January 2020

Interim Remedial Measure Work Plan

Groundwater Treatment System

Allied Healthcare Products, Inc.
46 New Street
Town of Stuyvesant
Columbia County, New York
BCP Site # XXXX

ALLIED HEALTHCARE PRODUCTS, INC.
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Saint Louis, MI 63110

I, Nancy Garry, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Draft IRM Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Prepared by:

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EXECUTIVE SUMMARY

The goal of the proposed Interim Remedial Measure (IRM) is to extract and treat groundwater containing volatile organic compounds (VOCs) at the Stuyvesant Falls Site that have impacted the on-site bedrock water supply well. The IRM will pump groundwater from the existing on-site bedrock water supply well to a groundwater treatment (GWT) system. The GWT system will consist of two granular activated carbon (GAC) tanks, and pre and post sediment filters. Once the water has been treated by the GWT system, it will discharge to existing water holding tanks that are used for both manufacturing processes and non-potable bathroom water (sinks for handwashing and toilets) in accordance with approval from New York State Department of Environmental Conservation (NYSDEC).

Water pumped from the bedrock water supply well will be treated with Granular Activated Carbon (GAC). The IRM is a presumptive/proven remedial technology consistent with NYSDEC DER-15: Presumptive/Proven Remedial Technologies, which is applicable to New York State's Remedial Programs including the State Superfund Program. This Interim Remedial Measure Work Plan (IRM WP) describes the groundwater pumping and treatment system, and the process for installing and implementing the system. It is anticipated that this groundwater capture and treatment system will be in operation within approximately (2) two months following receipt of work plan approval from NYSDEC.

GROUNDWATER TREATMENT SYSTEM
INTERIM REMEDIAL MEASURE WORK PLAN
46 NEW STREET
TOWN OF STUYVESANT, NEW YORK

TABLE OF CONTENTS

GROUNDWATER TREATMENT SYSTEM
INTERIM REMEDIAL MEASURE WORK PLAN
46 NEW STREET
TOWN OF STUYVESANT, NEW YORK

TABLE OF CONTENTS

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INTERIM REMEDIAL MEASURE WORK PLAN
46 NEW STREET
TOWN OF STUYVESANT, NEW YORK

TABLE OF CONTENTS

ACRONYMNS

AWQS	New York State Ambient Water Quality Standards and Guidance Values
BCP	Brownfield Cleanup Program
bgs	below ground surface
CAMP	Community Air Monitoring Plan
CCR	Construction Completion Report
COC	Contaminants of Concern
DER	Division of Environmental Remediation
DUSRs	Data Usability Summary Reports
FER	Final Engineering Report
GAC	granular activated carbon
GWT	groundwater treatment
gpm	gallons per minute
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
IRM WP	Interim Remedial Measure Work Plan
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
MCL	maximum contaminant level
PLS	professional land surveyor
ppb	parts per billion
RI	remedial investigation
SCG	standards, criteria, and guidance
SWPPP	Stormwater Pollution Prevention Plan
TAL	Target Analyte List
TCE	Trichloroethene
TOC	total organic carbon
VOC	volatile organic compound

1.0 INTRODUCTION & PURPOSE

1.1 Introduction

This Interim Remedial Measure Work Plan (IRM WP) has been prepared in accordance with New York State Department of Environmental Conservation (NYSDEC) DER-10 – Technical Guidance for Site Investigation and Remediation, dated May 2010, in connection with the property at 46 New Street, located in the Town of Stuyvesant, Columbia County, New York (the Site). A Site location map is presented as Figure 1 and a Site layout map is presented as Figure 2.

1.2 Purpose and Goal

The purpose of this IRM WP is to provide a plan for a non-emergency IRM. The goal of the IRM is to extract and treat groundwater containing volatile organic compounds (VOCs) above regulatory values within the Site's bedrock water supply well prior to its non-potable uses at the facility (wash sinks, toilets and manufacturing), and discharge to the facility's septic system.

The IRM will extract and treat deep groundwater within the bedrock beneath the site. The IRM will use the existing on-site bedrock water supply well to treat the water with GAC and discharge the water to existing water holding tanks that are used for both manufacturing processes and non-potable water. The GAC treatment system is to be installed within the basement of Building C as shown on Figure 2. The IRM is a presumptive/proven remedial technology consistent with NYSDEC DER-15: Presumptive/Proven Remedial Technologies, which is applicable to New York State's Remedial Programs including the State Superfund Program. Groundwater in the bedrock beneath the Site will be considered one treatment unit for the purposes of this IRM.

2.0 REMEDIAL ACTION DESCRIPTION

2.1 Site Background and Physical Setting

The Site is in the Town of Stuyvesant, Columbia County, New York. The subject Site is located immediately west of the intersection of Woods Lane and Hudson Avenue, on the western side of the Kinderhook Creek. The Site buildings are serviced with water from an on-site bedrock well. The well water is used for manufacturing purposes, and for the sinks and toilets. Potable water is sourced from an outside vendor. Sanitary wastes are currently discharged to an on-site septic system.

The Site was first developed in the 1820s with a cotton mill which was later expanded in 1888. According to historical records, a portion of the Site was leased to the Collins Bag Company during this time. The Site was primarily used for the cotton mill until 1925. In 1925, the Site was briefly used for the manufacture of electric steel casings and corrosion resistant alloys until 1926. The Site was used minimally, if at all, from 1926 until 1940 when it began to be used for the purpose of manufacturing nickel alkali storage batteries until 1946.

Circa 1948 the Site was purchased by Thomas A. Edison Inc. for the manufacturing of medical gases (oxygen, nitrogen and nitrous oxide), including anesthetics (cyclopropane), Baralyme (CO_2 absorbent powder) and trimethylene chlorobromide (a product to ease labor pains during childbirth), as well as machines for administering these products. In 1959 Thomas A. Edison Inc. merged with McGraw Electric to become McGraw-Edison. In 1965, McGraw-Edison sold its medical gas division (and the Site) to Chemetron Medical Products. Chemetron Medical Products phased out the production of oxygen, nitrogen and nitrous oxide, cyclopropane and trimethylene chlorobromide such that by 1967 it was only producing Baralyme. In 1977, Chemetron Medical Products was purchased by Allegheny International who eventually changed its entity name to Allied Healthcare Products, Inc. in 1980.

Currently there are two main buildings and several smaller out buildings within the Site. The 5-story stone building and tower with a 5-story brick addition is commonly referred to as Building A/B. The second 5 story brick building is referred to as Building C. The three smaller and isolated out buildings are referred to as the Former Lunch Building, former Liquid Waste Pump Building and the Water Pump Building. The Site building locations are shown on Figure 2. Building A/B is currently used for storage. Building C

is used for office space and manufacturing. The outbuildings are currently vacant and unused.

Water for the site is currently supplied by an on-site bedrock well drilled in 2000. Prior to 2000, water for the Site was taken from the Kinderhook Creek. The bedrock was encountered at a depth of 13 feet and 40 feet of steel casing was installed. Shale bedrock was encountered to a depth of 125 feet and limestone to a depth of 405 feet. The well yield, when installed, was approximately 2 gallons per minute (gpm). In 2007 the well yielded 1.2 gpm which prompted it to be hydro-fractured which increased the yield to 4 gpm. See Figure 2 for the location of the well. The well water is not used for potable consumption, only for bathroom sink and toilet use, and for manufacturing. Potable water is provided by an outside bottle water vendor.

Water from the well enters the lowest level (basement) of the Building C. The well water first enters an aeration tank to remove methane from the water. A centrifugal pump pulls water from the aeration tank and pumps it through a 30-gallon pressure tank to the three above ground storage tanks. Water from the storage tanks is then distributed throughout the building for non-potable use.

Sanitary wastes are handled via an on-site septic tank and leach field. The former manufacturing of Baralyme and current production of Litholyme/Carbolime do not generate liquid wastes. Water used in the process is consumed during production. Any excess water is captured in product solution tanks which are periodically rinsed out. The residual solution is captured and transferred to a 250-gallon polyethylene tote which is removed for proper disposal by a waste vendor.

Generated waste water at the site is from bathroom sinks and toilets and is piped to a septic tank and leach field located north of Building A/B (see Figure 2).

Land use surrounding the Site includes mixed residential, agricultural and vacant woodland areas to the southwest and south, mixed residential and agricultural areas to the northwest, residential and vacant land to the north, and the Kinderhook Creek to the south beyond which is the Hamlet of Stuyvesant Falls. The Kinderhook Creek generally flows east to west past the Site. The southern property line runs along an approximate 100-foot cliff formed in the bedrock.

2.1.1 Geology and Hydrogeology

This section summarizes Site geology and hydrogeology as it relates to the proposed groundwater treatment IRM.

The Site is in the Hudson-Mohawk Valley physiographic unit between the Hudson River to the west and the Taconic Mountains to the east. Bedrock beneath the site is mapped as the Nassua formation which consists of folded beds of slate and shale with thin beds of quartizite. Based on well drilling records for the Site well, the Nassua formation extends to a depth of approximately 125 feet, below which is limestone to a depth of at least 405 feet. The depth to bedrock as explored by others is approximately 2 to 16 feet below existing ground surface elevations.

Soils overlying the bedrock are classified by the Columbia County Soil Survey as Udorthents. This soil type is nearly level, excessively to moderately drained and composed of sand and gravel to fine, sandy loam and silt loam. Based on Site development dating back to the late 1800s, much of the Site soils have likely been reworked and include the importation of soil fill and other non-soil materials. Soil thickness across the site have been found ranging from approximately 1 to 16 feet below ground surface (bgs).

Groundwater in soils above the bedrock is reported to be variable and where encountered, is present immediately above the bedrock surface. Based on the overall topography of the Site and surrounding land west of the Kinderhook Creek, groundwater flow is inferred to be in a southernly direction.

2.2 Nature and Extent of VOCs

A remedial investigation of the Site will be undertaken to characterize the nature and extent of contaminants of concern (COCs).

Analysis of the data collected to date as summarized in the Brownfield Cleanup Program (BCP) Application and Remedial Investigation Work Plan provides the context for developing the proposed groundwater IRM. The analytical results for the water samples collected from the bedrock water supply well on various dates is presented in Appendix A and summarized in the following section.

2.2.1 Recent Investigations

C.T. Male Associates Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C. (C.T. Male) collected a groundwater sample from the water supply well in July 2019. The sample was collected in the basement of 'Building C' from a spigot just after the pressure tank. The well water was purged to waste for approximately five minutes at a moderate flow prior to the collection of a sample. The sample was analyzed for VOCs by EPA Method 8260. The analytical results were then validated by Environmental Data Services Inc. The analytical results had a detection of 1,2-dichloropropane at a concentration of 5.7 ppb. The New York State Ambient Water Quality Standard (AWQS) for this compound is 1 ppb. Acetone and trichloroethene (TCE) were also detected; however, at concentrations below their respective AWQS values.

Based on the above analytical result, C.T. Male was requested to collect additional water sample from the bedrock supply well on September 12, 2019 and three from the water system within Building C. The samples were analyzed for VOCs by EPA Method 8260, and the Target Analyte List of metals by standard methods. The following samples were collected:

- Pre-Aerator: a raw water sample from the supply well.
- Post-Aerator: a sample collected after the equipment used to remove methane and before entering the water storage tanks.
- Pre-Production: Indicated by plant personnel to be the water from the water storage tanks used in product production. A production waste water sample could not be collected as all water used in production is consumed in the process.
- Sink: A water sample collected from a bathroom sink.

As shown on Table 1, in Appendix A, the analyte 1,2-dichloropropane was detected in each of the samples collected on September 12, 2019. The highest concentration of 1,2-dichloropropane was detected in the Pre-Aerator sample which is representative of the on-site bedrock supply well water. Methylene chloride, TCE and acetone were also in three of the four samples (Pre-Aerator, Post Aerator and Sink) at various concentrations. Acetone and TCE were not detected in the Pre-Production sample. The concentrations

of 1,2-dichloropropane in each of the four samples, ranged from 37 – 250 parts per billion, which is greater than the AWQS value. Acetone exceeded its AWQS value in the Pre-Aerator, Post-Aerator and Sink samples. Concentrations of methylene chloride were above the AWQS value in the Pre-Aerator and Post-Aerator samples.

The September 12, 2019 samples were also analyzed for target analyte list (TAL) metals. As shown in Table 1, Iron and Sodium were detected at concentrations above their respective AWGS groundwater standard or guidance values. The Iron detections are naturally occurring concentrations. The Sodium level may be related to the application of de-icing agents within the Site and on adjacent public roadways.

3.0 IRM APPROACH

The non-emergency IRM described in this document will extract and treat groundwater in the bedrock beneath the Site prior to non-potable use by the facility.

The existing bedrock water supply well will be used as the capture well. The Groundwater Treatment (GWT) system process flow diagram is shown on Figure 3. The GWT treatment system components are shown on Figure 4.

The main elements of the IRM system installation are as follows:

- Three 2.0 cubic foot granulated activated carbon tanks;
- Two 5 micron filters. Pre and post filters for the GAC tanks;
- Totalizing flow meter; and
- Ancillary equipment and associated controls.

The elements of the IRM are further detailed in Section 2.4.

3.1 Groundwater Capture Well

The Site bedrock supply well is six inches in diameter and constructed with a steel casing set at a depth of 40 feet bgs. The existing submersible pump will be used to extract groundwater and pump it to existing water system and to the above-ground GWT system.

3.2 Groundwater Treatment System

3.2.1 GWT System Contractor

Culligan, a licensed water treatment contractor, is responsible for the installation, scheduled inspection, and scheduled and non-scheduled maintenance of GWT system. In the event a new contractor takes over the responsibility of the GWT system, NYSDEC will be informed in advance of the change.

3.2.2 Treatment System Overview

The GWT system components include the following:

- Pre-GAC Polypropylene sediment filter (Dual Gradient 50 - 5 micron size);

- Lead GAC Canister (2 ft^3 Calgon Cullar, with F600AW-acid washed carbon);
- Two Lag GAC Canisters (2 ft^3 Calgon Cullar, with F600AW-acid washed carbon);
- Post-GAC polypropylene sediment filter (Dual Gradient 50 - 5 micron size);
- Flow Meter (total gallons) and flow controller;
- Three shut off valves within the GWT system;
- Influent, Midpoint and Effluent Water Sampling Ports; and
- Plumbing piping and fittings used are composed of PEX Products, and are typically three-quarter inch diameter. All plumbing fittings are NSF 61 certified.

The Groundwater Treatment (GWT) system process flow diagram is shown on Figure 3. The GWT treatment system components are shown on Figure 4.

The GWT system installation and operation manual is presented in Appendix B. The manufacturer's information and specification sheets for each system component are presented in Appendix C.

4.0 OPERATION

The proposed IRM GWT system for groundwater pumped from the bedrock supply well consists of cartridge filtration pretreatment for solids removal followed by GAC treatment in a lead-lag configuration for VOC removal. A design flowrate of 8 gpm has been selected. Each GAC vessel/tank will contain approximately 2 cubic feet of GAC. The spent GAC will be returned to and managed by the supplier in accordance with applicable regulatory requirements. Process equipment, except for the pumping well, will be assembled within the basement of Building C.

Groundwater treatment system effluent that is not consumed in product production (water used for sanitary purposes will be discharged to the existing septic system in accordance with approval from NYSDEC).

A plan of the GWT system process flow schematic is shown in Figure 3, and plan of the GWT system is shown on Figure 4.

4.1 Operational Overview

The GWT system operates through pressurized flow from the water supply well pump and pressure tank system within the existing water system. There will be shut off valves installed at the GWT system influent and effluent flows from the existing water system. There will also be a shut off valve installed in-line from the existing water system pressure tank to the holding tank. This will provide the ability to provide a by-pass for the GWT system if needed for repairs or emergency situations.

Well water from the water supply well/pressure tank first flows through a pre-GAC polypropylene sediment filter, and then flows to the lead and lag GAC vessels/tanks. Effluent from the GAC vessels/tanks then flows through a post-GAC polypropylene sediment filter and a totalizing mechanical flow meter (records total gallons of water).

4.2 Applicable NYS Standards, Criteria, and Guidance (SCGs)

GWT system effluent that is not consumed for manufacturing needs will be discharged to the on-site septic system in accordance with approval from NYSDEC. The discharge will be monitored, and the results reported to NYSDEC in accordance with the permit. The applicable NYS SCGs will be met through water treatment system effluent water quality monitoring and reporting to NYSDEC.

4.3 Applicable Permits and Approvals

The following permits and approvals are anticipated to be required to construct and operate the IRM.

New York State Permits and Approvals

- Approval to discharge treated groundwater from NYSDEC.

A NYSDEC Water Withdrawal Permit or equivalent will not be required as it is not anticipated that the IRM will exceed the groundwater withdrawal threshold volume of 100,000 gallons per day.

4.4 GWT System Startup

Prior to installing the GWT system, the GWT system contractor will complete a site visit to review the existing water system and area required for GWT equipment installation. During the initial site visit it will also be determined if additional operational considerations are needed. The GWT system will be installed in the basement of Building C, where the current water service line from the supply well enters the building. During the pre-installation site visit, an un-treated water sample from the bedrock supply well (source) will be collected, analyzed and recorded by Culligan for Hardness, Iron, Manganese, Hydrogen Sulfide, Alkalinity, Total Dissolved Solids, and pH. This data is retained by Culligan for future reference and evaluation of the GWT system operation.

At system startup a visual check of the pre- and post filters are completed, along with GAC tank pressures to ensure operation. The total gallons of water treated are then recorded at the flow meter. The initial system sampling of the GWT is then completed.

The initial sampling of the GWT system will be completed immediately after installation. Water samples will then be collected for VOC analysis from the water sampling point located prior to the lead GAC canister (influent), and after the lag GAC canister (effluent) water sampling point and post-GAC polypropylene sediment filter.

The GWT system will not be approved for use until the analytical results for the initial effluent system sample have been received, reviewed and confirmed to meet applicable standards, and approved by the NYSDEC.

4.5 Laboratory Analyses

The influent, mid-point and effluent samples when collected from the GWT system will be analyzed by EPA Method 8260.

4.6 Non-Scheduled System Shutdown

The GWT is designed to operate periodically or continuously and to treat the bedrock supply water whenever there is water demand within the system. The GWT system components rely on water pressure and flow to operate. The only time the GWT system will not treat water is during a power outage (i.e. as the water well pump will not be in operation). Treatment will resume as soon as the power is restored.

5.0 INSPECTION AND MAINTENANCE REQUIREMENTS

5.1 Scheduled Inspection and Maintenance

Following the installation of the GWT system, a quality control inspection of the system will be completed by Culligan to ensure the system components have been installed and are properly functioning.

Scheduled maintenance of the GWT system is as follows:

Pre and Post Filter Replacement:	Every 3 months
GAC Vessel Replacement:	As needed depending on periodic analytical monitoring (see Section 4.2)

Non-scheduled GWT system maintenance by Culligan will be completed on an as-needed basis.

5.2 GAC Change Out

Following the collection and analysis of the initial influent and effluent water samples from a GWT system (Section 3.2), subsequent samples will be collected from the influent and midpoint sample ports. The influent and midpoint samples will initially be analyzed by the laboratory. Routine sampling at the midpoint ensures that a breakthrough of the lead GAC vessel is identified before a breakthrough of the lag GAC vessel and establishes the need to schedule a lead GAC vessel change out.

The change out of the GAC vessels will be initiated when a VOC is detected above its maximum contaminant level (MCL). The GAC vessel will then be scheduled for change out as follows:

- Remove the Lead GAC vessel.
- Remove a Lag GAC vessel and place it in the Lead GAC position.
- Install the replacement GAC vessel in the Lag position.
- Spent GAC media will be removed from the vessel by Culligan for subsequent shipment to Calgon. GAC media will be accumulated and stored undercover at

Culligan's facility. Pick-up of the spent media will then be scheduled by Culligan with Calgon. The spent material will be transported to Calgon's facility for processing.

- Upon return of the Lead GAC canister to Culligan, the GAC media will be evaluated and recorded for indications of biofilm accumulation, and mineral encrustation to determine if "channeling" is occurring within the GAC canister beds. Channeling can reduce the GAC life cycle and is important in determining when a GAC canister should be replaced. Observations of the spent GAC media will be recorded by Culligan and included in the annual report (see Section 5.2).

5.3 Sediment Filter Change Out

The pre- and post-polypropylene sediment cartridge filters will be replaced by Culligan every three months. The frequency of filter changes may be modified over time as historical data is developed for the system.

5.4 System Data Records

Culligan, or any subsequent contractors, will keep records of work and modifications made to the GWT system.

6.0 ONGOING MONITORING AND REPORTING

The sampling activities conducted as part of this IRM Work Plan will be performed in accordance with this plan.

6.1 Sample Collection and Analysis

As indicated in Section 3.2, initial system water samples are collected prior to the Lead GAC canister and after the Lag GAC vessel and analyzed by the laboratory of record for VOCs by EPA Method 8260.

After the completion of the initial system sampling for VOCs (as presented in Section 3.2), the follow-up sampling of the influent, midpoint and effluent samples from the GWT system will be performed at the following frequency:

Year 1: Monthly for the first 6 months of operation, and quarterly (every 3 months thereafter)

Year 2: Quarterly (every 3 months)

After the first year of operation and monitoring, the data will be evaluated to determine if the sample frequency can be modified. Any request to modify the sampling frequency will be made in writing to NYSDEC.

6.2 Periodic Reporting

Within 45 days following the installation of the GWT system, a summary report will be submitted to NYSDEC. The results for all system sampling events, dating back to the initial sets of results from the water supply wells, will be provided in a master Excel spreadsheet that also incorporates information related to operation and maintenance activities and other supporting documentation to NYSDEC on an annual basis.

