | 50 | 0 | 45.2 | ug/L | 90 | | | | 75 | 124 | |
| 1,1-Dichloroethane | 50 | 0 | 45.8 | ug/L | 92 | | | | 77 | 125 | |
| 2-Butanone | 250 | 0 | 240 | ug/L | 96 | | | | 56 | 143 | |
| Carbon Tetrachloride | 50 | 0 | 41.4 | ug/L | 83 | | | | 72 | 136 | |
| cis-1,2-Dichloroethene | 50 | 0 | 47.5 | ug/L | 95 | | | | 78 | 123 | |
| Chloroform | 50 | 0 | 44.8 | ug/L | 90 | | | | 79 | 124 | |
| 1,1,1-Trichloroethane | 50 | 0 | 44.0 | ug/L | 88 | | | | 74 | 131 | |
| Methylcyclohexane | 50 | 0 | 42.4 | ug/L | 85 | | | | 72 | 132 | |
| Benzene | 50 | 0 | 44.7 | ug/L | 89 | | | | 79 | 120 | |
| 1,2-Dichloroethane | 50 | 0 | 42.5 | ug/L | 85 | | | | 73 | 128 | |
| Trichloroethene | 50 | 0 | 43.1 | ug/L | 86 | | | | 79 | 123 | |
| 1,2-Dichloropropane | 50 | 0 | 47.3 | ug/L | 95 | | | | 78 | 122 | |
| Bromodichloromethane | 50 | 0 | 45.5 | ug/L | 91 | | | | 79 | 125 | |
| 4-Methyl-2-Pentanone | 250 | 0 | 240 | ug/L | 96 | | | | 67 | 130 | |
| Toluene | 50 | 0 | 44.7 | ug/L | 89 | | | | 80 | 121 | |
| t-1,3-Dichloropropene | 50 | 0 | 43.3 | ug/L | 87 | | | | 73 | 127 | |
| cis-1,3-Dichloropropene | 50 | 0 | 45.7 | ug/L | 91 | | | | 75 | 124 | |
| 1,1,2-Trichloroethane | 50 | 0 | 45.9 | ug/L | 92 | | | | 80 | 119 | |
| 2-Hexanone | 250 | 0 | 240 | ug/L | 96 | | | | 57 | 139 | |
| Dibromochloromethane | 50 | 0 | 45.2 | ug/L | 90 | | | | 74 | 126 | |
| Tetrachloroethene | 50 | 0 | 41.8 | ug/L | 84 | | | | 74 | 129 | |
| Chlorobenzene | 50 | 0 | 44.3 | ug/L | 89 | | | | 82 | 118 | |
| Ethyl Benzene | 50 | 0 | 45.1 | ug/L | 90 | | | | 79 | 121 | |
| m/p-Xylenes | 100 | 0 | 90.8 | ug/L | 91 | | | | 80 | 121 | |
| o-Xylene | 50 | 0 | 47.4 | ug/L | 95 | | | | 78 | 122 | |
| Styrene | 50 | 0 | 48.2 | ug/L | 96 | | | | 78 | 123 | |
| Bromoform | 50 | 0 | 44.3 | ug/L | 89 | | | | 66 | 130 | |
| Isopropylbenzene | 50 | 0 | 46.9 | ug/L | 94 | | | | 72 | 131 | |
| 1,1,2,2-Tetrachloroethane | 50 | 0 | 46.2 | ug/L | 92 | | | | 71 | 121 | |
| 1,3-Dichlorobenzene | 50 | 0 | 44.8 | ug/L | 90 | | | | 80 | 119 | |
| 1,4-Dichlorobenzene | 50 | 0 | 44.3 | ug/L | 89 | | | | 79 | 118 | |
| 1,2-Dichlorobenzene | 50 | 0 | 47.0 | ug/L | 94 | | | | 80 | 119 | |

CHEMTECH

## Matrix Spike/Matrix Spike Duplicate Summary
## SW-846

**SDG No.:** L3618

**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 :** | **L3618-13MSD** | **Client Sample ID :** | **BP-VPB179-GW-498-500MSD** | | | | | **Datafile :** | VN062816.D | | |
| Chloromethane | 50 | 0 | 47.7 | ug/L | 95 | | 18 | | 50 | 139 | 20 |
| Vinyl chloride | 50 | 0 | 54.3 | ug/L | 109 | | 24 | * | 58 | 137 | 20 |
| Bromomethane | 50 | 0 | 47.5 | ug/L | 95 | | 8 | | 53 | 141 | 20 |
| Chloroethane | 50 | 0 | 55.2 | ug/L | 110 | | 16 | | 60 | 138 | 20 |
| Trichlorofluoromethane | 50 | 0 | 50.6 | ug/L | 101 | | 12 | | 65 | 141 | 20 |
| 1,1,2-Trichlorotrifluoroethane | 50 | 0 | 54.3 | ug/L | 109 | | 16 | | 70 | 136 | 20 |
| 1,1-Dichloroethene | 50 | 0 | 55.5 | ug/L | 111 | | 13 | | 71 | 131 | 20 |
| Acetone | 250 | 2.90 | 250 | ug/L | 99 | | 13 | | 39 | 160 | 20 |
| Carbon disulfide | 50 | 0 | 52.1 | ug/L | 104 | | 14 | | 64 | 133 | 20 |
| Methyl tert-butyl Ether | 50 | 0 | 51.5 | ug/L | 103 | | 6 | | 71 | 124 | 20 |
| Methylene Chloride | 50 | 0 | 54.5 | ug/L | 109 | | 11 | | 74 | 124 | 20 |
| trans-1,2-Dichloroethene | 50 | 0 | 47.2 | ug/L | 94 | | 4 | | 75 | 124 | 20 |
| 1,1-Dichloroethane | 50 | 0 | 47.2 | ug/L | 94 | | 3 | | 77 | 125 | 20 |
| 2-Butanone | 250 | 0 | 240 | ug/L | 96 | | 0 | | 56 | 143 | 20 |
| Carbon Tetrachloride | 50 | 0 | 45.4 | ug/L | 91 | | 9 | | 72 | 136 | 20 |
| cis-1,2-Dichloroethene | 50 | 0 | 49.3 | ug/L | 99 | | 4 | | 78 | 123 | 20 |
| Chloroform | 50 | 0 | 47.5 | ug/L | 95 | | 6 | | 79 | 124 | 20 |
| 1,1,1-Trichloroethane | 50 | 0 | 47.8 | ug/L | 96 | | 8 | | 74 | 131 | 20 |
| Methylcyclohexane | 50 | 0 | 46.4 | ug/L | 93 | | 9 | | 72 | 132 | 20 |
| Benzene | 50 | 0 | 45.8 | ug/L | 92 | | 2 | | 79 | 120 | 20 |
| 1,2-Dichloroethane | 50 | 0 | 44.9 | ug/L | 90 | | 5 | | 73 | 128 | 20 |
| Trichloroethene | 50 | 0 | 45.8 | ug/L | 92 | | 6 | | 79 | 123 | 20 |
| 1,2-Dichloropropane | 50 | 0 | 46.9 | ug/L | 94 | | 1 | | 78 | 122 | 20 |
| Bromodichloromethane | 50 | 0 | 47.3 | ug/L | 95 | | 4 | | 79 | 125 | 20 |
| 4-Methyl-2-Pentanone | 250 | 0 | 240 | ug/L | 96 | | 0 | | 67 | 130 | 20 |
| Toluene | 50 | 0 | 47.6 | ug/L | 95 | | 6 | | 80 | 121 | 20 |
| t-1,3-Dichloropropene | 50 | 0 | 46.5 | ug/L | 93 | | 7 | | 73 | 127 | 20 |
| cis-1,3-Dichloropropene | 50 | 0 | 45.9 | ug/L | 92 | | 0 | | 75 | 124 | 20 |
| 1,1,2-Trichloroethane | 50 | 0 | 47.0 | ug/L | 94 | | 2 | | 80 | 119 | 20 |
| 2-Hexanone | 250 | 0 | 240 | ug/L | 96 | | 0 | | 57 | 139 | 20 |
| Dibromochloromethane | 50 | 0 | 49.2 | ug/L | 98 | | 8 | | 74 | 126 | 20 |
| Tetrachloroethene | 50 | 0 | 43.9 | ug/L | 88 | | 5 | | 74 | 129 | 20 |
| Chlorobenzene | 50 | 0 | 47.4 | ug/L | 95 | | 7 | | 82 | 118 | 20 |
| Ethyl Benzene | 50 | 0 | 49.2 | ug/L | 98 | | 9 | | 79 | 121 | 20 |
| m/p-Xylenes | 100 | 0 | 100 | ug/L | 100 | | 10 | | 80 | 121 | 20 |
| o-Xylene | 50 | 0 | 52.3 | ug/L | 105 | | 10 | | 78 | 122 | 20 |
| Styrene | 50 | 0 | 51.7 | ug/L | 103 | | 7 | | 78 | 123 | 20 |
| Bromoform | 50 | 0 | 48.1 | ug/L | 96 | | 8 | | 66 | 130 | 20 |
| Isopropylbenzene | 50 | 0 | 49.0 | ug/L | 98 | | 4 | | 72 | 131 | 20 |
| 1,1,2,2-Tetrachloroethane | 50 | 0 | 45.6 | ug/L | 91 | | 1 | | 71 | 121 | 20 |
| 1,3-Dichlorobenzene | 50 | 0 | 47.5 | ug/L | 95 | | 6 | | 80 | 119 | 20 |
| 1,4-Dichlorobenzene | 50 | 0 | 47.4 | ug/L | 95 | | 7 | | 79 | 118 | 20 |
| 1,2-Dichlorobenzene | 50 | 0 | 49.8 | ug/L | 100 | | 6 | | 80 | 119 | 20 |

# Appendix C

## Support Documents

### B. Chain of Custody (COC)

# CHEMTECH
CHAIN OF CUSTODY RECORD

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

Chemtech Project Number: L3618

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-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
- ☐ 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) | | | | | | | | | |

## 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-VPB179-TB-20200804 | QA | | X | 8/4/20 | 9:00 | 2 | Trip Blank |
| 2. | BP-VPB179-GW-438-440 | AQ | | X | 8/4/20 | 9:45 | 2 | |
| 3. | BP-VPB179-GW-458-460 | AQ | | X | 8/4/20 | 11:35 | 2 | |
| 4. | BP-VPB179-GW-478-480 | AQ | | X | 8/5/20 | 10:10 | 2 | |
| 5. | BP-VPB179-GW-498-500 | AQ | | X | 8/5/20 | 12:00 | 6 | Extra volume for MS/MSD |
| 6. | BP-VPB179-DUP-20200805 | AQ | | X | 8/5/20 | - | 2 | |
| 7. | BP-VPB179-EB-20200805 | QA | | X | 8/5/20 | 13:00 | 2 | Equipment blank |
| 8. | BP-VPB179-GW-518-520 | AQ | | X | 8/5/20 | 13:40 | 2 | |
| 9. | BP-VPB179-GW-538-540 | AQ | | X | 8/6/20 | 9:40 | 2 | |
| 10. | BP-VPB179-GW-558-560 | AQ | | X | 8/6/20 | 11:40 | 2 | |

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

| | RELINQUISHED BY SAMPLER | DATE/TIME | RECEIVED BY |
|---|---|---|---|
| 1. | | 8/6/20 1600 | |
| 2. | | 8-7-20 10:00 | |
| 3. | | | |

| | RELINQUISHED BY | DATE/TIME | RECEIVED BY |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |

**Conditions of bottles or coolers at receipt:** ☒ Compliant ☐ Non Compliant ☐ Cooler Temp 1/4.5
MeOH extraction requires an additional 4oz. Jar for percent solid ☐ Ice in Cooler? 4.3

**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

**CHEMTECH**
CHAIN OF CUSTODY RECORD

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

Chemtech Project Number: L3618

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 | |

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

**ANALYSIS**

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

| 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-VPB179-GW-578-580 | AQ | | X | 8/6/20 | 13:30 | 2 | 2 | | | | | | | | | | |
| 2. | | | | | | | | | | | | | | | | | | |
| 3. | | | | | | | | | | | | | | | | | | |
| 4. | | | | | | | | | | | | | | | | | | |
| 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. | 8/6/20 1600 | 1. |
| RELINQUISHED BY | DATE/TIME | RECEIVED BY |
| 2. | 8-7-20 10:00 | 2. |
| RELINQUISHED BY | DATE/TIME | RECEIVED FOR LAB BY |
| 3. | | 3. |

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant ☐ Cooler Temp 4.3
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 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

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 # trichloroethene for BP-VPB-179-GW-438-440

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

Calc. Concentration = 7.9

| AREA c | AREA st | CONC istd | RRF | Vf | Vi | DL | UnitF |
|---|---|---|---|---|---|---|---|
| 15219 | 273812 | 50 | 0.354 | 5000 | 5000 | 1 | 1 |

Reported Concentration = 7.9

**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: | September 21, 2020 |
| DATA REVIEWER(S): | Amy L. Hogan |
| SDG NUMBER: | L3666 |
| SAMPLING DATE(S): | August 7-11, 2020 |

SAMPLES:

| Client Sample ID | Laboratory ID | VOC |
|---|---|---|
| BP-VPB179-TB-20200807 | L3666-01 | X |
| BP-VPB179-GW-598-600 | L3666-02 | X |
| BP-VPB179-GW-618-620 | L3666-03 | X |
| BP-VPB179-GW-663-665 | L3666-04 | X |
| BP-VPB179-GW-678-680 | L3666-05 | X |
| BP-VPB179-GW-703-705 | L3666-06 | X |
| BP-VPB179-GW-718-720 | L3666-07 | X |
| BP-VPB179-DUP-20200811 | L3666-08 | X |
| BP-VPB179-GW-643-645 | L3666-09 | 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: L3666 – 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-VPB179-GW-643-645 was analyzed as a soil.

All laboratory data were acceptable with qualifications.

**MAJOR ISSUES**

There were no Major Issues for this SDG.

**MINOR ISSUES**

I.) Holding Times:

The laboratory case narrative states that a pH reading of 6 was obtained for sample BP-VPB179-GW-678-680, which exceeds the QC limit. The results for this sample, which consisted entirely of non-detects, were qualified as estimated (UJ) with reason code M.

All other 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 were no associated equipment blanks 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-VPB179-TB-20200807. 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 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-VPB179-GW-678-680 / BP-VPB179-DUP-20200811) was identified as part of this SDG. There were no calculable RPD or calculable 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 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.

# 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-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 1,1,1-TRICHLOROETHANE | U | 0.75 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 1,1,2,2-TETRACHLOROETHANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 1,1,2-TRICHLOROETHANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | TRICHLOROTRIFLUOROETHANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 1,1-DICHLOROETHANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 1,1-DICHLOROETHENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 1,2-DICHLOROBENZENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 1,2-DICHLOROETHANE | U | 0.75 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 1,2-DICHLOROPROPANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 1,3-DICHLOROBENZENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 1,4-DICHLOROBENZENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 2-BUTANONE | U | 2.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 2-HEXANONE | U | 3.8 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | 4-METHYL-2-PENTANONE | U | 2.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | ACETONE | U | 2.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | BENZENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | BROMODICHLOROMETHANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | BROMOFORM | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | BROMOMETHANE | U | 3.8 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | CARBON DISULFIDE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | CARBON TETRACHLORIDE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | CHLOROBENZENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | DIBROMOCHLOROMETHANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | CHLOROETHANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | CHLOROFORM | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | CHLOROMETHANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | CIS-1,2-DICHLOROETHENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | CIS-1,3-DICHLOROPROPENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | ETHYLBENZENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | ISOPROPYLBENZENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | M/P-XYLENES | U | 1 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | METHYLCYCLOHEXANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | METHYL TERT-BUTYL ETHER | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | METHYLENE CHLORIDE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | O-XYLENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | STYRENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | TETRACHLOROETHENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | TOLUENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | TRANS-1,2-DICHLOROETHENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | TRANS-1,3-DICHLOROPROPENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | TRICHLOROETHENE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | TRICHLOROFLUOROMETHANE | U | 0.5 | | UJ | M |
| BP-VPB179-GW-678-680 | 8/11/2020 0:00 | L3666-05 | VINYL CHLORIDE | U | 0.5 | | UJ | M |

# Appendix B

## Laboratory Sample Results

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 08/07/20 |
| Project: | CTO WE13 | Date Received: | 08/12/20 |
| Client Sample ID: | BP-VPB179-TB-20200807 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-01 | 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 |
|---|---|---|---|---|
| VN062852.D | 1 | | 08/12/20 12:47 | 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 | 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: | 08/07/20 |
| Project: | CTO WE13 | Date Received: | 08/12/20 |
| Client Sample ID: | BP-VPB179-TB-20200807 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-01 | 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 |
|---|---|---|---|---|
| VN062852.D | 1 | | 08/12/20 12:47 | 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 | 51.2 | | 81 - 118 | | 102% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.5 | | 80 - 119 | | 103% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.4 | | 89 - 112 | | 97% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.1 | | 85 - 114 | | 94% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 124000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 214000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 216000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 82900 | 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: | 08/07/20 |
| Project: | CTO WE13 | Date Received: | 08/12/20 |
| Client Sample ID: | BP-VPB179-GW-598-600 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-02 | 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 |
|---|---|---|---|---|
| VN062856.D | 1 | | 08/12/20 14:31 | 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 | 8.80 | 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 | 0.60 | 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: | 08/07/20 |
| Project: | CTO WE13 | Date Received: | 08/12/20 |
| Client Sample ID: | BP-VPB179-GW-598-600 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-02 | 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 |
|---|---|---|---|---|
| VN062856.D | 1 | | 08/12/20 14:31 | 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 | 52.4 | | 81 - 118 | | 105% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.5 | | 80 - 119 | | 101% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 47.7 | | 89 - 112 | | 95% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 48.1 | | 85 - 114 | | 96% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 122000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 214000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 215000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 81000 | 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: | 08/07/20 |
| Project: | CTO WE13 | Date Received: | 08/12/20 |
| Client Sample ID: | BP-VPB179-GW-618-620 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-03 | 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 |
|---|---|---|---|---|
| VN062857.D | 1 | | 08/12/20 14:55 | 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 | 7.20 | 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 | 0.58 | 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: | 08/07/20 |
| Project: | CTO WE13 | Date Received: | 08/12/20 |
| Client Sample ID: | BP-VPB179-GW-618-620 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-03 | 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 |
|---|---|---|---|---|
| VN062857.D | 1 | | 08/12/20 14:55 | 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 | 51.7 | | 81 - 118 | | 103% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 52.7 | | 80 - 119 | | 105% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.5 | | 89 - 112 | | 99% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 49.0 | | 85 - 114 | | 98% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 127000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 217000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 225000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 83800 | 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-VPB179-GW-663-665 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-04 | 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 |
|---|---|---|---|---|
| VN062858.D | 1 | | 08/12/20 15:20 | 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 | 6.60 | 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: | 08/10/20 |
| Project: | CTO WE13 | Date Received: | 08/12/20 |
| Client Sample ID: | BP-VPB179-GW-663-665 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-04 | 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 |
|---|---|---|---|---|
| VN062858.D | 1 | | 08/12/20 15:20 | 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 | 51.9 | | 81 - 118 | | 104% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.5 | | 80 - 119 | | 103% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.8 | | 89 - 112 | | 98% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 48.6 | | 85 - 114 | | 97% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 129000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 221000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 227000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 87900 | 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-VPB179-GW-678-680 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-05 | 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 |
|---|---|---|---|---|
| VN062859.D | 1 | | 08/12/20 15:44 | 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: | 08/11/20 |
| Project: | CTO WE13 | Date Received: | 08/12/20 |
| Client Sample ID: | BP-VPB179-GW-678-680 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-05 | 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 |
|---|---|---|---|---|
| VN062859.D | 1 | | 08/12/20 15:44 | 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 | 50.4 | | 80 - 119 | | 101% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.9 | | 89 - 112 | | 98% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.6 | | 85 - 114 | | 95% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 129000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 221000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 227000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 83100 | 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-VPB179-GW-703-705 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-06 | 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 |
|---|---|---|---|---|
| VN062860.D | 1 | | 08/12/20 16:09 | 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 | 3.50 | 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 | 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-VPB179-GW-703-705 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-06 | 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 |
|---|---|---|---|---|
| VN062860.D | 1 | | 08/12/20 16:09 | 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 | 52.4 | | 81 - 118 | | 105% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.6 | | 80 - 119 | | 101% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.2 | | 89 - 112 | | 96% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.0 | | 85 - 114 | | 94% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 121000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 213000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 214000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 80300 | 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-VPB179-GW-718-720 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-07 | 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 |
|---|---|---|---|---|
| VN062861.D | 1 | | 08/12/20 16:34 | 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 | 4.20 | 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 | 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-VPB179-GW-718-720 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-07 | 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 |
|---|---|---|---|---|
| VN062861.D | 1 | | 08/12/20 16:34 | 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 | 51.9 | | 81 - 118 | | 104% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.1 | | 80 - 119 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 48.0 | | 89 - 112 | | 96% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.5 | | 85 - 114 | | 95% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 125000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 216000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 220000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 83800 | 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-VPB179-DUP-20200811 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-08 | 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 |
|---|---|---|---|---|
| VN062862.D | 1 | | 08/12/20 16:58 | 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: | 08/11/20 |
| Project: | CTO WE13 | Date Received: | 08/12/20 |
| Client Sample ID: | BP-VPB179-DUP-20200811 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-08 | 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 |
|---|---|---|---|---|
| VN062862.D | 1 | | 08/12/20 16:58 | 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 | 52.2 | | 81 - 118 | | 104% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.2 | | 80 - 119 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.7 | | 89 - 112 | | 99% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 49.4 | | 85 - 114 | | 99% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 124000 | 7.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 214000 | 8.55 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 222000 | 11.38 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 83400 | 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-VPB179-GW-643-645 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-09 | Matrix: | SOIL |
| Analytical Method: | SW8260 | % Moisture: | 72.1 |
| 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 |
|---|---|---|---|---|
| VD066214.D | 1 | | 08/13/20 17:01 | VD081320 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units(Dry Weight) |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 14.3 | U | 5.20 | 14.3 | 17.8 | ug/Kg |
| 74-87-3 | Chloromethane | 14.3 | U | 7.90 | 14.3 | 17.8 | ug/Kg |
| 75-01-4 | Vinyl Chloride | 14.3 | U | 4.90 | 14.3 | 17.8 | ug/Kg |
| 74-83-9 | Bromomethane | 14.3 | U | 4.60 | 14.3 | 17.8 | ug/Kg |
| 75-00-3 | Chloroethane | 14.3 | U | 5.80 | 14.3 | 17.8 | ug/Kg |
| 75-69-4 | Trichlorofluoromethane | 14.3 | U | 5.30 | 14.3 | 17.8 | ug/Kg |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 14.3 | U | 5.90 | 14.3 | 17.8 | ug/Kg |
| 75-35-4 | 1,1-Dichloroethene | 14.3 | U | 5.10 | 14.3 | 17.8 | ug/Kg |
| 67-64-1 | Acetone | 110 | | 21.7 | 71.3 | 89.1 | ug/Kg |
| 75-15-0 | Carbon Disulfide | 8.90 | U | 3.50 | 8.90 | 17.8 | ug/Kg |
| 1634-04-4 | Methyl tert-butyl Ether | 14.3 | U | 5.00 | 14.3 | 17.8 | ug/Kg |
| 75-09-2 | Methylene Chloride | 74.4 | | 20.3 | 28.5 | 35.6 | ug/Kg |
| 156-60-5 | trans-1,2-Dichloroethene | 14.3 | U | 5.70 | 14.3 | 17.8 | ug/Kg |
| 75-34-3 | 1,1-Dichloroethane | 8.90 | U | 3.40 | 8.90 | 17.8 | ug/Kg |
| 78-93-3 | 2-Butanone | 71.3 | U | 29.6 | 71.3 | 89.1 | ug/Kg |
| 56-23-5 | Carbon Tetrachloride | 8.90 | U | 3.20 | 8.90 | 17.8 | ug/Kg |
| 156-59-2 | cis-1,2-Dichloroethene | 14.3 | U | 5.00 | 14.3 | 17.8 | ug/Kg |
| 67-66-3 | Chloroform | 14.3 | U | 4.50 | 14.3 | 17.8 | ug/Kg |
| 71-55-6 | 1,1,1-Trichloroethane | 8.90 | U | 2.70 | 8.90 | 17.8 | ug/Kg |
| 108-87-2 | Methylcyclohexane | 8.90 | U | 1.60 | 8.90 | 17.8 | ug/Kg |
| 71-43-2 | Benzene | 8.90 | U | 3.00 | 8.90 | 17.8 | ug/Kg |
| 107-06-2 | 1,2-Dichloroethane | 8.90 | U | 3.20 | 8.90 | 17.8 | ug/Kg |
| 79-01-6 | Trichloroethene | 8.90 | U | 3.00 | 8.90 | 17.8 | ug/Kg |
| 78-87-5 | 1,2-Dichloropropane | 8.90 | U | 3.10 | 8.90 | 17.8 | ug/Kg |
| 75-27-4 | Bromodichloromethane | 8.90 | U | 3.20 | 8.90 | 17.8 | ug/Kg |
| 108-10-1 | 4-Methyl-2-Pentanone | 71.3 | U | 24.9 | 71.3 | 89.1 | ug/Kg |
| 108-88-3 | Toluene | 8.90 | U | 3.10 | 8.90 | 17.8 | ug/Kg |
| 10061-02-6 | t-1,3-Dichloropropene | 8.90 | U | 3.80 | 8.90 | 17.8 | ug/Kg |
| 10061-01-5 | cis-1,3-Dichloropropene | 8.90 | U | 3.50 | 8.90 | 17.8 | ug/Kg |
| 79-00-5 | 1,1,2-Trichloroethane | 8.90 | U | 3.50 | 8.90 | 17.8 | ug/Kg |
| 591-78-6 | 2-Hexanone | 71.3 | U | 31.4 | 71.3 | 89.1 | ug/Kg |
| 124-48-1 | Dibromochloromethane | 8.90 | U | 3.80 | 8.90 | 17.8 | ug/Kg |

