2018 PERIODIC REVIEW REPORT

Brewster Village Well Field
Site No. 3-40-012

Village of Brewster
Putnam County, New York

Prepared for:
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Abbreviations and Acronyms

µg/L	micrograms per liter
AC	alternating current
AES	Adirondack Environmental Services
ARAR	applicable or relevant and appropriate standards
ASP	analytical services protocols
AWQS	ambient water quality standards
Aztech	Aztech Environmental Technologies
CDM Smith	Camp Dresser McKee & Smith
COC	contaminant of concern
DC	direct current
DCE	cis-1,2-dichloroethylene
DEC	decrease
DER	Department of Environmental Remediation
DMM	Department of Materials Management
DOW	Division of Water
DUP	duplicate
EC/IC	engineering and institutional controls
ESD	explanation of significant differences
EWP	excavation work plan
FAP	field activities plan
ft. bgs	feet below ground surface
gpm	gallons per minute
GWTS	groundwater treatment system
INC	increase
lbs.	pounds
LDPE	low-density polyethylene
MCL	maximum contaminant level
MTBE	methyl tert-butyl ether
ND	non-detect
NYCDEP	New York City Department of Environmental Protection
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
O&M	operations and maintenance
OU	operable unit
P&ID	piping and instrumentation diagram
Pace	Pace Analytical Services
PCE	tetrachloroethylene (tetrachloroethene)
PID	photoionization detector
PLC	programmable logic controller
POX	purgeable halocarbons
PM	project manager
PRR	period review report

PVC	polyvinyl chloride
QA/QC	quality assurance quality control
QAPP	quality assurance project plan
RI/FS	remedial investigation feasibility study
ROD	record of decision
RSO	remedial system optimization
SMP	site management plan
SSDS	sub-slab depressurization system
SVE	soil vapor extraction
TCE	trichloroethylene (trichloroethene)
TOGS 1.1.1 GA	New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series Ambient Water Quality Standards and Guidance Values for groundwater
US EPA	United States Environmental Protection Agency
VAC	voltage of alternating current
VC	vinyl chloride
VDC	voltage of direct current
VFD	variable frequency drive
VOC	volatile organic compound

Section 1
Executive Summary

This periodic review report (PRR) was prepared by Camp Dresser McKee & Smith (CDM Smith) for the New York State Department of Environmental Conservation (NYSDEC) under Work Assignment DCWA No. 8 of CDM Smith's standby contract D007621. The NYSDEC assigned the Site identification number 3-40-012. This PRR covers the operation and maintenance of operable unit (OU) 1 between January and December 2018.

1.1 Site Summary

The Brewster Well Field Site (the "Site") is approximately three-quarters of a mile east of the Village of Brewster in the Town of Southeast, Putnam County, New York.

In 1978, the initial contamination discovery indicated chlorinated solvent contamination in the Brewster Well Field. The primary contaminants of concern (COCs) were tetrachloroethylene (PCE), trichloroethylene (TCE), and cis-1,2-dichloroethylene (DCE).

The source of the contamination was traced to Alben Dry Cleaners, formerly located at the current Subaru dealership property. The dry well was used by the dry cleaners from the initial operation in 1965 until 1983. In 1988, a Record of Decision (ROD) was signed to address the source material. The selected remedy called for the excavation, removal, and off-site incineration of the contents of the dry well and its surrounding contaminated soils. This remedy was completed by the United States Environmental Protection Agency (US EPA) in 1991.

A packed tower air stripper was installed at the village well field in 1984 to treat the Village's water supply. In 1986, a ROD was signed to address the groundwater contamination. The selected remedy required continued operation of the existing air stripping system at the well field and the design and construction of a groundwater management system that would contain the plume of contamination and restore groundwater quality near the site by treating the extracted groundwater with a new air stripper.

The groundwater management system was installed by the US EPA in 1991 northeast of the former Brady Stannard dealership to treat the volatile organic compound (VOC) plume. This operated until its replacement by the US EPA in 2007 with the groundwater treatment system (GWTS) at the Subaru dealership. The 1991 groundwater management system was demolished in 2012.

Soil gas samples were collected beneath the slab of the Subaru dealership that indicated elevated VOC concentrations. A sub-slab depressurization system was installed at the Subaru dealership by the US EPA in 2007 to address potential indoor air contamination from the VOC contamination under the building. Further investigation at the dealership indicated that there was a small volume of contaminated soil under the building. The sub-slab depressurization system was enhanced to target the contaminated soil. The concentration of soil samples collected under the building in 2011 were below the NYSDEC soil cleanup objectives. The sub-slab depressurization

system remains in operation due to residual contamination in the groundwater beneath the building.