6.3 System Shutdown and Removal

Upon achieving regulatory criteria for the removal of a GWT system all system components will be removed. The criteria for removal of the GWT is as follows:

- System sampling demonstrates that the groundwater is below the State Ambient Groundwater Quality Standards.

Three consecutive rounds of annual sampling do not show an upward trend in VOC concentrations, unless a shorter period of time is otherwise agreed to and approved by NYSDEC.

7.0 TEMPORARY CONSTRUCTION FACILITIES

7.1 Site Security, Staging and Parking

7.1.1 Site Security

IRM construction activities will take place on Site (property owned by Allied Healthcare Products Inc.). Site security expected to be implemented during construction of the IRM will include a designated entrance for personnel involved in the construction of the IRM.

Site security during operation of the IRM is expected to include locking cap for the bedrock supply well.

7.1.2 Staging

Equipment and materials for the construction and operation of the IRM will be staged within designated areas within the Site boundaries. The staging area locations will be determined prior to beginning construction of the IRM.

7.1.3 Parking

It is expected that the existing parking area of the Site will be used by personnel involved in the construction and operation of the IRM.

7.2 Site Clearing and Grubbing

No clearing and/or grubbing of trees and vegetation will be necessary for the construction and operation of the IRM.

7.3 Handling of Excess and Imported Soil/Fill

The IRM installation and operational activities will not be ground intrusive activities. Therefore, there will be no generation of excess soils or import of other fill materials or soils.

7.4 IRM Derived Wastes

The IRM-derived wastes will be disposed of in accordance with applicable regulations and in consultation with NYSDEC.

7.5 Utilities

Necessary precautions will be taken to protect existing utilities located within the boundaries of the IRM.

Utilities expected to be required during construction and operation of the IRM include:

- Temporary bathroom and hand washing facilities; and
- Electricity during construction and operation of the IRM.

7.6 Surveying

Survey work performed in conjunction with the IRM will be certified by a New York State Professional Land Surveyor (PLS).

8.0 SITE CONTROLS DURING REMEDIAL ACTION

8.1 Stormwater Management

A NYSDEC Stormwater Pollution Prevention Plan (SWPPP) is not required as existing Site conditions will not be changed or altered in relation to the construction or operation of the IRM.

8.2 Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) is not required for the installation or operation of the IRM. IRM construction activities will be completed within the existing Site Buildings.

8.3 Dust Control

Dust suppression will not necessary as no ground intrusive activities will be performed.

8.4 Construction Observation and Certification

C.T. Male will provide full-time observation during construction of the IRM (construction observer).

Periodic observation of the construction of the IRM will be made by a C.T. Male registered Professional Engineer to provide the required certification for the Construction Completion Report (CCR). The engineer will work with the construction observer to document that the project is implemented in accordance with the NYSDEC approved IRM WP. The project engineer will provide engineering review of IRM-related contractor submittals and field changes for the IRM construction work.

9.0 HEALTH AND SAFETY PLAN (HASP)

C.T. Male will follow health and safety procedures in accordance with the existing Site-specific health and safety plan (HASP) that was developed for IRM activities. Prior to implementing the field work, the existing Site-specific HASP will be amended as needed for any IRM tasks that are not addressed in the existing plan.

The contractor(s) for the Site IRM will be required to provide a Site-specific HASP certified by a Certified Industrial Hygienist or equivalent. The contractor's employees will be required to have read and understood their company's Site-specific HASP prior to beginning work.

A copy of the health and safety plans will be available at the Site during the performance of IRMs to which they are applicable.

10.0 IRM MONITORING PROGRAM

The operation of the groundwater IRM will be monitored by evaluating hydrogeological conditions at and nearby the Site, and by collecting data associated with the groundwater treatment system.

10.1 Hydrogeological Conditions Monitoring

Data related to groundwater extraction will be collected to evaluate operation of the IRM, including the following:

- Concentration trends at the existing water well and others installed as a function of the RI.
- Groundwater elevation monitoring based on manual water level measurements augmented with a water level recording transducer to be installed in the supply well.
- Water level variability and well capacity over the range of hydrologic conditions at the Site.
- Whether well fouling may be an issue and to determine appropriate operation and maintenance methods if excessive fouling occurs.

10.2 Groundwater Treatment System Monitoring

Samples will be collected from the groundwater treatment system as described below in Section 9.2.1.

10.2.1 Water Treatment System Sampling

10.2.1.1 General

Water samples will be collected from the GWT system, and the results will be reported to NYSDEC. Sampling will be conducted during system start up and during system operation. The samples will be collected from the sampling port prior to the lead GAC vessel, in between the lead/lag GAC vessels (midpoint), and after the lag GAC vessel and post filtration (effluent). The samples will be analyzed for those VOCs and other general chemistry parameters in accordance with approval from NYSDEC.

Additional data related to the GWT system operation will be collected to monitor the operation of the IRM, including the following:

- Ranges of dissolved iron and manganese during long-term pumping in order to evaluate possible pre-treatment requirements.
- Measure mass recovery rate and GAC usage rate.

10.2.1.2 Frequency

One round of samples will be collected during system start up. During system operation, VOC samples, in accordance with approval from NYSDEC, will be collected in accordance with the NYSDEC approved protocols at the system inlet, mid-point, and outlet to demonstrate that the system is operating as designed. Long-term sampling will be conducted in accordance with approval from NYSDEC.

10.2.1.3 Data Validation

Analytical data will be presented in ASP Category B data deliverable packages that will undergo EPA Level IIA data validation by an independent third-party data validation firm. Results of the data validation will be presented in Data Usability Summary Reports (DUSRs).

10.2.1.4 Confirmatory Sampling Results Review

Review and submission of the analytical data and data usability summary reports will conform to the delivery schedule in accordance with approval from NYSDEC.

11.0 IRM ACTION SCHEDULE AND PROGRESS REPORTS

11.1 IRM Action Schedule

Project construction work on Site will begin within 60 days of formal approval from NYSDEC. NYSDEC will be provided with written notice a minimum of five business days prior to the initiation of IRM site work.

11.2 IRM Progress Reports

Weekly progress reports will be submitted to the NYSDEC Project Manager via email during IRM construction. The progress report will briefly summarize the IRM activities completed for the previous week. The progress report will be submitted at the beginning of the following week. The format will be in a bulleted style, generally highlighting the major items accomplished during the previous week.

Relevant updates during IRM operations will be included in the ongoing monthly project progress reports submitted to NYSDEC describing remedial investigation activities. Additionally, quarterly progress reports on the operation of the IRM will be submitted to the NYSDEC Project Manager, the New York State Department of Health Project Manager, and pertinent personnel representing the remedial parties that will generally include the following information, where applicable:

- A tabulation of sample results received during the reporting period.
- A discussion of project progress and significant activities during the reporting period, including the status of requisite permits.
- A discussion of pending/planned significant project activities during the next two months, unless another time frame is authorized by NYSDEC.
- A discussion of problems encountered during operation of the IRM and proposed actions to correct the problems.
- Request for modifications to the IRM, and the status of previously-requested modifications.

11.3 Citizen Participation

Per 6 NYCRR Part 375-2.10(f), this IRM WP will be placed in the document repositories and will undergo a 30-day public comment period. A fact sheet summarizing the work

to be performed and availability of the IRM WP will be prepared by NYSDEC and will be sent to the public via the NYSDEC listserv.

12.0 INSTITUTIONAL CONTROLS AND SITE MANAGEMENT PLAN

A Site Management Plan will be prepared that describes procedures for operating and maintaining the groundwater treatment system and that requires periodic reports summarizing the effectiveness of the system. Following completion of the RI/FS, institutional controls will be implemented, as appropriate.

13.0 IRM CONSTRUCTION COMPLETION REPORT

The IRM will be documented in a Construction Completion Report (CCR) that will be incorporated into the final RI Report. The CCR will then be incorporated and/or referenced in the Final Engineering Report (FER). The FER is required for the Department's issuance of the Certificate of Completion.

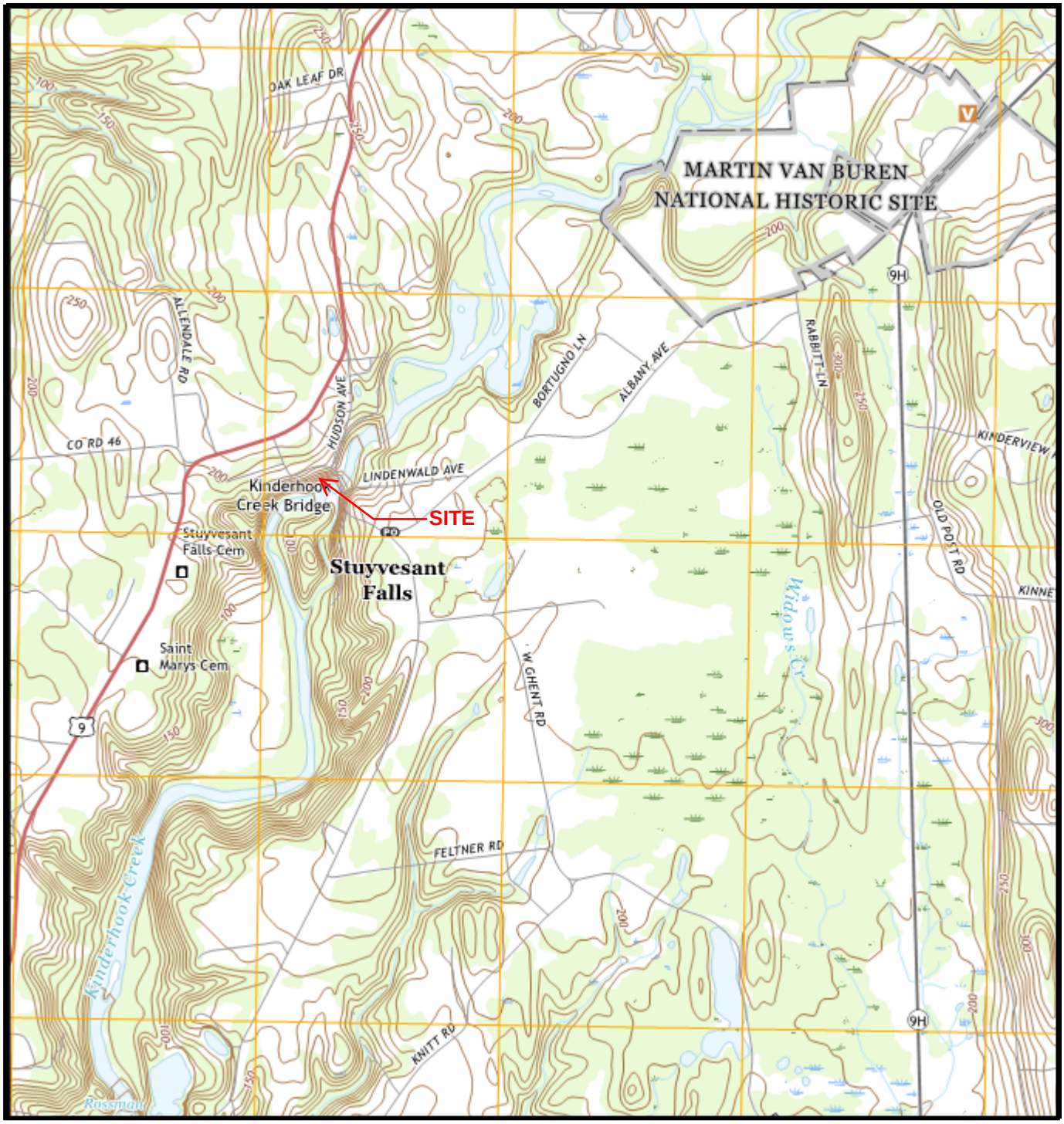
TABLE 1
GROUNDWATER ANALYTICAL RESULTS - 2019

TABLE 1: WATER SUPPLY WELL SAMPLING ANALYTICAL RESULTS SUMMARY
ALLIED HEALTHCARE PRODUCTS SITE
TOWN OF STUYVESANT, COLUMBIA COUNTY

		SAMPLE ID:	DW-1	SUPPLY WELL				PRE-AERATOR				POST-AERETOR				PRE-PRODUCTION				SINK			
		LAB ID:		L1931049-01				L1941701-02				L1941701-03				L1941701-04				L1941701-05			
		COLLECTION DATE:	10/28/2004	7/15/2019				9/12/2019				9/12/2019				9/12/2019				9/12/2019			
		SAMPLE MATRIX:	WATER	WATER				WATER				WATER				WATER				WATER			
		NY-AWQS [1]																					
ANALYTE	CAS	(ug/l)	Conc	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
VOLATILE ORGANICS																							
1,2-Dichloropropane	78-87-5	0.6	**33**	**5.7**		1	0.14	**250**		5	0.68	**240**		2.5	0.34	**37**		1	0.14	**120**		2.5	0.34
Acetone	67-64-1	50	9.5	13		5	1.5	**100**		25	7.3	**130**		12	3.6	6.8		5	1.5	**130**		12	3.6
Methylene chloride	75-09-2	5	0.97	ND		2.5	0.7	**5.9**	J	12	3.5	**5.1**	J	6.2	1.8	ND		2.5	0.7	2.8	J	6.2	1.8
Trichloroethene	79-01-6	5	ND	0.26	J	0.5	0.18	3.7		2.5	0.88	2.2		1.2	0.44	ND		0.5	0.18	1.2		1.2	0.44
SEMI-VOLATILE ORGANICS																							
Bis (2-ethylhexyl) phthalate	117-81-7	5	3	NA				NA				NA				NA				Not Analyzed			
1-Chloropropane	540-54-5	NS	2	NA				NA				NA				NA				Not Analyzed			
METALS																							
Aluminum, Total	7429-90-5	NS	NA	NA	-	-	-	1.13		0.01	0.00327	0.635		0.01	0.00327	0.258		0.01	0.00327	0.282		0.01	0.00327
Arsenic, Total	7440-38-2	0.025	ND	NA	-	-	-	0.00063		0.0005	0.00016	0.00024	J	0.0005	0.00016	0.0004	J	0.0005	0.00016	0.0002	J	0.0005	0.00016
Barium, Total	7440-39-3	1	393	NA	-	-	-	0.442		0.0005	0.00017	0.3291		0.0005	0.00017	0.3084		0.0005	0.00017	0.3241		0.0005	0.00017
Beryllium, Total	7440-41-7	0.003	ND	NA	-	-	-	0.00012	J	0.0005	0.0001	ND		0.0005	0.0001	ND		0.0005	0.0001	ND		0.0005	0.0001
Calcium, Total	7440-70-2	NS	NA	NA	-	-	-	1.83		0.1	0.0394	1.88		0.1	0.0394	2.56		0.1	0.0394	2.32		0.1	0.0394
Chromium, Total	7440-47-3	0.05	ND	NA	-	-	-	0.00129		0.001	0.00017	0.00049	J	0.001	0.00017	ND		0.001	0.00017	ND		0.001	0.00017
Cobalt, Total	7440-48-4	NS	NA	NA	-	-	-	0.00056		0.0005	0.00016	0.00028	J	0.0005	0.00016	ND		0.0005	0.00016	ND		0.0005	0.00016
Copper, Total	7440-50-8	0.2	132	NA	-	-	-	0.00109		0.001	0.00038	0.00452		0.001	0.00038	0.01735		0.001	0.00038	0.01456		0.001	0.00038
Iron, Total	7439-89-6	0.3	NA	NA	-	-	-	**1.49**		0.05	0.0191	**0.802**		0.05	0.0191	**0.447**		0.05	0.0191	**0.48**		0.05	0.0191
Lead, Total	7439-92-1	0.025	15.3	NA	-	-	-	0.00049	J	0.001	0.00034	0.00072	J	0.001	0.00034	0.00046	J	0.001	0.00034	0.0015		0.001	0.00034
Magnesium, Total	7439-95-4	35	NA	NA	-	-	-	0.694		0.07	0.0242	0.563		0.07	0.0242	0.577		0.07	0.0242	0.561		0.07	0.0242
Manganese, Total	7439-96-5	0.3	NA	NA	-	-	-	0.02092		0.001	0.00044	0.01013		0.001	0.00044	0.00645		0.001	0.00044	0.00718		0.001	0.00044
Nickel, Total	7440-02-0	0.1	ND	NA	-	-	-	0.00093	J	0.002	0.00055	0.00061	J	0.002	0.00055	ND		0.002	0.00055	ND		0.002	0.00055
Potassium, Total	7440-09-7	NS	NA	NA	-	-	-	3.62		0.1	0.0309	3.49		0.1	0.0309	3.62		0.1	0.0309	3.59		0.1	0.0309
Sodium, Total	7440-23-5	20	NA	NA	-	-	-	**301**		0.1	0.0293	**271**		0.1	0.0293	**278**		0.1	0.0293	**279**		0.1	0.0293
Vanadium, Total	7440-62-2	NS	NA	NA	-	-	-	0.00163	J	0.005	0.00157	ND		0.005	0.00157	ND		0.005	0.00157	ND		0.005	0.00157
Zinc, Total	7440-66-6	2	76.9	NA	-	-	-	0.00377	J	0.01	0.00341	0.01043		0.01	0.00341	0.00726	J	0.01	0.00341	0.00825	J	0.01	0.00341

Notes:
(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.
J = Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ or RL)
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
ug/l = ppb or parts per billion
mg/l = ppm or parts per million

FIGURE 1
SITE LOCATION MAP



MAP REFERENCE
United States Geological Survey
7.5 Minute Series Topographic Map
Quadrangle: Stottville, NY
Date: 2019

N

C.T.MALE ASSOCIATES
ENGINEERING, SURVEYING, ARCHITECTURE
LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C.
50 CENTURY HILL DRIVE
LATHAM, NY 12110

FIGURE 1 - SITE LOCATION MAP

TOWN OF STUYVESANT	COLUMBIA COUNTY, NY
SCALE: 1:24,000	The locations and features depicted on this map are approximate and do not represent an actual survey.
DRAFTER: AS	
PROJECT No: 19.9379	

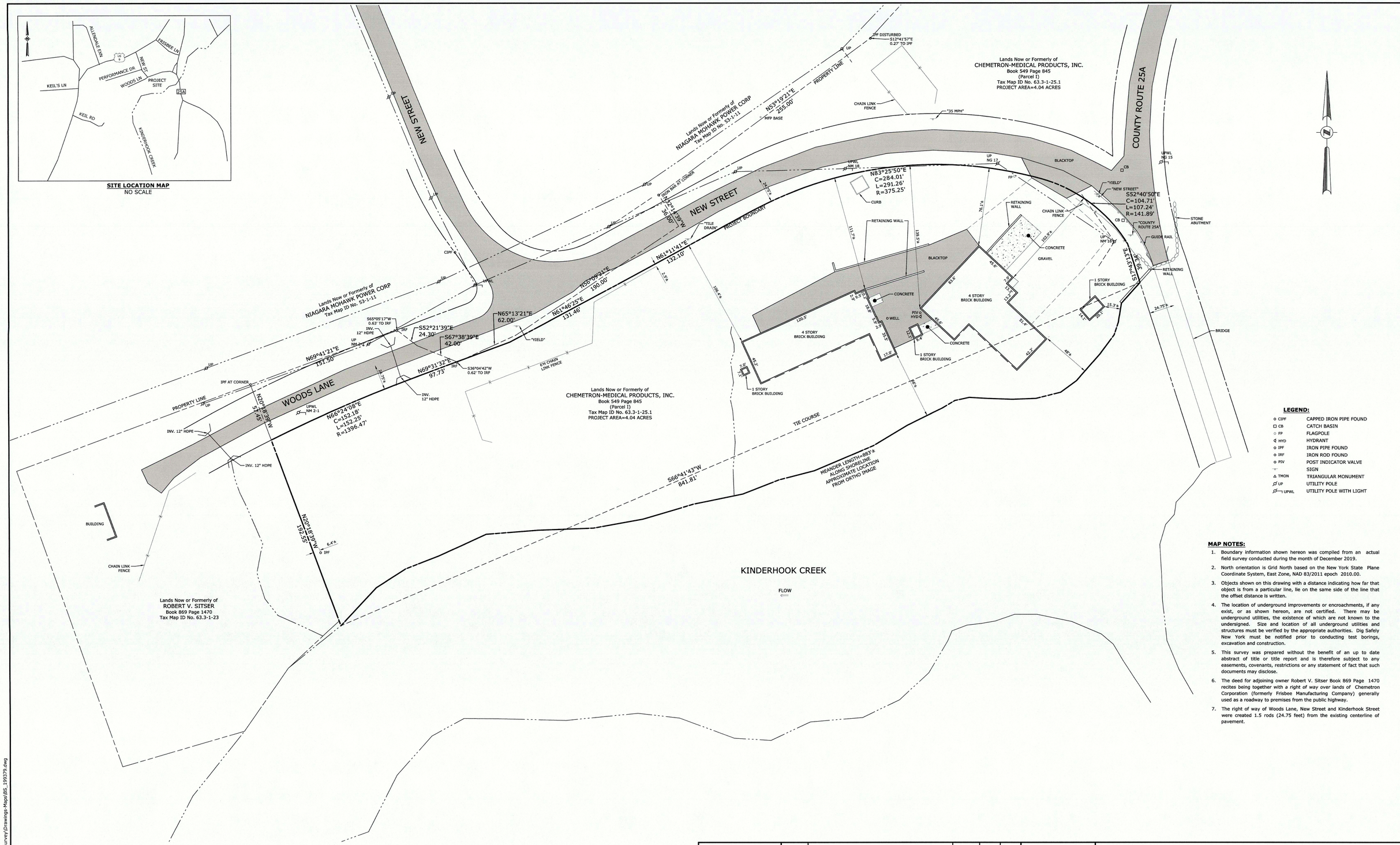
FIGURE 2
SITE LAYOUT MAP

XREFS: NONE

PROJECT NUMBER: 19.9379

CAD DWG. FILE NAME: BS_19379.dwg

SITE LOCATION MAP
NO SCALE



LEGEND:

CIPF	CAPPED IRON PIPE FOUND
CB	CATCH BASIN
FP	FLAGPOLE
HYD	HYDRANT
IPF	IRON PIPE FOUND
IRF	IRON ROD FOUND
PIV	POST INDICATOR VALVE
	SIGN
TMON	TRIANGULAR MONUMENT
UP	UTILITY POLE
UPWL	UTILITY POLE WITH LIGHT

MAP NOTES:

1. Boundary information shown hereon was compiled from an actual field survey conducted during the month of December 2019.
2. North orientation is Grid North based on the New York State Plane Coordinate System, East Zone, NAD 83/2011 epoch 2010.00.
3. Objects shown on this drawing with a distance indicating how far that object is from a particular line, lie on the same side of the line that the offset distance is written.
4. The location of underground improvements or encroachments, if any exist, or as shown hereon, are not certified. There may be underground utilities, the existence of which are not known to the undersigned. Size and location of all underground utilities and structures must be verified by the appropriate authorities. Dig Safely New York must be notified prior to conducting test borings, excavation and construction.
5. This survey was prepared without the benefit of an up to date abstract of title or title report and is therefore subject to any easements, covenants, restrictions or any statement of fact that such documents may disclose.
6. The deed for adjoining owner Robert V. Sitser Book 869 Page 1470 recites being together with *a right of way over lands of Chemetron* Corporation (formerly Frisbee Manufacturing Company) generally used as a roadway to premises from the public highway.
7. The right of way of Woods Lane, New Street and Kinderhook Street were created 1.5 rods (24.75 feet) from the existing centerline of pavement.