# 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-VPB179-GW-643-645 | SDG No.: | L3666 |
| Lab Sample ID: | L3666-09 | Matrix: | SOIL |
| Analytical Method: | SW8260 | % Moisture: | 72.1 |
| 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 |
|---|---|---|---|---|
| VD066214.D | 1 | | 08/13/20 17:01 | VD081320 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units(Dry Weight) |
|---|---|---|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 8.90 | U | 3.10 | 8.90 | 17.8 | ug/Kg |
| 108-90-7 | Chlorobenzene | 8.90 | U | 3.20 | 8.90 | 17.8 | ug/Kg |
| 100-41-4 | Ethyl Benzene | 8.90 | U | 3.70 | 8.90 | 17.8 | ug/Kg |
| 179601-23-1 | m/p-Xylenes | 17.8 | U | 7.70 | 17.8 | 35.6 | ug/Kg |
| 95-47-6 | o-Xylene | 8.90 | U | 3.60 | 8.90 | 17.8 | ug/Kg |
| 100-42-5 | Styrene | 14.3 | U | 4.90 | 14.3 | 17.8 | ug/Kg |
| 75-25-2 | Bromoform | 14.3 | U | 4.30 | 14.3 | 17.8 | ug/Kg |
| 98-82-8 | Isopropylbenzene | 8.90 | U | 4.00 | 8.90 | 17.8 | ug/Kg |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 8.90 | U | 3.80 | 8.90 | 17.8 | ug/Kg |
| 541-73-1 | 1,3-Dichlorobenzene | 14.3 | U | 4.60 | 14.3 | 17.8 | ug/Kg |
| 106-46-7 | 1,4-Dichlorobenzene | 8.90 | U | 3.00 | 8.90 | 17.8 | ug/Kg |
| 95-50-1 | 1,2-Dichlorobenzene | 14.3 | U | 3.70 | 14.3 | 17.8 | ug/Kg |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 55.7 | | 71 - 136 | | 111% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.7 | | 78 - 119 | | 103% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 45.4 | | 85 - 116 | | 91% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 42.6 | | 79 - 119 | | 85% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 215000 | 7.98 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 329000 | 8.86 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 294000 | 11.64 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 126000 | 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

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

# CASE NARRATIVE

**Tetra Tech NUS, Inc.**
**Project Name: CTO WE13**
**Project Manager: David Brayack**
**Chemtech Project # L3666**
**Test Name: VOCMS Group1**

**A. Number of Samples and Date of Receipt:**
1 Solid sample was received on 08/12/2020.
8 Water samples were received on 08/12/2020.

**B. Parameters**
According to the Chain of Custody document, the following analyses were requested: VOCMS Group1 and VOCMS Group3. 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 of VOCMS Group1 was based on method 8260C.

**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 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 % RSD is greater than 15% in the Initial Calibration method (82N080520W.M) for 1,1,2-Trichlorotrifluoroethane, 1,1-Dichloroethene, Carbon disulfide, Methylene chloride, these compounds are passing on Linear Regression.
The Continuous Calibration met the requirements .
The Tuning criteria met requirements.

**E. Additional Comments:**
Sample # 05 has recorded pH reading- pH #6.0.

Samples for MS/MSD for VOC analysis were not provided with this set of samples. The Blank Spike Duplicate is reported with the data.

The not QT review data is reported in the Miscellaneous.

# Appendix C

## Support Documents

### B. Chain of Custody (COC)

# 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

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**

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**

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

| 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-VPB179-TB-20200807 | QA | | X | 8/7/20 | 9:00 | 2 | 2 | | | | | | | | | | Trip Blank |
| 2. | BP-VPB179-GW-598-600 | AQ | | X | 8/7/20 | 9:30 | 2 | 2 | | | | | | | | | | |
| 3. | BP-VPB179-GW-618-620 | AQ | | X | 8/7/20 | 11:30 | 4 | 4 | | | | | | | | | | Very Turbid |
| 4. | BP-VPB179-GW-643-645 | AQ | | X | 8/10/20 | 9:55 | 4 | 4 | | | | | | | | | | Very Turbid |
| 5. | BP-VPB179-GW-663-665 | AQ | | X | 8/10/20 | 13:45 | 2 | 2 | | | | | | | | | | |
| 6. | BP-VPB179-GW-678-680 | AQ | | X | 8/11/20 | 9:50 | 2 | 2 | | | | | | | | | | |
| 7. | BP-VPB179-GW-703-705 | AQ | | X | 8/11/20 | 13:35 | 2 | 2 | | | | | | | | | | |
| 8. | BP-VPB179-GW-718-720 | AQ | | X | 8/11/20 | 15:35 | 2 | 2 | | | | | | | | | | |
| 9. | BP-VPB179-DUP-20200811 | AQ | | X | 8/11/20 | 11:00 | 2 | 2 | | | | | | | | | | |
| 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. | 8/11/20/1630 | 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
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

# Appendix C

## Support Documents

### C. Calculations for Stage 4 Data Validation

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-VPB179-GW-598-600

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

Calc. Concentration = 8.8

| AREA c | AREA st | CONC istd | RRF | Vf | Vi | DL | UnitF |
|---|---|---|---|---|---|---|---|
| 6463 | 122400 | 50 | 0.299 | 5000 | 5000 | 1 | 1 |

Reported Concentration = 8.8

**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) Semivolatile Organic Compounds (SVOC)* |
| DATA VALIDATION DATE: | September 21, 2020 |
| DATA REVIEWER(S): | Amy L. Hogan |
| SDG NUMBER: | L3717 |
| SAMPLING DATE(S): | August 12-13, 2020 |

SAMPLES:

| Client Sample ID | Laboratory ID | VOC | SVOC* |
|---|---|---|---|
| BP-VPB179-GW-738-740 | L3666-01 | X | |
| BP-VPB179-TB-20200812 | L3666-02 | X | |
| BP-VPB179-GW-758-760 | L3666-03 | X | X |
| BP-VPB179-GW-778-780 | L3666-04 | X | |
| BP-VPB179-GW-798-800 | L3666-05 | X | X |
| BP-VPB179-GW-818-820 | L3666-06 | X | |
| BP-VPB179-EB-20200813 | L3666-07 | 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: L3717 – 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-VPB179-GW-738-740 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:

Acetone (7.50 ug/L), methylene chloride (0.94 ug/L) and toluene (4.70 ug/L) were detected in associated equipment blank BP-VPB-EB-20200813. Since the blank concentrations were less than the LOQ, 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-VPB179-TB-20200812. 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 the groundwater samples in this SDG. 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 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.

***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 non-detect 1,4-dioxane result for associated sample BP-VPB179-GW-798-800 was qualified as estimated (UJ) 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 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

## DATA QUALIFICATION SUMMARY TABLE (DQST) WITH QUALIFICATION CODES

**SVOC**

| Client Sample ID | Date Collected | Lab Sample ID | Analyte | Lab Qual | Val Result | VAL_RES ERROR | Val Qual | Val Reason |
|---|---|---|---|---|---|---|---|---|
| BP-VPB179-GW-798-800 | 8/13/2020 0:00 | L3717-05 | 1,4-DIOXANE | U | 0.17 | | UJ | C |

**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 | | | | |

# Appendix B

## Laboratory Sample Results

# 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-VPB179-GW-738-740 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-01 | Matrix: | SOIL |
| Analytical Method: | SW8260 | % Moisture: | 80.9 |
| Sample Wt/Vol: | 5.04 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 |
|---|---|---|---|---|
| VD066315.D | 1 | | 08/19/20 13:38 | VD081920 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units(Dry Weight) |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 20.8 | U | 7.60 | 20.8 | 26.0 | ug/Kg |
| 74-87-3 | Chloromethane | 20.8 | U | 11.6 | 20.8 | 26.0 | ug/Kg |
| 75-01-4 | Vinyl Chloride | 20.8 | U | 7.20 | 20.8 | 26.0 | ug/Kg |
| 74-83-9 | Bromomethane | 20.8 | U | 6.80 | 20.8 | 26.0 | ug/Kg |
| 75-00-3 | Chloroethane | 20.8 | U | 8.50 | 20.8 | 26.0 | ug/Kg |
| 75-69-4 | Trichlorofluoromethane | 20.8 | U | 7.80 | 20.8 | 26.0 | ug/Kg |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 20.8 | U | 8.50 | 20.8 | 26.0 | ug/Kg |
| 75-35-4 | 1,1-Dichloroethene | 20.8 | U | 7.40 | 20.8 | 26.0 | ug/Kg |
| 67-64-1 | Acetone | 96.8 | J | 31.6 | 100 | 130 | ug/Kg |
| 75-15-0 | Carbon Disulfide | 13.0 | U | 5.10 | 13.0 | 26.0 | ug/Kg |
| 1634-04-4 | Methyl tert-butyl Ether | 20.8 | U | 7.40 | 20.8 | 26.0 | ug/Kg |
| 75-09-2 | Methylene Chloride | 41.6 | U | 29.7 | 41.6 | 51.9 | ug/Kg |
| 156-60-5 | trans-1,2-Dichloroethene | 20.8 | U | 8.30 | 20.8 | 26.0 | ug/Kg |
| 75-34-3 | 1,1-Dichloroethane | 13.0 | U | 4.90 | 13.0 | 26.0 | ug/Kg |
| 78-93-3 | 2-Butanone | 100 | U | 43.1 | 100 | 130 | ug/Kg |
| 56-23-5 | Carbon Tetrachloride | 13.0 | U | 4.60 | 13.0 | 26.0 | ug/Kg |
| 156-59-2 | cis-1,2-Dichloroethene | 20.8 | U | 7.20 | 20.8 | 26.0 | ug/Kg |
| 67-66-3 | Chloroform | 20.8 | U | 6.60 | 20.8 | 26.0 | ug/Kg |
| 71-55-6 | 1,1,1-Trichloroethane | 13.0 | U | 4.00 | 13.0 | 26.0 | ug/Kg |
| 108-87-2 | Methylcyclohexane | 13.0 | U | 2.40 | 13.0 | 26.0 | ug/Kg |
| 71-43-2 | Benzene | 13.0 | U | 4.40 | 13.0 | 26.0 | ug/Kg |
| 107-06-2 | 1,2-Dichloroethane | 13.0 | U | 4.70 | 13.0 | 26.0 | ug/Kg |
| 79-01-6 | Trichloroethene | 13.0 | U | 4.40 | 13.0 | 26.0 | ug/Kg |
| 78-87-5 | 1,2-Dichloropropane | 13.0 | U | 4.60 | 13.0 | 26.0 | ug/Kg |
| 75-27-4 | Bromodichloromethane | 13.0 | U | 4.70 | 13.0 | 26.0 | ug/Kg |
| 108-10-1 | 4-Methyl-2-Pentanone | 100 | U | 36.3 | 100 | 130 | ug/Kg |
| 108-88-3 | Toluene | 13.0 | U | 4.50 | 13.0 | 26.0 | ug/Kg |
| 10061-02-6 | t-1,3-Dichloropropene | 13.0 | U | 5.60 | 13.0 | 26.0 | ug/Kg |
| 10061-01-5 | cis-1,3-Dichloropropene | 13.0 | U | 5.10 | 13.0 | 26.0 | ug/Kg |
| 79-00-5 | 1,1,2-Trichloroethane | 13.0 | U | 5.20 | 13.0 | 26.0 | ug/Kg |
| 591-78-6 | 2-Hexanone | 100 | U | 45.8 | 100 | 130 | ug/Kg |
| 124-48-1 | Dibromochloromethane | 13.0 | U | 5.50 | 13.0 | 26.0 | ug/Kg |

# 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-VPB179-GW-738-740 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-01 | Matrix: | SOIL |
| Analytical Method: | SW8260 | % Moisture: | 80.9 |
| Sample Wt/Vol: | 5.04 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 |
|---|---|---|---|---|
| VD066315.D | 1 | | 08/19/20 13:38 | VD081920 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units(Dry Weight) |
|---|---|---|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 13.0 | U | 4.50 | 13.0 | 26.0 | ug/Kg |
| 108-90-7 | Chlorobenzene | 13.0 | U | 4.70 | 13.0 | 26.0 | ug/Kg |
| 100-41-4 | Ethyl Benzene | 13.0 | U | 5.40 | 13.0 | 26.0 | ug/Kg |
| 179601-23-1 | m/p-Xylenes | 26.0 | U | 11.3 | 26.0 | 51.9 | ug/Kg |
| 95-47-6 | o-Xylene | 13.0 | U | 5.20 | 13.0 | 26.0 | ug/Kg |
| 100-42-5 | Styrene | 20.8 | U | 7.20 | 20.8 | 26.0 | ug/Kg |
| 75-25-2 | Bromoform | 20.8 | U | 6.30 | 20.8 | 26.0 | ug/Kg |
| 98-82-8 | Isopropylbenzene | 13.0 | U | 5.90 | 13.0 | 26.0 | ug/Kg |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 13.0 | U | 5.50 | 13.0 | 26.0 | ug/Kg |
| 541-73-1 | 1,3-Dichlorobenzene | 20.8 | U | 6.70 | 20.8 | 26.0 | ug/Kg |
| 106-46-7 | 1,4-Dichlorobenzene | 13.0 | U | 4.40 | 13.0 | 26.0 | ug/Kg |
| 95-50-1 | 1,2-Dichlorobenzene | 20.8 | U | 5.40 | 20.8 | 26.0 | ug/Kg |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 56.8 | | 71 - 136 | | 114% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.4 | | 78 - 119 | | 103% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 46.4 | | 85 - 116 | | 93% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 42.1 | | 79 - 119 | | 84% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 153000 | 7.98 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 236000 | 8.86 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 208000 | 11.64 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 89000 | 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

# 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-VPB179-TB-20200812 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-02 | 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 |
|---|---|---|---|---|
| VX017980.D | 1 | | 08/19/20 13:24 | 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: | 08/12/20 |
| Project: | CTO WE13 | Date Received: | 08/15/20 |
| Client Sample ID: | BP-VPB179-TB-20200812 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-02 | 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 |
|---|---|---|---|---|
| VX017980.D | 1 | | 08/19/20 13:24 | 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 | 46.4 | | 81 - 118 | | 93% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 46.3 | | 80 - 119 | | 93% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 45.4 | | 89 - 112 | | 91% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 45.3 | | 85 - 114 | | 91% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 490000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 756000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 702000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 338000 | 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: | 08/12/20 |
| Project: | CTO WE13 | Date Received: | 08/15/20 |
| Client Sample ID: | BP-VPB179-GW-758-760 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-03 | 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 |
|---|---|---|---|---|
| VX017976.D | 1 | | 08/19/20 11:54 | 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 | 7.10 | 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: | 08/12/20 |
| Project: | CTO WE13 | Date Received: | 08/15/20 |
| Client Sample ID: | BP-VPB179-GW-758-760 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-03 | 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 |
|---|---|---|---|---|
| VX017976.D | 1 | | 08/19/20 11:54 | 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 | 44.6 | | 81 - 118 | | 89% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 46.8 | | 80 - 119 | | 94% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 45.9 | | 89 - 112 | | 92% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 43.1 | | 85 - 114 | | 86% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 491000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 750000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 675000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 306000 | 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-VPB179-GW-778-780 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-04 | 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 |
|---|---|---|---|---|
| VX017977.D | 1 | | 08/19/20 12:17 | 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 | 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 | 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-VPB179-GW-778-780 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-04 | 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 |
|---|---|---|---|---|
| VX017977.D | 1 | | 08/19/20 12:17 | 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 | 44.6 | | 81 - 118 | | 89% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 47.2 | | 80 - 119 | | 94% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 46.0 | | 89 - 112 | | 92% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 42.9 | | 85 - 114 | | 86% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 510000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 764000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 702000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 314000 | 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-VPB179-GW-798-800 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-05 | 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 |
|---|---|---|---|---|
| VX017978.D | 1 | | 08/19/20 12:39 | 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 | 3.80 | 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 | 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-VPB179-GW-798-800 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-05 | 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 |
|---|---|---|---|---|
| VX017978.D | 1 | | 08/19/20 12:39 | 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 | 45.7 | | 81 - 118 | | 91% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 47.3 | | 80 - 119 | | 95% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 44.6 | | 89 - 112 | | 89% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 43.3 | | 85 - 114 | | 87% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 480000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 741000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 685000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 325000 | 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-VPB179-GW-818-820 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-06 | 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 |
|---|---|---|---|---|
| VX017979.D | 1 | | 08/19/20 13:01 | 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 | 3.90 | 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: | 08/13/20 |
| Project: | CTO WE13 | Date Received: | 08/15/20 |
| Client Sample ID: | BP-VPB179-GW-818-820 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-06 | 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 |
|---|---|---|---|---|
| VX017979.D | 1 | | 08/19/20 13:01 | 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 | 45.5 | | 81 - 118 | | 91% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 46.5 | | 80 - 119 | | 93% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 45.1 | | 89 - 112 | | 90% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 44.1 | | 85 - 114 | | 88% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 478000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 742000 | 6.84 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 688000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 321000 | 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-VPB179-EB-20200813 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-07 | 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 |
|---|---|---|---|---|
| VX017975.D | 1 | | 08/19/20 11:32 | 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 | 7.50 | 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 | 0.94 | J | 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 | 4.70 | 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: | 08/13/20 |
| Project: | CTO WE13 | Date Received: | 08/15/20 |
| Client Sample ID: | BP-VPB179-EB-20200813 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-07 | 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 |
|---|---|---|---|---|
| VX017975.D | 1 | | 08/19/20 11:32 | 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 | 45.9 | | 81 - 118 | | 92% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 46.3 | | 80 - 119 | | 93% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 45.6 | | 89 - 112 | | 91% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 42.8 | | 85 - 114 | | 86% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 494000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 763000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 696000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 312000 | 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: | 08/12/20 |
| Project: | CTO WE13 | Date Received: | 08/15/20 |
| Client Sample ID: | BP-VPB179-GW-758-760 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-03 | 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 |
|---|---|---|---|---|
| BN011633.D | 1 | 08/18/20 08:55 | 08/26/20 02:15 | PB131047 |

| 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 | 0.26 | | 30 - 150 | | 65% | SPK: 0.4 |
| 93951-69-0 | Fluoranthene-d10 | 0.32 | | 30 - 150 | | 80% | SPK: 0.4 |
| 4165-60-0 | Nitrobenzene-d5 | 0.53 | * | 55 - 111 | | 133% | SPK: 0.4 |
| 321-60-8 | 2-Fluorobiphenyl | 0.67 | * | 53 - 106 | | 168% | 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 | 2260 | 7.76 | | | | |
| 1146-65-2 | Naphthalene-d8 | 9190 | 10.54 | | | | |
| 15067-26-2 | Acenaphthene-d10 | 5870 | 14.39 | | | | |
| 1517-22-2 | Phenanthrene-d10 | 13400 | 17.14 | | | | |
| 1719-03-5 | Chrysene-d12 | 13200 | 21.32 | | | | |
| 1520-96-3 | Perylene-d12 | 13900 | 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: | 08/13/20 |
| Project: | CTO WE13 | Date Received: | 08/15/20 |
| Client Sample ID: | BP-VPB179-GW-798-800 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-05 | Matrix: | Water |
| Analytical Method: | SW8270SIM | % Moisture: | 100 |
| Sample Wt/Vol: | 590 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 |
|---|---|---|---|---|
| BN011575.D | 1 | 08/18/20 08:55 | 08/22/20 07:16 | PB131047 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 123-91-1 | 1,4-Dioxane | 0.17 | U | 0.16 | 0.17 | 0.17 | ug/L |
| **SURROGATES** | | | | | | | |
| 7297-45-2 | 2-Methylnaphthalene-d10 | 0.26 | | 30 - 150 | | 65% | SPK: 0.4 |
| 93951-69-0 | Fluoranthene-d10 | 0.35 | | 30 - 150 | | 88% | SPK: 0.4 |
| 4165-60-0 | Nitrobenzene-d5 | 0.46 | * | 55 - 111 | | 114% | SPK: 0.4 |
| 321-60-8 | 2-Fluorobiphenyl | 0.58 | * | 53 - 106 | | 145% | 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 | 1580 | 7.4 | | | | |
| 1146-65-2 | Naphthalene-d8 | 6260 | 10.14 | | | | |
| 15067-26-2 | Acenaphthene-d10 | 3850 | 14.03 | | | | |
| 1517-22-2 | Phenanthrene-d10 | 9240 | 16.79 | | | | |
| 1719-03-5 | Chrysene-d12 | 9840 | 21.01 | | | | |
| 1520-96-3 | Perylene-d12 | 9890 | 23.1 | | | | |