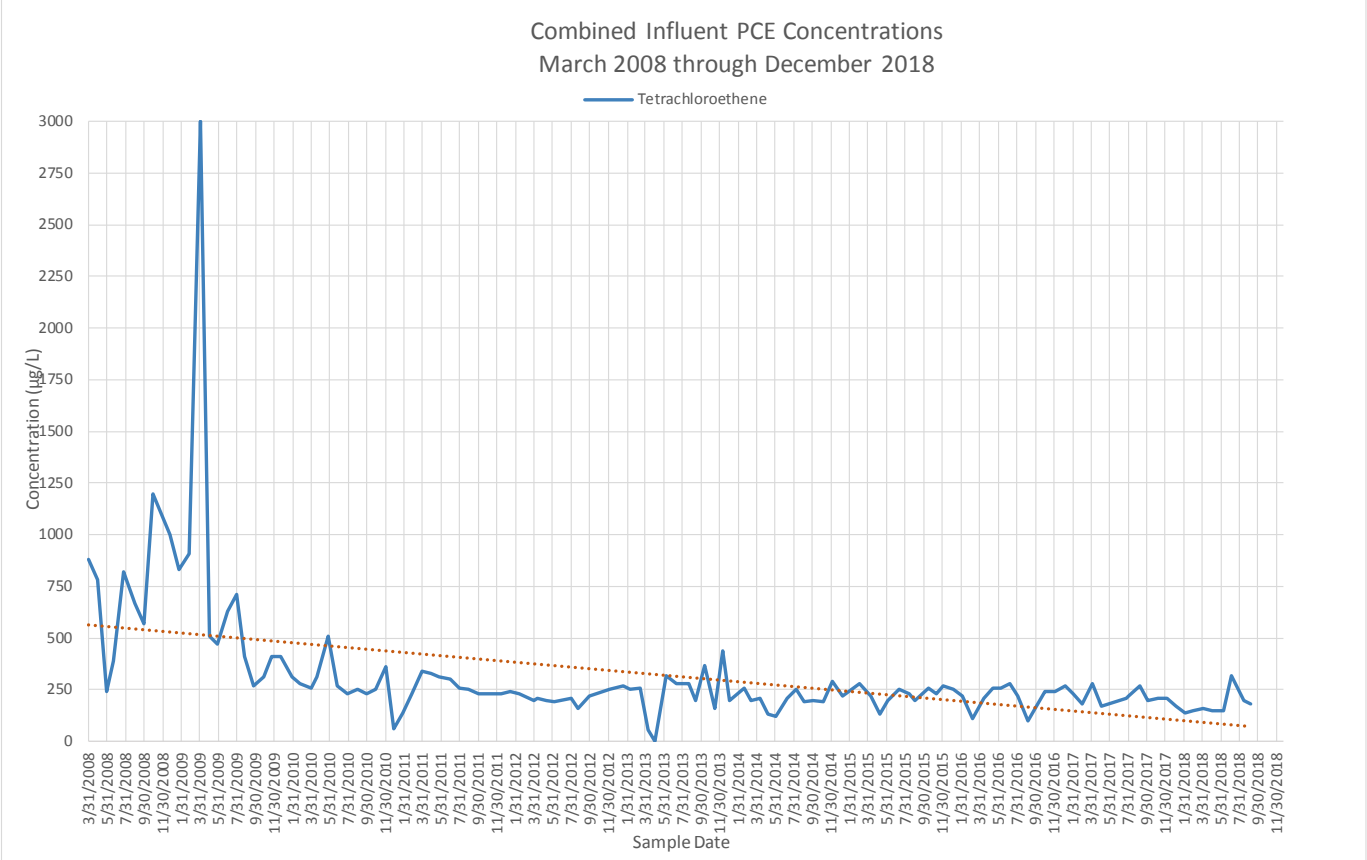
1.2 Remedial Program Effectiveness

The GWTS treated approximately 8,593,950 gallons of water between January 5 and December 31, 2018. The GWTS average combined influent PCE concentration was 223 µg/L in 2018. The GWTS removed a total of 11.91 pounds (lbs.) of VOCs in 2018.

CDM Smith collected groundwater samples from 22 groundwater monitoring wells in 2018. Eleven (11) of the wells sampled in 2018 reported concentrations of PCE above the NYSDEC Ambient Water Quality Standard (AWQS) Guidance Value of 5 µg/L. Three (3) groundwater monitoring wells reported an increase in PCE concentration above the AWQS in 2018.