BAR SCALE
40 0 20 40 80
1 inch = 40 ft.

"ONLY COPIES OF THIS MAP SIGNED IN RED INK AND EMBOSSED WITH THE SEAL OF AN OFFICER OF C.T. MALE ASSOCIATES OR A DESIGNATED REPRESENTATIVE SHALL BE CONSIDERED TO BE A VALID TRUE COPY".

WILLIAM J. NETTLETON
P.L.S. NO. 49513

STATE OF NEW YORK · WILLIAM J. NETTLETON · 049513 · LICENSED LAND SURVEYOR

DATE		REVISIONS RECORD/DESCRIPTION	DRAFTER	CHECK	APPR.
	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				

APPROVED: WJN
DRAFTED : KEC
CHECKED : DGD
PROJ. NO : 19.9379
SCALE : 1"=40'
DATE : DEC. 5, 2019

BOUNDARY SURVEY

PORTION OF LANDS NOW OR FORMERLY OF

CHEMETRON-MEDICAL PRODUCTS, INC.

NEW STREET

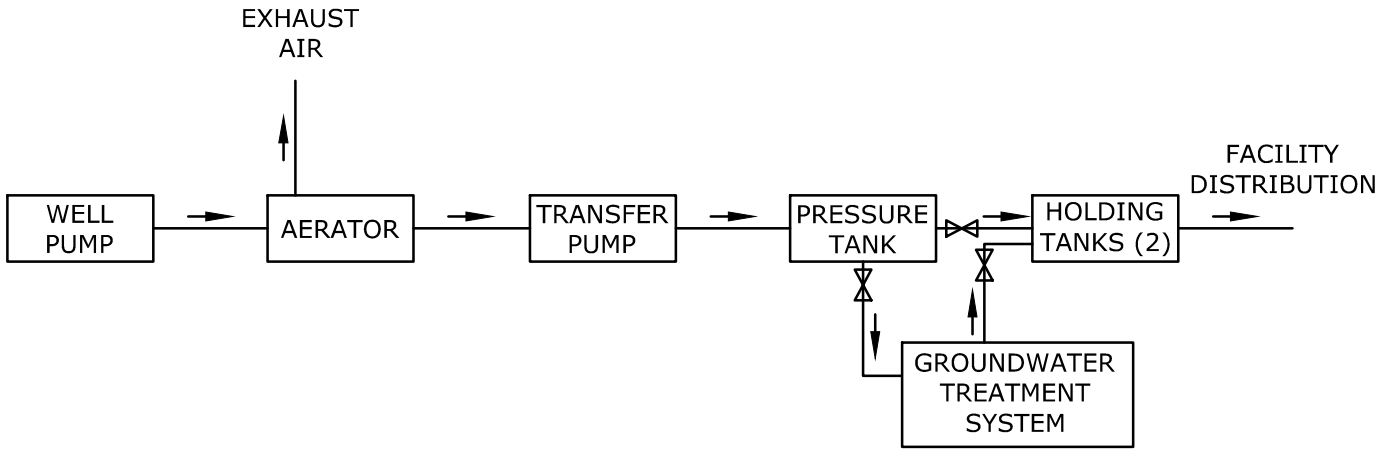
TOWN OF STUYVESANT — COLUMBIA COUNTY, NEW YORK

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 518.786.7400
COBLESKILL, NY · GLENS FALLS, NY · POUGHKEEPSIE, NY · JOHNSTOWN, NY
LITTLE FALLS, NY · RED HOOK, NY · SYRACUSE, NY
www.ctmale.com

SHEET 1 OF 1
DWG. NO: 19-732

CAD DWG. FILE NAME: K:\Projects\199379\Survey\Drawings-Maps\BS_199379.dwg

FIGURE 3
PROCESS FLOW DIAGRAM



LEGEND:

⋈ SHUT OFF VALVES TO BYPASS TREATMENT SYSTEM

Date	RECORD OF WORK	Appr.

Drafter: S.WUNSCH	Checker: K.MOLINE
Appr. by: K.MOLINE	Proj. No. 19.9379

FIGURE 3
PROCESS FLOW DIAGRAM
GROUNDWATER TREATMENT SYSTEM
ALLIED HEALTHCARE PRODUCTS

TOWN OF STUYVENSANT | COLUMBIA COUNTY, NEW YORK

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 518.786.7400
COBLESKILL, NY • GLENS FALLS, NY • POUGHKEEPSIE, NY • JOHNSTOWN, NY
LITTLE FALLS, NY • RED HOOK, NY • SYRACUSE, NY
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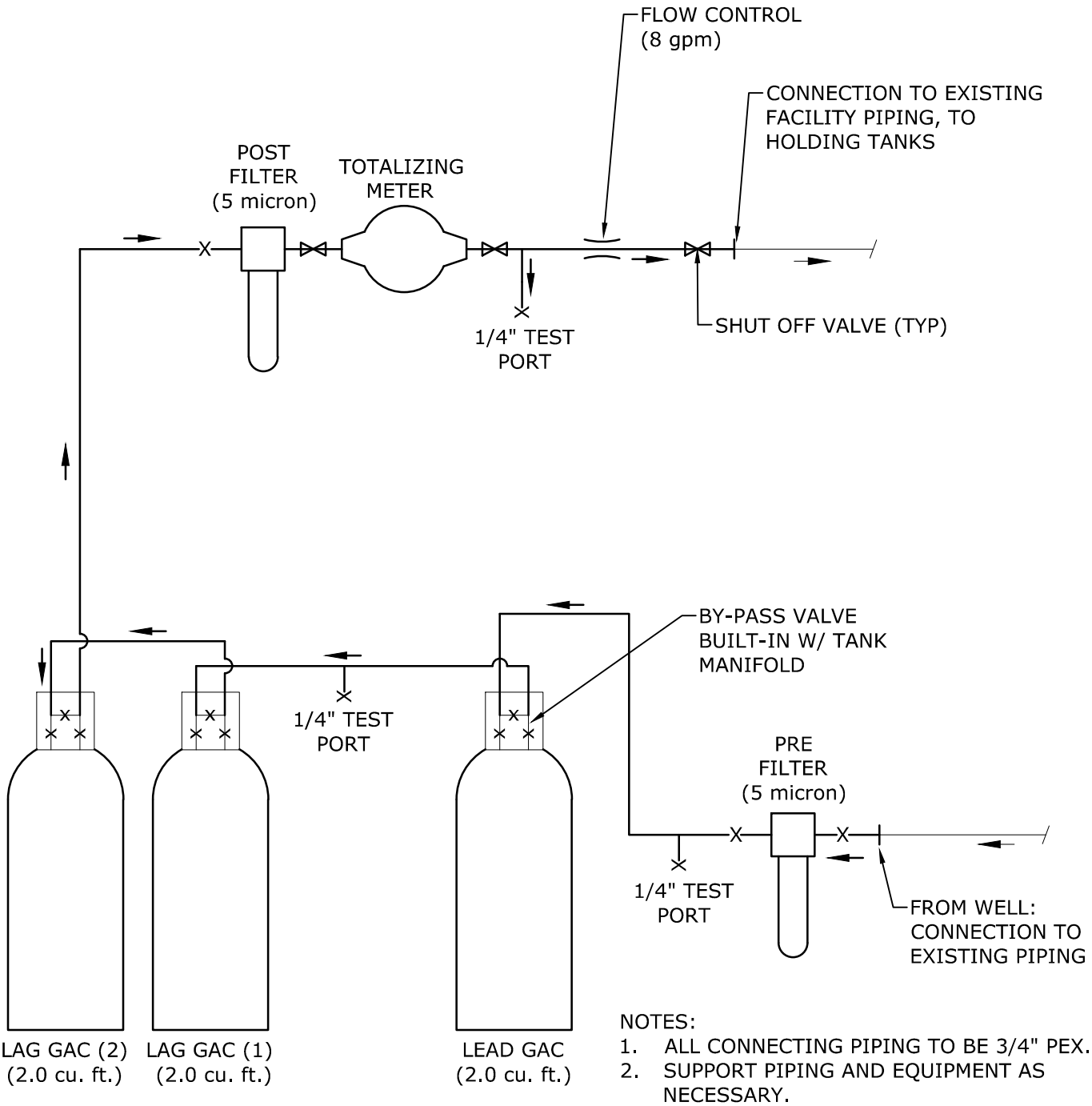
SCALE: NONE | DATE: DECEMBER 20, 2019

FIGURE 4
PROCESS SCHEMATIC,
IRM GROUNDWATER TREATMENT SYSTEM

NONE :XREFS



NOTES:
1. ALL CONNECTING PIPING TO BE 3/4" PEX.
2. SUPPORT PIPING AND EQUIPMENT AS NECESSARY.

Date	RECORD OF WORK	Appr.

Drafter: S.WUNSCH	Checker: K.MOLINE
Appr. by: K.MOLINE	Proj. No. 19.9379

FIGURE 4
IRM GROUNDWATER TREATMENT SYSTEM
ALLIED HEALTHCARE PRODUCTS

TOWN OF STUYVENSANT	COLUMBIA COUNTY, NEW YORK

C.T. MALE ASSOCIATES
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SCALE: NONE	DATE: DECEMBER 20, 2019

CAD DWG. FILE NAME: K:\Projects\199379\Env\Drawings-Maps\FIGURE 4.dwg

APPENDIX A
WATER SUPPLY WELL – LABORATORY RESULTS

ANALYTICAL REPORT

Lab Number:	L1931049
Client:	C.T. Male Associates 50 Century Hill Drive Latham, NY 12210
ATTN:	Kirk Moline
Phone:	(518) 786-7400
Project Name:	ALLIED HEALTH
Project Number:	19.9379
Report Date:	07/22/19

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1931049
Report Date: 07/22/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1931049-01	SUPPLY WELL	WATER	STUYVESANT FALLS, NY	07/15/19 10:00	07/15/19
L1931049-02	TRIP BLANK	WATER	STUYVESANT FALLS, NY	07/15/19 00:00	07/15/19

Project Name:	ALLIED HEALTH	**Lab Number:**	L1931049
Project Number:	19.9379	**Report Date:**	07/22/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	ALLIED HEALTH	**Lab Number:**	L1931049
Project Number:	19.9379	**Report Date:**	07/22/19

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L1931049-02: The Trip Blank has a result for acetone present above the reporting limit. The sample was verified as being labeled correctly by the laboratory and the previous analysis showed there was no potential for carry over.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 07/22/19

ORGANICS

VOLATILES

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1931049
Report Date: 07/22/19

SAMPLE RESULTS

Lab ID: L1931049-01
Client ID: SUPPLY WELL
Sample Location: STUYVESANT FALLS, NY
Date Collected: 07/15/19 10:00
Date Received: 07/15/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/18/19 12:00
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	5.7		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	0.26	J	ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: ALLIED HEALTH **Lab Number:** L1931049

Project Number: 19.9379 **Report Date:** 07/22/19

SAMPLE RESULTS

Lab ID: L1931049-01 Date Collected: 07/15/19 10:00

Client ID: SUPPLY WELL Date Received: 07/15/19

Sample Location: STUYVESANT FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	13		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	77		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	96		70-130

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1931049
Report Date: 07/22/19

SAMPLE RESULTS

Lab ID: L1931049-02
Client ID: TRIP BLANK
Sample Location: STUYVESANT FALLS, NY
Date Collected: 07/15/19 00:00
Date Received: 07/15/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/18/19 12:29
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1931049
Report Date: 07/22/19

SAMPLE RESULTS

Lab ID: L1931049-02
Client ID: TRIP BLANK
Sample Location: STUYVESANT FALLS, NY
Date Collected: 07/15/19 00:00
Date Received: 07/15/19
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	8.3		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	81		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	98		70-130

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1931049
Report Date: 07/22/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/18/19 08:15
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG1261556-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1931049
Report Date: 07/22/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/18/19 08:15
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG1261556-5					
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
Methyl Acetate	ND		ug/l	2.0	0.23
Cyclohexane	ND		ug/l	10	0.27
1,4-Dioxane	ND		ug/l	250	61.
Freon-113	ND		ug/l	2.5	0.70
Methyl cyclohexane	ND		ug/l	10	0.40

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1931049
Report Date: 07/22/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/18/19 08:15
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG1261556-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: ALLIED HEALTH

Project Number: 19.9379

Lab Number: L1931049

Report Date: 07/22/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG1261556-3 WG1261556-4								
Methylene chloride	110		110		70-130	0		20
1,1-Dichloroethane	98		98		70-130	0		20
Chloroform	100		100		70-130	0		20
Carbon tetrachloride	100		100		63-132	0		20
1,2-Dichloropropane	90		95		70-130	5		20
Dibromochloromethane	100		100		63-130	0		20
1,1,2-Trichloroethane	100		100		70-130	0		20
Tetrachloroethene	100		100		70-130	0		20
Chlorobenzene	110		100		75-130	10		20
Trichlorofluoromethane	100		97		62-150	3		20
1,2-Dichloroethane	93		92		70-130	1		20
1,1,1-Trichloroethane	100		100		67-130	0		20
Bromodichloromethane	98		99		67-130	1		20
trans-1,3-Dichloropropene	100		100		70-130	0		20
cis-1,3-Dichloropropene	86		92		70-130	7		20
Bromoform	94		98		54-136	4		20
1,1,2,2-Tetrachloroethane	100		100		67-130	0		20
Benzene	100		110		70-130	10		20
Toluene	110		110		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
Chloromethane	87		87		64-130	0		20
Bromomethane	86		92		39-139	7		20
Vinyl chloride	94		91		55-140	3		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: ALLIED HEALTH

Project Number: 19.9379

Lab Number: L1931049

Report Date: 07/22/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG1261556-3 WG1261556-4								
Chloroethane	97		96		55-138	1		20
1,1-Dichloroethene	100		100		61-145	0		20
trans-1,2-Dichloroethene	100		100		70-130	0		20
Trichloroethene	100		100		70-130	0		20
1,2-Dichlorobenzene	100		100		70-130	0		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	100		100		70-130	0		20
Methyl tert butyl ether	88		100		63-130	13		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	105		105		70-130	0		20
cis-1,2-Dichloroethene	100		110		70-130	10		20
Styrene	100		100		70-130	0		20
Dichlorodifluoromethane	110		110		36-147	0		20
Acetone	110		100		58-148	10		20
Carbon disulfide	100		100		51-130	0		20
2-Butanone	88		93		63-138	6		20
4-Methyl-2-pentanone	92		96		59-130	4		20
2-Hexanone	86		84		57-130	2		20
Bromochloromethane	110		110		70-130	0		20
1,2-Dibromoethane	100		100		70-130	0		20
1,2-Dibromo-3-chloropropane	95		99		41-144	4		20
Isopropylbenzene	110		100		70-130	10		20
1,2,3-Trichlorobenzene	98		98		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: ALLIED HEALTH

Project Number: 19.9379

Lab Number: L1931049

Report Date: 07/22/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG1261556-3 WG1261556-4								
1,2,4-Trichlorobenzene	99		98		70-130	1		20
Methyl Acetate	88		90		70-130	2		20
Cyclohexane	94		93		70-130	1		20
1,4-Dioxane	128		136		56-162	6		20
Freon-113	100		100		70-130	0		20
Methyl cyclohexane	96		96		70-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		98		70-130
Toluene-d8	106		104		70-130
4-Bromofluorobenzene	99		97		70-130
Dibromofluoromethane	101		102		70-130

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1931049
Report Date: 07/22/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1931049-01A	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260(14)
L1931049-01B	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260(14)
L1931049-01C	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260(14)
L1931049-02A	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260(14)
L1931049-02B	Vial HCl preserved	A	NA		4.2	Y	Absent		NYTCL-8260(14)

*Values in parentheses indicate holding time in days

Project Name:	ALLIED HEALTH	**Lab Number:**	L1931049
Project Number:	19.9379	**Report Date:**	07/22/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers

Project Name:	ALLIED HEALTH	**Lab Number:**	L1931049
Project Number:	19.9379	**Report Date:**	07/22/19

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers

Project Name:	ALLIED HEALTH	**Lab Number:**	L1931049
Project Number:	19.9379	**Report Date:**	07/22/19

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 7/15/19

ALPHA Job #: L1931049

Client Information

Client: C.T. Male Associates
Address: 50 Century Hill Drive
Latham, NY 12110
Phone: (518) 786-7400
Fax:
Email: K.moline@ctmale.com

Project Information

Project Name: Allied Health
Project Location: Stuyvesant Falls, NY
Project #: 19.9379
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
ALPHAQuote #:

Turn-Around Time

Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information

☐ Same as Client Info
PO #

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Disposal Site Information

Please identify below location of applicable disposal facilities.

Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

TCL VOCs-8260

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TCL VOCs-8260	Sample Specific Comments	Total Bottle
31049-01	Supply Well	07/15/19	1000	GW	RH	X		3
-02	Trip Blank	"	—	Rinse W	—	X		2

Container Type: V
Preservative: B

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	07/15/19 1100	[signature] ALPHA	7/15/19 1100
[signature]	7/15/19 1110	[signature]	7-15-19 1230
[signature]	7-15-19 16:55	[signature]	7/15/19 1655

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L1941701
Client:	C.T. Male Associates 50 Century Hill Drive Latham, NY 12210
ATTN:	Kirk Moline
Phone:	(518) 786-7400
Project Name:	ALLIED HEALTH
Project Number:	19.9379
Report Date:	09/19/19

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1941701
Report Date: 09/19/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1941701-01	TRIP BLANK	WATER	STUYVESANT FALLS, NY	09/12/19 00:00	09/12/19
L1941701-02	PRE-AERATOR	WATER	STUYVESANT FALLS, NY	09/12/19 09:20	09/12/19
L1941701-03	POST-AERETOR	WATER	STUYVESANT FALLS, NY	09/12/19 09:30	09/12/19
L1941701-04	PRE-PRODUCTION	WATER	STUYVESANT FALLS, NY	09/12/19 09:32	09/12/19
L1941701-05	SINK	WATER	STUYVESANT FALLS, NY	09/12/19 09:45	09/12/19

Project Name:	ALLIED HEALTH	**Lab Number:**	L1941701
Project Number:	19.9379	**Report Date:**	09/19/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	ALLIED HEALTH	**Lab Number:**	L1941701
Project Number:	19.9379	**Report Date:**	09/19/19

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L1941701-01: The Trip Blank has a result for acetone present above the reporting limit. The sample was verified as being labeled correctly by the laboratory and the previous analysis showed there was no potential for carry over.