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

# 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-VPB179-EB-20200813 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-07 | 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 |
|---|---|---|---|---|
| VX017975.D | 1 | | 08/19/20 11:32 | 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 | 7.50 | 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 | 0.94 | J | 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 | 4.70 | 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: | 08/13/20 |
| Project: | CTO WE13 | Date Received: | 08/15/20 |
| Client Sample ID: | BP-VPB179-EB-20200813 | SDG No.: | L3717 |
| Lab Sample ID: | L3717-07 | 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 |
|---|---|---|---|---|
| VX017975.D | 1 | | 08/19/20 11:32 | 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 | 45.9 | | 81 - 118 | | 92% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 46.3 | | 80 - 119 | | 93% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 45.6 | | 89 - 112 | | 91% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 42.8 | | 85 - 114 | | 86% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 494000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 763000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 696000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 312000 | 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



# Surrogate Summary

**SW-846**

**SDG No.:** L3717

**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 |
|---|---|---|---|---|---|---|---|---|
| L3717-03 | BP-VPB179-GW-758-760 | 2-Methylnaphthalene-d10 | 0.4 | 0.26 | 65 | | 30 | 150 |
| | | Fluoranthene-d10 | 0.4 | 0.32 | 80 | | 30 | 150 |
| | | Nitrobenzene-d5 | 0.4 | 0.53 | 133 | * | 55 | 111 |
| | | 2-Fluorobiphenyl | 0.4 | 0.67 | 168 | * | 53 | 106 |
| | | Terphenyl-d14 | 0.4 | 0.71 | 176 | * | 58 | 132 |
| L3717-05 | BP-VPB179-GW-798-800 | 2-Methylnaphthalene-d10 | 0.4 | 0.26 | 65 | | 30 | 150 |
| | | Fluoranthene-d10 | 0.4 | 0.35 | 88 | | 30 | 150 |
| | | Nitrobenzene-d5 | 0.4 | 0.46 | 114 | * | 55 | 111 |
| | | 2-Fluorobiphenyl | 0.4 | 0.58 | 145 | * | 53 | 106 |
| | | Terphenyl-d14 | 0.4 | 0.68 | 170 | * | 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 |

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 |

# Appendix C

## Support Documents

### B. Chain of Custody (COC)

# CHEMTECH
CHAIN OF CUSTODY RECORD

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

Chemtech Project Number: L3717

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-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 & 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) | | | | | | | |

## 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 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | BP-VPB179-TB-20200812 | QA | | X | 8/12/20 | 9:00 | 2 | 2 | | | | | | | | | Trip Blank |
| 2. | BP-VPB179-GW-738-740 | AQ | | X | 8/12/20 | 10:07 | 2 | 2 | | | | | | | | | Very Turbid |
| 3. | BP-VPB179-GW-758-760 | AQ | | X | 8/12/20 | 12:25 | 3 | 2 | 1 | | | | | | | | |
| 4. | BP-VPB179-GW-778-780 | AQ | | X | 8/13/20 | 10:15 | 2 | 2 | | | | | | | | | |
| 5. | BP-VPB179-GW-798-800 | AQ | | X | 8/13/20 | 12:15 | 3 | 2 | 1 | | | | | | | | |
| 6. | BP-VPB179-GW-818-820 | AQ | | X | 8/13/20 | 14:20 | 2 | 2 | | | | | | | | | |
| 7. | BP-VPB179-EB-20200813 | AQ | | X | 8/13/20 | 14:45 | 2 | 2 | | | | | | | | | |
| 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. Daniel Albanese | 8/14/20 - 1535 | 1. |
| RELINQUISHED BY | DATE/TIME | RECEIVED BY |
| 2. | 8/15/20 13:15 | 2. |
| RELINQUISHED BY | DATE/TIME | RECEIVED FOR LAB BY |
| 3. | | 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

# Appendix C

## Support Documents

### C. Calculations for Stage 4 Data Validation

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-VPB179-GW-758-760

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

Calc. Concentration = 7.1

| AREA c | AREA st | CONC istd | RRF | Vf | Vi | DL | UnitF |
|---|---|---|---|---|---|---|---|
| 20165 | 491003 | 50 | 0.288 | 5000 | 5000 | 1 | 1 |

Reported Concentration = 7.1

**SDG L3717**

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 |
|---|---|---|---|---|---|---|
| 1413 | 2150 | 0.4 | 0.62 | 1000 | 1000 | 1 |

Reported Concentration = 0.42

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## 5. VPB179 Groundwater Analytical Data Validation Table

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VPB179 Groundwater Analytical Data Validated Table



| LOCATION<br>SAMPLE ID<br>SAMPLE DATE<br>TOP DEPTH<br>BOTTOM DEPTH | NYSDEC Groundwater Guidance or Standard Value [1] | **VPB179**<br>**BP-VPB179-GW-58-60**<br>**20200728**<br>**58**<br>**60** | **VPB179**<br>**BP-VPB179-GW-98-100**<br>**20200728**<br>**98**<br>**100** | **VPB179**<br>**BP-VPB179-GW-153-155**<br>**20200729**<br>**153**<br>**155** | **VPB179**<br>**BP-VPB179-GW-198-200**<br>**20200729**<br>**198**<br>**200** | **VPB179**<br>**BP-VPB179-GW-218-220**<br>**20200729**<br>**218**<br>**220** | **VPB179**<br>**BP-VPB179-GW-238-240**<br>**20200729**<br>**238**<br>**240** | **VPB179**<br>**BP-VPB179-GW-258-260**<br>**20200730**<br>**258**<br>**260** |
|---|---|---|---|---|---|---|---|---|
| **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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 0.5 U |
| 2-BUTANONE | 50 | 6.6 J | 3.4 J | 9.8 J | 2.5 U | 2.5 U | 2.5 U | 4 J |
| 2-HEXANONE | 50 | 2.2 J | 3.8 U | 1.1 J | 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 | 2.5 U |
| ACETONE | 5 | 22.3 U | 14.3 U | **45.2** | 6.8 U | 5.5 U | 8.3 U | 18.9 U |
| BENZENE | 1 | **1.9** J | 0.78 J | 0.68 J | 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 | 0.5 U |
| BROMOFORM | 50 | 0.5 U | 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 | 3.8 U |
| CARBON DISULFIDE | 60 | 0.5 U | 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 | 0.5 U |
| CHLOROBENZENE | 5 | 0.76 J | 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 | 0.5 U |
| CHLOROETHANE | 5 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLOROFORM | 7 | 0.5 U | 0.88 J | 0.5 U | 0.5 U | 0.5 U | 0.52 J | 0.5 U |
| CHLOROMETHANE | 5 | 0.5 U | 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 | **49** | **17.8** | **10.1** | **5.8** |
| CIS-1,3-DICHLOROPROPENE | 0.4 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| ETHYLBENZENE | 5 | 1.6 J | 2.1 J | 1.7 J | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| ISOPROPYLBENZENE | 5 | 0.21 J | 0.5 U | 0.27 J | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| M+P-XYLENES | NC | 4 J | 7.1 J | 5.8 J | 0.27 J | 1 U | 1 U | 0.38 J |
| METHYL CYCLOHEXANE | NC | 0.5 U | 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 | 0.97 J | 0.55 J |
| METHYLENE CHLORIDE | 5 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| O-XYLENE | NC | 2.9 J | 4.3 J | 3.2 J | 0.5 U | 0.5 U | 0.5 U | 0.21 J |
| STYRENE | 5 | 0.5 U | 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 | 0.31 J | **15.1** | **17** | 3.2 J | **14.9** |
| TOLUENE | 5 | **7.2** | **11.9** | **5.7** | 0.31 U | 0.5 U | 0.5 U | 0.35 U |
| TRANS-1,2-DICHLOROETHENE | 5 | 0.5 U | 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 | 0.5 U |
| TRICHLOROETHENE | 5 | 0.5 U | 0.5 U | 0.5 U | **140** | **76.7** | **24.2** | **32.8** |
| TRICHLOROFLUOROMETHANE | 5 | 0.5 U | 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 | 0.5 U |
| **SEMIVOLATILES (UG/L)** | | | | | | | | |
| 1,4-DIOXANE | 1 [2] | -- | -- | -- | -- | -- | -- | -- |

| LOCATION<br>SAMPLE ID<br>SAMPLE DATE<br>TOP DEPTH<br>BOTTOM DEPTH | NYSDEC Groundwater Guidance or Standard Value [1] | **VPB179**<br>**BP-VPB179-GW-278-280**<br>**20200730**<br>**278**<br>**280** | **VPB179**<br>**BP-VPB179-GW-278-280-D**<br>**20200730**<br>**278**<br>**280** | **VPB179**<br>**BP-VPB179-GW-298-300**<br>**20200730**<br>**298**<br>**300** | **VPB179**<br>**BP-VPB179-GW-318-320**<br>**20200731**<br>**318**<br>**320** | **VPB179**<br>**BP-VPB179-GW-338-340**<br>**20200731**<br>**338**<br>**340** | **VPB179**<br>**BP-VPB179-GW-358-360**<br>**20200803**<br>**358**<br>**360** | **VPB179**<br>**BP-VPB179-GW-378-380**<br>**20200803**<br>**378**<br>**380** |
|---|---|---|---|---|---|---|---|---|
| **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 | 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 | 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 | 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 | 0.5 U |
| 1,1-DICHLOROETHANE | 5 | 0.43 J | 0.5 U | 0.5 U | 0.31 J | 0.5 U | 0.46 J | 0.33 J |
| 1,1-DICHLOROETHENE | 5 | 0.82 J | 1.2 J | 0.5 U | 0.61 J | 0.5 U | 1.1 J | 0.55 J |
| 1,2-DICHLOROBENZENE | 3 | 0.5 U | 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 | 0.75 U |
| 1,2-DICHLOROPROPANE | 1 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.95 J | 0.49 J |
| 1,3-DICHLOROBENZENE | 3 | 0.5 U | 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 | 0.5 U |
| 2-BUTANONE | 50 | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U |
| 2-HEXANONE | 50 | 3.8 U | 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 | 2.5 U |
| ACETONE | 5 | 6.3 U | 7 U | 4.2 U | **15** J | 2.9 J | **13.5** J | 4.3 J |
| BENZENE | 1 | 0.5 U | 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 | 0.5 U |
| BROMOFORM | 50 | 0.5 U | 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 | 3.8 U |
| CARBON DISULFIDE | 60 | 0.5 U | 0.5 U | 0.5 U | 0.5 UJ | 0.5 UJ | 0.5 UJ | 0.5 UJ |
| CARBON TETRACHLORIDE | 5 | 0.5 U | 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 | 0.5 U |
| CHLORODIBROMOMETHANE | 5 | 0.5 U | 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 | 0.5 U |
| CHLOROFORM | 7 | 0.5 U | 0.5 U | 0.32 J | 0.5 U | 0.5 U | 0.5 U | 0.2 J |
| CHLOROMETHANE | 5 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CIS-1,2-DICHLOROETHENE | 5 | **8.3** | **10.7** | **13.6** | **22.3** | 0.5 U | **10.3** | 5 |
| CIS-1,3-DICHLOROPROPENE | 0.4 | 0.5 U | 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 | 0.5 U |
| ISOPROPYLBENZENE | 5 | 0.5 U | 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 | 0.3 J | 1 U |
| METHYL CYCLOHEXANE | NC | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| METHYL TERT-BUTYL ETHER | 10 | 1.2 J | 1.5 J | 0.21 J | 0.5 U | 0.5 U | 0.5 U | 0.45 J |
| METHYLENE CHLORIDE | 5 | 0.5 U | 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 | 0.5 U |
| STYRENE | 5 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| TETRACHLOROETHENE | 5 | 4.1 J | 4.2 J | **10.7** | **11.1** | 0.26 J | **13.2** | **8.1** |
| TOLUENE | 5 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.23 J | 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 | 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 | 0.5 U |
| TRICHLOROETHENE | 5 | **53.5** | **64.2** | **130** | **150** | 1.5 J | **75.5** | **67.1** |
| TRICHLOROFLUOROMETHANE | 5 | 0.5 U | 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 | 0.5 U |
| **SEMIVOLATILES (UG/L)** | | | | | | | | |
| 1,4-DIOXANE | 1 [2] | -- | -- | -- | -- | -- | -- | -- |

| LOCATION<br>SAMPLE ID<br>SAMPLE DATE<br>TOP DEPTH<br>BOTTOM DEPTH | NYSDEC Groundwater Guidance or Standard Value [1] | **VPB179**<br>**BP-VPB179-GW-398-400**<br>**20200803**<br>**398**<br>**400** | **VPB179**<br>**BP-VPB179-GW-418-420**<br>**20200803**<br>**418**<br>**420** | **VPB179**<br>**BP-VPB179-GW-438-440**<br>**20200804**<br>**438**<br>**440** | **VPB179**<br>**BP-VPB179-GW-458-460**<br>**20200804**<br>**458**<br>**460** | **VPB179**<br>**BP-VPB179-GW-478-480**<br>**20200805**<br>**478**<br>**480** | **VPB179**<br>**BP-VPB179-GW-498-500**<br>**20200805**<br>**498**<br>**500** | **VPB179**<br>**BP-VPB179-GW-498-500-D**<br>**20200805**<br>**498**<br>**500** |
|---|---|---|---|---|---|---|---|---|
| **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 | 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 | 0.5 U |
| 1,1,2-TRICHLOROETHANE | 1 | 0.28 J | 0.27 J | 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 | 0.5 U |
| 1,1-DICHLOROETHANE | 5 | 0.53 J | 0.56 J | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-DICHLOROETHENE | 5 | 0.9 J | 1.2 J | 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 | 0.5 U |
| 1,2-DICHLOROETHANE | 5 | 0.28 J | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U |
| 1,2-DICHLOROPROPANE | 1 | **1.7** J | 0.67 J | 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 | 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 | 0.5 U |
| 2-BUTANONE | 50 | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U |
| 2-HEXANONE | 50 | 3.8 U | 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 | 2.5 U |
| ACETONE | 5 | 4.4 J | 3.9 J | 12.3 U | 3 U | 15.5 U | 2.9 U | 5.5 U |
| BENZENE | 1 | 0.5 U | 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 | 0.5 U |
| BROMOFORM | 50 | 0.5 U | 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 | 3.8 U |
| CARBON DISULFIDE | 60 | 0.5 UJ | 0.5 UJ | 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 | 0.5 U |
| CHLOROBENZENE | 5 | 0.5 U | 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 | 0.5 U |
| CHLOROETHANE | 5 | 0.5 U | 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 | 0.5 U |
| CHLOROMETHANE | 5 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CIS-1,2-DICHLOROETHENE | 5 | **29.1** | **32.7** | 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 | 0.5 U |
| ETHYLBENZENE | 5 | 0.5 U | 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 | 0.5 U |
| M+P-XYLENES | NC | 1 U | 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 | 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 | 0.5 U |
| METHYLENE CHLORIDE | 5 | 0.5 U | 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 | 0.5 U |
| STYRENE | 5 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| TETRACHLOROETHENE | 5 | **17.9** | **25** | 0.93 J | 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 | 0.5 U |
| TRANS-1,2-DICHLOROETHENE | 5 | 0.58 J | 0.43 J | 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 | 0.5 U |
| TRICHLOROETHENE | 5 | **280** | **270** | **7.9** | 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 | 0.5 U |
| VINYL CHLORIDE | 2 | 0.5 U | 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] | -- | -- | -- | -- | -- | -- | -- |

| LOCATION<br>SAMPLE ID<br>SAMPLE DATE<br>TOP DEPTH<br>BOTTOM DEPTH | NYSDEC Groundwater Guidance or Standard Value (1) | **VPB179**<br>**BP-VPB179-GW-518-520**<br>**20200805**<br>**518**<br>**520** | **VPB179**<br>**BP-VPB179-GW-538-540**<br>**20200806**<br>**538**<br>**540** | **VPB179**<br>**BP-VPB179-GW-558-560**<br>**20200806**<br>**558**<br>**560** | **VPB179**<br>**BP-VPB179-GW-578-580**<br>**20200806**<br>**578**<br>**580** | **VPB179**<br>**BP-VPB179-GW-598-600**<br>**20200807**<br>**598**<br>**600** | **VPB179**<br>**BP-VPB179-GW-618-620**<br>**20200807**<br>**618**<br>**620** | **VPB179**<br>**BP-VPB179-GW-663-665**<br>**20200810**<br>**663**<br>**665** |
|---|---|---|---|---|---|---|---|---|
| **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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 0.5 U |
| 2-BUTANONE | 50 | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U |
| 2-HEXANONE | 50 | 3.8 U | 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 | 2.5 U |
| ACETONE | 5 | 5.2 U | 6.5 U | 5.9 U | 5.7 U | **8.8** J | **7.2** J | **6.6** J |
| BENZENE | 1 | 0.5 U | 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 | 0.5 U |
| BROMOFORM | 50 | 0.5 U | 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 | 3.8 U |
| CARBON DISULFIDE | 60 | 0.5 U | 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 | 0.5 U |
| CHLOROBENZENE | 5 | 0.5 U | 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 | 0.5 U |
| CHLOROETHANE | 5 | 0.5 U | 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 | 0.5 U |
| CHLOROMETHANE | 5 | 0.5 U | 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 | 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 | 0.5 U |
| ETHYLBENZENE | 5 | 0.5 U | 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 | 0.5 U |
| M+P-XYLENES | NC | 1 U | 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 | 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 | 0.5 U |
| METHYLENE CHLORIDE | 5 | 0.5 U | 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 | 0.5 U |
| STYRENE | 5 | 0.5 U | 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 | 0.5 U |
| TOLUENE | 5 | 0.5 U | 0.5 U | 0.38 J | 0.49 J | 0.6 J | 0.58 J | 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 | 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 | 0.5 U |
| TRICHLOROETHENE | 5 | 0.5 U | 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 | 0.5 U |
| VINYL CHLORIDE | 2 | 0.5 U | 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) | -- | -- | -- | -- | -- | -- | -- |

| LOCATION<br>SAMPLE ID<br>SAMPLE DATE<br>TOP DEPTH<br>BOTTOM DEPTH | NYSDEC Groundwater Guidance or Standard Value [1] | **VPB179**<br>**BP-VPB179-GW-678-680**<br>**20200811**<br>**678**<br>**680** | **VPB179**<br>**BP-VPB179-GW-678-680-D**<br>**20200811**<br>**678**<br>**680** | **VPB179**<br>**BP-VPB179-GW-703-705**<br>**20200811**<br>**703**<br>**705** | **VPB179**<br>**BP-VPB179-GW-718-720**<br>**20200811**<br>**718**<br>**720** | **VPB179**<br>**BP-VPB179-GW-758-760**<br>**20200812**<br>**758**<br>**760** | **VPB179**<br>**BP-VPB179-GW-778-780**<br>**20200813**<br>**778**<br>**780** | **VPB179**<br>**BP-VPB179-GW-798-800**<br>**20200813**<br>**798**<br>**800** |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES (UG/L)** | | | | | | | | |
| 1,1,1-TRICHLOROETHANE | 5 | 0.75 UJ | 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 UJ | 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 UJ | 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 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-DICHLOROETHANE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-DICHLOROETHENE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-DICHLOROBENZENE | 3 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-DICHLOROETHANE | 5 | 0.75 UJ | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U | 0.75 U |
| 1,2-DICHLOROPROPANE | 1 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,3-DICHLOROBENZENE | 3 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,4-DICHLOROBENZENE | 3 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 2-BUTANONE | 50 | 2.5 UJ | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U |
| 2-HEXANONE | 50 | 3.8 UJ | 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 UJ | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U | 2.5 U |
| ACETONE | 5 | 2.5 UJ | 2.5 U | 3.5 J | 4.2 J | 7.1 U | 4.8 U | 3.8 U |
| BENZENE | 1 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| BROMODICHLOROMETHANE | 50 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| BROMOFORM | 50 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| BROMOMETHANE | 5 | 3.8 UJ | 3.8 U | 3.8 U | 3.8 U | 3.8 U | 3.8 U | 3.8 U |
| CARBON DISULFIDE | 60 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CARBON TETRACHLORIDE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLOROBENZENE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLORODIBROMOMETHANE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLOROETHANE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLOROFORM | 7 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLOROMETHANE | 5 | 0.5 UJ | 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 UJ | 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 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| ETHYLBENZENE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| ISOPROPYLBENZENE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| M+P-XYLENES | NC | 1 UJ | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| METHYL CYCLOHEXANE | NC | 0.5 UJ | 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 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| METHYLENE CHLORIDE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| O-XYLENE | NC | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| STYRENE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| TETRACHLOROETHENE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| TOLUENE | 5 | 0.5 UJ | 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 UJ | 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 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| TRICHLOROETHENE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| TRICHLOROFLUOROMETHANE | 5 | 0.5 UJ | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| VINYL CHLORIDE | 2 | 0.5 UJ | 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 | -- | 0.17 UJ |

| LOCATION<br>SAMPLE ID<br>SAMPLE DATE<br>TOP DEPTH<br>BOTTOM DEPTH | NYSDEC Groundwater Guidance or Standard Value (1) | **VPB179**<br>**BP-VPB179-GW-818-820**<br>**20200813**<br>**818**<br>**820** |
|---|---|---|
| **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 | 3.9 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.