The remedial goals set forth in the ROD are being achieved through a reduction in groundwater contaminant concentrations at the Brewster Village Well Field, the former Brady Stannard dealership, and the Subaru dealership (formerly Smith-Cairns Subaru). The GWTS effluent continues to meet SPDES requirements. However, the combined influent PCE concentration has plateaued, fluctuating just above and below 250 µg/L since 2010 as shown in Figure 1-1 below.

Figure 1-1 GWTS Combined Influent PCE Concentrations, March 2008 through December 2018



The municipal water treatment system, owned and monitored by the Village of Brewster on a quarterly basis between January and December 2018. Prior to 2018 there were no detections of

PCE, TCE, DCE, or Chloroform above the NYSDEC Division of Water (DOW) Technical Operational Guidance Series AWQS and Guidance Values for groundwater (TOGS 1.1.1 GA) limits. However, detections were observed for Chloroform in 2018 above the AWQS of 7. It is also important to note that detections for VOCs including PCE were observed above detection limits after the air stripper on the village water system; although concentrations were below AWQS with the exception of Chloroform at 7.1 ug/l. The village drinking water analytical trends are displayed in **Appendix F**.

In addition to the annual monitoring, CDM Smith collected samples from ten wells on November 6, 2018 and November 7, 2018 for emerging contaminants, PFAS and 1,4-dioxane. Sample results were provided to the NYSDEC and uploaded into the EQuIS database.

1.3 Compliance

The GWTS was sampled monthly in 2018. CDM Smith performed groundwater monitoring well gauging and sampling in May 2018. The sub-slab depressurization system (SSDS) were also inspected for operability in May 2018.

To improve compliance with the Site Management Plan (SMP), CDM Smith developed a draft project calendar (**Figure 11**). The calendar includes operations and maintenance (O&M) and monitoring activities as required in the SMP. Upon approval by the NYSDEC PM, the final calendar will be submitted to the client and subcontractors. To improve O&M compliance, a draft O&M manual for the GWTS was created by Aztech Environmental Technologies (Aztech). This manual contains cut sheets and suggested maintenance for the installed equipment.

1.4 Recommendations

Since the combined influent PCE concentration has not decreased since 2010, and the GWTS has been in operation for ten years, CDM Smith recommends further investigation and evaluation of potential methods to reduce the contaminant source and plume under or near the Subaru Dealership that continues to source the groundwater This may include further investigation of a potential high VOC source under the Subaru dealership.

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Section 2
Site Overview

2.1 Site Location and Features

The Site is located on the northern and southern banks of the East Branch Croton River (the "River") in the Brewster Well Field, and on the property of the former Brady Stannard and Subaru (former Alben Dry Cleaners) dealerships along Old Route 22, south of the Croton River (**Figure 1**). The Site is approximately three-quarters of a mile east of the Village of Brewster in the Town of Southeast, Putnam County, New York. The land to the north and west of the site is largely residential while most of the land south of the site is occupied by commercial or light industrial facilities.

The subsurface hydrogeology consists of unconsolidated sediments overlying bedrock. Groundwater wells DGC1D, 2D, 5I, 7D, 7I, 10D, 10I, 11I, 14D, and 15D are installed within bedrock. All intermediate wells installed in bedrock are screened above it. Laboratory analysis of groundwater sampled from the bedrock wells between 1986 and 2018 reported no detections of COCs except in May 2017, well DGC7I reported a detection of 60.8 ppm of DCE.

All recovery wells are screened in the unconsolidated overburden. Groundwater flow on the south side of the East Branch of the Croton River (from source area) is to the north. Under natural conditions (i.e. no well field), groundwater would discharge to the river from both the north and south. However, due to the historic pumping at the Village's well field north of the river, groundwater flows beneath the river from the south thus drawing contamination from the Site towards the Brewster Well Field.

The East Branch of the Croton River flows southwest and contributes to the Croton Falls Reservoir approximately 3.5 miles downstream. The East Branch of the Croton River is also impounded approximately 3,000 feet upstream to form the East Branch Croton Reservoir.

2.2 Site History

In 1978, the Brewster Well Field, which supplies water to approximately 2,200 people, was found to be contaminated with halogenated VOCs that included PCE, TCE and DCE. Alben Dry Cleaners was determined as the source of the contamination. The Site was placed on the National Priorities List (NPL) in December 1982. Under a cooperative agreement with the US EPA Office of Research and Development, a packed air stripper was installed in 1984 at the Village's well field to provide treatment of the water supply.