L1941701-02 and -05: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 09/19/19

ORGANICS

VOLATILES

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1941701
Report Date: 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-01
Client ID: TRIP BLANK
Sample Location: STUYVESANT FALLS, NY
Date Collected: 09/12/19 00:00
Date Received: 09/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 09/17/19 17:51
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: ALLIED HEALTH **Lab Number:** L1941701

Project Number: 19.9379 **Report Date:** 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-01 Date Collected: 09/12/19 00:00

Client ID: TRIP BLANK Date Received: 09/12/19

Sample Location: STUYVESANT FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	5.7		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	87		70-130
4-Bromofluorobenzene	84		70-130
Dibromofluoromethane	101		70-130

Project Name: ALLIED HEALTH **Lab Number:** L1941701

Project Number: 19.9379 **Report Date:** 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-02 D
Client ID: PRE-AERATOR
Sample Location: STUYVESANT FALLS, NY

Date Collected: 09/12/19 09:20
Date Received: 09/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 09/18/19 12:14
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	5.9	J	ug/l	12	3.5	5
1,1-Dichloroethane	ND		ug/l	12	3.5	5
Chloroform	ND		ug/l	12	3.5	5
Carbon tetrachloride	ND		ug/l	2.5	0.67	5
1,2-Dichloropropane	250		ug/l	5.0	0.68	5
Dibromochloromethane	ND		ug/l	2.5	0.74	5
1,1,2-Trichloroethane	ND		ug/l	7.5	2.5	5
Tetrachloroethene	ND		ug/l	2.5	0.90	5
Chlorobenzene	ND		ug/l	12	3.5	5
Trichlorofluoromethane	ND		ug/l	12	3.5	5
1,2-Dichloroethane	ND		ug/l	2.5	0.66	5
1,1,1-Trichloroethane	ND		ug/l	12	3.5	5
Bromodichloromethane	ND		ug/l	2.5	0.96	5
trans-1,3-Dichloropropene	ND		ug/l	2.5	0.82	5
cis-1,3-Dichloropropene	ND		ug/l	2.5	0.72	5
Bromoform	ND		ug/l	10	3.2	5
1,1,2,2-Tetrachloroethane	ND		ug/l	2.5	0.84	5
Benzene	ND		ug/l	2.5	0.80	5
Toluene	ND		ug/l	12	3.5	5
Ethylbenzene	ND		ug/l	12	3.5	5
Chloromethane	ND		ug/l	12	3.5	5
Bromomethane	ND		ug/l	12	3.5	5
Vinyl chloride	ND		ug/l	5.0	0.36	5
Chloroethane	ND		ug/l	12	3.5	5
1,1-Dichloroethene	ND		ug/l	2.5	0.84	5
trans-1,2-Dichloroethene	ND		ug/l	12	3.5	5
Trichloroethene	3.7		ug/l	2.5	0.88	5
1,2-Dichlorobenzene	ND		ug/l	12	3.5	5

Project Name: ALLIED HEALTH **Lab Number:** L1941701

Project Number: 19.9379 **Report Date:** 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-02 D Date Collected: 09/12/19 09:20

Client ID: PRE-AERATOR Date Received: 09/12/19

Sample Location: STUYVESANT FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	12	3.5	5
1,4-Dichlorobenzene	ND		ug/l	12	3.5	5
Methyl tert butyl ether	ND		ug/l	12	3.5	5
p/m-Xylene	ND		ug/l	12	3.5	5
o-Xylene	ND		ug/l	12	3.5	5
cis-1,2-Dichloroethene	ND		ug/l	12	3.5	5
Styrene	ND		ug/l	12	3.5	5
Dichlorodifluoromethane	ND		ug/l	25	5.0	5
Acetone	100		ug/l	25	7.3	5
Carbon disulfide	ND		ug/l	25	5.0	5
2-Butanone	ND		ug/l	25	9.7	5
4-Methyl-2-pentanone	ND		ug/l	25	5.0	5
2-Hexanone	ND		ug/l	25	5.0	5
Bromochloromethane	ND		ug/l	12	3.5	5
1,2-Dibromoethane	ND		ug/l	10	3.2	5
1,2-Dibromo-3-chloropropane	ND		ug/l	12	3.5	5
Isopropylbenzene	ND		ug/l	12	3.5	5
1,2,3-Trichlorobenzene	ND		ug/l	12	3.5	5
1,2,4-Trichlorobenzene	ND		ug/l	12	3.5	5
Methyl Acetate	ND		ug/l	10	1.2	5
Cyclohexane	ND		ug/l	50	1.4	5
1,4-Dioxane	ND		ug/l	1200	300	5
Freon-113	ND		ug/l	12	3.5	5
Methyl cyclohexane	ND		ug/l	50	2.0	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	97		70-130

Project Name: ALLIED HEALTH **Lab Number:** L1941701

Project Number: 19.9379 **Report Date:** 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-03 D
Client ID: POST-AERETOR
Sample Location: STUYVESANT FALLS, NY

Date Collected: 09/12/19 09:30
Date Received: 09/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 09/18/19 12:39
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	5.1	J	ug/l	6.2	1.8	2.5
1,1-Dichloroethane	ND		ug/l	6.2	1.8	2.5
Chloroform	ND		ug/l	6.2	1.8	2.5
Carbon tetrachloride	ND		ug/l	1.2	0.34	2.5
1,2-Dichloropropane	240		ug/l	2.5	0.34	2.5
Dibromochloromethane	ND		ug/l	1.2	0.37	2.5
1,1,2-Trichloroethane	ND		ug/l	3.8	1.2	2.5
Tetrachloroethene	ND		ug/l	1.2	0.45	2.5
Chlorobenzene	ND		ug/l	6.2	1.8	2.5
Trichlorofluoromethane	ND		ug/l	6.2	1.8	2.5
1,2-Dichloroethane	ND		ug/l	1.2	0.33	2.5
1,1,1-Trichloroethane	ND		ug/l	6.2	1.8	2.5
Bromodichloromethane	ND		ug/l	1.2	0.48	2.5
trans-1,3-Dichloropropene	ND		ug/l	1.2	0.41	2.5
cis-1,3-Dichloropropene	ND		ug/l	1.2	0.36	2.5
Bromoform	ND		ug/l	5.0	1.6	2.5
1,1,2,2-Tetrachloroethane	ND		ug/l	1.2	0.42	2.5
Benzene	ND		ug/l	1.2	0.40	2.5
Toluene	ND		ug/l	6.2	1.8	2.5
Ethylbenzene	ND		ug/l	6.2	1.8	2.5
Chloromethane	ND		ug/l	6.2	1.8	2.5
Bromomethane	ND		ug/l	6.2	1.8	2.5
Vinyl chloride	ND		ug/l	2.5	0.18	2.5
Chloroethane	ND		ug/l	6.2	1.8	2.5
1,1-Dichloroethene	ND		ug/l	1.2	0.42	2.5
trans-1,2-Dichloroethene	ND		ug/l	6.2	1.8	2.5
Trichloroethene	2.2		ug/l	1.2	0.44	2.5
1,2-Dichlorobenzene	ND		ug/l	6.2	1.8	2.5

Project Name: ALLIED HEALTH **Lab Number:** L1941701

Project Number: 19.9379 **Report Date:** 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-03 D Date Collected: 09/12/19 09:30

Client ID: POST-AERETOR Date Received: 09/12/19

Sample Location: STUYVESANT FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	6.2	1.8	2.5
1,4-Dichlorobenzene	ND		ug/l	6.2	1.8	2.5
Methyl tert butyl ether	ND		ug/l	6.2	1.8	2.5
p/m-Xylene	ND		ug/l	6.2	1.8	2.5
o-Xylene	ND		ug/l	6.2	1.8	2.5
cis-1,2-Dichloroethene	ND		ug/l	6.2	1.8	2.5
Styrene	ND		ug/l	6.2	1.8	2.5
Dichlorodifluoromethane	ND		ug/l	12	2.5	2.5
Acetone	130		ug/l	12	3.6	2.5
Carbon disulfide	ND		ug/l	12	2.5	2.5
2-Butanone	ND		ug/l	12	4.8	2.5
4-Methyl-2-pentanone	ND		ug/l	12	2.5	2.5
2-Hexanone	ND		ug/l	12	2.5	2.5
Bromochloromethane	ND		ug/l	6.2	1.8	2.5
1,2-Dibromoethane	ND		ug/l	5.0	1.6	2.5
1,2-Dibromo-3-chloropropane	ND		ug/l	6.2	1.8	2.5
Isopropylbenzene	ND		ug/l	6.2	1.8	2.5
1,2,3-Trichlorobenzene	ND		ug/l	6.2	1.8	2.5
1,2,4-Trichlorobenzene	ND		ug/l	6.2	1.8	2.5
Methyl Acetate	ND		ug/l	5.0	0.58	2.5
Cyclohexane	ND		ug/l	25	0.68	2.5
1,4-Dioxane	ND		ug/l	620	150	2.5
Freon-113	ND		ug/l	6.2	1.8	2.5
Methyl cyclohexane	ND		ug/l	25	0.99	2.5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	97		70-130

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1941701
Report Date: 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-04
Client ID: PRE-PRODUCTION
Sample Location: STUYVESANT FALLS, NY
Date Collected: 09/12/19 09:32
Date Received: 09/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 09/18/19 13:29
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	37		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: ALLIED HEALTH **Lab Number:** L1941701

Project Number: 19.9379 **Report Date:** 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-04 Date Collected: 09/12/19 09:32

Client ID: PRE-PRODUCTION Date Received: 09/12/19

Sample Location: STUYVESANT FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	6.8		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	100		70-130

Project Name: ALLIED HEALTH **Lab Number:** L1941701

Project Number: 19.9379 **Report Date:** 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-05 D
Client ID: SINK
Sample Location: STUYVESANT FALLS, NY

Date Collected: 09/12/19 09:45
Date Received: 09/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 09/18/19 13:04
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	2.8	J	ug/l	6.2	1.8	2.5
1,1-Dichloroethane	ND		ug/l	6.2	1.8	2.5
Chloroform	ND		ug/l	6.2	1.8	2.5
Carbon tetrachloride	ND		ug/l	1.2	0.34	2.5
1,2-Dichloropropane	120		ug/l	2.5	0.34	2.5
Dibromochloromethane	ND		ug/l	1.2	0.37	2.5
1,1,2-Trichloroethane	ND		ug/l	3.8	1.2	2.5
Tetrachloroethene	ND		ug/l	1.2	0.45	2.5
Chlorobenzene	ND		ug/l	6.2	1.8	2.5
Trichlorofluoromethane	ND		ug/l	6.2	1.8	2.5
1,2-Dichloroethane	ND		ug/l	1.2	0.33	2.5
1,1,1-Trichloroethane	ND		ug/l	6.2	1.8	2.5
Bromodichloromethane	ND		ug/l	1.2	0.48	2.5
trans-1,3-Dichloropropene	ND		ug/l	1.2	0.41	2.5
cis-1,3-Dichloropropene	ND		ug/l	1.2	0.36	2.5
Bromoform	ND		ug/l	5.0	1.6	2.5
1,1,2,2-Tetrachloroethane	ND		ug/l	1.2	0.42	2.5
Benzene	ND		ug/l	1.2	0.40	2.5
Toluene	ND		ug/l	6.2	1.8	2.5
Ethylbenzene	ND		ug/l	6.2	1.8	2.5
Chloromethane	ND		ug/l	6.2	1.8	2.5
Bromomethane	ND		ug/l	6.2	1.8	2.5
Vinyl chloride	ND		ug/l	2.5	0.18	2.5
Chloroethane	ND		ug/l	6.2	1.8	2.5
1,1-Dichloroethene	ND		ug/l	1.2	0.42	2.5
trans-1,2-Dichloroethene	ND		ug/l	6.2	1.8	2.5
Trichloroethene	1.2		ug/l	1.2	0.44	2.5
1,2-Dichlorobenzene	ND		ug/l	6.2	1.8	2.5

Project Name: ALLIED HEALTH **Lab Number:** L1941701

Project Number: 19.9379 **Report Date:** 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-05 D Date Collected: 09/12/19 09:45

Client ID: SINK Date Received: 09/12/19

Sample Location: STUYVESANT FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	6.2	1.8	2.5
1,4-Dichlorobenzene	ND		ug/l	6.2	1.8	2.5
Methyl tert butyl ether	ND		ug/l	6.2	1.8	2.5
p/m-Xylene	ND		ug/l	6.2	1.8	2.5
o-Xylene	ND		ug/l	6.2	1.8	2.5
cis-1,2-Dichloroethene	ND		ug/l	6.2	1.8	2.5
Styrene	ND		ug/l	6.2	1.8	2.5
Dichlorodifluoromethane	ND		ug/l	12	2.5	2.5
Acetone	130		ug/l	12	3.6	2.5
Carbon disulfide	ND		ug/l	12	2.5	2.5
2-Butanone	ND		ug/l	12	4.8	2.5
4-Methyl-2-pentanone	ND		ug/l	12	2.5	2.5
2-Hexanone	ND		ug/l	12	2.5	2.5
Bromochloromethane	ND		ug/l	6.2	1.8	2.5
1,2-Dibromoethane	ND		ug/l	5.0	1.6	2.5
1,2-Dibromo-3-chloropropane	ND		ug/l	6.2	1.8	2.5
Isopropylbenzene	ND		ug/l	6.2	1.8	2.5
1,2,3-Trichlorobenzene	ND		ug/l	6.2	1.8	2.5
1,2,4-Trichlorobenzene	ND		ug/l	6.2	1.8	2.5
Methyl Acetate	ND		ug/l	5.0	0.58	2.5
Cyclohexane	ND		ug/l	25	0.68	2.5
1,4-Dioxane	ND		ug/l	620	150	2.5
Freon-113	ND		ug/l	6.2	1.8	2.5
Methyl cyclohexane	ND		ug/l	25	0.99	2.5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	97		70-130

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1941701
Report Date: 09/19/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/17/19 09:25
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1285257-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1941701
Report Date: 09/19/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/17/19 09:25
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1285257-5					
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
Methyl Acetate	ND		ug/l	2.0	0.23
Cyclohexane	ND		ug/l	10	0.27
1,4-Dioxane	ND		ug/l	250	61.
Freon-113	ND		ug/l	2.5	0.70
Methyl cyclohexane	ND		ug/l	10	0.40

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1941701
Report Date: 09/19/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/17/19 09:25
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1285257-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	84		70-130
Dibromofluoromethane	100		70-130

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1941701
Report Date: 09/19/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/18/19 08:30
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-05 Batch: WG1285576-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1941701
Report Date: 09/19/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/18/19 08:30
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-05 Batch: WG1285576-5					
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
Methyl Acetate	ND		ug/l	2.0	0.23
Cyclohexane	ND		ug/l	10	0.27
1,4-Dioxane	ND		ug/l	250	61.
Freon-113	ND		ug/l	2.5	0.70
Methyl cyclohexane	ND		ug/l	10	0.40

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1941701
Report Date: 09/19/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/18/19 08:30
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-05 Batch: WG1285576-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	101		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1941701
Report Date: 09/19/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1285257-3 WG1285257-4								
Methylene chloride	85		81		70-130	5		20
1,1-Dichloroethane	95		93		70-130	2		20
Chloroform	84		84		70-130	0		20
Carbon tetrachloride	100		100		63-132	0		20
1,2-Dichloropropane	88		88		70-130	0		20
Dibromochloromethane	96		93		63-130	3		20
1,1,2-Trichloroethane	76		74		70-130	3		20
Tetrachloroethene	89		86		70-130	3		20
Chlorobenzene	87		86		75-130	1		20
Trichlorofluoromethane	80		78		62-150	3		20
1,2-Dichloroethane	98		97		70-130	1		20
1,1,1-Trichloroethane	95		94		67-130	1		20
Bromodichloromethane	83		84		67-130	1		20
trans-1,3-Dichloropropene	79		78		70-130	1		20
cis-1,3-Dichloropropene	88		86		70-130	2		20
Bromoform	84		86		54-136	2		20
1,1,2,2-Tetrachloroethane	75		74		67-130	1		20
Benzene	79		77		70-130	3		20
Toluene	82		82		70-130	0		20
Ethylbenzene	85		83		70-130	2		20
Chloromethane	92		88		64-130	4		20
Bromomethane	52		50		39-139	4		20
Vinyl chloride	90		88		55-140	2		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1941701
Report Date: 09/19/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1285257-3 WG1285257-4								
Chloroethane	93		88		55-138	6		20
1,1-Dichloroethene	86		84		61-145	2		20
trans-1,2-Dichloroethene	92		87		70-130	6		20
Trichloroethene	88		86		70-130	2		20
1,2-Dichlorobenzene	94		92		70-130	2		20
1,3-Dichlorobenzene	92		91		70-130	1		20
1,4-Dichlorobenzene	92		93		70-130	1		20
Methyl tert butyl ether	88		86		63-130	2		20
p/m-Xylene	90		90		70-130	0		20
o-Xylene	90		90		70-130	0		20
cis-1,2-Dichloroethene	93		89		70-130	4		20
Styrene	90		90		70-130	0		20
Dichlorodifluoromethane	78		74		36-147	5		20
Acetone	100		100		58-148	0		20
Carbon disulfide	68		66		51-130	3		20
2-Butanone	110		110		63-138	0		20
4-Methyl-2-pentanone	92		91		59-130	1		20
2-Hexanone	100		100		57-130	0		20
Bromochloromethane	110		110		70-130	0		20
1,2-Dibromoethane	88		87		70-130	1		20
1,2-Dibromo-3-chloropropane	99		94		41-144	5		20
Isopropylbenzene	84		84		70-130	0		20
1,2,3-Trichlorobenzene	96		93		70-130	3		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: ALLIED HEALTH

Project Number: 19.9379

Lab Number: L1941701

Report Date: 09/19/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1285257-3 WG1285257-4								
1,2,4-Trichlorobenzene	96		93		70-130	3		20
Methyl Acetate	110		110		70-130	0		20
Cyclohexane	95		92		70-130	3		20
1,4-Dioxane	90		88		56-162	2		20
Freon-113	85		81		70-130	5		20
Methyl cyclohexane	71		70		70-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		98		70-130
Toluene-d8	88		89		70-130
4-Bromofluorobenzene	83		85		70-130
Dibromofluoromethane	98		99		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1941701
Report Date: 09/19/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-05 Batch: WG1285576-3 WG1285576-4								
Methylene chloride	97		96		70-130	1		20
1,1-Dichloroethane	110		100		70-130	10		20
Chloroform	100		94		70-130	6		20
Carbon tetrachloride	95		92		63-132	3		20
1,2-Dichloropropane	100		100		70-130	0		20
Dibromochloromethane	95		94		63-130	1		20
1,1,2-Trichloroethane	99		100		70-130	1		20
Tetrachloroethene	96		94		70-130	2		20
Chlorobenzene	93		92		75-130	1		20
Trichlorofluoromethane	96		92		62-150	4		20
1,2-Dichloroethane	94		96		70-130	2		20
1,1,1-Trichloroethane	92		90		67-130	2		20
Bromodichloromethane	96		94		67-130	2		20
trans-1,3-Dichloropropene	94		93		70-130	1		20
cis-1,3-Dichloropropene	92		92		70-130	0		20
Bromoform	94		99		54-136	5		20
1,1,2,2-Tetrachloroethane	96		99		67-130	3		20
Benzene	100		100		70-130	0		20
Toluene	96		94		70-130	2		20
Ethylbenzene	96		94		70-130	2		20
Chloromethane	130		120		64-130	8		20
Bromomethane	40		**37**	Q	39-139	8		20
Vinyl chloride	88		84		55-140	5		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: ALLIED HEALTH

Project Number: 19.9379

Lab Number: L1941701

Report Date: 09/19/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-05 Batch: WG1285576-3 WG1285576-4								
Chloroethane	77		73		55-138	5		20
1,1-Dichloroethene	99		99		61-145	0		20
trans-1,2-Dichloroethene	97		96		70-130	1		20
Trichloroethene	97		96		70-130	1		20
1,2-Dichlorobenzene	95		96		70-130	1		20
1,3-Dichlorobenzene	98		99		70-130	1		20
1,4-Dichlorobenzene	97		95		70-130	2		20
Methyl tert butyl ether	81		81		63-130	0		20
p/m-Xylene	90		90		70-130	0		20
o-Xylene	90		90		70-130	0		20
cis-1,2-Dichloroethene	95		95		70-130	0		20
Styrene	95		95		70-130	0		20
Dichlorodifluoromethane	140		130		36-147	7		20
Acetone	130		140		58-148	7		20
Carbon disulfide	120		110		51-130	9		20
2-Butanone	120		120		63-138	0		20
4-Methyl-2-pentanone	86		92		59-130	7		20
2-Hexanone	87		89		57-130	2		20
Bromochloromethane	96		95		70-130	1		20
1,2-Dibromoethane	91		90		70-130	1		20
1,2-Dibromo-3-chloropropane	84		91		41-144	8		20
Isopropylbenzene	87		87		70-130	0		20
1,2,3-Trichlorobenzene	89		92		70-130	3		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: ALLIED HEALTH

Project Number: 19.9379

Lab Number: L1941701

Report Date: 09/19/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-05 Batch: WG1285576-3 WG1285576-4								
1,2,4-Trichlorobenzene	91		90		70-130	1		20
Methyl Acetate	130		130		70-130	0		20
Cyclohexane	100		100		70-130	0		20
1,4-Dioxane	82		78		56-162	5		20
Freon-113	100		100		70-130	0		20
Methyl cyclohexane	90		88		70-130	2		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		102		70-130
Toluene-d8	97		96		70-130
4-Bromofluorobenzene	81		82		70-130
Dibromofluoromethane	95		95		70-130

METALS

Project Name: ALLIED HEALTH
Lab Number: L1941701
Project Number: 19.9379
Report Date: 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-02
Client ID: PRE-AERATOR
Sample Location: STUYVESANT FALLS, NY
Date Collected: 09/12/19 09:20
Date Received: 09/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	1.13		mg/l	0.0100	0.00327	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00063		mg/l	0.00050	0.00016	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Barium, Total	0.4420		mg/l	0.00050	0.00017	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Beryllium, Total	0.00012	J	mg/l	0.00050	0.00010	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Calcium, Total	1.83		mg/l	0.100	0.0394	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Chromium, Total	0.00129		mg/l	0.00100	0.00017	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Cobalt, Total	0.00056		mg/l	0.00050	0.00016	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Copper, Total	0.00109		mg/l	0.00100	0.00038	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Iron, Total	1.49		mg/l	0.0500	0.0191	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Lead, Total	0.00049	J	mg/l	0.00100	0.00034	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Magnesium, Total	0.694		mg/l	0.0700	0.0242	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Manganese, Total	0.02092		mg/l	0.00100	0.00044	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	09/17/19 14:15	09/17/19 18:01	EPA 7470A	1,7470A	GD
Nickel, Total	0.00093	J	mg/l	0.00200	0.00055	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Potassium, Total	3.62		mg/l	0.100	0.0309	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Sodium, Total	301.		mg/l	0.100	0.0293	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Vanadium, Total	0.00163	J	mg/l	0.00500	0.00157	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM
Zinc, Total	0.00377	J	mg/l	0.01000	0.00341	1	09/17/19 18:20	09/18/19 14:23	EPA 3005A	1,6020B	AM