## 6. VPB179 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: | September 21, 2020 |
| DATA REVIEWER(S): | Amy L. Hogan |
| SDG NUMBER: | 2008201 |
| SAMPLING DATE(S): | August 6, 2020 |

SAMPLES:

| Client Sample ID | Laboratory ID | VOC |
|---|---|---|
| BP-VPB179-AIR-DW-20200806 | 2008201-01 | X |
| BP-VPB180-AIR-DW-20200806MD | 2008201-01MD | X |
| BP-VPB180-AIR-UW-20200806 | 2008201-02 | 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: 2008201 – 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 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 Standard Deviation (%RSD) for the standards analyzed on 8/4/20 on instrument MSD_V was 36.4% for bromomethane, which exceeded the 30% QC limit. The bromomethane results for both samples, which were non-detects, were qualified as estimated (UJ) 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 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. The Percent Recoveries (%Rs) for Freon 11 (134%, 133%) exceeded the 62-126% laboratory QC limits. Since the Freon 11 results for the samples were non-detect, no data qualification was necessary.

VII.) Matrix Duplicate (MD):

MD analysis was performed using SDG sample BP-VPB179-AIR-DW-20200806. 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.

# 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-VPB179-AIR-DW-2020080 | 8/6/2020 0:00 | 2008201-01A | BROMOMETHANE | U | 2.5 | | UJ | C |
| BP-VPB179-AIR-UW-2020080 | 8/6/2020 0:00 | 2008201-02A | BROMOMETHANE | U | 2.5 | | UJ | C |

# Appendix B

## Laboratory Sample Results

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

eurofins | Air Toxics

| | | | |
|---|---|---|---|
| **Client ID:** | BP-VPB179-AIR-DW-20200806 | | |
| **Lab ID:** | 2008201-01A | **Date/Time Analyzed:** | 8/13/20 12:47 PM |
| **Date/Time Collected:** | 8/6/20 03:30 PM | **Dilution Factor:** | 1.61 |
| **Media:** | 6 Liter Summa Canister (100% SIM Ambier | **Instrument/Filename:** | msdv.i / v081307 |

| Compound | CAS# | MDL (ug/m3) | LOD (ug/m3) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | 120-82-1 | 2.6 | 4.8 | 6.0 | 4.8 U |
| 1,2,4-Trimethylbenzene | 95-63-6 | 0.33 | 0.63 | 0.79 | 0.46 J |
| 1,2-Dichlorobenzene | 95-50-1 | 0.57 | 0.77 | 0.97 | 0.77 U |
| 1,2-Dichloropropane | 78-87-5 | 0.35 | 0.60 | 0.74 | 0.60 U |
| 1,3,5-Trimethylbenzene | 108-67-8 | 0.40 | 0.63 | 0.79 | 0.63 U |
| 1,3-Butadiene | 106-99-0 | 0.15 | 0.28 | 0.36 | 0.28 U |
| 1,3-Dichlorobenzene | 541-73-1 | 0.29 | 0.77 | 0.97 | 0.77 U |
| 1,4-Dioxane | 123-91-1 | 0.33 | 0.46 | 0.58 | 0.46 U |
| 2,2,4-Trimethylpentane | 540-84-1 | 0.83 | 3.0 | 3.8 | 1.8 J |
| 2-Butanone (Methyl Ethyl Ketone) | 78-93-3 | 0.38 | 1.9 | 2.4 | 2.0 J |
| 2-Hexanone | 591-78-6 | 0.47 | 2.6 | 3.3 | 2.6 U |
| 2-Propanol | 67-63-0 | 0.43 | 1.6 | 2.0 | 4.6 |
| 3-Chloropropene | 107-05-1 | 1.2 | 2.0 | 2.5 | 2.0 U |
| 4-Ethyltoluene | 622-96-8 | 0.30 | 0.63 | 0.79 | 0.63 U |
| 4-Methyl-2-pentanone | 108-10-1 | 0.14 | 0.53 | 0.66 | 0.53 U |
| Acetone | 67-64-1 | 0.68 | 1.5 | 3.8 | 15 |
| alpha-Chlorotoluene | 100-44-7 | 0.52 | 0.67 | 0.83 | 0.67 U |
| Bromodichloromethane | 75-27-4 | 0.33 | 0.86 | 1.1 | 0.86 U |
| Bromoform | 75-25-2 | 0.51 | 1.3 | 1.7 | 1.3 U |
| Bromomethane | 74-83-9 | 0.61 | 2.5 | 3.1 | 2.5 U |
| Carbon Disulfide | 75-15-0 | 0.37 | 2.0 | 2.5 | 2.0 U |
| Chlorobenzene | 108-90-7 | 0.23 | 0.59 | 0.74 | 0.59 U |
| Chloromethane | 74-87-3 | 0.34 | 1.3 | 1.7 | 1.3 U |
| cis-1,3-Dichloropropene | 10061-01-5 | 0.28 | 0.58 | 0.73 | 0.58 U |

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

| | | | |
|---|---|---|---|
| **Client ID:** | BP-VPB179-AIR-DW-20200806 | | |
| **Lab ID:** | 2008201-01A | **Date/Time Analyzed:** | 8/13/20 12:47 PM |
| **Date/Time Collected:** | 8/6/20 03:30 PM | **Dilution Factor:** | 1.61 |
| **Media:** | 6 Liter Summa Canister (100% SIM Ambier | **Instrument/Filename:** | msdv.i / v081307 |

| Compound | CAS# | MDL (ug/m3) | LOD (ug/m3) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|---|
| Cumene | 98-82-8 | 0.10 | 0.63 | 0.79 | 0.63 U |
| Cyclohexane | 110-82-7 | 0.22 | 0.44 | 2.8 | 0.40 J |
| Dibromochloromethane | 124-48-1 | 0.54 | 1.1 | 1.4 | 1.1 U |
| Ethanol | 64-17-5 | 0.44 | 1.2 | 3.0 | 51 |
| Freon 11 | 75-69-4 | 0.20 | 0.72 | 0.90 | 1.4 |
| Freon 113 | 76-13-1 | 0.51 | 0.99 | 1.2 | 0.99 U |
| Heptane | 142-82-5 | 0.61 | 2.6 | 3.3 | 2.6 U |
| Hexachlorobutadiene | 87-68-3 | 2.7 | 6.9 | 8.6 | 6.9 U |
| Hexane | 110-54-3 | 0.48 | 2.3 | 2.8 | 1.0 J |
| Methylene Chloride | 75-09-2 | 0.28 | 0.45 | 1.1 | 0.65 J |
| Propylbenzene | 103-65-1 | 0.47 | 0.63 | 0.79 | 0.63 U |
| Styrene | 100-42-5 | 0.20 | 0.55 | 0.68 | 0.55 U |
| Tetrahydrofuran | 109-99-9 | 0.81 | 1.9 | 2.4 | 1.9 U |
| trans-1,3-Dichloropropene | 10061-02-6 | 0.31 | 0.58 | 0.73 | 0.58 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 | 128 |
| 4-Bromofluorobenzene | 460-00-4 | 71-124 | 106 |
| Toluene-d8 | 2037-26-5 | 89-112 | 92 |

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MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

eurofins | Air Toxics

| | | | |
|---|---|---|---|
| **Client ID:** | BP-VPB179-AIR-DW-20200806 | | |
| **Lab ID:** | 2008201-01B | **Date/Time Analyzed:** | 8/13/20 12:47 PM |
| **Date/Time Collected:** | 8/6/20 03:30 PM | **Dilution Factor:** | 1.61 |
| **Media:** | 6 Liter Summa Canister (100% SIM Ambier | **Instrument/Filename:** | msdv.i / v081307sim |

| Compound | CAS# | MDL (ug/m3) | LOD (ug/m3) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 71-55-6 | 0.050 | 0.17 | 0.18 | 0.072 J |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.12 | 0.21 | 0.22 | 0.21 U |
| 1,1,2-Trichloroethane | 79-00-5 | 0.068 | 0.17 | 0.18 | 0.17 U |
| 1,1-Dichloroethane | 75-34-3 | 0.039 | 0.12 | 0.13 | 0.12 U |
| 1,1-Dichloroethene | 75-35-4 | 0.055 | 0.059 | 0.064 | 0.059 U |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 0.098 | 0.24 | 0.62 | 0.24 U |
| 1,2-Dichloroethane | 107-06-2 | 0.053 | 0.12 | 0.13 | 0.098 J |
| 1,4-Dichlorobenzene | 106-46-7 | 0.18 | 0.18 | 0.48 | 0.19 J |
| Benzene | 71-43-2 | 0.034 | 0.098 | 0.26 | 0.92 |
| Carbon Tetrachloride | 56-23-5 | 0.13 | 0.19 | 0.20 | 0.55 |
| Chloroethane | 75-00-3 | 0.033 | 0.081 | 0.21 | 0.081 U |
| Chloroform | 67-66-3 | 0.067 | 0.15 | 0.16 | 0.23 |
| cis-1,2-Dichloroethene | 156-59-2 | 0.042 | 0.12 | 0.13 | 0.12 U |
| Ethyl Benzene | 100-41-4 | 0.046 | 0.13 | 0.14 | 0.40 |
| Freon 114 | 76-14-2 | 0.060 | 0.21 | 0.22 | 0.15 J |
| Freon 12 | 75-71-8 | 0.064 | 0.15 | 0.40 | 2.6 |
| m,p-Xylene | 108-38-3 | 0.045 | 0.13 | 0.28 | 1.3 |
| Methyl tert-butyl ether | 1634-04-4 | 0.033 | 0.11 | 0.58 | 0.11 U |
| o-Xylene | 95-47-6 | 0.038 | 0.13 | 0.14 | 0.52 |
| Tetrachloroethene | 127-18-4 | 0.089 | 0.21 | 0.22 | 0.24 |
| Toluene | 108-88-3 | 0.058 | 0.12 | 0.30 | 2.8 |
| trans-1,2-Dichloroethene | 156-60-5 | 0.048 | 0.12 | 0.64 | 0.12 U |
| Trichloroethene | 79-01-6 | 0.066 | 0.16 | 0.17 | 0.11 J |
| Vinyl Chloride | 75-01-4 | 0.022 | 0.038 | 0.082 | 0.038 U |

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

| | | | |
|---|---|---|---|
| **Client ID:** | BP-VPB179-AIR-DW-20200806 | | |
| **Lab ID:** | 2008201-01B | **Date/Time Analyzed:** | 8/13/20 12:47 PM |
| **Date/Time Collected:** | 8/6/20 03:30 PM | **Dilution Factor:** | 1.61 |
| **Media:** | 6 Liter Summa Canister (100% SIM Ambier | **Instrument/Filename:** | msdv.i / v081307sim |

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 | 120 |
| 4-Bromofluorobenzene | 460-00-4 | 80-117 | 109 |
| Toluene-d8 | 2037-26-5 | 87-114 | 95 |

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

eurofins | Air Toxics

| | | | |
|---|---|---|---|
| **Client ID:** | BP-VPB179-AIR-UW-20200806 | | |
| **Lab ID:** | 2008201-02A | **Date/Time Analyzed:** | 8/13/20 03:17 PM |
| **Date/Time Collected:** | 8/6/20 03:30 PM | **Dilution Factor:** | 1.61 |
| **Media:** | 6 Liter Summa Canister (100% SIM Ambier | **Instrument/Filename:** | msdv.i / v081310 |

| Compound | CAS# | MDL (ug/m3) | LOD (ug/m3) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | 120-82-1 | 2.6 | 4.8 | 6.0 | 4.8 U |
| 1,2,4-Trimethylbenzene | 95-63-6 | 0.33 | 0.63 | 0.79 | 0.42 J |
| 1,2-Dichlorobenzene | 95-50-1 | 0.57 | 0.77 | 0.97 | 0.77 U |
| 1,2-Dichloropropane | 78-87-5 | 0.35 | 0.60 | 0.74 | 0.60 U |
| 1,3,5-Trimethylbenzene | 108-67-8 | 0.40 | 0.63 | 0.79 | 0.63 U |
| 1,3-Butadiene | 106-99-0 | 0.15 | 0.28 | 0.36 | 0.28 U |
| 1,3-Dichlorobenzene | 541-73-1 | 0.29 | 0.77 | 0.97 | 0.77 U |
| 1,4-Dioxane | 123-91-1 | 0.33 | 0.46 | 0.58 | 0.46 U |
| 2,2,4-Trimethylpentane | 540-84-1 | 0.83 | 3.0 | 3.8 | 1.7 J |
| 2-Butanone (Methyl Ethyl Ketone) | 78-93-3 | 0.38 | 1.9 | 2.4 | 1.1 J |
| 2-Hexanone | 591-78-6 | 0.47 | 2.6 | 3.3 | 2.6 U |
| 2-Propanol | 67-63-0 | 0.43 | 1.6 | 2.0 | 5.6 |
| 3-Chloropropene | 107-05-1 | 1.2 | 2.0 | 2.5 | 2.0 U |
| 4-Ethyltoluene | 622-96-8 | 0.30 | 0.63 | 0.79 | 0.63 U |
| 4-Methyl-2-pentanone | 108-10-1 | 0.14 | 0.53 | 0.66 | 0.53 U |
| Acetone | 67-64-1 | 0.68 | 1.5 | 3.8 | 13 |
| alpha-Chlorotoluene | 100-44-7 | 0.52 | 0.67 | 0.83 | 0.67 U |
| Bromodichloromethane | 75-27-4 | 0.33 | 0.86 | 1.1 | 0.86 U |
| Bromoform | 75-25-2 | 0.51 | 1.3 | 1.7 | 1.3 U |
| Bromomethane | 74-83-9 | 0.61 | 2.5 | 3.1 | 2.5 U |
| Carbon Disulfide | 75-15-0 | 0.37 | 2.0 | 2.5 | 2.0 U |
| Chlorobenzene | 108-90-7 | 0.23 | 0.59 | 0.74 | 0.59 U |
| Chloromethane | 74-87-3 | 0.34 | 1.3 | 1.7 | 0.91 J |
| cis-1,3-Dichloropropene | 10061-01-5 | 0.28 | 0.58 | 0.73 | 0.58 U |

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

| | | | |
|---|---|---|---|
| **Client ID:** | BP-VPB179-AIR-UW-20200806 | | |
| **Lab ID:** | 2008201-02A | **Date/Time Analyzed:** | 8/13/20 03:17 PM |
| **Date/Time Collected:** | 8/6/20 03:30 PM | **Dilution Factor:** | 1.61 |
| **Media:** | 6 Liter Summa Canister (100% SIM Ambier | **Instrument/Filename:** | msdv.i / v081310 |

| Compound | CAS# | MDL (ug/m3) | LOD (ug/m3) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|---|
| Cumene | 98-82-8 | 0.10 | 0.63 | 0.79 | 0.63 U |
| Cyclohexane | 110-82-7 | 0.22 | 0.44 | 2.8 | 0.58 J |
| Dibromochloromethane | 124-48-1 | 0.54 | 1.1 | 1.4 | 1.1 U |
| Ethanol | 64-17-5 | 0.44 | 1.2 | 3.0 | 56 |
| Freon 11 | 75-69-4 | 0.20 | 0.72 | 0.90 | 1.5 |
| Freon 113 | 76-13-1 | 0.51 | 0.99 | 1.2 | 0.99 U |
| Heptane | 142-82-5 | 0.61 | 2.6 | 3.3 | 2.6 U |
| Hexachlorobutadiene | 87-68-3 | 2.7 | 6.9 | 8.6 | 6.9 U |
| Hexane | 110-54-3 | 0.48 | 2.3 | 2.8 | 1.3 J |
| Methylene Chloride | 75-09-2 | 0.28 | 0.45 | 1.1 | 0.75 J |
| Propylbenzene | 103-65-1 | 0.47 | 0.63 | 0.79 | 0.63 U |
| Styrene | 100-42-5 | 0.20 | 0.55 | 0.68 | 0.21 J |
| Tetrahydrofuran | 109-99-9 | 0.81 | 1.9 | 2.4 | 0.88 J |
| trans-1,3-Dichloropropene | 10061-02-6 | 0.31 | 0.58 | 0.73 | 0.58 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 | 82-136 | 122 |
| 4-Bromofluorobenzene | 460-00-4 | 71-124 | 104 |
| Toluene-d8 | 2037-26-5 | 89-112 | 94 |

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MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

eurofins | Air Toxics

| | | | |
|---|---|---|---|
| **Client ID:** | BP-VPB179-AIR-UW-20200806 | | |
| **Lab ID:** | 2008201-02B | **Date/Time Analyzed:** | 8/13/20 03:17 PM |
| **Date/Time Collected:** | 8/6/20 03:30 PM | **Dilution Factor:** | 1.61 |
| **Media:** | 6 Liter Summa Canister (100% SIM Ambier | **Instrument/Filename:** | msdv.i / v081310sim |

| Compound | CAS# | MDL (ug/m3) | LOD (ug/m3) | Rpt. Limit (ug/m3) | Amount (ug/m3) |
|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 71-55-6 | 0.050 | 0.17 | 0.18 | 0.065 J |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.12 | 0.21 | 0.22 | 0.21 U |
| 1,1,2-Trichloroethane | 79-00-5 | 0.068 | 0.17 | 0.18 | 0.17 U |
| 1,1-Dichloroethane | 75-34-3 | 0.039 | 0.12 | 0.13 | 0.12 U |
| 1,1-Dichloroethene | 75-35-4 | 0.055 | 0.059 | 0.064 | 0.059 U |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 0.098 | 0.24 | 0.62 | 0.24 U |
| 1,2-Dichloroethane | 107-06-2 | 0.053 | 0.12 | 0.13 | 0.10 J |
| 1,4-Dichlorobenzene | 106-46-7 | 0.18 | 0.18 | 0.48 | 0.18 U |
| Benzene | 71-43-2 | 0.034 | 0.098 | 0.26 | 0.85 |
| Carbon Tetrachloride | 56-23-5 | 0.13 | 0.19 | 0.20 | 0.53 |
| Chloroethane | 75-00-3 | 0.033 | 0.081 | 0.21 | 0.080 J |
| Chloroform | 67-66-3 | 0.067 | 0.15 | 0.16 | 0.22 |
| cis-1,2-Dichloroethene | 156-59-2 | 0.042 | 0.12 | 0.13 | 0.12 U |
| Ethyl Benzene | 100-41-4 | 0.046 | 0.13 | 0.14 | 0.38 |
| Freon 114 | 76-14-2 | 0.060 | 0.21 | 0.22 | 0.12 J |
| Freon 12 | 75-71-8 | 0.064 | 0.15 | 0.40 | 2.5 |
| m,p-Xylene | 108-38-3 | 0.045 | 0.13 | 0.28 | 1.2 |
| Methyl tert-butyl ether | 1634-04-4 | 0.033 | 0.11 | 0.58 | 0.11 U |
| o-Xylene | 95-47-6 | 0.038 | 0.13 | 0.14 | 0.46 |
| Tetrachloroethene | 127-18-4 | 0.089 | 0.21 | 0.22 | 0.22 |
| Toluene | 108-88-3 | 0.058 | 0.12 | 0.30 | 2.7 |
| trans-1,2-Dichloroethene | 156-60-5 | 0.048 | 0.12 | 0.64 | 0.12 U |
| Trichloroethene | 79-01-6 | 0.066 | 0.16 | 0.17 | 0.098 J |
| Vinyl Chloride | 75-01-4 | 0.022 | 0.038 | 0.082 | 0.038 U |