After completing a remedial investigation/feasibility study (RI/FS), the OU-1 ROD was signed in 1986. The selected remedy included:

- Continued operation (by the Village of Brewster) of the existing air stripping system at the well field north of the River to provide the Village a water supply that exceeds applicable or relevant and appropriate standards (ARARs); and

- The design and construction of a GWTS to contain the groundwater contaminant plume, restore groundwater quality through the extraction, treatment and re-injection of the treated water, and to restore groundwater quality south of the East Branch Croton River.

The ROD identified ARARs for the Site to include US EPA's Maximum Contaminant Levels (MCLs), and New York State's groundwater quality standards established pursuant to the Clean Water Act, as follows:

- US EPA Safe Drinking Water Act limit of 5 µg/L for TCE;
- NYS Groundwater Standard of 10 µg/L for TCE.

The ROD also called for an RI/FS to identify and address the source(s) of groundwater contamination. A supplemental RI/FS was completed in July 1988. Based upon the results of soil and groundwater sampling activities, a dry well adjacent to Alben Dry Cleaners was identified as a significant source of contamination. In September 1988, a second operable unit (OU-2) ROD was issued by US EPA. This "source control" ROD called for the excavation and off-site disposal of the dry well, its contents, and surrounding contaminated soils. This OU-2 remedial action was completed by Foster Wheeler Environmental in September 1991.

Because of the potential for migration of volatile chemicals from the subsurface into overlying buildings at properties near the groundwater plume, soil gas samples were collected under the slab of the Subaru dealership in January 2006. Elevated VOC concentrations led to the installation of a sub-slab depressurization system (SSDS) beneath the dealership in January 2007.

During the Five-Year Review conducted in 2007, it was determined that the original GWTS was not fully capturing a plume under the Subaru dealership (former location of the Alben Dry Cleaners). Thus, a new treatment system with three extraction wells and a stacked tray air stripper was installed at the Subaru dealership in 2007 by Aztech under contract with the US EPA.

Aztech installed a variable frequency drive (VFD) on the air stripper blower of the GWTS in July 2008. The addition of the VFD reduced power consumption by running the blower at a lower speed while achieving the same removal results and meeting discharge limits. Aztech also installed a ProControl system on the GWTS to allow for remote system monitoring. Remote access decreased the frequency of site visits, therefore reducing man-hours and fuel consumption. Both modifications were in support of the NYSDEC DER-31/Green Remediation, resulting in cost and greenhouse gas emission reduction.

An investigation of the soil beneath the Subaru dealership was completed in January 2009. The results indicated the presence of a small volume of contaminated soil. In October 2009, the US EPA issued an Explanation of Significant Differences (ESD) for the Site to address the soil vapor intrusion and additional source material found beneath the Subaru dealership. In addition, the ESD incorporated institutional controls into the Site remedy to prevent exposure to contaminated groundwater and soils where the remedies were conducted. The institutional controls added to the remedy include the Putnam County Department of Health's restrictions related to the installation of wells and the requirements of notifications to the planning board and the Subaru dealership. The sub-slab depressurization system at the Subaru dealership was enhanced with additional piping and a new blower to target the contaminated soil in March 2010.

The new piping was installed to reach the area of greatest contamination. The new blower allowed for greater VOC removal from the area. The analytical results of soil sampling in July 2011 indicated that the soil under the building had met the NSYDEC soil cleanup objectives. The sub-slab depressurization system O&M is currently implemented by NYSDEC.

A collapsed underground storage tank caused a historical spill of petroleum on the former Brady Stannard dealership property. Residual petroleum contamination associated with this spill remains at the Site; however, this spill is not an area of concern (AOC) related to the Site and is not discussed further in this PRR. Since May 2017, a large volume of excavated soil is stored on the property. It is uncertain whether the soil vapor extraction (SVE) system and the contaminated soil associated with the spill were removed. Figure 2 shows an SVE system to the east of the Brady Stannard dealership. This property is a spill site registered with NYSDEC under a different contract.

The 1991 groundwater management system was demolished and removed from the site by a US EPA contractor in 2012. The associated extraction wells were abandoned; however, the injection wells remain on-site.

Extraction well ERTEW6 was abandoned and re-installed in the same location in June 2013. The new extraction well was installed to 35 feet below ground surface (bgs) and constructed of 6-inch diameter stainless steel casing and screen to prevent corrosion.

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Section 3

Operation and Maintenance

This section summarizes the O&M tasks completed during the reporting period, component performance, deficiencies (if applicable), and established conclusions regarding site O&M.