Project Name: ALLIED HEALTH
Lab Number: L1941701
Project Number: 19.9379
Report Date: 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-03
Client ID: POST-AERETOR
Sample Location: STUYVESANT FALLS, NY
Date Collected: 09/12/19 09:30
Date Received: 09/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.635		mg/l	0.0100	0.00327	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00024	J	mg/l	0.00050	0.00016	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Barium, Total	0.3291		mg/l	0.00050	0.00017	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Calcium, Total	1.88		mg/l	0.100	0.0394	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Chromium, Total	0.00049	J	mg/l	0.00100	0.00017	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Cobalt, Total	0.00028	J	mg/l	0.00050	0.00016	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Copper, Total	0.00452		mg/l	0.00100	0.00038	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Iron, Total	0.802		mg/l	0.0500	0.0191	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Lead, Total	0.00072	J	mg/l	0.00100	0.00034	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Magnesium, Total	0.563		mg/l	0.0700	0.0242	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Manganese, Total	0.01013		mg/l	0.00100	0.00044	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	09/17/19 14:15	09/17/19 18:03	EPA 7470A	1,7470A	GD
Nickel, Total	0.00061	J	mg/l	0.00200	0.00055	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Potassium, Total	3.49		mg/l	0.100	0.0309	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Sodium, Total	271.		mg/l	0.100	0.0293	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM
Zinc, Total	0.01043		mg/l	0.01000	0.00341	1	09/17/19 18:20	09/18/19 14:28	EPA 3005A	1,6020B	AM

Project Name: ALLIED HEALTH
Lab Number: L1941701
Project Number: 19.9379
Report Date: 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-04
Client ID: PRE-PRODUCTION
Sample Location: STUYVESANT FALLS, NY
Date Collected: 09/12/19 09:32
Date Received: 09/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.258		mg/l	0.0100	0.00327	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00040	J	mg/l	0.00050	0.00016	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Barium, Total	0.3084		mg/l	0.00050	0.00017	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Calcium, Total	2.56		mg/l	0.100	0.0394	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Copper, Total	0.01735		mg/l	0.00100	0.00038	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Iron, Total	0.447		mg/l	0.0500	0.0191	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Lead, Total	0.00046	J	mg/l	0.00100	0.00034	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Magnesium, Total	0.577		mg/l	0.0700	0.0242	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Manganese, Total	0.00645		mg/l	0.00100	0.00044	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	09/17/19 14:15	09/17/19 18:04	EPA 7470A	1,7470A	GD
Nickel, Total	ND		mg/l	0.00200	0.00055	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Potassium, Total	3.62		mg/l	0.100	0.0309	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Sodium, Total	278.		mg/l	0.100	0.0293	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM
Zinc, Total	0.00726	J	mg/l	0.01000	0.00341	1	09/17/19 18:20	09/18/19 15:15	EPA 3005A	1,6020B	AM

Project Name: ALLIED HEALTH
Lab Number: L1941701
Project Number: 19.9379
Report Date: 09/19/19

SAMPLE RESULTS

Lab ID: L1941701-05
Client ID: SINK
Sample Location: STUYVESANT FALLS, NY
Date Collected: 09/12/19 09:45
Date Received: 09/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.282		mg/l	0.0100	0.00327	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00020	J	mg/l	0.00050	0.00016	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Barium, Total	0.3241		mg/l	0.00050	0.00017	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Calcium, Total	2.32		mg/l	0.100	0.0394	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Copper, Total	0.01456		mg/l	0.00100	0.00038	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Iron, Total	0.480		mg/l	0.0500	0.0191	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Lead, Total	0.00150		mg/l	0.00100	0.00034	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Magnesium, Total	0.561		mg/l	0.0700	0.0242	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Manganese, Total	0.00718		mg/l	0.00100	0.00044	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	09/17/19 14:15	09/17/19 18:06	EPA 7470A	1,7470A	GD
Nickel, Total	ND		mg/l	0.00200	0.00055	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Potassium, Total	3.59		mg/l	0.100	0.0309	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Sodium, Total	279.		mg/l	0.100	0.0293	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM
Zinc, Total	0.00825	J	mg/l	0.01000	0.00341	1	09/17/19 18:20	09/18/19 15:19	EPA 3005A	1,6020B	AM

Project Name: ALLIED HEALTH **Lab Number:** L1941701

Project Number: 19.9379 **Report Date:** 09/19/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02-05 Batch: WG1285100-1										
Mercury, Total	ND		mg/l	0.00020	0.00009	1	09/17/19 14:15	09/17/19 17:43	1,7470A	GD

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02-05 Batch: WG1285204-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	09/17/19 18:20	09/18/19 13:43	1,6020B	AM

Project Name: ALLIED HEALTH
Project Number: 19.9379
Lab Number: L1941701
Report Date: 09/19/19

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: ALLIED HEALTH

Project Number: 19.9379

Lab Number: L1941701

Report Date: 09/19/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02-05 Batch: WG1285100-2								
Mercury, Total	92		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: ALLIED HEALTH

Project Number: 19.9379

Lab Number: L1941701

Report Date: 09/19/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02-05 Batch: WG1285204-2					
Aluminum, Total	103	-	80-120	-	
Antimony, Total	83	-	80-120	-	
Arsenic, Total	107	-	80-120	-	
Barium, Total	106	-	80-120	-	
Beryllium, Total	109	-	80-120	-	
Cadmium, Total	113	-	80-120	-	
Calcium, Total	103	-	80-120	-	
Chromium, Total	105	-	80-120	-	
Cobalt, Total	105	-	80-120	-	
Copper, Total	98	-	80-120	-	
Iron, Total	106	-	80-120	-	
Lead, Total	111	-	80-120	-	
Magnesium, Total	103	-	80-120	-	
Manganese, Total	107	-	80-120	-	
Nickel, Total	102	-	80-120	-	
Potassium, Total	104	-	80-120	-	
Selenium, Total	111	-	80-120	-	
Silver, Total	105	-	80-120	-	
Sodium, Total	102	-	80-120	-	
Thallium, Total	111	-	80-120	-	
Vanadium, Total	110	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: ALLIED HEALTH

Project Number: 19.9379

Lab Number: L1941701

Report Date: 09/19/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02-05 Batch: WG1285204-2					
Zinc, Total	109	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1941701
Report Date: 09/19/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02-05 QC Batch ID: WG1285100-3 QC Sample: L1941656-01 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00483	97		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1941701
Report Date: 09/19/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02-05 QC Batch ID: WG1285204-3 QC Sample: L1941226-01 Client ID: MS Sample										
Aluminum, Total	ND	2	1.50J	**0**	Q	-	-	75-125	-	20
Antimony, Total	ND	0.5	0.5446J	109		-	-	75-125	-	20
Arsenic, Total	0.1995	0.12	0.3641	**0**	Q	-	-	75-125	-	20
Barium, Total	2.539	2	4.478	97		-	-	75-125	-	20
Beryllium, Total	ND	0.05	0.05335J	**0**	Q	-	-	75-125	-	20
Cadmium, Total	ND	0.051	0.06022	118		-	-	75-125	-	20
Calcium, Total	5350	10	5280	**0**	Q	-	-	75-125	-	20
Chromium, Total	ND	0.2	0.09858J	**0**	Q	-	-	75-125	-	20
Cobalt, Total	ND	0.5	0.5059	101		-	-	75-125	-	20
Copper, Total	ND	0.25	0.1934J	77		-	-	75-125	-	20
Iron, Total	ND	1	ND	**0**	Q	-	-	75-125	-	20
Lead, Total	ND	0.51	0.5296	104		-	-	75-125	-	20
Magnesium, Total	994	10	993	**0**	Q	-	-	75-125	-	20
Manganese, Total	44.16	0.5	43.89	**0**	Q	-	-	75-125	-	20
Nickel, Total	ND	0.5	0.4587	92		-	-	75-125	-	20
Potassium, Total	260	10	271	110		-	-	75-125	-	20
Selenium, Total	ND	0.12	ND	**0**	Q	-	-	75-125	-	20
Silver, Total	ND	0.05	0.04928J	98		-	-	75-125	-	20
Sodium, Total	91200	10	90500	**0**	Q	-	-	75-125	-	20
Thallium, Total	ND	0.12	0.1176	98		-	-	75-125	-	20
Vanadium, Total	ND	0.5	0.4679J	94		-	-	75-125	-	20

Matrix Spike Analysis
Batch Quality Control

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1941701
Report Date: 09/19/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02-05 QC Batch ID: WG1285204-3 QC Sample: L1941226-01 Client ID: MS Sample										
Zinc, Total	ND	0.5	ND	**0**	Q	-	-	75-125	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: ALLIED HEALTH

Project Number: 19.9379

Lab Number: L1941701

Report Date: 09/19/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02-05 QC Batch ID: WG1285100-4 QC Sample: L1941656-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1941701
Report Date: 09/19/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1941701-01A	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-01B	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-02A	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-02B	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-02C	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-02D	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1941701-03A	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-03B	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-03C	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-03D	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1941701-04A	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-04B	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-04C	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)

*Values in parentheses indicate holding time in days

Project Name: ALLIED HEALTH
Project Number: 19.9379

Lab Number: L1941701
Report Date: 09/19/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1941701-04D	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1941701-05A	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-05B	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-05C	Vial HCl preserved	A	NA		2.7	Y	Absent		NYTCL-8260-R2(14)
L1941701-05D	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)

*Values in parentheses indicate holding time in days

Project Name:	ALLIED HEALTH	**Lab Number:**	L1941701
Project Number:	19.9379	**Report Date:**	09/19/19

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers

Project Name:	ALLIED HEALTH	**Lab Number:**	L1941701
Project Number:	19.9379	**Report Date:**	09/19/19

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers

Project Name:	ALLIED HEALTH	**Lab Number:**	L1941701
Project Number:	19.9379	**Report Date:**	09/19/19

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 9/12/19

ALPHA Job #: L1941701

Client Information
Client: C.T. Male Associates
Address: 50 Century Hill Drive, Latham, NY 12110
Phone: (518) 786-7400
Fax:
Email: K.moline@ctmale.com

Project Information
Project Name: Allied Health
Project Location: Stuyvesant Falls, NY
Project #: 19.9379
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☒ Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TCL VOCs by EPA 8260	TAL Metals	Sample Specific Comments	Total Bottle
41701 - 01	Trip Blank	09/12/19	—	W	—	X			2
02	Pre-Aerator		0920	GW	RH	X	X		4
03	Post-Aerator		0930	GW	RH	X	X		4
04	Pre-Production		0935	GW	RH	X	X		4
05	Sink		0945	GW	RH	X	X		4

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	V	P
Preservative	B	C

Relinquished By:	Date/Time	Received By:	Date/Time
	09/12/19 1100	AAL	9-12-19 11:00
	9-12-19		9/12/19 12:25
	9/12/19 1650	AAL	9/12/19 1650

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

APPENDIX B
WATER TREATMENT INSTALLATION AND OPERATION MANUAL

Culligan Water

Culligan Water
154 Brentwood Dr, Suite 1
Colchester, Vt 05446

Everett Windover

c-802-598-4400

o-802-865-0000

windover@culligan4u.com

Culligan Water

Installation and Operation Manual

Exchange Carbon Filter System

Culligan Water

Contents

Overview

This Portable Exchange Carbon Filtration System is designed to be installed in residential applications for the reduction of traces of organic chemical contamination from well water supplies. The system provides maximum flow rate of up to 8 GPM and includes a cartridge type sediment pre-filter (Dual Gradient 50-5 micron), a dual Carbon Filter system containing a total of 4 Ft^3 of a Filtrasorb F600AW Bituminous Coal Acid Washed Granular Activated Carbon (Culligan Cullar F600AW), cartridge type sediment post-filter (Dual Gradient 50-5 micron) and a final UV Light Water Sterilizer rated at 8 GPM flow rate. The system incorporates test ports in the inlet, in between the two carbon vessels and at the outlet of the system for monitoring the system efficiency. Also, a water totalizing meter is included in the outlet of the system to record water usage and facilitate service monitoring.

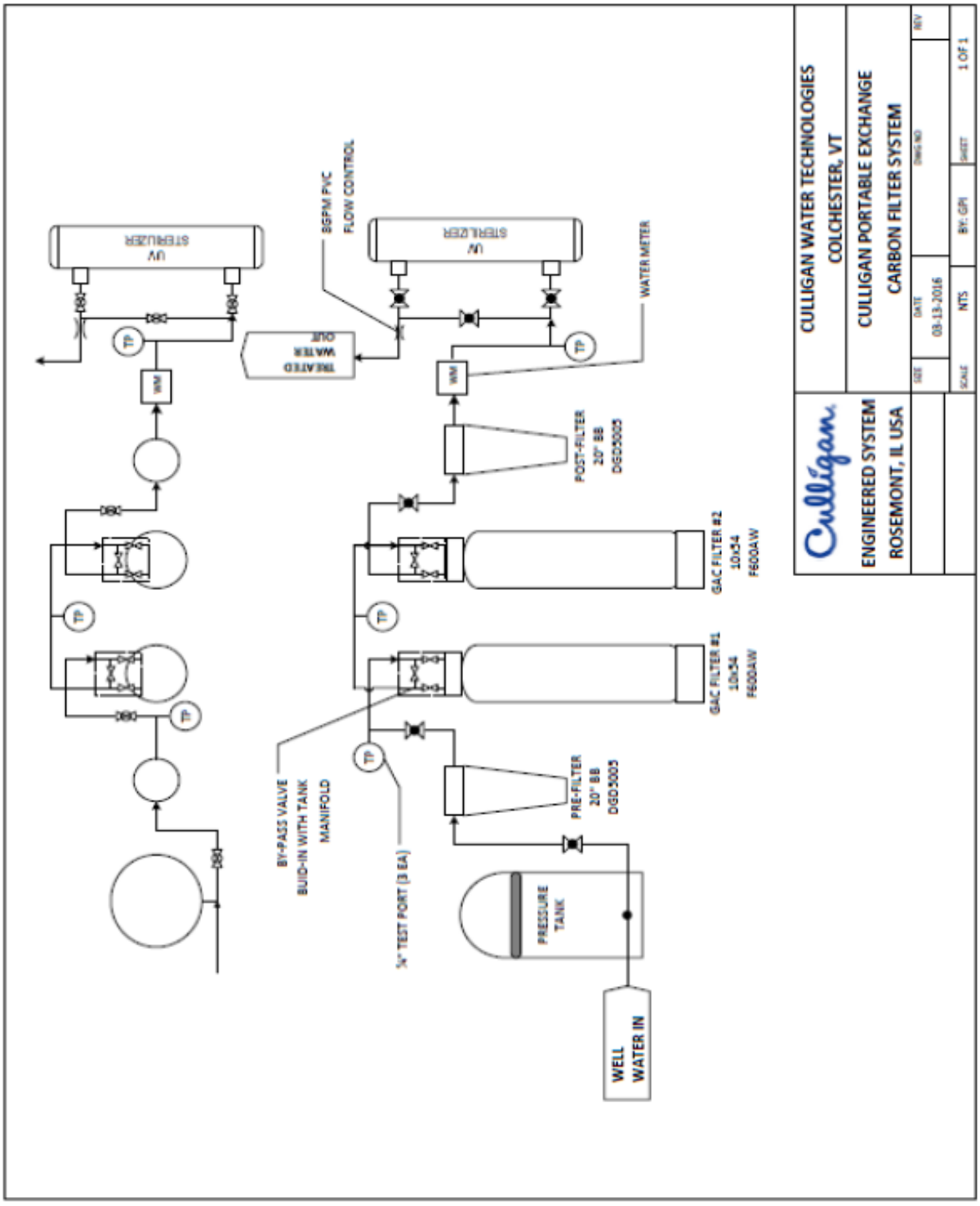
System Design – Typical Operation

System is installed on the main water line of the residence after the well pressure tank as indicated in the system flow diagram (Fig. 1) below. The first sediment filter is used for the removal of sediments and suspended matter. Then water flows through two (2) 10"x54" vessels in series each containing 2.0 Ft^3 of the Cullar F600AW (#SPC10776) Granular Activated Carbon media for the adsorption of traces of organic contaminants. The dual filter approach provides for a continuous back contingency. Following the carbon filter vessels a secondary cartridge type sediment filter is utilized to provide clean water to the residence. Finally, a UV light water sterilization unit is providing microbiological control prior to distribution of the water to the household.

The system operation is designed to be simple, maintenance free and to operate continuously and to treat the supply water whenever there is water use within the building. Other than the UV unit which requires electrical power, all POET components rely on water pressure and flow to operate. Periodic exchange of the carbon filters is performed by Culligan of the Green Mountains. Sampling ports are included during the installation to facilitate testing the system efficacy and determine when the carbon filter(s) need to be replaced. The spent carbon should be disposed according to applicable local and federal requirements as it may contain the contaminants being removed in the process and has to be treated accordingly.

Refer to this manual for further details and instructions for the system components.

Culligan Water



Initial Site Visit/ Pre-Installation

Prior to installing a POET, a site visit is performed to review the existing water system and the area where is equipment is to be installed.
During this site visit pictures are taken of the area to be used for the equipment installation. The installation Spec form is filled out which includes the following information.

Building Type Existing Pipe Type Water source
Electrical Type Location of Equipment Drawing of placement

The Raw water will also be tested and recorded for the following.
Hardness, Iron, Manganese, Hydrogen Sulfide, Alkalinity, Total Dissolved Solids and pH

All of this data will be compiled onto a spreadsheet for use later. This sheet also has the customer name, address, account number, date of install, water parameters, if they have a softener and any dates of tank replacements

Post Installation

Approximately a month after installation of the POET system, a second site visit is performed. During this visit the installation is checked to ensure that it is operating as it should, that there are no leaks, taking pictures and answering any questions that the customer may have. See attachment- Post Installation Inspection

POET Systems components

- Pre-Filter (Dual Gradient 50-5 micron)
- Lead GAC Tank (2 ft3 Culligan Cullar F600AW)
- Lag GAC Tank (2 ft3 Culligan Cullar F600AW)
- Post Filter (Dual Gradient 50-5 micron)
- UV Lamp (VIQUA S8Q-PA)
- Flow Meter (Total gallons)
- Influent, Midpoint and Effluent Water Sampling Ports

Maintenance Schedules

Pre- Post Filter Replacement:	Every 4 Months or pressure reduction issues
Ultraviolet Lamp Replacement:	Every 12 Months
Ultraviolet Quartz Sleeve Cleaning:	Every 12 Months or in high hardness areas every six months. Replacement may be required if sleeve is unable to be cleaned.
GAC Tank / Tank Replacement:	Every 24 months replace both tanks. If PFOA breakthrough occurs before the 24 -month cycle replace the lead tank with the lag tank and replace lag location with replacement tank. *(Recommendation of a 24-month exchange is recommended due to the organic growth potential and channeling that would create an unexpected breakthrough of contaminated water to service. Both tanks should be change at this interval).*

Delivery/ Service Procedure

A minimum of 48 hours prior to a delivery or service the customers are contacted via phone. With our own rapport between the customers and our technicians many have allowed us to gain entrance to the systems with special instructions. Thus being able to keep each location on schedule. Our technicians are in constant contact with the customers that have special time limitations.

During a regular delivery the following is performed:

- General housekeeping of the system and the surrounding areas
- The entire POET system and components are checked for leaks
- On the GAC Tanks check that both bypasses are in operation mode
- Change the filters per the Filter Cartridge Replacement instructions
- Check the filter housing O-ring for dryness or cracks, replace if necessary
- Check the UV for continuous power supply
- Check the Quartz Sleeve for clarity- clean sleeve, if the sleeve is not cleanable replace sleeve
- If due for new UV bulb- replace bulb and clean quartz sleeve or replace sleeve
- Check the totalizing meter to ensure operational by opening a test port and allowing the water to flow
- All of the consumable products are removed from the customers location and disposed of properly

A copy of the delivery ticket or work order is left at the customer's house stating exactly what was serviced or replaced.

Culligan Water

PORTABLE EXCHANGE CARBON FILTERS

FILLING AND START UP PROCEDURES

The following procedures should be followed every time a new Portable Exchange carbon filter is installed or exchange for an application. Every filter needs to be prepared according to the following instructions before it is placed in service.

I. FILLING PROCEDURES:

1. Insert the Outlet distributor manifold in the tank and make sure it is properly centered
2. Cover the opening of the manifold with a clean rag.
3. Place a wide-mouth funnel in the tank opening.
4. Open one (1) 55 lbs. bag of Filtrasorb F600AW carbon. Slowly pour the carbon into the tank via the funnel. Fill the carbon within 2" – 3" from the top. Each tank depending on the size used should take 2 Ft^3 of carbon.
5. Fill the tank with water and allow the media to soak for 24-48 hours. The water level in the tank will decrease as the media soaks up water. Add water to the tank to keep the media submerged so all the media gets saturated.
6. Thread the tank closure with the inlet strainer into the tank; be careful not to miss thread.

II. RECOMMENDED START UP PROCEDURE:

1. It is advisable that every new filter is backwashed for 10 - 15 minutes at a flow rate of 5 – 8 GPM.
2. Easiest way to backwash the PE Carbon Tanks is utilizing a backwash funnel assembly usually installed in a Culligan dealership. Backwash the media in the funnel for 10-15 minutes to make sure water is clean and all carbon fines are washed out.
3. Drop media back in the tank, drain excess water. Unit is ready to set in service.
4. If a backwash funnel is not available reverse the flow of the water on the tank manifold. Flow backwards to drain for 10-15 minutes at a flow rate no more than 5 GPM. If flow starts diminishing is because media is lifted around the top manifold. After 10-15 minutes make sure that the water to drain comes out clear. Reverse the flow and run to drain for another 5 min at 5 GPM to settle the bed.
5. You are ready to place the unit to service.
6. When installing the unit make sure that the Inlet & Outlet are hooked up correctly.