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN
NWIRP Bethpage

| | | | |
|---|---|---|---|
| **Client ID:** | BP-VPB179-AIR-UW-20200806 | | |
| **Lab ID:** | 2008201-02B | **Date/Time Analyzed:** | 8/13/20 03:17 PM |
| **Date/Time Collected:** | 8/6/20 03:30 PM | **Dilution Factor:** | 1.61 |
| **Media:** | 6 Liter Summa Canister (100% SIM Ambier | **Instrument/Filename:** | msdv.i / v081310sim |

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 | 116 |
| 4-Bromofluorobenzene | 460-00-4 | 80-117 | 106 |
| Toluene-d8 | 2037-26-5 | 87-114 | 93 |

# Appendix C

## Support Documents

## A. Documents Supporting Qualifications

US32TAR1

INITIAL CALIBRATION DATA

Start Cal Date : 04-AUG-2020 13:12
End Cal Date : 04-AUG-2020 18:31
Quant Method : ISTD
Origin : Disabled
Target Version : 3.60
Integrator : HP RTE
Method file : /chem/msdv.i/04AUG20.b/v20l0804a.m
Cal Date : 05-Aug-2020 10:56 uefi
Curve Type : Average

| Compound | 0.05000 Level 5 | 0.10000 Level 6 | 0.50000 Level 7 | 1.000 Level 8 | 5.000 Level 12 | 10.000 Level 13 | RRF | % RSD | |
|---|---|---|---|---|---|---|---|---|---|
| | 15.000 Level 14 | 20.000 Level 15 | 40.000 Level 16 | | | | | | |
| 88 Isobutylbenzene | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | | | |
| | +++++ | +++++ | +++++ | | | | +++++ | +++++ | |
| 89 2-Ethyltoluene | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | | | |
| | +++++ | +++++ | +++++ | | | | +++++ | +++++ | |
| 90 1-Undecene | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | | | |
| | +++++ | +++++ | +++++ | | | | +++++ | +++++ | |
| 91 Bromomethane | +++++ | +++++ | 0.33643 | 0.76287 | 1.44674 | 1.22790 | | | |
| | 1.34154 | 1.30528 | 1.20583 | | | | 1.08951 | 36.410 | <- |
| 92 4-Ethyl-1,2-dimethylbenzene | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | | | |
| | +++++ | +++++ | +++++ | | | | +++++ | +++++ | |
| 93 1,3-Diethylbenzene | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | | | |
| | +++++ | +++++ | +++++ | | | | +++++ | +++++ | |
| 94 1,4-Diethylbenzene | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | | | |
| | +++++ | +++++ | +++++ | | | | +++++ | +++++ | |
| 95 1,2,4,5-tetramethylbenzene | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | | | |
| | +++++ | +++++ | +++++ | | | | +++++ | +++++ | |
| 96 Chloroethane | +++++ | +++++ | 0.43651 | 0.48382 | 0.53196 | 0.49203 | | | |
| | 0.50458 | 0.48920 | 0.48806 | | | | 0.48945 | 5.826 | |

Report Date: 13-Aug-2020 15:39

US32TAR1

RECOVERY REPORT

Client Name: Client SDG: 13AUG20
Sample Matrix: GAS Fraction: VOA
Lab Smp Id: LCS Client Smp ID: LCS
Level: LOW Operator: ef
Data Type: MS DATA SampleType: LCS
SpikeList File: ControlDOD.spk Quant Type: ISTD
Sublist File: CNTRL091120.sub
Method File: /chem/msdv.i/13AUG20.b/v20l0804a.m
Misc Info: 10ppbv (50ppbv)

| SPIKE COMPOUND | CONC ADDED PPBV | CONC RECOVERED PPBV | % RECOVERED | LIMITS |
|---|---|---|---|---|
| 39 Propylene | 10.000 | 7.973 | 79.73 | 57-136 |
| 48 Freon 12 | 10.000 | 11.502 | 115.02 | 59-128 |
| 68 Freon 114 | 10.000 | 10.603 | 106.03 | 63-121 |
| 75 Chloromethane | 10.000 | 7.230 | 72.30 | 59-132 |
| 79 Butane | 10.000 | 7.977 | 79.77 | 64-129 |
| 81 Vinyl Chloride | 10.000 | 8.586 | 85.87 | 64-127 |
| 82 1,3-Butadiene | 10.000 | 8.555 | 85.55 | 66-134 |
| 91 Bromomethane | 10.000 | 11.195 | 111.95 | 63-134 |
| 96 Chloroethane | 10.000 | 9.288 | 92.88 | 63-127 |
| 97 Isopentane | 10.000 | 9.228 | 92.29 | 63-127 |
| 101 Freon 11 | 10.000 | 13.387 | 133.87* | 62-126 |
| 107 Ethanol | 11.600 | 8.974 | 77.36 | 59-125 |
| 112 Freon 113 | 10.000 | 11.000 | 110.01 | 66-126 |
| 114 1,1-Dichloroethen | 10.000 | 10.071 | 100.71 | 61-133 |
| 116 Acetone | 10.000 | 7.172 | 71.72 | 58-128 |
| 119 Carbon Disulfide | 10.000 | 9.091 | 90.91 | 57-134 |
| 120 2-Propanol | 10.000 | 8.244 | 82.44 | 52-125 |
| 121 3-Chloropropene | 10.000 | 9.521 | 95.21 | 71-131 |
| 125 Methylene Chlorid | 10.000 | 8.805 | 88.05 | 62-115 |
| 129 Methyl tert-butyl | 10.000 | 11.441 | 114.41 | 66-126 |
| 130 trans-1,2-Dichlor | 10.000 | 9.690 | 96.90 | 67-124 |
| 132 Hexane | 10.000 | 9.304 | 93.04 | 63-120 |
| 135 1,1-Dichloroethan | 10.000 | 9.198 | 91.98 | 68-126 |
| 136 Vinyl Acetate | 10.000 | 10.672 | 106.72 | 56-139 |
| 142 cis-1,2-Dichloroe | 10.000 | 9.937 | 99.37 | 70-121 |
| 143 2-Butanone | 10.000 | 9.309 | 93.09 | 67-130 |
| 145 Tetrahydrofuran | 10.000 | 8.398 | 83.98 | 64-123 |
| 147 Chloroform | 10.000 | 10.716 | 107.16 | 68-123 |
| 149 1,1,1-Trichloroet | 10.000 | 12.298 | 122.98 | 68-125 |
| 150 Carbon Tetrachlor | 10.000 | 7.349 | 73.49 | 68-132 |
| 148 Cyclohexane | 10.000 | 10.125 | 101.25 | 70-117 |
| 155 2,2,4-Trimethylpe | 10.000 | 8.793 | 87.93 | 68-121 |
| 156 Benzene | 10.000 | 8.813 | 88.13 | 69-119 |

| | SPIKE COMPOUND | CONC ADDED PPBV | CONC RECOVERED PPBV | % RECOVERED | LIMITS |
|---|---|---|---|---|---|
| 159 | 1,2-Dichloroethan | 10.000 | 11.451 | 114.51 | 65-128 |
| 160 | Heptane | 10.000 | 8.634 | 86.34 | 69-123 |
| 163 | Trichloroethene | 10.000 | 10.038 | 100.38 | 71-123 |
| 165 | Methylcyclohexane | 10.000 | 9.196 | 91.96 | 69-121 |
| 168 | 1,2-Dichloropropa | 10.000 | 8.011 | 80.11 | 69-123 |
| 169 | 1,4-Dioxane | 10.000 | 8.535 | 85.35 | 71-122 |
| 171 | Bromodichlorometh | 10.000 | 10.288 | 102.88 | 72-128 |
| 174 | cis-1,3-Dichlorop | 10.000 | 9.842 | 98.42 | 70-128 |
| 175 | 4-Methyl-2-pentan | 10.000 | 8.910 | 89.10 | 67-130 |
| 179 | Toluene | 10.000 | 9.634 | 96.34 | 66-119 |
| 181 | trans-1,3-Dichlor | 10.000 | 10.360 | 103.60 | 75-133 |
| 182 | 1,1,2-Trichloroet | 10.000 | 9.245 | 92.45 | 73-119 |
| 183 | Tetrachloroethene | 10.000 | 10.675 | 106.75 | 66-124 |
| 185 | 2-Hexanone | 10.000 | 7.422 | 74.22 | 62-128 |
| 188 | Dibromochlorometh | 10.000 | 10.644 | 106.44 | 70-130 |
| 189 | 1,2-Dibromoethane | 10.000 | 10.039 | 100.39 | 74-122 |
| 192 | Chlorobenzene | 10.000 | 9.552 | 95.52 | 70-119 |
| 194 | Ethyl Benzene | 10.000 | 10.241 | 102.41 | 70-124 |
| 196 | m,p-Xylene | 10.000 | 10.205 | 102.05 | 61-134 |
| 198 | o-Xylene | 10.000 | 10.154 | 101.54 | 67-125 |
| 199 | Styrene | 10.000 | 9.930 | 99.30 | 73-127 |
| 203 | Bromoform | 10.000 | 10.456 | 104.56 | 66-139 |
| 205 | Cumene | 10.000 | 10.206 | 102.07 | 68-124 |
| 209 | 1,1,2,2-Tetrachlo | 10.000 | 8.140 | 81.40 | 65-127 |
| 211 | Propylbenzene | 10.000 | 9.928 | 99.29 | 69-123 |
| 218 | 4-Ethyltoluene | 10.000 | 10.458 | 104.59 | 67-129 |
| 220 | 1,3,5-Trimethylbe | 10.000 | 11.020 | 110.20 | 67-130 |
| 227 | 1,2,4-Trimethylbe | 10.000 | 11.314 | 113.14 | 66-132 |
| 232 | 1,3-Dichlorobenze | 10.000 | 8.921 | 89.21 | 65-130 |
| 233 | 1,4-Dichlorobenze | 10.000 | 9.249 | 92.49 | 60-131 |
| 234 | alpha-Chlorotolue | 10.000 | 8.583 | 85.83 | 50-147 |
| 238 | 1,2-Dichlorobenze | 10.000 | 8.752 | 87.52 | 63-129 |
| 245 | 1,2,4-Trichlorobe | 11.600 | 12.119 | 104.47 | 55-142 |
| 246 | Hexachlorobutadie | 11.600 | 14.592 | 125.80 | 56-138 |
| 247 | Naphthalene | 1.160 | 1.103 | 95.13 | 57-138 |

| | SURROGATE COMPOUND | CONC ADDED PPBV | CONC RECOVERED PPBV | % RECOVERED | LIMITS |
|---|---|---|---|---|---|
| $ 157 | 1,2-Dichloroethan | 5.000 | 5.765 | 115.30 | 82-136 |
| $ 177 | Toluene-d8 | 5.000 | 5.042 | 100.84 | 89-112 |
| $ 208 | 4-Bromofluorobenz | 5.000 | 5.346 | 106.91 | 71-124 |

Report Date: 13-Aug-2020 15:39

US32TAR1

RECOVERY REPORT

Client Name: Client SDG: 13AUG20
Sample Matrix: GAS Fraction: VOA
Lab Smp Id: LCSD Client Smp ID: LCSD
Level: LOW Operator: ef
Data Type: MS DATA SampleType: LCSD
SpikeList File: ControlDOD.spk Quant Type: ISTD
Sublist File: CNTRL091120.sub
Method File: /chem/msdv.i/13AUG20.b/v20l0804a.m
Misc Info: 10ppbv (50ppbv)

| SPIKE COMPOUND | CONC ADDED PPBV | CONC RECOVERED PPBV | % RECOVERED | LIMITS |
|---|---|---|---|---|
| 39 Propylene | 10.000 | 7.676 | 76.76 | 57-136 |
| 48 Freon 12 | 10.000 | 11.226 | 112.26 | 59-128 |
| 68 Freon 114 | 10.000 | 10.387 | 103.87 | 63-121 |
| 75 Chloromethane | 10.000 | 7.255 | 72.55 | 59-132 |
| 79 Butane | 10.000 | 7.645 | 76.45 | 64-129 |
| 81 Vinyl Chloride | 10.000 | 8.337 | 83.37 | 64-127 |
| 82 1,3-Butadiene | 10.000 | 8.290 | 82.90 | 66-134 |
| 91 Bromomethane | 10.000 | 10.467 | 104.67 | 63-134 |
| 96 Chloroethane | 10.000 | 9.054 | 90.54 | 63-127 |
| 97 Isopentane | 10.000 | 8.701 | 87.01 | 63-127 |
| 101 Freon 11 | 10.000 | 13.310 | 133.10* | 62-126 |
| 107 Ethanol | 11.600 | 7.622 | 65.70 | 59-125 |
| 112 Freon 113 | 10.000 | 10.632 | 106.32 | 66-126 |
| 114 1,1-Dichloroethen | 10.000 | 10.073 | 100.73 | 61-133 |
| 116 Acetone | 10.000 | 6.914 | 69.14 | 58-128 |
| 119 Carbon Disulfide | 10.000 | 8.851 | 88.51 | 57-134 |
| 120 2-Propanol | 10.000 | 8.371 | 83.71 | 52-125 |
| 121 3-Chloropropene | 10.000 | 9.246 | 92.46 | 71-131 |
| 125 Methylene Chlorid | 10.000 | 8.059 | 80.59 | 62-115 |
| 129 Methyl tert-butyl | 10.000 | 10.792 | 107.92 | 66-126 |
| 130 trans-1,2-Dichlor | 10.000 | 9.293 | 92.93 | 67-124 |
| 132 Hexane | 10.000 | 8.862 | 88.62 | 63-120 |
| 135 1,1-Dichloroethan | 10.000 | 9.017 | 90.17 | 68-126 |
| 136 Vinyl Acetate | 10.000 | 9.689 | 96.89 | 56-139 |
| 142 cis-1,2-Dichloroe | 10.000 | 9.861 | 98.61 | 70-121 |
| 143 2-Butanone | 10.000 | 9.039 | 90.39 | 67-130 |
| 145 Tetrahydrofuran | 10.000 | 8.042 | 80.42 | 64-123 |
| 147 Chloroform | 10.000 | 10.240 | 102.41 | 68-123 |
| 149 1,1,1-Trichloroet | 10.000 | 11.988 | 119.88 | 68-125 |
| 150 Carbon Tetrachlor | 10.000 | 7.013 | 70.13 | 68-132 |
| 148 Cyclohexane | 10.000 | 9.882 | 98.82 | 70-117 |
| 155 2,2,4-Trimethylpe | 10.000 | 8.336 | 83.36 | 68-121 |
| 156 Benzene | 10.000 | 9.109 | 91.09 | 69-119 |

| SPIKE COMPOUND | CONC ADDED PPBV | CONC RECOVERED PPBV | % RECOVERED | LIMITS |
|---|---|---|---|---|
| 159 1,2-Dichloroethan | 10.000 | 12.086 | 120.86 | 65-128 |
| 160 Heptane | 10.000 | 9.084 | 90.84 | 69-123 |
| 163 Trichloroethene | 10.000 | 10.515 | 105.15 | 71-123 |
| 165 Methylcyclohexane | 10.000 | 9.898 | 98.98 | 69-121 |
| 168 1,2-Dichloropropa | 10.000 | 8.448 | 84.48 | 69-123 |
| 169 1,4-Dioxane | 10.000 | 9.408 | 94.08 | 71-122 |
| 171 Bromodichlorometh | 10.000 | 10.362 | 103.62 | 72-128 |
| 174 cis-1,3-Dichlorop | 10.000 | 10.154 | 101.54 | 70-128 |
| 175 4-Methyl-2-pentan | 10.000 | 9.202 | 92.02 | 67-130 |
| 179 Toluene | 10.000 | 9.602 | 96.02 | 66-119 |
| 181 trans-1,3-Dichlor | 10.000 | 10.520 | 105.21 | 75-133 |
| 182 1,1,2-Trichloroet | 10.000 | 9.353 | 93.53 | 73-119 |
| 183 Tetrachloroethene | 10.000 | 10.494 | 104.94 | 66-124 |
| 185 2-Hexanone | 10.000 | 7.434 | 74.35 | 62-128 |
| 188 Dibromochlorometh | 10.000 | 10.451 | 104.51 | 70-130 |
| 189 1,2-Dibromoethane | 10.000 | 9.956 | 99.56 | 74-122 |
| 192 Chlorobenzene | 10.000 | 9.526 | 95.26 | 70-119 |
| 194 Ethyl Benzene | 10.000 | 9.998 | 99.98 | 70-124 |
| 196 m,p-Xylene | 10.000 | 9.523 | 95.23 | 61-134 |
| 198 o-Xylene | 10.000 | 9.950 | 99.50 | 67-125 |
| 199 Styrene | 10.000 | 9.706 | 97.06 | 73-127 |
| 203 Bromoform | 10.000 | 10.457 | 104.57 | 66-139 |
| 205 Cumene | 10.000 | 9.886 | 98.87 | 68-124 |
| 209 1,1,2,2-Tetrachlo | 10.000 | 8.181 | 81.81 | 65-127 |
| 211 Propylbenzene | 10.000 | 9.404 | 94.04 | 69-123 |
| 218 4-Ethyltoluene | 10.000 | 10.344 | 103.44 | 67-129 |
| 220 1,3,5-Trimethylbe | 10.000 | 10.828 | 108.28 | 67-130 |
| 227 1,2,4-Trimethylbe | 10.000 | 11.416 | 114.16 | 66-132 |
| 232 1,3-Dichlorobenze | 10.000 | 8.768 | 87.68 | 65-130 |
| 233 1,4-Dichlorobenze | 10.000 | 8.909 | 89.09 | 60-131 |
| 234 alpha-Chlorotolue | 10.000 | 8.247 | 82.47 | 50-147 |
| 238 1,2-Dichlorobenze | 10.000 | 8.519 | 85.19 | 63-129 |
| 245 1,2,4-Trichlorobe | 11.600 | 13.351 | 115.10 | 55-142 |
| 246 Hexachlorobutadie | 11.600 | 14.831 | 127.86 | 56-138 |
| 247 Naphthalene | 1.160 | 1.245 | 107.36 | 57-138 |

| SURROGATE COMPOUND | CONC ADDED PPBV | CONC RECOVERED PPBV | % RECOVERED | LIMITS |
|---|---|---|---|---|
| $ 157 1,2-Dichloroethan | 5.000 | 5.910 | 118.20 | 82-136 |
| $ 177 Toluene-d8 | 5.000 | 5.245 | 104.90 | 89-112 |
| $ 208 4-Bromofluorobenz | 5.000 | 5.101 | 102.03 | 71-124 |

# Appendix C

## Support Documents

### B. Chain of Custody (COC)

eurofins | Air Toxics

# Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2008201

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: David Breyak Project # 112G0805-WE13
Sampler: Vin Verghese
Site Name: NWIRP Bethpage VPB179

Special Instructions/Notes:

Turnaround Time (Rush surcharges may apply)
Standard X Rush _____(specify)

| Lab ID | Field Sample Identification(Location) | Can # | Flow Controller # 24906 | 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-VPB179-AIR-DW-20200806 | N3554 | ~~24914~~ (W) | 8/6/20 | 0730 | 8/6/20 | 1530 | 30 | 6 | | | X | | | |
| 02A | BP-VPB179-AIR-UW-20200806 | N2512 | 23695 | 8/6/20 | 0730 | 8/6/20 | 1530 | 30 | 6 | | | X | | | |

| Relinquished by: (Signature/Affiliation) | Date | Time | Received by: (Signature/Affiliation) | Date | Time |
|---|---|---|---|---|---|
| VV /TT | 8/7/20 ~~8/8/20~~ | 1515 | JMV TAT | 08/08/20 | 1035 |
| 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

# Appendix C

## Support Documents

### C. Calculations for Stage 4 Data Validation

**SDG 2008201**

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-VPB179-AIR-DW-20200806

Areac(Concistd)(DL)(MW)/Areast(

Calc. Concentration = 14.7

| AREA c | AREA st | CONC istd | RRF | DL | Mw | GasC |
|---|---|---|---|---|---|---|
| 34412 | 70394 | 5 | 0.63808 | 1.61 | 58.08 | 24.45 |

Reported Concentration = 15

## 7. VPB179 Air Sample Analytical Data Validated Table

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Vertical Profile Boring 179, Air Analytical Data Table
Naval Weapons Industrial Reserve Plant
Bethpage - Bethpage, New York