For servicing of the system contact the Culligan Dealer in your area.

Single GAC Tank Exchange

After notification of breakthrough on a single GAC exchange tank.

- Remove the Lead GAC exchange tank
- Remove the Lag GAC tank and place it in the Lead position
- Install the replacement GAC tank in the Lag position

When changing the Lead/Lag tank be sure to record the gallons used on the meter for reference later. The date of the change out and meter reading will be updated to the spreadsheet. A Poet De-commissioning form is to be filled out.

Decommissioning a GAC Exchange Tank

Spent media from the GAC tanks will be brought back to our plant and stored in a Super Sac provided by Calgon Carbon Corp. Prior to being transferred to the Super Sac the media will be examined for any indications of biofilm accumulation, and mineral encrustation to determine if channeling has occurred in the bed. This information is being shared with the engineering firm involved with the location of this account for future reference of life expectancy of the media capacity. A POET Decommissioning Form is filled out and accompanied with that customers file. See Attachment this information is also documented on the Bennington Decommissioning spreadsheet that contains the customer account number, name, address, removal date, Super Sac number and the date media is sent for destruction.

Disposal of Components

• Pre/Post filters	Dispose in trash
• UV/Quartz Sleeve	Packaged in boxes provided by local Hazardous Waste Facility Then delivered to local Facility
• Empty GAC Tank	Will be tagged as POET use only and be entered into the tank exchange inventory

Culligan Water

Portable Exchange Carbon Filtration
Specifications and Operating Data

Cullar Portable Exchange Carbon Unit – 10x54 FRP Tank, 2.0 Ft3

The 10"x54"-CARB FRP 1" will Provide:

Superior Quality Flow, gpm	: 3.1 @ 2 psi loss
High Quality Flow, gpm	: 4.7 @ 4 psi loss
Utility Quality Flow, gpm	: 6.3 @ 6 psi loss
Carbon Volume, ft^3	: 2.0

Miscellaneous Design Data:

Tank Size, in.	: 10x54
Tank Area, ft^2	: 0.54
Operating Pressure, psi	: 0-150
Oper. Temperature, °F	: 33-120

The 10"-CARB FRP 1" System Requirements:

Voltage	: None*
Pipe Conn, in NPT...	
Inlet	: 1.0
Outlet	: 1.0
Weight per tank, lbs...	
Shipping	: 132.0
Operating	: 195.0
Overall Dimensions, in....	
Width	: 11.0
Depth	: 12.0
Height	: 56.0

* Note: Voltage may be required for water quality instruments.

Cullar – Filtrasorb F600AW Activated Carbon Media:

The Filtrasorb F600AW media is a granular activated carbon for the removal of dissolved organic compounds from water. Such contaminants include taste and odor compounds, organic color, Total organic Carbon (TOC), and industrial organic compounds such as TCE, PCE and others. The F600AW is made of selected grades of bituminous coal and it is acid wash to provide cleanliness. See attached factory data sheet for more details.

Culligan Water

Data Sheet

Pure Water. Clean Air. Better World.

CalgonCarbon

FILTRASORB® 600

Granular Activated Carbon

Applications

With its enhanced high energy pore structure, FILTRASORB 600 is ideally suited for trace removal applications and offers a significant performance advantage over traditional activated carbon products used in these types of applications.

Specific applications include:

- Removal of MTBE
- Removal of DBCP
- Removal of THMs
- Removal of pesticides and herbicides
- Removal of other organics at concentrations < 1 ppm
- Potable water treatment
- Groundwater treatment
- Ultrapure water treatment

Description

FILTRASORB 600 is a granular activated carbon for the removal of dissolved organic compounds from water and wastewater as well as industrial and food processing streams. These contaminants include taste and odor compounds, organic color, total organic carbon (TOC), and industrial organic compounds such as TCE and PCE.

This activated carbon is made from select grades of bituminous coal through a process known as reagglomeration to produce a high activity, durable, granular product capable of withstanding the abrasion associated with repeated backwashing, hydraulic transport, and reactivation for reuse. Activation is carefully controlled to produce a significant volume of both low and high energy pores for effective adsorption of a broad range of high and low molecular weight organic contaminants.

FILTRASORB 600 is formulated to comply with all the applicable provisions of the AWWA Standard for Granular Activated Carbon (B604) and Food Chemicals Codex. This product may also be certified to the requirements of ANSI/NSF Standard 61 for use in municipal water treatment facilities. Only products bearing the NSF Mark are certified to the NSF/ANSI 61 - Drinking Water System Components - Health Effects standard. Certified Products will bear the NSF Mark on packaging or documentation shipped with the product.

Features / Benefits

- Produced from a pulverized blend of high quality bituminous coals resulting in a consistent, high quality product.
- Carbon granules are uniformly activated through the whole granule, not just the outside, resulting in excellent adsorption properties and constant adsorption kinetics.
- The reagglomerated structure ensures proper wetting while also eliminating floating material.
- High mechanical strength relative to other raw materials, thereby reducing the generation of fines during backwashing and hydraulic transport.
- Carbon bed segregation is retained after repeated backwashing, ensuring the adsorption profile remains unchanged and therefore maximizing the bed life.
- Reagglomerated with a high abrasion resistance, which provides excellent reactivation performance.
- High density carbon resulting in a greater adsorption capacity per unit volume.

Specifications[1]	FILTRASORB 600
Iodine Number, mg/g	850 (min)
Moisture by Weight	2% (max)
Abrasion Number	80 (min)
Trace Capacity Number, mg/g	16 (min)
Screen Size by Weight, US Sieve Series	
On 12 mesh	5% (max)
Through 40 mesh	4% (max)

[1]Calgon Carbon test method

Typical Properties*	FILTRASORB 600
Apparent Density (tamped)	0.62 g/cc
Water Extractables	<1%
Non-Wettable	<1%

*For general information only, not to be used as purchase specifications.

Safety Message

Wet activated carbon can deplete oxygen from air in enclosed spaces. If use in an enclosed space is required, procedures for work in an oxygen deficient environment should be followed.

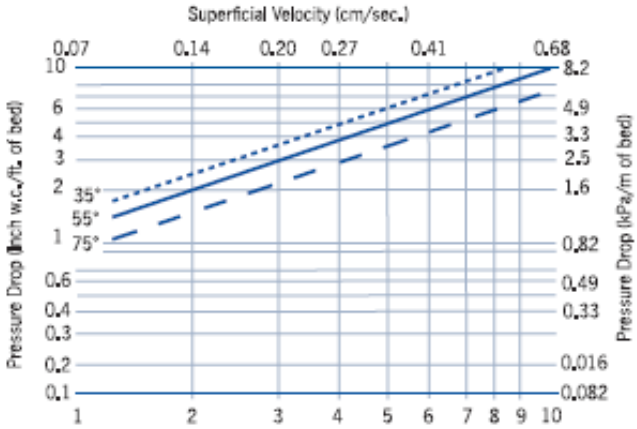
1.800.4CARBON calgoncarbon.com

DS-FILTRA60015-EIN-E1

Culligan Water

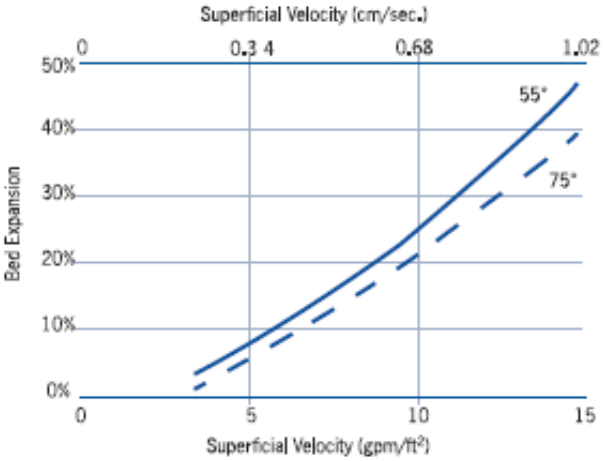
Typical Pressure Drop

Based on a backwashed and segregated bed



Typical Bed Expansion During Backwash

Based on a backwashed and segregated bed

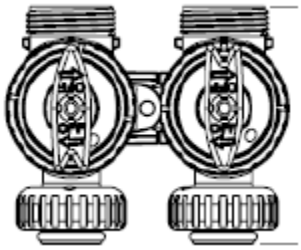


Safety Message

Wet activated carbon can deplete oxygen from air in enclosed spaces. If use in an enclosed space is required, procedures for work in an oxygen deficient environment should be followed.

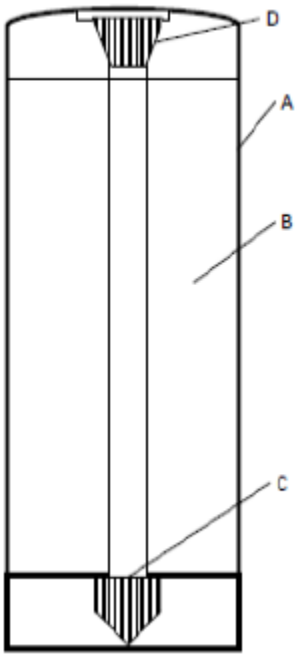
Culligan Water

Carbon Filter Component Parts:



By-Pass Valve WS1 (#SPC10762)

In & Out Tank Head (#SPC10761)



A. Filter Tank, FRP, 10”x54” (#SPC10770)

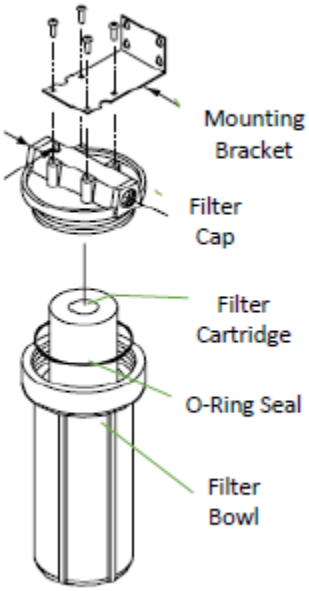
B. Carbon Media, 2 Ft^3, Cullar F600AW (#SPC10776)

B. Distributor Manifold (#SPC10773)

D. Top Distributor Basket (#SPC10765)

Culligan Water

Filter Cartridge Replacement Procedures



The pre and post filter cartridges need to be replaced when a significant pressure drop across the filter increases, or in a regular interval as determine by local water conditions.

1. Turn off water supply to filter. Depress red pressure- relief button to relieve the pressure from the filter.

2. Using the filter wrench provided (#MS010522), unscrew the filter bowl.

3. Remove and discard old filter cartridge.

4. Clean the filter bowl with a damp cloth and rinse thoroughly.

5. Remove the wrapper from the new cartridge (#MS004512). Install the cartridge in the bowl, making sure it seals in the bottom of the bowl.

6. Check the O-ring seal (#MS404498) for dryness and cuts. Replace the seal if necessary and use silicone lube as needed.

   CAUTION! Do not use petroleum-based lubricants, which destroy the synthetic rubber seal.

7. Screw the filter bowl onto the filter cap and hand tighten. DO NOT OVER-TIGHTEN.

8. Slowly turn on the water supply to allow filter to fill with water and then press the red pressure-relief button on top of the filter cap to release trapped air.

Culligan Water

UV Sterilizer # S8Q-PA-C (#D1022214)

Models:

S2Q-PA, S5Q-PA, S8Q-PA, S2Q-P/12VDC, S5Q-P/12VDC

NSF Standard 55 Class B Validated Models:

SV5Q-PA, SV8Q-PA

Powered by Sterilight

825 Clair Rd. W, Guelph, Ontario, Canada N1L 1R1
T. (+1) 519.763.1832 • tf. (+1) 800.265.7246 (US and Canada only)
T. (+31) 73 747 8144 (Europe only) • F. (+1) 519.763.5869
e-mail: info@viqua.com
www.viqua.com

Section 1 Safety Information

These are the original instructions. Please read this entire manual before operating this equipment. Pay attention to all danger, warning, and caution statements in this manual. Failure to do so could result in serious personal injury or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired. DO NOT use or install this equipment in any manner other than that specified in the installation manual.

1.1 Potential Hazards:

Read all labels and tags attached to the system. Personal injury or damage to the system could occur if not observed.

	Waste electrical and electronic equipment (WEEE). This symbol indicates that you should not discard wasted electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.		This symbol indicates not to store any combustible or flammable material close to the system.
	This symbol indicates there is Mercury present.		This symbol indicates that the contents of the transport package are fragile and the package should be handled with care.
	This is the safety alert symbol. Obey all safety messages that follow this symbol to avoid potential injury. When on the equipment, refer to the Operational and Maintenance manual for additional safety information.		This symbol indicates safety glasses with side protection is required for protection against UV exposure.
	This symbol indicates a risk of electrical shock and/or electrocution exists.		This symbol indicates gloves must be worn.
	This symbol indicates the marked equipment may contain a component that can eject forcibly. Obey all procedures to safely depressurize.		This symbol indicates safety boots must be worn.
	This symbol indicates the system is under pressure.		This symbol indicates the operator must read all available documentation to perform required procedures.
	This symbol indicates there is a potential UV hazard. Proper protection must be worn.		This symbol indicates the plumber must use copper piping.
	This symbol indicates the marked item could be hot and should not be touched without care.		This symbol indicates that the system should only be connected to a properly grounded, grounding-type controller receptacle that is protected by a Ground Fault Circuit Interrupter (GFCI).
	This symbol indicates there is a potential for VERY hot water when flow is started.		

Warning: This product may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

1.2 Safety Precautions:

⚠DANGER

Failure to follow these instructions will result in serious injury or death.

- **Electric Shock:** To avoid possible electric shock, special care should be taken since water is present near the electrical equipment. Unless a situation is encountered that is explicitly addressed by the provided maintenance and troubleshooting sections, DO NOT attempt repairs yourself, refer to an authorized service facility.
- **GROUNDING:** This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electrical shock. This system is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances. Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a qualified electrician or service personnel if you are in doubt as to whether the outlet is properly grounded. DO NOT modify the plug provided with this system – if it does not fit in the outlet, have a proper outlet installed by a qualified electrician. DO NOT use any type of adapter with this system.
- **GROUND FAULT CIRCUIT INTERRUPTER PROTECTION:** To comply with the National Electrical Code (NFPA 70) and to provide additional protection from the risk of electric shock, this system should only be connected to a properly grounded, grounding-type controller receptacle that is protected by a Ground Fault Circuit Interrupter (GFCI) or to a residual current device (RCD) having a rated residual operating current not exceeding 30 mA. Inspect operation of GFCI as per manufacturer's suggested maintenance schedule.
- DO NOT operate the disinfection system if it has a damaged cord or plug, if it is malfunctioning or if it has been dropped or damaged in any manner.
- DO NOT use this disinfection system for other than intended use (potable water applications). The use of attachments not recommended or sold by the manufacturer / distributor may cause an unsafe condition.
- DO NOT install this disinfection system where it will be exposed to the weather or to temperatures below freezing.
- DO NOT store this disinfection system where it will be exposed to the weather.
- DO NOT store this disinfection system where it will be exposed to temperatures below freezing unless all water has been drained from it and the water supply has been disconnected.

Safety Information

⚠ WARNING

- During extended periods of no water flow, the water in your chamber can become very hot (Approx. 60 °C) and potentially lead to scalding. It is recommended to run your water until this hot water has been purged from your chamber. Do not allow water to contact your skin during this time. To eliminate this condition, a temperature management valve can be installed at the outlet of your UV system.
- This system contains a UV Lamp. Do not operate the UV Lamp when it is removed from the chamber. Unintended use or damage of the system may result in the exposure of dangerous UV radiation. UV radiation may, even in little doses, cause harm to the eyes and skin.
- Changes or modifications made to this system without the consent of the manufacturer could render the system unsafe for operation and may void the manufacturer's warranty.

⚠ CAUTION

Failure to follow these instructions could result in minor or moderate injury.

- Carefully examine the disinfection system after installation. It should not be plugged in if there is water on parts not intended to be wet such as, the controller or lamp connector.
- Due to thermal expansion concerns and potential material degradation due to UV exposure, it is recommended to use metal fittings and at least 10" of copper pipe on the outlet of your UV chamber.
- **Hg EXPOSURE**: The UV lamp contains mercury. If the lamp breaks, then avoid inhalation or ingestion of the debris and avoid exposure to eyes and skin. Never use a vacuum cleaner to clean up a broken lamp as this may scatter the spilled mercury. Obey local regulations and guidelines for the removal and disposal of mercury waste.

NOTICE

- The UV lamp inside the disinfection system is rated at an effective life of approximately 9000 hours. To ensure continuous protection, replace the UV lamp annually.
- The UV system is not to be used or played with by children. Persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, are also not to handle the UV system unless they have been given supervision or instruction.
- This system is intended to be permanently connected to the water lines.
- This system is not intended to be used in or above water or outdoors or used in swimming pools when persons are in the pool.
- **EXTENSION CORDS**: If an extension cord is necessary, use only 3-wire extension cords that have 3-prong grounding-type plugs and 3-pole cord connectors that accept the plug from this system. Use only extension cords that are intended for outdoor use. Use only extension cords having an electrical rating not less than the rating of the system. A cord rated for less amperes or watts than this system rating may overheat. Exercise caution when arranging the cord so that it will not be tripped over or pulled. DO NOT use damaged extension cords. Examine extension cord before using and replace if damaged. DO NOT abuse extension cord. Keep extension cord away from heat and sharp edges. Always disconnect the extension cord from the receptacle before disconnecting this system from the extension cord. Never yank cord to pull plug from outlet. Always grasp the plug and pull to disconnect.
- If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its service agent.
- **SYSTEM PROTECTION:** To protect your Controller, a UL1449 certified (or equivalent) transient voltage surge suppressor is strongly recommended.
- The UV lamp in this system conforms to the applicable provisions of the Code of Federal Regulations (CFR) requirements including, Title 21, Chapter 1, Subchapter J, Radiological Health.
- Read and understand the Owner's Manual before operating and performing any maintenance on this equipment.

1.3 Water Chemistry

Water quality is extremely important for the optimum performance of your UV system. The following levels are recommended for installation:

Water Quality and Minerals	Level
Iron	< 0.3 ppm (0.3 mg/L)
Hardness*	< 7 gpg (120 mg/L)
Turbidity	< 1 NTU
Manganese	< 0.05 ppm (0.05 mg/L)
Tannins	< 0.1 ppm (0.1 mg/L)
UV Transmittance	> 75% (call factory for recommendations on applications where UVT < 75%)

* Where total hardness is less than 7 gpg, the UV unit should operate efficiently provided the quartz sleeve is cleaned periodically. If total hardness exceeds 7 gpg, the water should be softened. If your water chemistry contains levels in excess of those mentioned above, proper pre-treatment is recommended to correct these water problems prior to the installation of your UV disinfection system. These water quality parameters can be tested by your local dealer, or by most private analytical laboratories. *Proper pre-treatment is essential for the UV disinfection system to operate as intended.*

Section 2 General Information

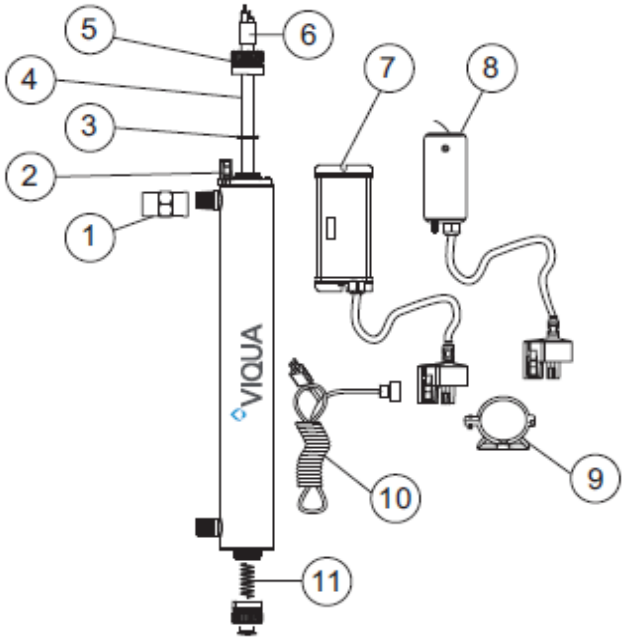


Figure 1 System Components

Item	Description	Part Number	UV Systems
1	Flow restrictor (Only for certified models)	440263-R	SV5Q-PA
		440264-R	SV8Q-PA
2	Lamp connector base	270276-R	Used on all systems
3	O-ring	410867	Used on all systems
4	Open-ended, 214 fused quartz sleeves with fire polished ends	QS-001	S1Q-PA
		QS-330	S2Q-PA
		QS-463	S5Q-PA, SV5Q-PA
		QS-810	S8Q-PA, SV8Q-PA
5	Retaining nut	RN-001	Used on all systems
6	Hard glass, coated Sterilumze®-EX UV lamps for long, consistent life (9000 hours)	S330RL	S2Q-PA
		S463RL	S5Q-PA, SV5Q-PA
		S810RL	S8Q-PA, SV8Q-PA
7	Controller (for 100-240V models only)	BA-ICE-S	S5Q-PA, S8Q-PA, SV5Q-PA, SV8Q-PA
8	Controller (for 12VDC models only)	BA-RO/P/12	S2Q-P/12VDC, S5Q-P/12VDC
9	2.5" Mounting brackets	410958-R	Used on all systems
10	IEC replacement power cords for VIQUA ICE Controller (sold separately)	260010	NORTH AMERICAN (NEMA 5-15P), 3-PRONG GROUNDED
		602637	CONTINENTAL EUROPEAN (CEE 7/7) 2-PIN WITH GROUND, "SCHUKO"
		260012	UK VERSION (BS 1363) 3-PRONG GROUNDED (5 AMP FUSE)
		260013	AUSTRALIAN VERSION (AS 3112) 3-PRONG GROUNDED
		260019	NO CONNECTOR, 3-WIRE, BARE LEADS
11	Spring	SP008	Used on all systems

Section 3 Installation

3.1 UV Disinfection System

⚠ CAUTION

⚠ Electronic controller must be connected to a Ground Fault Protected Circuit (GFCI) receptacle. Ensure green ground wire ring terminal is securely fastened to ground stud on UV chamber.