Tetra Tech

| LOCATION | VPB179 | VPB179 |
|---|---|---|
| SAMPLE ID | BP-VPB179-AIR-DW-2020080 | BP-VPB179-AIR-UW-2020080 |
| SAMPLE DATE | 8/6/2020 | 8/6/2020 |
| SAMPLE TYPE | Downwind | Upwind |
| **VOLATILE ORGANICS (UG/M3)** | | |
| 1,1,1-TRICHLOROETHANE | 0.072 J | 0.065 J |
| 1,1,2,2-TETRACHLOROETHANE | 0.21 U | 0.21 U |
| 1,1,2-TRICHLOROETHANE | 0.17 U | 0.17 U |
| 1,1,2-TRICHLOROTRIFLUOROETHANE | 0.99 U | 0.99 U |
| 1,1-DICHLOROETHANE | 0.12 U | 0.12 U |
| 1,1-DICHLOROETHENE | 0.059 U | 0.059 U |
| 1,2,4-TRICHLOROBENZENE | 4.8 U | 4.8 U |
| 1,2,4-TRIMETHYLBENZENE | 0.46 J | 0.42 J |
| 1,2-DIBROMOETHANE | 0.24 U | 0.24 U |
| 1,2-DICHLOROBENZENE | 0.77 U | 0.77 U |
| 1,2-DICHLOROETHANE | 0.098 J | 0.1 J |
| 1,2-DICHLOROPROPANE | 0.6 U | 0.6 U |
| 1,2-DICHLOROTETRAFLUOROETHANE | 0.15 J | 0.12 J |
| 1,3,5-TRIMETHYLBENZENE | 0.63 U | 0.63 U |
| 1,3-BUTADIENE | 0.28 U | 0.28 U |
| 1,3-DICHLOROBENZENE | 0.77 U | 0.77 U |
| 1,4-DICHLOROBENZENE | 0.19 J | 0.18 U |
| 1,4-DIOXANE | 0.46 U | 0.46 U |
| 1-ETHYL-4-METHYL BENZENE | 0.63 U | 0.63 U |
| 2,2,4-TRIMETHYLPENTANE | 1.8 J | 1.7 J |
| 2-BUTANONE | 2 J | 1.1 J |
| 2-HEXANONE | 2.6 U | 2.6 U |
| 3-CHLOROPROPENE | 2 U | 2 U |
| 4-METHYL-2-PENTANONE | 0.53 U | 0.53 U |
| ACETONE | 15 | 13 |
| BENZENE | 0.92 | 0.85 |
| BENZYL CHLORIDE | 0.67 U | 0.67 U |
| BROMODICHLOROMETHANE | 0.86 U | 0.86 U |
| BROMOFORM | 1.3 U | 1.3 U |
| BROMOMETHANE | 2.5 UJ | 2.5 UJ |
| CARBON DISULFIDE | 2 U | 2 U |
| CARBON TETRACHLORIDE | 0.55 | 0.53 |
| CHLOROBENZENE | 0.59 U | 0.59 U |
| CHLORODIBROMOMETHANE | 1.1 U | 1.1 U |
| CHLOROETHANE | 0.081 U | 0.08 J |
| CHLOROFORM | 0.23 | 0.22 |
| CHLOROMETHANE | 1.3 U | 0.91 J |
| CIS-1,2-DICHLOROETHENE | 0.12 U | 0.12 U |
| CIS-1,3-DICHLOROPROPENE | 0.58 U | 0.58 U |
| CYCLOHEXANE | 0.4 J | 0.58 J |
| DICHLORODIFLUOROMETHANE | 2.6 | 2.5 |
| ETHANOL | 51 | 56 |
| ETHYLBENZENE | 0.4 | 0.38 |
| HEXACHLOROBUTADIENE | 6.9 U | 6.9 U |
| HEXANE | 1 J | 1.3 J |
| ISOPROPANOL | 4.6 | 5.6 |
| ISOPROPYLBENZENE | 0.63 U | 0.63 U |
| M+P-XYLENES | 1.3 | 1.2 |
| METHYL TERT-BUTYL ETHER | 0.11 U | 0.11 U |
| METHYLENE CHLORIDE | 0.65 J | 0.75 J |
| N-HEPTANE | 2.6 U | 2.6 U |
| N-PROPYLBENZENE | 0.63 U | 0.63 U |
| O-XYLENE | 0.52 | 0.46 |
| STYRENE | 0.55 U | 0.21 J |
| TETRACHLOROETHENE | 0.24 | 0.22 |
| TETRAHYDROFURAN | 1.9 U | 0.88 J |
| TOLUENE | 2.8 | 2.7 |
| TRANS-1,2-DICHLOROETHENE | 0.12 U | 0.12 U |
| TRANS-1,3-DICHLOROPROPENE | 0.58 U | 0.58 U |
| TRICHLOROETHENE | 0.11 J | 0.098 J |
| TRICHLOROFLUOROMETHANE | 1.4 | 1.5 |
| VINYL CHLORIDE | 0.038 U | 0.038 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-MW179D, TT-MW179D1, and TT-MW179D2

1. **TT-MW179D, TT-MW179D1, and TT-MW179D2 Boring Logs**
2. **TT-MW179D, TT-MW179D1, and TT-MW179D2 Well Construction Logs**
3. **TT-MW179D, TT-MW179D1, and TT-MW179D2 Well Development/Groundwater Sample Log Sheets**
4. **TT-MW179D, TT-MW179D1, and TT-MW179D2 Analytical Data Unvalidated**
5. **TT-MW179D, TT-MW179D1, and TT-MW179D2 Analytical Data Table Unvalidated**

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**1. TT-MW179D, TT-MW179D1, and TT-MW179D2**
**Boring Logs**

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# WELL NUMBER TT-MW179D



**Tetra Tech**

**CLIENT** NAVFAC MIDLANT
**PROJECT NAME** NWIRP Bethpage OU2
**PROJECT NUMBER** 112G08005-WE13
**PROJECT LOCATION** BETHPAGE
**DATE STARTED** 8/25/20 **COMPLETED** 9/30/20
**GROUND ELEVATION** 118.8 **HOLE SIZE** 8.625 inches
**DRILLING CONTRACTOR** DELTA WELL & PUMP
**DRILLING METHOD** MUD ROTARY
**GROUND WATER LEVEL** ---
**LOGGED BY** Will Yeung
**NORTHING** 213555 meters **EASTING** 1120940.8 meters **DATUM:** NVD 88
**NOTES** HSA FIRST 50 FT

| DEPTH (ft) | SAMPLE TYPE NUMBER | RECOVERY % | BLOW COUNTS (N VALUE) | U.S.C.S. | GRAPHIC LOG | MATERIAL DESCRIPTION | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | 0-213 ft bgs: See VPB179 for Descriptions | Casing Top Elev: 118.48 (ft)<br>Casing Type: PVC<br>Top of Casing<br>10 inch diameter Steel Surface Casing<br>Bentonite Cement Grout<br>Schedule 80 PVC |

*(Continued Next Page)*



TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 6/15/21 12:50 - 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) | SAMPLE TYPE NUMBER | RECOVERY (in) | BLOW COUNTS (N VALUE) | U.S.C.S. | GRAPHIC LOG | MATERIAL DESCRIPTION | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|
| | | | | | | 0-213 ft bgs: See VPB179 for Descriptions *(continued)* | |
| 170 | | | | | | | |
| 180 | | | | | | | |
| 190 | | | | | | | Bentonite Seal |
| 200 | | | | | | | Secondary Sand Pack #0 |
| 210 | | | | | | | Primary Sand Pack #1 |
| | | | | | | 213.0 -94.2 | |
| | SS | 17 | 13-26-34-30/0" | SP | | (SP) Light brown/brown poorly graded fine SAND, moist | |
| | | | | | | 215.0 -96.2 | |
| | SS | 13 | 6-25-35-26/0" | SP | | (SP) Brown poorly graded fine SAND, moist | |
| 220 | | | | | | 220.0 -101.2 | |

TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 6/16/21 11:14 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

*(Continued Next Page)*

# WELL NUMBER TT-MW179D



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 | 17 | 8-23-23-20/0" | SP | | (SP) Light brown/brown poorly graded fine SAND, moist | 4" Diameter Schedule 80 PVC, 10 Slot Well Screen (212-232 ft bgs) |
| 225.0 | | | | | | -106.2 | |
| | SS | 14 | 11-30-28-26/0" | SP | | (SP) Grey/light brown poorly graded fine SAND, moist | |
| 230 | | | | | | 230.0 -111.2 | |
| | | | | | | | Sand to Bottom |
| 240 | | | | | | | |
| | | | | | | | Bottom of Borehole |
| 250 | | | | | | | |

Bottom of borehole at 253.0 feet.

TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 6/16/21 11:14 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

# WELL NUMBER TT-MW179D1

PYGL 1 AI 3

**Tetra Tech**

**CLIENT** HYVI YC U49&YHT **PROJECT NAME** H5 4OP Bethpage ARM

**PROJECT NUMBER** 11MG0800E-5 L12 **PROJECT LOCATION** BL TF PYGL

**DATE STARTED** 8DVEDM0 **COMPLETED** 7D DM0 **GROUND ELEVATION** 1176 **HOLE SIZE** 86NME inches

**DRILLING CONTRACTOR** 9L&TY 5 L&&. PRUP **DRILLING METHOD** UR9 OATYOW

**GROUND WATER LEVEL** --- **LOGGED BY** 5 ill Weung

**NORTHING** M12EM767 meters **EASTING** 11M070/6 meters **DATUM:** HV9 88

**NOTES** FSY I 4OST E0 I T

| 9LPTF (ft) | SYUP&L TWPL HRUBLO | OLCAVLOW% | B&A5 CARHTS (HVY&RL) | R6SGCG66 | GOYPF4C &AG | UYTLO4Y&9LSCO4PT4AH | 5 L&&94YGOYU |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Casing Top Llevb1176 21 (ft)<br>Casing TypebPVC |
| 10 | | | | | | 0-208 ft 3gsbSee VPB1: 7 for 9escriptions | Top of Casing |
| M0 | | | | | | | |
| 20 | | | | | | | 10 inch diameter Steel Surface Casing |
| / 0 | | | | | | | |
| E0 | | | | | | | |
| N0 | | | | | | | |
| : 0 | | | | | | | |
| 80 | | | | | | | |
| 70 | | | | | | | |
| 100 | | | | | | | |
| 110 | | | | | | | |
| 1M0 | | | | | | | |
| 120 | | | | | | | |
| 1/ 0 | | | | | | | |
| 1E0 | | | | | | | Bentonite Cement Grout |
| 1N0 | | | | | | | Schedule 80 PVC |
| 1: 0 | | | | | | | |
| 180 | | | | | | | |
| 170 | | | | | | | |
| M00 | | | | | | | |
| M10 | | | | | | | |
| MM0 | | | | | | | |
| M20 | | | | | | | |
| M/ 0 | | | | | | | |
| ME0 | | | | | | | |
| MN0 | | | | | | | |
| M 0 | | | | | | | |

TT U5 BAO4HG-U5 CAHSTORCT4AH - G4HT ST9 RS &YBGG9T - NDEDM 12DM- PbG4HT I 4&LS\POAJLCTS\BLTF PYGL\BP H4O6GGPJ

*(Continued Next Page)*

# WELL NUMBER TT-MW179D1

bW2L 2 YI 3

**Tetra Tech**

**CLIENT** HW. I WC R(MLWHT **PROJECT NAME** H. (Ab - ethpage YOP

**PROJECT NUMBER** 11P2 0300EV. L1B **PROJECT LOCATION** - LTFbW2L

| MLbTF )ftG | SWRbLL T4bL HOR- LA | ALCY: LA4 )inG | - LY. CYOHTS )H: WLOLG | O55SDC55 | 2AWbF(C LY2 | RWTLA(WL MLSCA(bT(YH | . LLL M(W2AWR |
|---|---|---|---|---|---|---|---|
| P30 | | | | | | 0\B03 ft 7gs9See : b- 1D/ for Mescriptions *(continued)* | |
| P/0 | | | | | | | - entonite Seal |
| | | | | | | | - Secondary Sand back #0 |
| B00 | | | | | | | - brimary Sand back #1 |
| | | | | | | B035 V1335B | |
| B10 | SS | 13 | EVIBV P0V 1D\0" | SbCL | | )SbCLGLight greyU7ro, nlorange poorly\graded fine rounded SWHMwsome lean claywmoist B105 VI/05B | |
| | SS | 18 | B\8\EV P0\0" | SbCL | | )SbCLGLight greyU7ro, n poorly\graded rounded fine SWHMwsome grey fat claywmoist B1E5 VI/E5B | |
| BP0 | SS | 1D | NVINV PPV PP\0" | Sb | | )SbGLight greyU7ro, n poorly\graded rounded fine SWHMwmoist BP05 \P005B | - 8" Miameter Schedule 30 b: Cw10 Slot . ell Screen )B0E\BPE ft 7gsG |
| | SS | 1/ | 3VI1V PE\8\0" | Sb | | )SbGLight greyU7ro, n poorly graded rounded fine SWHMwmoist BPE5 \P0E5B | |
| BB0 | | | | | | | - Sand to - ottom |

*(Continued Next Page)*



TT R. - YA(H2\R. CYHSTAOCTYH V2 (HT STMOS LW 82 MT VNJNDP1 1191 3 Vb 92 (HT I (LLSbAYJLCTS\- LTFbW2L\- b_H(A(S82bJ

# Tetra Tech

## WELL NUMBER TT-MW179D1

bW2L 3 YI 3

**CLIENT** HW. I WC R(MLWHT **PROJECT NAME** H. (Ab - ethpage YOP

**PROJECT NUMBER** 11P2 0300EV. L1B **PROJECT LOCATION** - LTFbW2L

| MLbTF )ftG | SWRbLL T4bL HOR- LA | ALCY: LA4 )inG | - LY. CYOHTS )H : WLOLG | O55C55 | 2AWbF(C LY2 | RWTLA(WL MLSCA(bT(YH | . LLL M(W2AWR | |
|---|---|---|---|---|---|---|---|---|
| B80 | | | | | | | | - ottom of - orehole |

- ottom of 7orehole at B8B50 feet5

TT R. - YA(H2VR. CYHSTAOCT(YH V2 (HT STMOS LW 2 MT VNJNJP1 1191 3 Vb92 (HT I (LLS\bAYJLCTS\- LTFbW2L\- b_H(A(S2bJ

# WELL NUMBER TT-MW179D2

bW2 L 1 YI P

**Tetra Tech**

**CLIENT** HW. I WC R(ML WHT
**PROJECT NAME** H. (Ab - ethpage YOP
**PROJECT NUMBER** 11P2 0300EV. L1B
**PROJECT LOCATION** - LTF bW2 L
**DATE STARTED** 3UPEUP0 **COMPLETED** / U13UP0
**GROUND ELEVATION** 11/ 5B **HOLE SIZE** 35NPE inches
**DRILLING CONTRACTOR** ML LTW. LLL 6 bORb
**DRILLING METHOD** ROMAYTWA4
**GROUND WATER LEVEL** W/
**LOGGED BY** . ill 4eung
**NORTHING** P1BEBD6N ft **EASTING** 11P0/ 1E53 ft **DATUM:** H: M33
**NOTES** FSA I (AST E0 I T

| MLbTF )ftG | SWRbLL T4bL HOR- LA | ALCY: LA4 )inG | - LY. CYOHTS )H : WLOLG | O5S5C5S5 | 2 AWbF(C LY2 | RWTLA(WL MLSCA(bT(YH | . LLL M(W2 AWR |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Casing Top Llev911/ )ftG<br>Casing Type9b: C |
| 10 | | | | | | 0\80B ft 7gs9See : b- 1D/ for Mescriptions | Top of Casing |
| P0 | | | | | | | |
| B0 | | | | | | | - 10 inch diameter Steel Surface Casing |
| 80 | | | | | | | |
| E0 | | | | | | | |
| N0 | | | | | | | |
| D0 | | | | | | | |
| 30 | | | | | | | |
| / 0 | | | | | | | |
| 100 | | | | | | | |
| 110 | | | | | | | |
| 1P0 | | | | | | | |
| 1B0 | | | | | | | |
| 180 | | | | | | | |
| 1E0 | | | | | | | |
| 1N0 | | | | | | | |
| 1D0 | | | | | | | |
| 130 | | | | | | | |
| 1/ 0 | | | | | | | - - entonite Cement 2 rout |
| P00 | | | | | | | - Schedule 30 b: C |
| P10 | | | | | | | |
| PP0 | | | | | | | |
| PB0 | | | | | | | |
| P80 | | | | | | | |
| PE0 | | | | | | | |
| PN0 | | | | | | | |
| PD0 | | | | | | | |
| P30 | | | | | | | |
| P/ 0 | | | | | | | |
| B00 | | | | | | | |
| B10 | | | | | | | |
| BP0 | | | | | | | |
| BB0 | | | | | | | |
| B80 | | | | | | | |
| BE0 | | | | | | | |
| BN0 | | | | | | | |
| BD0 | | | | | | | - - entonite Seal |
| B30 | | | | | | | Secondary Sand back #0 |
| B/ 0 | | | | | | | brimary Sand |

TT R. - YA(H2 VR. CYHSTAOCTY H V2 (HT STM OS LW 2 MT VNJ NJP1 11913 Vb92 (HT I (LL S\bAYJL CTS\- LTF bW2 L\- b H(A(S2 bJ

*(Continued Next Page)*

# WELL NUMBER TT-MW179D2



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 |
|---|---|---|---|---|---|---|---|
| | | | | | | 0-403 ft bgs: See VPB179 for Descriptions *(continued)* | |
| 400 | | | | | | 403.0 -283.6 | |
| | SS | 18 | 8-30-35-44/0" | SP | | (SP) Grey/brown poorly-graded rounded coarse SAND, moist 405.0 -285.6 | |
| | SS | 17 | 11-35-45-25/0" | SP | | (SP) Light grey/brown poorly graded rounded fine SAND, moist 410.0 -290.6 | |
| 410 | | | | | | | 4" Diameter Schedule 80 PVC, 10 Slot Well Screen (400-420 ft bgs) |
| | SS | 18.5 | 9-37-40-37/0" | SP | | (SP) Light grey/brown poorly-graded rounded fine SAND, moist 415.0 -295.6 | |
| | SS | 15 | 12-30-40-70/0" | SP | | (SP) Light grey/ dark brown poorly graded rounded fine SAND, moist 420.0 -300.6 | |
| 420 | | | | | | | Sand to Bottom |
| 430 | | | | | | | Bottom of Borehole |

Bottom of borehole at 438.0 feet.

TT MW BORING-MW CONSTRUCTION - GINT STD US LAB.GDT - 6/16/21 11:14 - P:\GINT FILES\PROJECTS\BETHPAGE\BP_NIRIS.GPJ

## 2. TT-MW179D, TT-MW179D1, and TT-MW179D2
## Well Construction Logs

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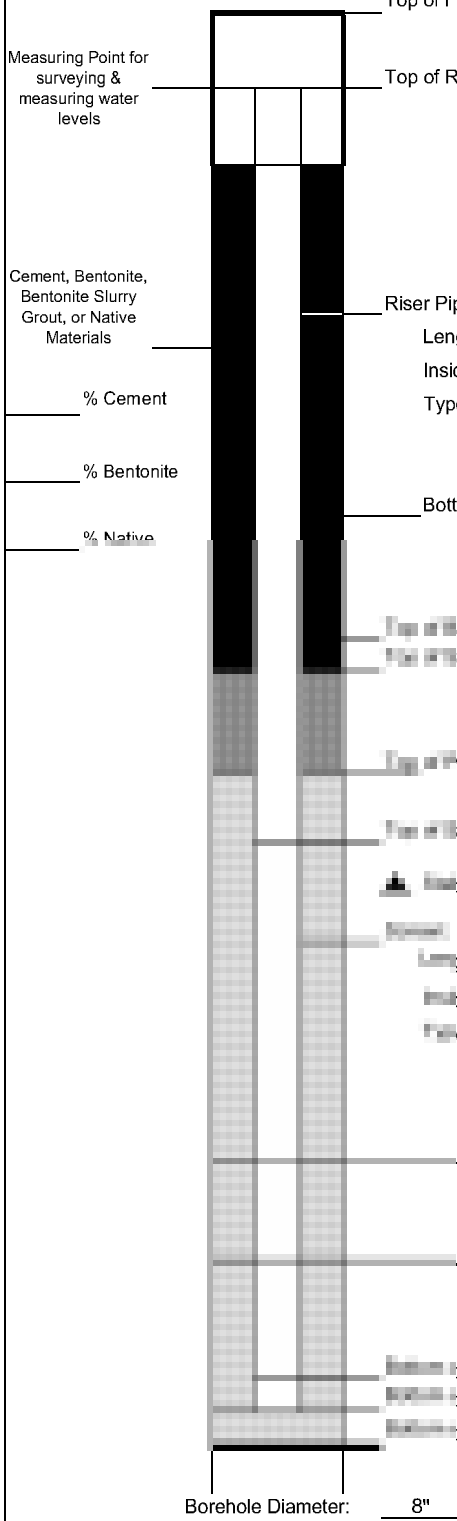
| | | |
|---|---|---|
| TETRA TECH | Client: NAVFAC Project Number: 112G08005-WE13 | **WELL ID: BP-TT-MW179D** |
| | Site Location: NWIRP BETHPAGE, NY | |
| | Well Location: Birchwood Lane | Date Installed: 10/2/2020 |
| | Method: Mud Rotary | Inspector: William Yeung |
| | Coordinates: NAD83 Northing: 213555.0078 Easting: 1120940.8274 | Contractor: Delta Well & Pump |

# MONITORING WELL CONSTRUCTION DETAIL




| | | Depth from G.S. (feet) | Elevation(feet) |
|---|---|---|---|
| Top of Flush Mount Well Cap | | 0 | 118.8 |
| Top of Riser Pipe | | 0.32 | 118.48 |
| Riser Pipe: | | | |
| Length | 212.00 | | |
| Inside Diameter (ID) | 4" | | |
| Type of Material | PVC Sch. 80 | | |
| Bottom of 10 inch diameter Steel Surface Casing | | 52.0 | 66.8 |
| [illegible]entonie Seal | | 189.0 | -70.2 |
| [illegible]econdary Sand Pack | #0 Sand | 193.0 | -74.2 |
| [illegible]rimary Sand Pack | #1 Sand | 201.0 | -82.2 |
| [illegible]creen | | 212.00 | -93.20 |
| [illegible]ilized Water Level | | | |
| [illegible]gth | 20' | | |
| [illegible]de Diameter (ID) | 4" | | |
| [illegible]e of Material | PVC Sch. 80 | | |
| [illegible]f Screen | | 232.00 | -113.20 |
| [illegible]f Sump | | 237.00 | -118.20 |
| [illegible]f Borehole | | 253.00 | -134.20 |

Describe Measuring Point:

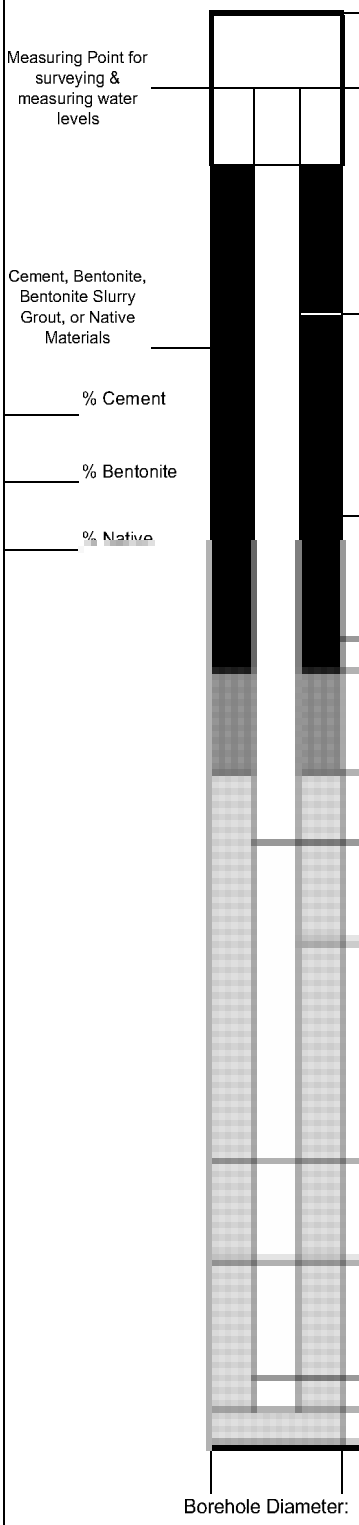
Ground Surface

William Yeung
Signature

10/2/2020
Date

| | | |
|---|---|---|
| TETRA TECH | Client: NAVFAC Project Number: 112G08005-WE13 | **WELL ID: BP-TT-MW179D1** |
| | Site Location: NWIRP BETHPAGE, NY | |
| | Well Location: Birchwood Lane | Date Installed: 9/10/2020 |
| | Method: Mud Rotary | Inspector: William Yeung |
| | Coordinates: NAD83 Northing: 213529.9493 Easting: 1120904.6854 | Contractor: Delta Well & Pump |

# MONITORING WELL CONSTRUCTION DETAIL




| | | Depth from G.S. (feet) | Elevation(feet) |
|---|---|---|---|
| Top of Flush Mount Well Cap | | 0 | 119.7 |
| Top of Riser Pipe | | 0.33 | 119.37 |
| Riser Pipe: | | | |
| Length | 305.00 | | |
| Inside Diameter (ID) | 4" | | |
| Type of Material | PVC Sch. 80 | | |
| Bottom of 10 inch diameter Steel Surface Casing | | 52.0 | 67.7 |
| [illegible]entonie Seal | | 286.0 | -166.3 |
| [illegible]econdary Sand Pack | #0 Sand | 290.0 | -170.3 |
| [illegible]rimary Sand Pack | #1 Sand | 295.0 | -175.3 |
| [illegible]creen | | 305.00 | -185.30 |
| [illegible]ilized Water Level | | | |
| [illegible]gth | 20' | | |
| [illegible]de Diameter (ID) | 4" | | |
| [illegible]e of Material | PVC Sch. 80 | | |
| [illegible]f Screen | | 325.00 | -205.30 |
| [illegible]f Sump | | 330.00 | -210.30 |
| [illegible]f Borehole | | 343.00 | -223.30 |

Borehole Diameter: 8"

Describe Measuring Point:

Ground Surface

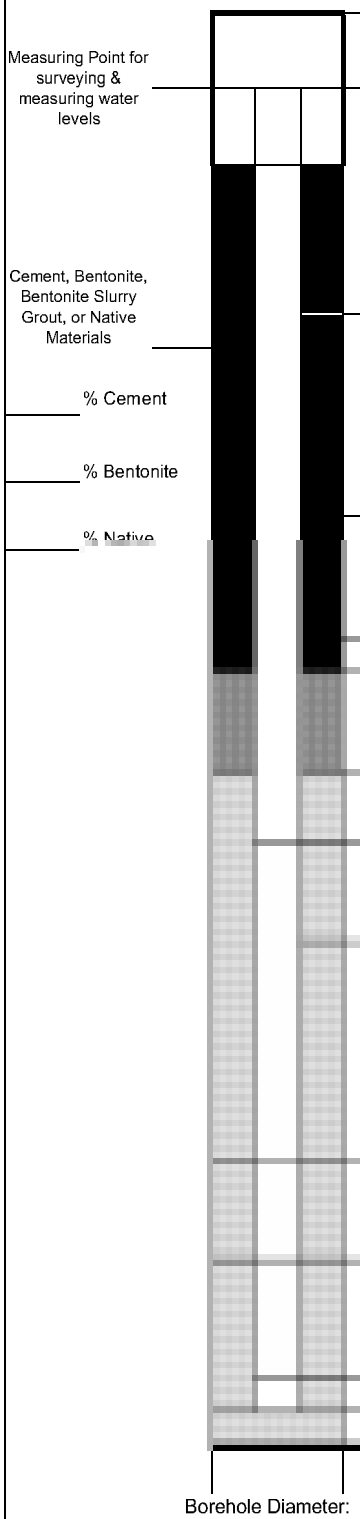
William Yeung
Signature

9/10/2020
Date

TETRA TECH

| | |
|---|---|
| Client: NAVFAC Project Number: 112G08005-WE13 | **WELL ID: BP-TT-MW179D2** |
| Site Location: NWIRP BETHPAGE, NY | |
| Well Location: Birchwood Lane | Date Installed: 9/22/2020 |
| Method: Mud Rotary | Inspector: William Yeung |
| Coordinates: NAD83 Northing: 213537.6175 Easting: 1120915.7882 | Contractor: Delta Well & Pump |

# MONITORING WELL CONSTRUCTION DETAIL




| | | Depth from G.S. (feet) | Elevation(feet) |
|---|---|---|---|
| Top of Flush Mount Well Cap | | 0 | 119.4 |
| Top of Riser Pipe | | 0.4 | 119.0 |
| Riser Pipe: | | | |
| Length | 400.00 | | |
| Inside Diameter (ID) | 4" | | |
| Type of Material | PVC Sch. 80 | | |
| Bottom of 10 inch diameter Steel Surface Casing | | 52.0 | 67.4 |
| entonie Seal | | 360.0 | -240.6 |
| econdary Sand Pack | #0 Sand | 365.0 | -245.6 |
| rimary Sand Pack | #1 Sand | 375.0 | -255.6 |
| creen | | 400.00 | -280.60 |
| ilized Water Level | | | |
| gth | 20' | | |
| de Diameter (ID) | 4" | | |
| e of Material | PVC Sch. 80 | | |
| f Screen | | 420.00 | -300.60 |
| f Sump | | 425.00 | -305.60 |
| f Borehole | | 438.00 | -318.60 |

Borehole Diameter: 8"

Describe Measuring Point:

Ground Surface

William Yeung
Signature

9/22/2020
Date

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**3. TT-MW179D, TT-MW179D1, and TT-MW179D2**

**Well Development/Groundwater Sample Log Sheets**

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# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 212' | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/15/20 |
| **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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 | 7.65 | 387.4 | 6.46 | 27.2 | 16.3 | 183.2 | - | |
| | | | | | | | | | | | |
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**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 |
|---|---|---|---|---|---|---|
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vin Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

| | |
|---|---|
| **Event:** | MW-179D Well Development |
| **Project Site Name:** | NWIRP Bethpage |
| **Project No.:** | 112G08005-WE13 |

| | | | |
|---|---|---|---|
| **Sample ID:** | 217' | **Sampled By:** | Varricchio |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/15/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 11:30 |

**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 650 MDS | **Pump Controller:** |
| **Turbidity Meter:** MicroTPW | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:30 | - | - | Clear | 7.1 | 283.4 | 7.06 | 11.3 | 16.3 | 184.6 | - | |
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**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 |
|---|---|---|---|---|---|---|
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Vin Varricchio* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 222' | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/15/20 |
| **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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 | - | - | Clear | 7.27 | 270.5 | 5.74 | 22.5 | 16.2 | 171.7 | - | |
| | | | | | | | | | | | |
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**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 |
|---|---|---|---|---|---|---|
| | | | | | | |
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 227' | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/15/20 |
| **MS/MSD Collected:** | YES / NO | **Sample Time:** | 13:00 |

**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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:00 | - | - | Clear | 6.83 | 264.3 | 5.52 | 4.83 | 16.5 | 173.1 | - | |
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**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
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**ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS**

| Analysis | Method | Preservative | Number | Vol. | Bottle Type | Collected |
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
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| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-TT-MW179D-GW-20201015 (232') | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/15/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 13:45 |
| **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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:45 | - | - | Clear | 6.11 | 262.9 | 5.83 | 4.75 | 16.9 | 173.2 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
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| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D1 Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 305' | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/19/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 9:35 |

**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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:35 | - | - | Clear | 6.88 | 220.4 | 7.19 | 14.4 | 14.8 | 176.4 | - | |
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**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
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**ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS**

| Analysis | Method | Preservative | Number | Vol. | Bottle Type | Collected |
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
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| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D1 Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 310' | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/19/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 10:35 |

**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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10:35 | - | - | Clear | 6.73 | 205 | 6.86 | 2.01 | 15.2 | 172.8 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
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| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D1 Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 315' | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/19/20 |
| **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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 | 6.53 | 206.3 | 6.74 | 1.34 | 15.6 | 179.5 | - | |
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**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
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**ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS**

| Analysis | Method | Preservative | Number | Vol. | Bottle Type | Collected |
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
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| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D1 Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 320' | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/19/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 12:35 |

**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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:35 | - | - | Clear | 6.18 | 205.5 | 6.27 | 1.59 | 16.4 | 194.4 | - | |
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**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
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**ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS**

| Analysis | Method | Preservative | Number | Vol. | Bottle Type | Collected |
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
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| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D1 Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-TT-MW179D1-GW-20201019 (325') | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/19/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 13:35 |
| **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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:35 | - | - | Clear | 6.37 | 206.4 | 6.71 | 1.03 | 16.1 | 190.8 | - | |
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**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 |
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D2 Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 400' | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/16/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 9:00 |
| **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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:00 | - | - | Clear | 7.52 | 196.8 | 7.39 | 25.7 | 14.8 | 128.2 | - | |
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**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 |
|---|---|---|---|---|---|---|
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D2 Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 405' | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/16/20 |
| **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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 | - | - | Clear | 6.69 | 191.9 | 6.53 | 5.71 | 14.8 | 167.8 | - | |
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**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 |
|---|---|---|---|---|---|---|
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D2 Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 410' | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/16/20 |
| **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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 | 6.47 | 187.2 | 6.66 | 2.08 | 14.8 | 179.6 | - | |
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**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 |
|---|---|---|---|---|---|---|
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D2 Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | 415' | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/16/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 11:45 |
| **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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:45 | - | - | Clear | 6.6 | 186.4 | 6.96 | 1.67 | 14.7 | 174.1 | - | |
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**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 |
|---|---|---|---|---|---|---|
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Will Yeung* |

# GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

**Event:** MW-179D2 Well Development
**Project Site Name:** NWIRP Bethpage
**Project No.:** 112G08005-WE13

| | | | |
|---|---|---|---|
| **Sample ID:** | BP-TT-MW179D2-GW-20201016 (420') | **Sampled By:** | Yeung |
| **QA/QC Duplicate ID:** | | **Sample Date:** | 10/16/20 |
| **MS/MSD Collected:** | YES NO | **Sample Time:** | 13:00 |
| **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 650 MDS | **Pump Controller:** | |
| **Turbidity Meter:** | MicroTPW | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:00 | - | - | Clear | 6.41 | 184.9 | 7.26 | 1.37 | 14.3 | 181.2 | - | |
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**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 |
| | | | | | | |
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**OBSERVATIONS / NOTES:**

| Coordinates: | N | E | Signature(s): |
|---|---|---|---|
| | | | *Will Yeung* |

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**4. TT-MW179D, TT-MW179D1, and TT-MW179D2**
**Analytical Data Unvalidated**

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

# DATA FOR

## 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 : L4470**

**ATTENTION : David Brayack**

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

Date :

Dear David Brayack,

**4** water samples for the **CTO WE13** project were received on **10/20/2020.** The analytical fax results for those samples requested for an expedited turn around time may be seen in this report. Please contact me if you have any questions or concerns regarding this report.

Regards,

Steven T Chaimowitz

s.chaim@chemtech.net

**CHEMTECH**

CHAIN OF CUSTODY RECORD

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

Chemtech Project Number: 14470

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: MW-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**

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-TB1-20201019 | QA | | X | 10/19/20 | 9:00 | 2 | | 2 | | | | | | | | | Trip Blank |
| 2. | BP-TT-MW179D-GW-20201015 (232') | AQ | | X | 10/15/20 | 13:45 | 3 | | 2 | 1 | | | | | | | | |
| 3. | BP-TT-MW179D2-GW-20201016 (420' | AQ | | X | 10/16/20 | 13:00 | 3 | | 2 | 1 | | | | | | | | |
| 4. | BP-TT-MW179D1-GW-20201019 (325' | AQ | | X | 10/19/20 | 13:35 | 3 | | 2 | 1 | | | | | | | | |
| 5. | | | | | | | | | | | | | | | | | | |
| 6. | | | | | | | | | | | | | | | | | | |
| 7. | | | | | | | | | | | | | | | | | | |
| 8. | | | | | | | | | | | | | | | | | | |
| 9. | | | | | | | | | | | | | | | | | | |
| 10. | | | | | | | | | | | | | | | | | | |

**PRESERVATIVES**

<-- 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. | 10/19/20 1600 | 1. |
| RELINQUISHED BY | DATE/TIME | RECEIVED BY |
| 2. FedEx | 10-20-2020 0950 | 2. |
| RELINQUISHED BY | DATE/TIME | RECEIVED FOR LAB BY |
| 3. | | 3. |

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant ☐ Cooler Temp 4.6°C
MeOH extraction requires an additional 4oz. Jar for percent solid ☐ Ice in Cooler?: Y

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

COC Revised

L4470

**CHEMTECH**
CHAIN OF CUSTODY RECORD

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

Chemtech Project Number:

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: MW-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**

FAX ~~2-8-10~~ Standard DAYS*
HARD COPY ~~2-8-10~~ Standard DAYS*
EDD ~~2-8-10~~ Standard 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**

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

**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 | A | 1 | 2 | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ~~BP-TB1-20201019~~ ~~BP-TB-2020101~~ | QA | | X | 10/19/20 | 9.00 | 2 | 2 | | | Trip Blank |
| 2 | BP-TT-MW179D-GW-20201015 ~~(322)~~ | AQ | | X | 10/15/20 | 13:45 | 3 | 2 | 1 | | |
| 3 | BP-TT-MW179D2-GW-20201016 ~~(326)~~ | AQ | | X | 10/16/20 | 13.00 | 3 | 2 | 1 | | |
| 4 | BP-TT-MW179D1-GW-20201019 ~~(325)~~ | AQ | | X | 10/19/20 | 13:35 | 3 | 2 | 1 | | |
| 5 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
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| 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 | 10/19/20 1640 | 1 |
| RELINQUISHED BY | DATE/TIME | RECEIVED BY |
| 2 | | 2 |
| RELINQUISHED BY | DATE/TIME | RECEIVED FOR LAB BY |
| 3 | | 3 |

Conditions of bottles or coolers at receipt: ☐ Compliant ☐ Non Compliant ☐ Cooler Temp
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 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/15/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TB-20201015 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-01 | 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 |
|---|---|---|---|---|
| VX019105.D | 1 | | 10/24/20 04:29 | VX102320 |

| 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 |

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: | 10/15/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TB-20201015 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-01 | 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 |
|---|---|---|---|---|
| VX019105.D | 1 | | 10/24/20 04:29 | VX102320 |

| 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 | 51.6 | | 81 - 118 | | 103% | 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 | 49.3 | | 85 - 114 | | 99% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 263000 | 5.64 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 463000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 433000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 219000 | 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: | 10/15/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TB-20201015RE | SDG No.: | L4470 |
| Lab Sample ID: | L4470-01RE | 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 |
|---|---|---|---|---|
| VX019193.D | 1 | | 10/29/20 17:18 | VX103120 |

| 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 |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/15/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TB-20201015RE | SDG No.: | L4470 |
| Lab Sample ID: | L4470-01RE | 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 |
|---|---|---|---|---|
| VX019193.D | 1 | | 10/29/20 17:18 | VX103120 |

| 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 | 51.7 | | 81 - 118 | | 103% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 48.7 | | 80 - 119 | | 97% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 52.1 | | 89 - 112 | | 104% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 53.2 | | 85 - 114 | | 106% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 296000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 514000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 486000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 243000 | 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

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/15/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D-GW-20201015 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-02 | 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 |
|---|---|---|---|---|
| VX019106.D | 1 | | 10/24/20 04:51 | VX102320 |

| 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 | 0.42 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 2.30 | 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 | 0.84 | 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 | 0.41 | J | 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 | 34.2 | | 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 | 130 | | 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 | 16.5 | | 0.13 | 0.50 | 5.00 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/15/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D-GW-20201015 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-02 | 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 |
|---|---|---|---|---|
| VX019106.D | 1 | | 10/24/20 04:51 | VX102320 |

| 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 | 50.9 | | 81 - 118 | | 102% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 48.4 | | 80 - 119 | | 97% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 51.0 | | 89 - 112 | | 102% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 50.4 | | 85 - 114 | | 101% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 262000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 453000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 429000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 215000 | 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: | 10/15/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D-GW-20201015RE | SDG No.: | L4470 |
| Lab Sample ID: | L4470-02RE | 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 |
|---|---|---|---|---|
| VX019194.D | 1 | | 10/29/20 17:40 | VX103120 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 74-87-3 | Chloromethane | 0.65 | 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 | 0.44 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 2.50 | J | 1.40 | 2.50 | 25.0 | ug/L |
| 75-15-0 | Carbon Disulfide | 0.90 | J | 0.23 | 0.50 | 5.00 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 0.85 | 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 | 0.33 | J | 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 | 37.0 | | 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 | 130 | | 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 | 15.8 | | 0.13 | 0.50 | 5.00 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/15/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D-GW-20201015RE | SDG No.: | L4470 |
| Lab Sample ID: | L4470-02RE | 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 |
|---|---|---|---|---|
| VX019194.D | 1 | | 10/29/20 17:40 | VX103120 |

| 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 | 52.1 | | 81 - 118 | | 104% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 49.0 | | 80 - 119 | | 98% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 51.7 | | 89 - 112 | | 103% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 53.4 | | 85 - 114 | | 107% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 294000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 510000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 483000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 250000 | 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

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/16/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D2-GW-20201016 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-03 | 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 |
|---|---|---|---|---|
| VX019145.D | 1 | | 10/27/20 18:40 | VX102720 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 74-87-3 | Chloromethane | 0.89 | 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 | 0.73 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 4.20 | J | 1.40 | 2.50 | 25.0 | ug/L |
| 75-15-0 | Carbon Disulfide | 0.95 | J | 0.23 | 0.50 | 5.00 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 0.69 | J | 0.19 | 0.50 | 5.00 | ug/L |
| 75-09-2 | Methylene Chloride | 0.33 | J | 0.32 | 0.50 | 5.00 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 0.26 | J | 0.14 | 0.50 | 5.00 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 0.35 | 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 | 22.9 | | 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 | 160 | E | 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 | 12.0 | | 0.13 | 0.50 | 5.00 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/16/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D2-GW-20201016 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-03 | 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 |
|---|---|---|---|---|
| VX019145.D | 1 | | 10/27/20 18:40 | VX102720 |

| 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 | 49.5 | | 81 - 118 | | 99% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 48.4 | | 80 - 119 | | 97% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 52.2 | | 89 - 112 | | 104% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 54.3 | | 85 - 114 | | 109% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 323000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 551000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 530000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 269000 | 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: | 10/16/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D2-GW-20201016DL | SDG No.: | L4470 |
| Lab Sample ID: | L4470-03DL | 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 |
|---|---|---|---|---|
| VX019160.D | 4 | | 10/28/20 13:09 | VX102820 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 74-87-3 | Chloromethane | 2.00 | UD | 0.88 | 2.00 | 20.0 | ug/L |
| 75-01-4 | Vinyl Chloride | 2.00 | UD | 0.67 | 2.00 | 20.0 | ug/L |
| 74-83-9 | Bromomethane | 15.0 | UD | 4.50 | 15.0 | 20.0 | ug/L |
| 75-00-3 | Chloroethane | 2.00 | UD | 1.30 | 2.00 | 20.0 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 2.00 | UD | 0.97 | 2.00 | 20.0 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 2.00 | UD | 0.76 | 2.00 | 20.0 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 2.00 | UD | 1.10 | 2.00 | 20.0 | ug/L |
| 67-64-1 | Acetone | 10.0 | UD | 5.50 | 10.0 | 100 | ug/L |
| 75-15-0 | Carbon Disulfide | 2.00 | UD | 0.92 | 2.00 | 20.0 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 2.00 | UD | 0.78 | 2.00 | 20.0 | ug/L |
| 75-09-2 | Methylene Chloride | 2.00 | UD | 1.30 | 2.00 | 20.0 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 2.00 | UD | 0.58 | 2.00 | 20.0 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 2.00 | UD | 0.60 | 2.00 | 20.0 | ug/L |
| 78-93-3 | 2-Butanone | 10.0 | UD | 4.00 | 10.0 | 100 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 2.00 | UD | 1.10 | 2.00 | 20.0 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 24.0 | D | 0.94 | 2.00 | 20.0 | ug/L |
| 67-66-3 | Chloroform | 2.00 | UD | 0.77 | 2.00 | 20.0 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 3.00 | UD | 0.60 | 3.00 | 20.0 | ug/L |
| 108-87-2 | Methylcyclohexane | 2.00 | UD | 0.43 | 2.00 | 20.0 | ug/L |
| 71-43-2 | Benzene | 2.00 | UD | 0.53 | 2.00 | 20.0 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 3.00 | UD | 1.10 | 3.00 | 20.0 | ug/L |
| 79-01-6 | Trichloroethene | 160 | D | 0.52 | 2.00 | 20.0 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 2.00 | UD | 0.43 | 2.00 | 20.0 | ug/L |
| 75-27-4 | Bromodichloromethane | 2.00 | UD | 0.46 | 2.00 | 20.0 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 10.0 | UD | 2.60 | 10.0 | 100 | ug/L |
| 108-88-3 | Toluene | 2.00 | UD | 0.78 | 2.00 | 20.0 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 2.00 | UD | 0.93 | 2.00 | 20.0 | ug/L |
| 10061-01-5 | cis-1,3-Dichloropropene | 2.00 | UD | 0.61 | 2.00 | 20.0 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 2.00 | UD | 0.77 | 2.00 | 20.0 | ug/L |
| 591-78-6 | 2-Hexanone | 15.0 | UD | 3.30 | 15.0 | 100 | ug/L |
| 124-48-1 | Dibromochloromethane | 2.00 | UD | 0.51 | 2.00 | 20.0 | ug/L |
| 127-18-4 | Tetrachloroethene | 12.7 | JD | 0.50 | 2.00 | 20.0 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/16/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D2-GW-20201016DL | SDG No.: | L4470 |
| Lab Sample ID: | L4470-03DL | 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 |
|---|---|---|---|---|
| VX019160.D | 4 | | 10/28/20 13:09 | VX102820 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 2.00 | UD | 0.48 | 2.00 | 20.0 | ug/L |
| 100-41-4 | Ethyl Benzene | 2.00 | UD | 0.46 | 2.00 | 20.0 | ug/L |
| 179601-23-1 | m/p-Xylenes | 4.00 | UD | 0.99 | 4.00 | 40.0 | ug/L |
| 95-47-6 | o-Xylene | 2.00 | UD | 0.50 | 2.00 | 20.0 | ug/L |
| 100-42-5 | Styrene | 2.00 | UD | 0.63 | 2.00 | 20.0 | ug/L |
| 75-25-2 | Bromoform | 2.00 | UD | 0.71 | 2.00 | 20.0 | ug/L |
| 98-82-8 | Isopropylbenzene | 2.00 | UD | 0.83 | 2.00 | 20.0 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2.00 | UD | 1.10 | 2.00 | 20.0 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 2.00 | UD | 0.65 | 2.00 | 20.0 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 2.00 | UD | 0.53 | 2.00 | 20.0 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 2.00 | UD | 0.72 | 2.00 | 20.0 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 50.9 | | 81 - 118 | | 102% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 49.4 | | 80 - 119 | | 99% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 51.5 | | 89 - 112 | | 103% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 51.4 | | 85 - 114 | | 103% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 319000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 553000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 514000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 256000 | 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

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/19/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D1-GW-20201019 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-04 | 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 |
|---|---|---|---|---|
| VX019146.D | 1 | | 10/27/20 19:03 | VX102720 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 74-87-3 | Chloromethane | 0.53 | 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 | 1.70 | J | 0.27 | 0.50 | 5.00 | ug/L |
| 67-64-1 | Acetone | 3.80 | J | 1.40 | 2.50 | 25.0 | ug/L |
| 75-15-0 | Carbon Disulfide | 0.92 | 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 | 0.55 | J | 0.14 | 0.50 | 5.00 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 0.72 | 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 | 35.9 | | 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 | 280 | E | 0.13 | 0.50 | 5.00 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1.30 | J | 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 | 0.24 | J | 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 | 24.5 | | 0.13 | 0.50 | 5.00 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/19/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D1-GW-20201019 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-04 | 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 |
|---|---|---|---|---|
| VX019146.D | 1 | | 10/27/20 19:03 | VX102720 |

| 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 | 50.4 | | 81 - 118 | | 101% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 48.7 | | 80 - 119 | | 97% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 51.8 | | 89 - 112 | | 104% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 53.6 | | 85 - 114 | | 107% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 324000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 558000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 533000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 274000 | 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: | 10/19/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D1-GW-20201019DL | SDG No.: | L4470 |
| Lab Sample ID: | L4470-04DL | 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 |
|---|---|---|---|---|
| VX019161.D | 5 | | 10/28/20 13:32 | VX102820 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 74-87-3 | Chloromethane | 2.50 | UD | 1.10 | 2.50 | 25.0 | ug/L |
| 75-01-4 | Vinyl Chloride | 2.50 | UD | 0.84 | 2.50 | 25.0 | ug/L |
| 74-83-9 | Bromomethane | 18.8 | UD | 5.70 | 18.8 | 25.0 | ug/L |
| 75-00-3 | Chloroethane | 2.50 | UD | 1.70 | 2.50 | 25.0 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 2.50 | UD | 1.20 | 2.50 | 25.0 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 2.50 | UD | 0.95 | 2.50 | 25.0 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1.90 | JD | 1.30 | 2.50 | 25.0 | ug/L |
| 67-64-1 | Acetone | 12.5 | UD | 6.90 | 12.5 | 130 | ug/L |
| 75-15-0 | Carbon Disulfide | 2.50 | UD | 1.20 | 2.50 | 25.0 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 2.50 | UD | 0.97 | 2.50 | 25.0 | ug/L |
| 75-09-2 | Methylene Chloride | 2.50 | UD | 1.60 | 2.50 | 25.0 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 2.50 | UD | 0.72 | 2.50 | 25.0 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 2.50 | UD | 0.75 | 2.50 | 25.0 | ug/L |
| 78-93-3 | 2-Butanone | 12.5 | UD | 5.00 | 12.5 | 130 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 2.50 | UD | 1.30 | 2.50 | 25.0 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 36.5 | D | 1.20 | 2.50 | 25.0 | ug/L |
| 67-66-3 | Chloroform | 2.50 | UD | 0.96 | 2.50 | 25.0 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 3.80 | UD | 0.75 | 3.80 | 25.0 | ug/L |
| 108-87-2 | Methylcyclohexane | 2.50 | UD | 0.54 | 2.50 | 25.0 | ug/L |
| 71-43-2 | Benzene | 2.50 | UD | 0.66 | 2.50 | 25.0 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 3.80 | UD | 1.40 | 3.80 | 25.0 | ug/L |
| 79-01-6 | Trichloroethene | 280 | D | 0.65 | 2.50 | 25.0 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1.40 | JD | 0.54 | 2.50 | 25.0 | ug/L |
| 75-27-4 | Bromodichloromethane | 2.50 | UD | 0.57 | 2.50 | 25.0 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 12.5 | UD | 3.30 | 12.5 | 130 | ug/L |
| 108-88-3 | Toluene | 2.50 | UD | 0.98 | 2.50 | 25.0 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 2.50 | UD | 1.20 | 2.50 | 25.0 | ug/L |
| 10061-01-5 | cis-1,3-Dichloropropene | 2.50 | UD | 0.76 | 2.50 | 25.0 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 2.50 | UD | 0.96 | 2.50 | 25.0 | ug/L |
| 591-78-6 | 2-Hexanone | 18.8 | UD | 4.10 | 18.8 | 130 | ug/L |
| 124-48-1 | Dibromochloromethane | 2.50 | UD | 0.64 | 2.50 | 25.0 | ug/L |
| 127-18-4 | Tetrachloroethene | 25.8 | D | 0.63 | 2.50 | 25.0 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/19/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D1-GW-20201019DL | SDG No.: | L4470 |
| Lab Sample ID: | L4470-04DL | 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 |
|---|---|---|---|---|
| VX019161.D | 5 | | 10/28/20 13:32 | VX102820 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 2.50 | UD | 0.60 | 2.50 | 25.0 | ug/L |
| 100-41-4 | Ethyl Benzene | 2.50 | UD | 0.58 | 2.50 | 25.0 | ug/L |
| 179601-23-1 | m/p-Xylenes | 5.00 | UD | 1.20 | 5.00 | 50.0 | ug/L |
| 95-47-6 | o-Xylene | 2.50 | UD | 0.62 | 2.50 | 25.0 | ug/L |
| 100-42-5 | Styrene | 2.50 | UD | 0.78 | 2.50 | 25.0 | ug/L |
| 75-25-2 | Bromoform | 2.50 | UD | 0.89 | 2.50 | 25.0 | ug/L |
| 98-82-8 | Isopropylbenzene | 2.50 | UD | 1.00 | 2.50 | 25.0 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2.50 | UD | 1.40 | 2.50 | 25.0 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 2.50 | UD | 0.81 | 2.50 | 25.0 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 2.50 | UD | 0.66 | 2.50 | 25.0 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 2.50 | UD | 0.90 | 2.50 | 25.0 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 50.8 | | 81 - 118 | | 102% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 48.4 | | 80 - 119 | | 97% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 51.0 | | 89 - 112 | | 102% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 51.8 | | 85 - 114 | | 104% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 328000 | 5.63 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 567000 | 6.83 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 528000 | 10.1 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 265000 | 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

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | Tetra Tech NUS, Inc. | Date Collected: | 10/15/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D-GW-20201015 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-02 | 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 |
|---|---|---|---|---|
| BN012427.D | 1 | 10/21/20 10:15 | 10/28/20 18:22 | PB132530 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 123-91-1 | 1,4-Dioxane | 0.30 | | 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 | 0.34 | | 55 - 111 | | 85% | SPK: 0.4 |
| 321-60-8 | 2-Fluorobiphenyl | 0.39 | | 53 - 106 | | 97% | SPK: 0.4 |
| 1718-51-0 | Terphenyl-d14 | 0.57 | * | 58 - 132 | | 142% | SPK: 0.4 |
| **INTERNAL STANDARDS** | | | | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 798 | 7.578 | | | | |
| 1146-65-2 | Naphthalene-d8 | 3120 | 10.352 | | | | |
| 15067-26-2 | Acenaphthene-d10 | 1800 | 14.217 | | | | |
| 1517-22-2 | Phenanthrene-d10 | 3750 | 16.968 | | | | |
| 1719-03-5 | Chrysene-d12 | 3980 | 21.184 | | | | |
| 1520-96-3 | Perylene-d12 | 4670 | 23.354 | | | | |

U = Not Detected
LOQ = Limit of Quantitation
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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: | 10/16/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D2-GW-20201016 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-03 | 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 |
|---|---|---|---|---|
| BN012426.D | 1 | 10/21/20 10:15 | 10/28/20 17:46 | PB132530 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 123-91-1 | 1,4-Dioxane | 0.39 | | 0.090 | 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 | 0.34 | | 30 - 150 | | 85% | SPK: 0.4 |
| 4165-60-0 | Nitrobenzene-d5 | 0.33 | | 55 - 111 | | 83% | SPK: 0.4 |
| 321-60-8 | 2-Fluorobiphenyl | 0.34 | | 53 - 106 | | 85% | SPK: 0.4 |
| 1718-51-0 | Terphenyl-d14 | 0.52 | | 58 - 132 | | 130% | SPK: 0.4 |
| **INTERNAL STANDARDS** | | | | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 813 | 7.578 | | | | |
| 1146-65-2 | Naphthalene-d8 | 3220 | 10.351 | | | | |
| 15067-26-2 | Acenaphthene-d10 | 1890 | 14.217 | | | | |
| 1517-22-2 | Phenanthrene-d10 | 3830 | 16.968 | | | | |
| 1719-03-5 | Chrysene-d12 | 4000 | 21.184 | | | | |
| 1520-96-3 | Perylene-d12 | 4740 | 23.35 | | | | |

U = Not Detected
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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: | 10/19/20 |
| Project: | CTO WE13 | Date Received: | 10/20/20 |
| Client Sample ID: | BP-TT-MW179D1-GW-20201019 | SDG No.: | L4470 |
| Lab Sample ID: | L4470-04 | 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 |
|---|---|---|---|---|
| BN012428.D | 1 | 10/21/20 10:15 | 10/28/20 18:59 | PB132530 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| **TARGETS** | | | | | | | |
| 123-91-1 | 1,4-Dioxane | 0.66 | | 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 | 0.32 | | 30 - 150 | | 80% | SPK: 0.4 |
| 4165-60-0 | Nitrobenzene-d5 | 0.30 | | 55 - 111 | | 75% | SPK: 0.4 |
| 321-60-8 | 2-Fluorobiphenyl | 0.32 | | 53 - 106 | | 80% | SPK: 0.4 |
| 1718-51-0 | Terphenyl-d14 | 0.53 | | 58 - 132 | | 132% | SPK: 0.4 |
| **INTERNAL STANDARDS** | | | | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 733 | 7.578 | | | | |
| 1146-65-2 | Naphthalene-d8 | 2900 | 10.351 | | | | |
| 15067-26-2 | Acenaphthene-d10 | 1690 | 14.217 | | | | |
| 1517-22-2 | Phenanthrene-d10 | 3380 | 16.968 | | | | |
| 1719-03-5 | Chrysene-d12 | 3530 | 21.184 | | | | |
| 1520-96-3 | Perylene-d12 | 4230 | 23.35 | | | | |

U = Not Detected
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() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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**5. TT-MW179D, TT-MW179D1, and TT-MW179D2**
**Analytical Data Table Unvalidated**

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TT-MW179D, TT-MW179D1 and TT-MW179D2
Unvalidated Groundwater Analytical Data Table



| SAMPLE ID<br>SAMPLE DATE | **BP-TT-MW179D1-GW-20201019<br>10/19/2020** | **BP-TT-MW179D2-GW-20201016<br>10/16/2020** | **BP-TT-MW179D-GW-20201015<br>10/15/2020** | **BP-TT-MW179D-GW-20201015-RE<br>10/15/2020** |
|---|---|---|---|---|
| **SEMIVOLATILES (UG/L)** | | | | |
| 1,4-DIOXANE | 0.66 | 0.39 | 0.3 | -- |
| **VOLATILES (UG/L)** | | | | |
| 1,1,1-TRICHLOROETHANE | 0.75 U | 0.75 U | 0.75 U | 0.75 U |
| 1,1,2,2-TETRACHLOROETHANE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1,2-TRICHLOROETHANE | 0.24 J | 0.5 U | 0.5 U | 0.5 U |
| 1,1,2-TRICHLOROTRIFLUOROETHANE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-DICHLOROETHANE | 0.72 J | 0.35 J | 0.5 U | 0.5 U |
| 1,1-DICHLOROETHENE | 1.7 J | 0.73 J | 0.42 J | 0.44 J |
| 1,2-DICHLOROBENZENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-DICHLOROETHANE | 0.75 U | 0.75 U | 0.75 U | 0.75 U |
| 1,2-DICHLOROPROPANE | 1.3 J | 0.5 U | 0.5 U | 0.5 U |
| 1,3-DICHLOROBENZENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1,4-DICHLOROBENZENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 2-BUTANONE | 2.5 U | 2.5 U | 2.5 U | 2.5 U |
| 2-HEXANONE | 3.8 U | 3.8 U | 3.8 U | 3.8 U |
| 4-METHYL-2-PENTANONE | 2.5 U | 2.5 U | 2.5 U | 2.5 U |
| ACETONE | 3.8 J | 4.2 J | 2.3 J | 2.5 J |
| BENZENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| BROMODICHLOROMETHANE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| BROMOFORM | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| BROMOMETHANE | 3.8 U | 3.8 U | 3.8 U | 3.8 U |
| CARBON DISULFIDE | 0.92 J | 0.95 J | 0.5 U | 0.9 J |
| CARBON TETRACHLORIDE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLOROBENZENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLORODIBROMOMETHANE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLOROETHANE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLOROFORM | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| CHLOROMETHANE | 0.53 J | 0.89 J | 0.5 U | 0.65 J |
| CIS-1,2-DICHLOROETHENE | 35.9 | 22.9 | 34.2 | 37 |
| CIS-1,3-DICHLOROPROPENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| ETHYLBENZENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| ISOPROPYLBENZENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| M+P-XYLENES | 1 U | 1 U | 1 U | 1 U |
| METHYL CYCLOHEXANE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| METHYL TERT-BUTYL ETHER | 0.5 U | 0.69 J | 0.84 J | 0.85 J |
| METHYLENE CHLORIDE | 0.5 U | 0.33 J | 0.5 U | 0.5 U |
| O-XYLENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| STYRENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| TETRACHLOROETHENE | 24.5 | 12 | 16.5 | 15.8 |
| TOLUENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| TRANS-1,2-DICHLOROETHENE | 0.55 J | 0.26 J | 0.41 J | 0.33 J |
| TRANS-1,3-DICHLOROPROPENE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| TRICHLOROETHENE | 280 D | 160 D | 130 | 130 |
| TRICHLOROFLUOROMETHANE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| VINYL CHLORIDE | 0.5 U | 0.5 U | 0.5 U | 0.5 U |

Notes:
ft bgs = feet below ground surface
NC = No criteria
UG/L = micrograms per Liter
**Bold** = Exceeds NYS Groundwater Standards or guidance value.
quantitation or was qualified as undetected during data review due to blank
limits or the analyte concentration was less than the limit of quantitation
D = Sample is reported with a secondary dilution factor.

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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

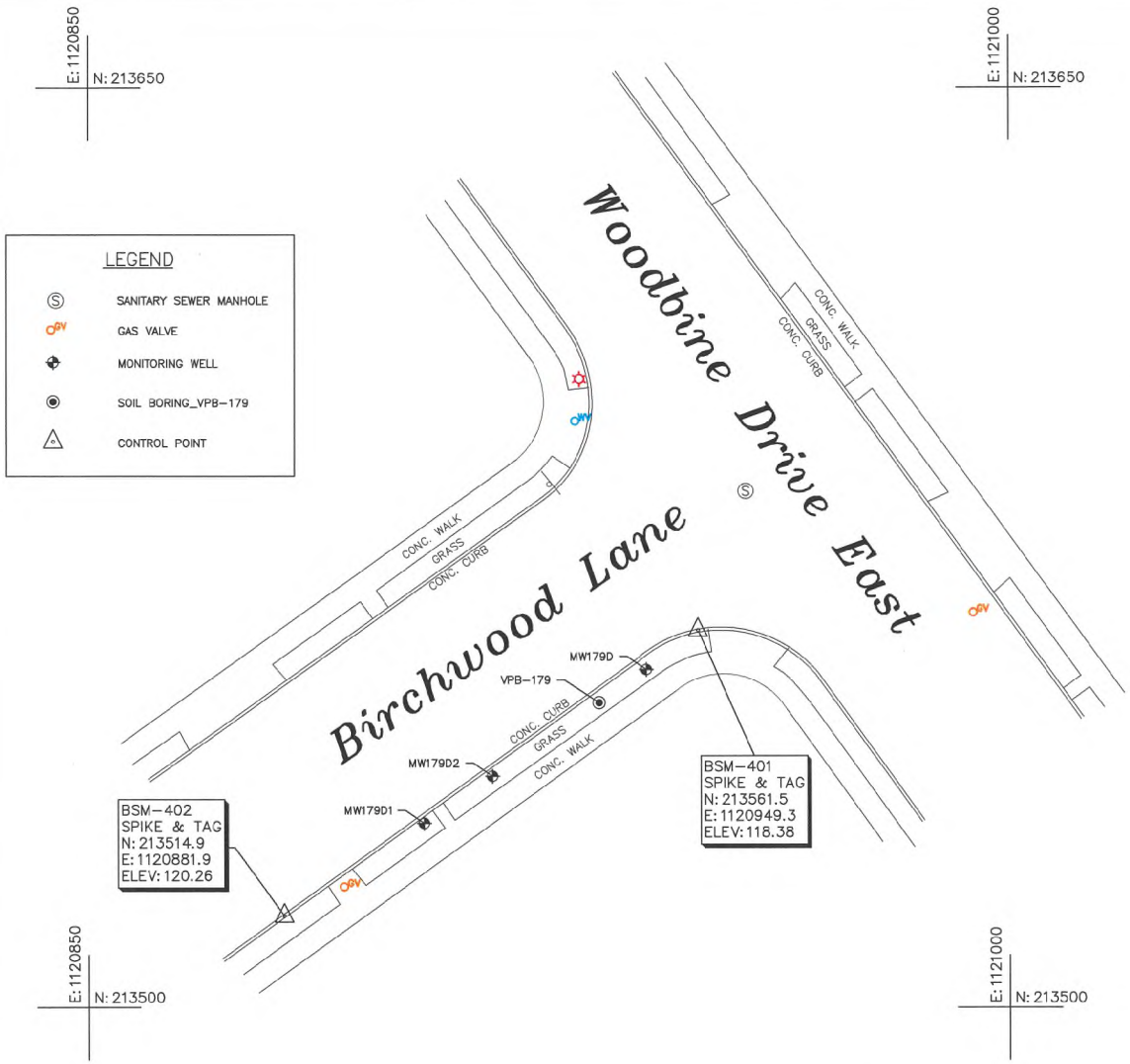
| Well/Boring ID | Grade Elev | Outer Casing | Inner Casing | Northing | Easting | Latitude North | Longitude West | Survey Date |
|---|---|---|---|---|---|---|---|---|
| BPOW1-7 | 73.2 | 73.19 | 72.83 | 201917.5 | 1130763.6 | 40°43'10.85" | 73°28'17.21" | 3/19/2021 |
| BPOW1-8 | 73.4 | 73.37 | 72.91 | 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 |
| MW180D2 | 71.0 | 71.04 | 70.67 | 200969.0 | 1124947.2 | 40°43'01.82" | 73°29'32.81" | 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 |
| 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




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-179 | 119.0 | – | – | 03/19/2021 |
| MW-179D | 118.8 | 118.82 | 118.48 | 03/19/2021 |
| MW-179D1 | 119.7 | 119.70 | 119.31 | 03/19/2021 |
| MW-179D2 | 119.4 | 119.40 | 119.00 | 03/19/2021 |

# MONITORING WELL LOCATION MAP – VPB 179
# FMR. NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
# BIRCHWOOD LANE AND WOODBINE DRIVE EAST
# BETHPAGE, NASSAU COUNTY, NEW YORK


BORBAS SURVEYING & MAPPING, LLC
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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