The disinfection system is designed to be mounted either horizontally or vertically at the point-of-use or point-of-entry depending on the specific flow rate of the unit.

Note: *The ideal installation is vertical with the lamp connector on top. This is to prevent water damage from occurring on the lamp pins and lamp connector.*

- The controller should be mounted either above or beside the UV chamber. Always mount controller horizontally to prevent moisture from running down cordage and causing a potential fire hazard. Drip loops in all cordage connected to controller is highly recommended. Refer to Figure 5.
- The complete water system, including any pressure or hot water tanks, must be sterilized before start up by flushing with chlorine (household bleach) to destroy any residual contamination. Refer to Section 3.2.
- The disinfection system is intended for indoor use only. DO NOT install disinfection system where it may be exposed to the weather.
- Install the disinfection system on cold water line only, before any branched lines.
- A 5 micron sediment filter must precede the disinfection system. Ideally, the disinfection system should be the last treatment the water receives before it reaches the faucet.

Procedure:

1. Figure 2 shows the installation of a typical disinfection system and the related components that may be used for the installation. The use of a by-pass assembly is recommended in case the system requires "off-line" maintenance. In this case, note the system requires supplementary disinfection for the distribution system if any water is used during by-pass condition. In addition, during by-pass, the water will NOT be disinfected and a "DO NOT CONSUME THE WATER" tag should be physically installed on the by-pass assembly until such time as the system is sanitized and returned to service. For more information, refer to Section 3.2. If the water is to be consumed while the system is off-line, the water must be boiled for two minutes prior to consumption.

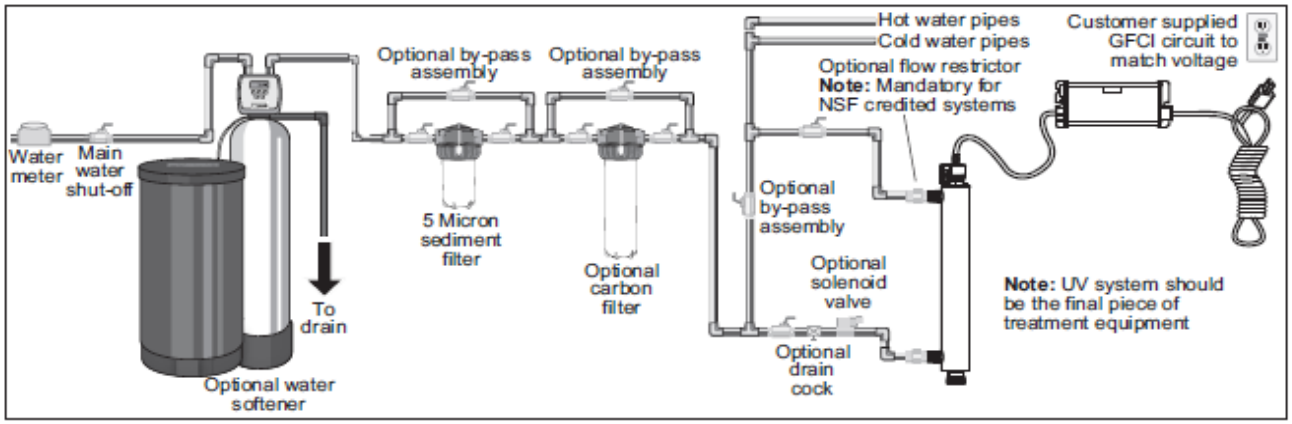


Figure 2 Disinfection System

2. Select a suitable location for the disinfection system and its related components. As it is recommended to install a GFCI, make sure that this is taken into consideration prior to any installation. The system can either be installed vertically (inlet port at the bottom) as shown in Figure 3 A, or horizontally as shown in Figure 3 B. However, the vertical installation is the most preferred method. When selecting a mounting location, leave enough space to allow the removal of the UV lamp and/or quartz sleeve (typically leave a space equal to the size of the UV chamber itself).

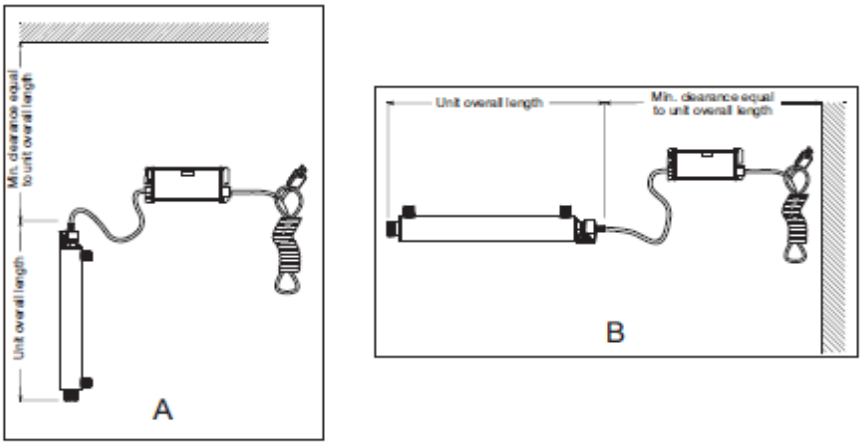


Figure 3 Disinfection Installation - Vertical and Horizontal

3. Mount the system to the wall using the supplied clamps. Various connection methods can be used to connect the water source to the system, however union type connectors are recommended. The use of a flow restrictor device will help to maintain the manufacturers rated flow. The flow restrictor should be installed on the outlet port and is designed to be installed in one direction only. Ensure that the flow of the water matches the flow direction as indicated on the flow restrictor. Refer to Figure 4.

Note: *DO NOT solder connections while attached to the system as this could damage the O-ring seals.*

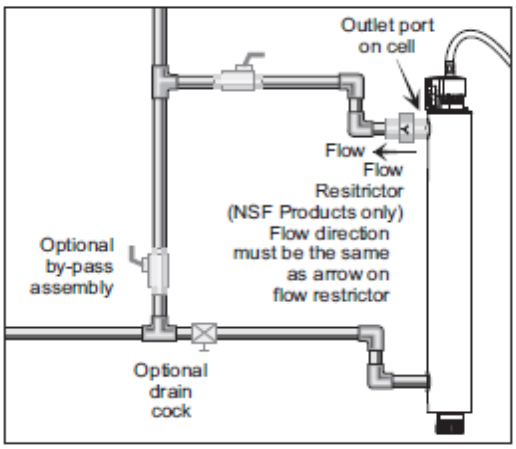


Figure 4 Flow Restrictor

4. Mount the VIQUA ICE controller horizontally to the wall, near the UV chamber. Ideally place the controller above the chamber and away from any water connection point, to prevent any water from potentially leaking onto the controller by means of a leak at a connection point or a "sweating" system. Make sure you allow for a "drip-loop" as shown in Figure 5 on the UV lamp, UV sensor, and power cord, again, to prevent any water from potentially entering the controller.

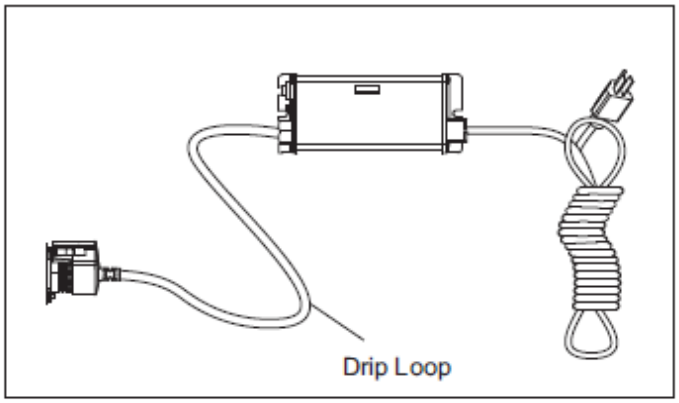


Figure 5 Drip Loop

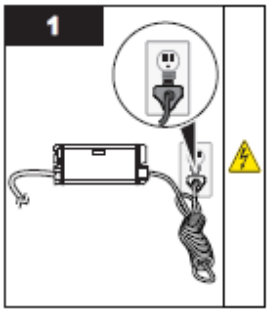
5. Install the UV lamp. Refer to Section 4.1.
6. When all plumbing connections are complete, slowly turn on the water supply and check for leaks. The most likely cause of leaks is from the O-ring seal. In case of a leak, shut water off, drain cell, remove the retaining nut, wipe the O-ring and threads. Clean and re-install.
7. Once it is determined that there are no leaks, plug the system into the ground fault interrupter and check controller to ensure the system is operating properly. The controller should illuminate without any alarms.

   Note: *DO NOT look directly at the glowing UV lamp.*
8. Allow the water to run for a few minutes to clear any air or dust that may be in the UV chamber.

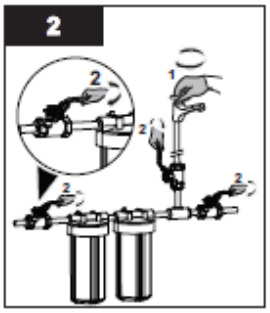
   Note: *When there is no flow, the water in the cell will become warm, as the UV lamp is always on. To remedy this, run a cold water tap anywhere in the house for a minute to flush out the warm water.*

3.2 Disinfection Procedure

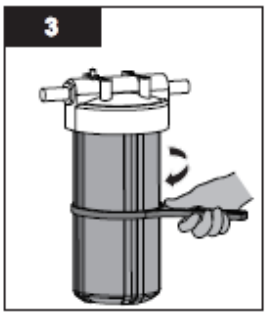
UV disinfection is a physical disinfection process and does not add any potentially harmful chemicals to the water. As UV does not provide a disinfection residual, it is imperative that the entire distribution system located after the UV be chemically disinfected to ensure that the plumbing system is free from any bacteriological contaminants. The disinfection process must be performed immediately after the UV unit is installed and repeated thereafter whenever the UV is shut down for service, without power, or inoperative for any reason. The procedure for sanitizing the plumbing system is readily accomplished as follows:



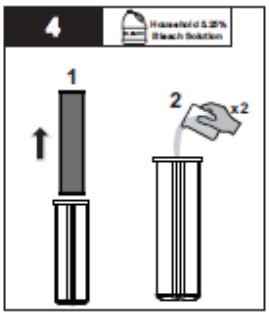
- Ensure the controller is plugged in for entire disinfection process.



- Shut off the water supply.
- Close each faucet.

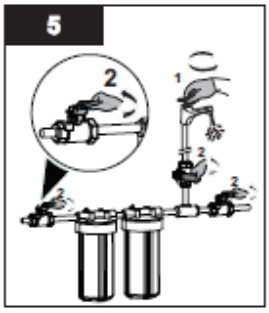


- Remove filter cartridge(s).

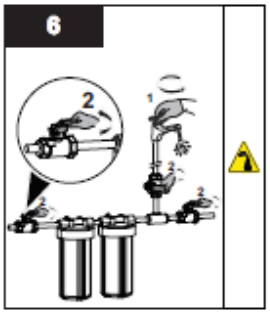


- Pour 2 cups of household bleach solution into the filter housing(s).

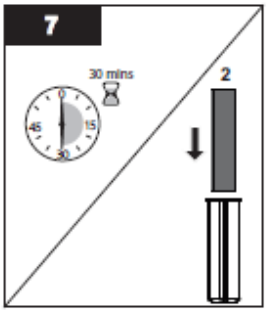
  Note: DO NOT use Hydrogen Peroxide.



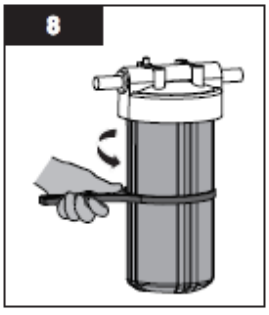
- Re-install the housings.
- Turn on the cold water supply.
- Open each faucet and all water openings until you smell the bleach and then close the faucets.



- Turn on the hot water supply.
- Open each faucet and all water openings until you smell the bleach and then close the faucets.



- DO NOT use water for 30 minutes.
- Flush the system until no chlorine smell is detectable and reinstall the filters.



- Reinstall filter housing(s).

Notes: *1) The addition of chlorine (bleach) to a hot water tank that has in the past been fed with untreated raw water with high levels of other contaminants (iron, manganese, hydrogen sulphide, organics, etc.) will result in oxidation of these contaminants and may require repeated flushing of the hot water tank. This contingency must be dealt with independently under the start-up procedure for any other conditioners that may form a part of the pre-treatment for the UV unit.*

2) The above disinfection procedure will result in a massive chlorine residual far in excess of the 0.5 to 1.0 mg/L typically present in municipally chlorinated water and of a magnitude consistent with the minimum 50 mg/L chlorine solution recommended for the disinfection of distribution systems known to be contaminated. DO NOT consume water until complete system has been flushed.

Section 4 Maintenance

⚠WARNING

- Always disconnect power before performing any work on the disinfection system.
- Always shut-off water flow and release water pressure before servicing.
- Regularly inspect your disinfection system to ensure that the power indicators are on and no alarms are present.
- Replace the UV lamp annually (or biennially if seasonal home use) to ensure maximum disinfection.
- Always drain the chamber when closing a seasonal home or leaving the unit in an area subject to freezing temperatures.

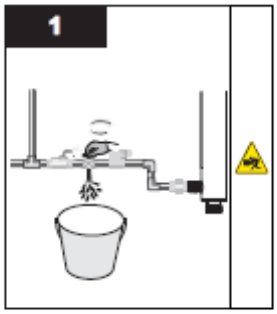
4.1 Replacing UV Lamp

NOTICE

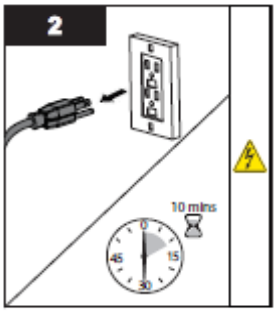
- Reset UV lamp life timer after UV lamp replacement. Refer to Section 5.1.3. Refer to www.lamprecycle.org for UV lamp disposal.
- DO NOT use water during replacement of UV lamp.

UV lamp replacement is a quick and simple procedure requiring no special tools. The UV lamp must be replaced after 9000 hours of continuous operation (approximately one year) in order to ensure adequate disinfection.

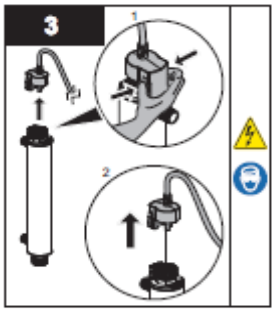
Procedure:



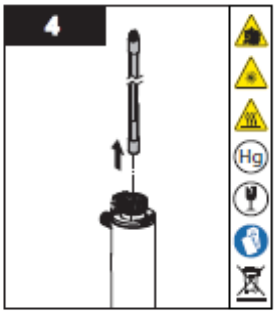
- Shut off the water line to chamber and release system pressure before servicing.



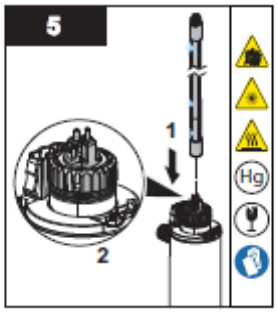
- Disconnect main power source and allow the unit to cool for 10 minutes.



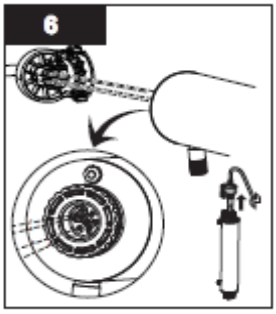
- Remove the lamp connector by squeezing the plastic locking tabs on the side of the connector.



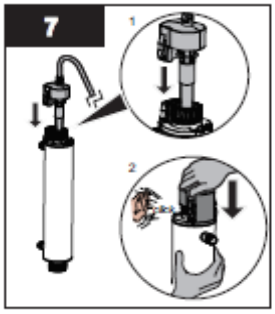
- Remove the lamp in upward direction from the chamber and lamp connector base.
- Always hold the lamp at the ceramic ends.



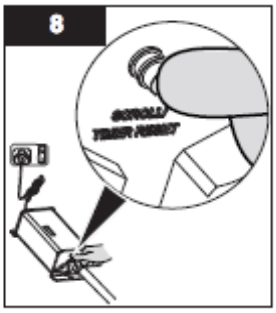
- Insert the new lamp fully into the chamber leaving about two inches of the lamp protruding from the chamber.



- Attach the connector to the lamp and note that the connector will only allow correct installation in one position.



- Push the lamp connector against lamp connector base together until an audible click is heard.
- Re-pressurize the system to check for leaks.



- Hold down the timer reset button and reapply power to the controller until you see [-SEE], then release timer reset button.
- A 5 second delay will occur until you hear an audible tone and LED display will read once again [365].

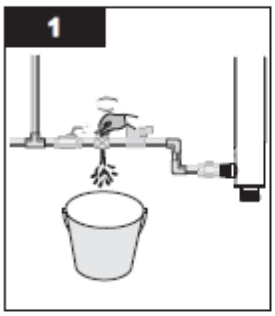
4.2 Cleaning and Replacing Quartz Sleeve

Note: *Minerals in the water slowly form a coating on the quartz sleeve. This coating must be removed because it reduces the amount of UV light reaching the water, thereby reducing disinfection performance. If the sleeve can not be cleaned, it must be replaced.*

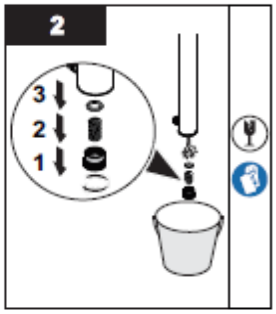
Prerequisites:

- Shut off water supply and drain all lines.
- Remove the UV lamp. Refer to Section 4.1.

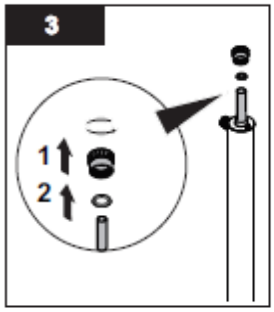
Procedure:



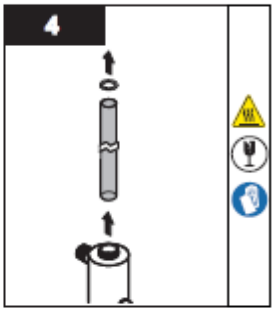
- Drain the chamber by using the drain port.



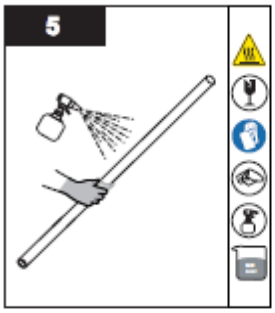
- Remove the bottom retaining nut, floating spring, and O-ring.



- Remove the top retaining nut and O-ring.

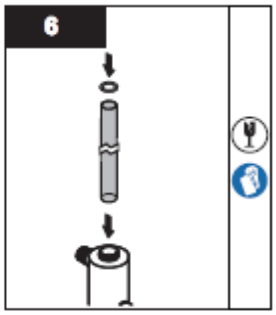


- Carefully, remove O-ring adhering to the quartz sleeve.
- Remove the quartz sleeve.

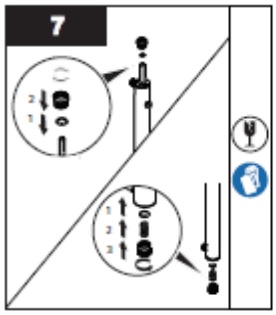


- Clean the quartz sleeve with a cloth soaked in CLR, vinegar or some other mild acid and then rinse with water.

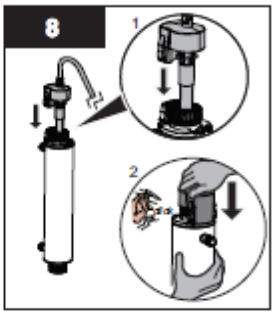
  Note: *If sleeve cannot be cleaned completely or it is scratched or cracked, then replace the sleeve.*



- Reinstall the quartz sleeve in the chamber allowing the sleeve to protrude an equal distance at both ends of the chamber.
- Slide supplied O-rings onto each end of the quartz sleeve.



- Reinstall the top and bottom retaining nuts, floating spring, and O-rings respectively.
- When service is complete, assemble the prerequisites in the reverse order of disassembly.



- Push the lamp connector against lamp connector base together until an audible click is heard.
- Plug in controller and verify the POWER-ON LED display.
- Re-pressurize the system to check for leaks.

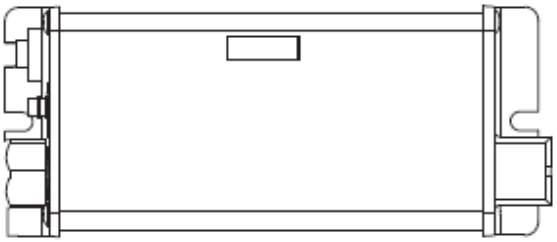
Note: *After replacing the UV lamp or quartz sleeve perform the disinfection procedure, refer to Section 3.2.*

Section 5 Operation

⚠WARNING

⚠ The advanced warning system has been installed to provide the optimum protection against microbiological contamination in water. DO NOT disregard the warning signals. The best way to ensure optimum UV performance is to have the water microbiologically tested by a recognized testing agency on a regular basis.

5.1 Basic Systems Incorporating BA-ICE-S Controller



5.1.1 UV lamp Life Remaining (days)

365 The controller tracks the number of days of operation of the UV lamp and the controller. The default screen will display the total UV lamp life remaining (in days). The controller will count down the number of days remaining until the UV lamp requires changing (365 days to 1 day). At "0" days, the controller will display A3 and sound an intermittent audible chirp (1 second on, 5 seconds off), indicating the need to change the UV lamp.

5.1.2 Understanding your "A3" Code

A3 *DEFERRAL* - Once the "A3" or end of UV lamp life message is shown on the LED display, the audible alarm can be deferred up to 4 separate times. The delay is designed to allow you time to address the alarm while you obtain a new UV lamp. This can be done by simply depressing the timer reset button for 5 seconds, which is located on the left side of the controller. Each time the timer reset button is pressed the controller alarm is deferred seven days. Once the final 7 day deferral has been reached the alarm can only be silenced by changing the UV lamp and manually resetting the controller timer, refer to Section 4.1.

5.1.3 Resetting UV lamp Life

Refer to Section 4.1.

Note: *Even though the alarm on the system can be deferred for a period of time, it is important to address each and every alarm condition as they are indicating that there is a potential problem with the system and should be remedied.*

5.1.4 Total Days of Operation

1680 The controller also displays the total running time of the controller. To obtain this reading, press the push-button once. The total running time of the controller will be numerically displayed in days. This information will remain displayed for ten seconds and will then revert back to the UV lamp life remaining default screen. It should be noted that this value cannot be reset.

5.1.5 UV lamp Failure (Blank Screen)

When the system recognizes UV LAMP FAILURE (no current running through the UV lamp), the display will be blank (no default UV LAMP LIFE REMAINING screen) and the system will sound an intermittent audible tones (1 second on,1 second off). The system will remain in this state, until this condition is remedied.

5.2 12VDC Systems Incorporating BA-RO/P/12 Controller

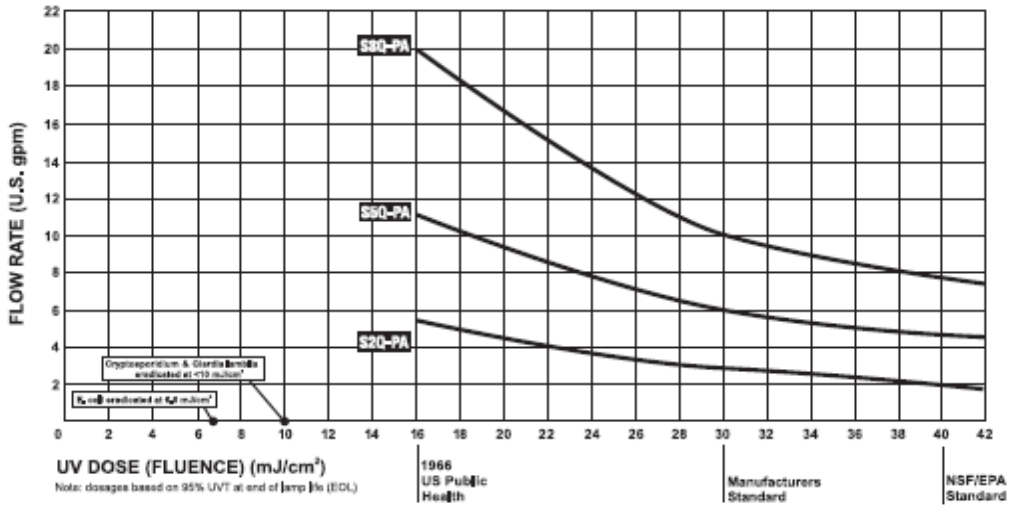
Green LED indicates UV lamp "ON".

Section 6 Troubleshooting

Symptom	Possible Causes	Solutions
Pressure Drop	Sediment pre-filter clogged	Replace filter cartridge with appropriate 5 micron cartridge. ***Note:** Check source water supply as fluctuations may occur in source pressure.*
	Flow regulator	Flow regulator will result in pressure drop when approaching full flow.
High Bacteria Counts	Quartz sleeve is stained or dirty	Clean sleeve with scale cleaner and eliminate source of staining problem (ie. soften hard water, refer to Section 4.2.
	Change in feed water quality	Have source water tested to ensure that water quality is still within allowable limits for this system.
	Contamination in water lines after UV system (eg. power failures, plumbing	Disinfection system must have a bacterial free distribution system to work effectively. Refer to Section 3.2
	Possible break-through of sediment through pre-filter	Have source water tested for turbidity - may need stepped filtration in order to catch all sediment entering water system (20 micron filter followed by a 5 micron filter followed by UV
Heated Product Water	Common problem caused by infrequent use of water	Run water until it returns to ambient temperature.
Water Appears Milky	Caused by air in the water lines	Run water until air is purged.
Unit Leaking Water	Problem with O-ring seal (on retaining nut and/or UV sensor)	Ensure O-ring is in place, check for cuts or abrasions, clean O-ring, moisten with water/ lubricant and re-install, replace if necessary (410867).
	Condensation on UV chamber caused by excessive humidity & cold water	Check location of disinfection system and control humidity.
	Inadequate inlet/outlet port connections	Check thread connections, reseal with Teflon® tape and re-tighten.
System Shutting Down Intermittently	Interrupted controller	• Ensure system has been installed on its own circuit, as other equipment may be drawing power away from UV (ie. pump or fridge). • UV system should not be installed on a circuit which is incorporated into a light switch.
UV lamp Failure Alarm on - New lamp	Loose connection between UV lamp and connector	Disconnect UV lamp from connector and reconnect, ensuring that a tight fit is accomplished
	Moisture build up in connector may keep UV lamp and connector from making a solid connection	Eliminate chance of any moisture getting to the connector and/or lamp pins

DISPLAY FAULT MODES	
LED display reads "A3"	• UV lamp life expired - countdown is at "0" days. Refer to Section 5.1.2, Understanding your A3 Code. • Press reset button for a deferred alarm, replace UV lamp
LED display is blank	• Controller is in UV lamp failure mode. Refer to Section 5.1.5, UV Lamp Failure. Replace UV Lamp, refer to Section 4.1. • Power system down, allowing it to reset itself; apply power in order to confirm that the controller is able to power UV lamp • Check to see if there is sufficient power to the UV system
Green LED off (12 VDC only)	• UV lamp failure. Replace UV Lamp, refer to Section 4.1. • No input voltage to controller

Section 7 Manufacturer's Dose Flow Chart



Section 8 Specifications: Standard and Validated

Model		S2Q-P/12VDC/ S2Q-PA		S5Q-P/12VDC/ S5Q-PA/SV5Q-PA*		S8Q-PA/ SV8Q-PA*
Flow Rate	*NSF Class B Certified 16mJ/cm² @ 70% UVT	-		3.6 gpm (13.6 lpm) (0.8 m³/hr)		7 gpm (26.5 lpm) (1.6 m³/hr)
	US Public Health 16mJ/cm² @ 95% UVT	5 gpm (19 lpm) (1.1 m³/hr)		11 gpm (42 lpm) (2.5 m³/hr)		20 gpm (75 lpm) (4.5 m³/hr)
	VIQUA Standard 30 mJ/cm² @ 95% UVT	3 gpm (11 lpm) (0.7 m³/hr)		6 gpm (23 lpm) (1.4 m³/hr)		10 gpm (38 lpm) (2.3 m³/hr)
	NSF/EPA 40mJ/cm² @ 95% UVT	2 gpm (7 lpm) (0.4 m³/hr)		4.5 gpm (17 lpm) (1.0 m³/hr)		8 gpm (29 lpm) (1.8 m³/hr)
Dimensions	Chamber	43.2 cm x 6.4 cm (17" x 2.5")		56 cm x 6.4 cm (22" x 2.5")		90 cm x 6.4 cm (35" x 2.5")
	Controller 100-250 VAC	18.6 cm x 8.1 cm x 6.4 cm (7.3" x 3.2" x 2.5")		18.6 cm x 8.1 cm x 6.4 cm (7.3" x 3.2" x 2.5")		18.6 cm x 8.1 cm x 6.4 cm (7.3" x 3.2" x 2.5")
	Controller 12 VDC	13.5 cm x 4.3 cm x 5.8 cm (5.3" x 1.7" x 2.3")		13.5 cm x 4.3 cm x 5.8 cm (5.3" x 1.7" x 2.3")		-
Inlet/Outlet Port Size[1]		1/2" MNPT		3/4" MNPT"		3/4" MNPT
Shipping Weight		2.7 kg (6 lbs)		2.7 kg (6 lbs)		4.5 kg (10 lbs)
Electrical	Voltage[2]	100-240 V / 50/60 Hz	12 VDC	100-240 V / 50/60 Hz	12 VDC	100-240 V / 50/60 Hz
	Max. Current	0.6 Amp	1.8 Amp	0.6 Amp	1.8 Amp	0.6 Amp
	Power Consumption	22 W	20 W	30 W	27 W	46 W
	UV lamp Watts	17 W	15 W	25 W	20 W	37 W
Maximum Operating Pressure		125 psi (861 kPa)		125psi (861 kPa)		125 psi (861 kPa)
Minimum Operating Pressure		15 psi (103 kPa)		15psi (103 kPa)		15 psi (103 kPa)
Ambient Water Temperature		2-40 °C (36-104 °F)		2-40 °C (36-104 °F)		2-40 °C (36-104 °F)
UV Lamp Type		Sterilume™-EX (standard-output)		Sterilume™-EX (standard-output)		Sterilume™-EX (standard-output)
UV Chamber Material		304 SS		304 SS		304 SS

[1] Units ending in "/2B" have BSPT connections.
[2] Units ending in "/2" are for 230V applications.

Section 9 Manufacturer's Warranty

Our Commitment

VIQUA is committed to ensuring your experience with our products and organization exceeds your expectations. We have manufactured your UV disinfection system to the highest quality standards and value you as our customer. Should you need any support, or have questions about your system, please contact our Technical Support team at 1.800.265.7246 or technicalsupport@viqua.com and we will be happy to assist you. We sincerely hope you enjoy the benefits of clean, safe drinking water after the installation of your VIQUA disinfection system.

How to Make a Warranty Claim

Note: *To maximise the disinfection performance and reliability of your VIQUA product, the system must be properly sized, installed and maintained. Guidance on the necessary water quality parameters and maintenance requirements can be found in your Owner's Manual.*

In the event that repair or replacement of parts covered by this warranty are required, the process will be handled by your dealer. If you are unsure whether an equipment problem or failure is covered by warranty, contact our Technical Support team at 1.800.265.7246 or e-mail technicalsupport@viqua.com. Our fully trained technicians will help you troubleshoot the problem and identify a solution. Please have available the model number (system type), the date of purchase, the name of the dealer from whom you purchased your VIQUA product ("the source dealer"), as well as a description of the problem you are experiencing. To establish proof of purchase when making a warranty claim, you will either need your original invoice, or have previously completed and returned your product registration card via mail or online.

Specific Warranty Coverage

Warranty coverage is specific to the VIQUA range of products. Warranty coverage is subject to the conditions and limitations outlined under "General Conditions and Limitations".

Ten-Year Limited Warranty for VIQUA UV Chamber

VIQUA warrants the UV chamber on the VIQUA product to be free from defects in material and workmanship for a period of ten (10) years from the date of purchase. During this time, VIQUA will repair or replace, at its option, any defective VIQUA UV chamber. Please return the defective part to your dealer who will process your claim.

Three-Year Limited Warranty for Electrical and Hardware Components

VIQUA warrants the electrical (controller) and hardware components to be free from defects in material and workmanship for a period of three (3) years from the date of purchase. During this time, VIQUA will repair or replace, at its option, any defective parts covered by the warranty. Please return the defective part to your dealer who will process your claim.

One-Year Limited Warranty for UV lamps, Sleeves, and UV Sensors

VIQUA warrants UV lamps, sleeves, and UV sensors to be free from defects in material and workmanship for a period of one (1) year from the date of purchase. During this time, VIQUA will repair or replace, at its option, any defective parts covered by the warranty.Your dealer will process your claim and advise whether the defective item needs to be returned for failure analysis.

Note: *Use only genuine VIQUA replacement lamps and sleeves in your system. Failure to do so may seriously compromise disinfection performance and affect warranty coverage.*

General Conditions and Limitations

None of the above warranties cover damage caused by improper use or maintenance, accidents, acts of God or minor scratches or imperfections that do not materially impair the operation of the product. The warranties also do not cover products that are not installed as outlined in the applicable Owner's Manual.

Parts repaired or replaced under these warranties will be covered under warranty up to the end of the warranty period applicable to the original part.

The above warranties do not include the cost of shipping and handling of returned items.The limited warranties described above are the only warranties applicable to the VIQUA range of products. These limited warranties outline the exclusive remedy for all claims based on a failure of or defect in any of these products, whether the claim is based on contract, tort (including negligence), strict liability or otherwise. These warranties are in lieu of all other warranties whether written, oral, implied or statutory. Without limitation, no warranty of merchantability or of fitness for a particular purpose shall apply to any of these products.

VIQUA does not assume any liability for personal injury or property damage caused by the use or misuse of any of the above products. VIQUA shall not in any event be liable for special, incidental, indirect or consequential damages. VIQUA's liability shall, in all instances, be limited to repair or replacement of the defective product or part and this liability will terminate upon expiration of the applicable warranty period.

Culligan Water

Culligan

CULLIGAN WTR COND OF COLCHESTER, VERMONT
154 BRENTWOOD DR. SUITE 1
COLCHESTER, VT 05446-7989
802-865-0000

INSTALLATION INSTRUCTIONS

SERVICE ADDRESS

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
COUNTY _____
PHONE # _____
WORK # _____ CELL # _____
EMAIL _____
DIRECTIONS: _____

TYPE OF EQUIPMENT

SOFTENER/FILTER: _____
RO/DRINKING WATER: _____
POU: _____ BIG BLUE/OTHER: _____
SIZE: _____ TYPE: _____

GENERAL INFORMATION

BUILDING TYPE:
- ☐ SINGLE FAMILY
- ☐ DUPLEX
- ☐ CONDO
- ☐ APARTMENT
- ☐ BUSINESS
- OTHER: _____

EXISTING PIPE/TUBING TYPE:
- ☐ COPPER
- ☐ CVPC
- ☐ GALVANIZED
- ☐ PEX
- ☐ POLYBUTELENE
- ☐ PVC
- OTHER: _____

PIPE/TUBING DIAMETER:
- ☐ 1/2"
- ☐ 3/4"
- ☐ 1"
- ☐ 1 1/4"
- ☐ 1 1/2"
- ☐ 2"
- OTHER: _____

WATER ANALYSIS:
- GPG _____
- IRON PPM _____
- TDS _____
- PH _____
- H2S _____
- OTHER: _____

WATER SOURCE:
- ☐ MUNICIPAL WATER
- ☐ PRIVATE WELL
- WATER PRESSURE _____

PRE-PLUMB:
- ☐ LOOP VALVE
- ☐ NONE
- ☐ STUBS
- ☐ SWITCH OUT
- OTHER: _____

ELECTRIC TYPE:
- ☐ OUTLET/WALL
- ☐ PULL LIGHT
- OTHER: _____

CUSTOMER TO:
- ☐ INSTALL OUTLET
- CUST. INITIALS: _____

PERMISSION OF YARD SIGN:
- CUST. INITIALS: _____

SOFTENER/FILTER INSTRUCTIONS

LOCATION OF EQUIPMENT:
- BASEMENT:
  - ☐ FINISHED
  - ☐ UNFINISHED
- ☐ CLOSET
- ☐ CRAWL SPACE
- ☐ GARAGE
- ☐ UNDER SINK
- ☐ UTILITY ROOM
- OTHER: _____

GENERAL INFORMATION:
- ☐ REMOVE OLD EQUIP.
- ☐ DISPOSE OLD EQUIP.
- ☐ LANDSCAPE REMOVAL
- ☐ STEPPING STONES
- ☐ TRENCHING: # OF FEET

DRAIN TYPE / DISTANCE:
- FLOOR _____ FT
- P-TRAP (RO ONLY) _____ FT
- SUMP PUMP _____ FT
- WASHER STAND PIPE _____ FT
- WASH TUB _____ FT
- OTHER: _____ FT

HARD LINES:
- ☐ BACK
- ☐ GARAGE
- ☐ HOSE BIBS
- ☐ KITCHEN
- ☐ SIDE
- ☐ SPRINKLER SYSTEM
- OTHER: _____

UNIT SETTINGS:
- PINS _____
- GALLONS _____
- REGEN TIME _____
- REGEN FREQUENCY _____

SALT INFORMATION:
- ☐ CONTRACT
- ☐ PRIVILEGE PROGRAM
- SALT TYPE: _____
- # OF BAGS _____
- # OF OCCUPANTS _____

DRINKING WATER FILTRATION

LOCATION OF EQUIPMENT:
- BASEMENT:
  - ☐ FINISHED
  - ☐ UNFINISHED
- ☐ CLOSET
- ☐ CRAWL SPACE
- ☐ GARAGE
- ☐ UNDER SINK
- ☐ UTILITY ROOM
- OTHER: _____

DRAIN TYPE / DISTANCE:
- FLOOR _____ FT
- P-TRAP (RO ONLY) _____ FT
- SUMP PUMP _____ FT
- WASHER STAND PIPE _____ FT
- WASH TUB _____ FT
- OTHER: _____ FT

FAUCET TYPE:
- TYPE: _____
- COLOR: _____
- LOCATION:
  - ☐ LEFT
  - ☐ RIGHT
- DRILL HOLE:
  - ☐ YES
  - ☐ NO

SINK TYPE:
- ☐ GRANITE
- ☐ PORCELAIN
- ☐ SOLID SURFACES
- ☐ STAINLESS
- OTHER: _____

PUMP:
- ☐ BOOSTER PUMP
- ☐ PREMEATE PUMP
- OTHER: _____

ICE MAKER:
- TYPE: _____

BOTTLE-LESS COOLERS/ POU

LOCATION OF EQUIPMENT:
- BASEMENT
- ☐ LUNCH/BREAK ROOM
- ☐ WAREHOUSE
- ☐ FRONT LOBBY
- ☐ OFFICE AREA
- ☐ LOADING DOCK AREA
- ☐ GYM
- OTHER: _____

GENERAL INFORMATION:
- DROP CEILING RUN:
  - ☐ YES
  - ☐ NO
- CEILING HEIGHT _____ FT
- PSI RANGE _____
- ☐ FAUCET
- ☐ ICEMAKER
- ☐ INSTA-HOT
- OTHER: _____

DRAIN TYPE / DISTANCE:
- FLOOR _____ FT
- P-TRAP (RO ONLY) _____ FT
- SUMP PUMP _____ FT
- WASHER STAND PIPE _____ FT
- WASH TUB _____ FT
- OTHER: _____ FT

DISTANCE FROM COOLER:
- WATER SUPPLY _____ FT
- ELECTRICAL OUTLET _____ FT
- TUBING NEEDED _____ FT
- # OF DOORWAY OPENINGS IN
- SUPPLY/DRAIN RUN _____

Customer is advised that Culligan assumes no liability from damage if refrigerator must be moved: _____ (Cust. Initials)

Icemaker connection to refrigerator must be compatible with Culligan's standard plumbing adapters: _____ (Cust. Initials)

ADDITIONAL INSTALLATION CHARGES

1. PIPE/ TUBING: _____ (type of pipe/tubing) _____ X _____ (# of feet) _____ (cost/ft) = $ _____
2. EXTRA BYPASSES: _____ (# of bypasses) X _____ (cost/bypass) = $ _____
3. REFRIGERATOR HOOK-UP: = $ _____
4. GRANITE SINK DRILLING: = $ _____
5. OTHER: _____ = $ _____

All information noted on this Installation Instructions document has been thoroughly explained to my satisfaction and is accurate to the best of my knowledge.

Customer's signature _____ Date _____
Install scheduled for: _____
Install completed date: _____ Customer Initials: _____ FST Initials: _____
Sales person signature _____ Date _____
Balance due upon completion of installation is: $ _____
Pick-up Completion Certificate: yes ☐ no ☐

INSTALLATION DIAGRAM

NOTE: Non-basic installs, attach additional plumbing diagram and cost sheet

Culligan Water

Culligan Water
154 BRENTWOOD DR, SUITE 1
COLCHESTER, VT 05446
802-865-0000

Post Installation Inspection

Customer Name: _____ Account #_____

Address: _____

City: _____

Phone #_____

1. Inspect all plumbing and components meet system design ☐
2. Record meter reading ☐ _____
3. Record Serial # from UV system ☐ _____
4. Take photos of the installation ☐
5. Address any questions or concerns the customer may have ☐
6. Verify No leaks ☐
7. Verify & note any existing integrity with existing plumbing ☐
8. Verify customers contact information ☐
9. Complete the final commissioning form and submit to main office ☐

Additional Comments:

_____

_____

_____

_____ _____

Technician's Signature Date

Office: Confirm with State DOC- Date of Completion: _____

Culligan Water

Culligan Water

www.Service@Culligan4u.com 800-400-0099

Culligan POET De- Commissioning Process 1054

Customer Name: _____

Address: _____

City_____State_____

Account #:_____ Work Order #_____Service Date: _____

Meter Reading_____

Company/Responsible Party: _____

Equipment Type: 1 ☐ 2 ☐ - 10 x 54 -2 cu. ft AW600

Total cubic ft. Generated _____ cu. ft

Super Sak- Carbon Acceptance Number

CAN#: 6560N

Calgon Carbon Corp

Date Disposed:_____/_____/_____

Technician: _____