Historically, three treatment systems have been in use at the Site since its inception in 1984. The GWTS currently in operation was constructed in 2007.

3.1 Groundwater Treatment System O&M Plan

3.1.1 Groundwater Treatment System Configuration

The GWTS currently in operation consists of the following primary elements:

- One (1) ProControl A1 (Cellular) EOS Model A1 programmable logic controller (PLC) main system controller;
- One (1) uninterruptible power supply/surge suppressor unit;
- Three (3) MEAS KPSI 700 submersible hydrostatic level transducers (one for each extraction well);
- One (1) OMEGA miniature temperature transmitter;
- One (1) air stripper analog pressure sensor;
- One (1) Environmental Systems Inc. EZ-Tray 16.6SS 120 gpm/850 cfm air stripper;
- Three (3) 4" Grundfos SP 25S 25 gpm pumps (one for each extraction well);
- Three (3) 4" 1hp, single-phase, 2-wire motors
- One (1) air stripper sump;
- Three (3) Signet 2536 Rotor-X Paddlewheel flow sensors (one for each extraction well);
- Four (4) Signet 8550 flow transmitters (one for each extraction well and one for combined influent);
- One (1) New York Blower Company air stripper blower;
- One (1) Cutler-Hammer Model CH30B3200R, 200A Main, 3 Phase, 120/208V 30 Space 3R circuit breaker panel;
- One (1) Hubbell-Weigmann Model N12302408 MCP enclosure with backplane;
- One (1) 5 volts of direct current (VDC) power supply for digital inputs;

- One (1) 24 VDC power supply for analog sensors;
- One (1) Dura-Pulse 240V 10 HP VFD (for air stripper blower);
- And one (1) metal system enclosure complete with TriCorp 240/208V, 4,8 kw, 15,086 BtuH electric utility heater, ventilation fan, and overhead fluorescent light fixture.

The installed equipment, system functions, programming set-up, piping and instrumentation diagram (P&ID), and product cut sheets for the GWTS are in the draft Operation and Maintenance Manual 2016 (Aztech, 2016), attached as Appendix G to Appendix J to the Site Management Plan. This manual is a draft update to the original manual created in 2010 that covered the PLC components and functions. Further clarifications of system parts and O&M requirements shall be submitted upon the approval of the draft Operation and Maintenance Manual.

3.1.2 Groundwater Treatment System O&M Procedures

The groundwater treatment system is inspected and sampled monthly by Aztech. Equipment failures or damage, if applicable, are repaired by Aztech as soon as possible and reported to CDM Smith and the NYSDEC.

Routine maintenance is conducted on the groundwater treatment system to assure that all system elements are running at maximum efficiency. The air stripper trays are scraped and washed using a dilute muriatic acid solution to remove and/or reduce scale build-up. This maintenance was recommended due to scaling historically seen during GWTS operation. The trays are cleaned annually. Additional cleaning is only necessary if the backpressure on the system increases significantly or if the air stripper is not effectively removing VOCs from the groundwater per increased VOC concentration reported in the GWTS effluent samples.

The flow meter pin wheels are removed and cleaned six times a year to remove fouling caused by the groundwater's iron concentration. This cleaning reduces the potential for the meters to read inaccurate flow volumes.

The VFD filters are changed as-needed to prevent the tripping of control equipment due to interference from the high switching frequency. The filter reduces the noise in the output signal. Abnormal alternating current (AC) voltage (greater than 4 volts of alternating current (VAC)) on the direct current (DC) bus or fluctuations in DC bus voltage measurements indicate that a capacitor may be failing. The filter is changed when these characteristics are shown during voltage measurements when the VFD is in operation.

The Site is weed whacked as-needed to allow for access to the treatment system trailer. The area is prone to poison ivy and prickly weeds. Routine maintenance of the vegetation allows for compliance with the site health and safety plan.

3.2 Groundwater Monitoring Well O&M Plan

The project site contains approximately 83 groundwater monitoring wells. CDM Smith inspects the wells that are still monitored (under the direction of NYSDEC) a minimum of once per year for damage.

The inspection includes checking the wells' inner and outer casing structure, recording the presence of well caps or plugs, and any features or damage that may impact the functionality of the wells, i.e. flush mounted road boxes etc.

CDM Smith reports groundwater well concerns to NYSDEC and Aztech. If repairs can be made during the site visit, CDM Smith purchases the new parts and completes the repairs. Otherwise, Aztech mobilizes to the site to complete the monitoring well repairs, typically during monthly GWTS O&M visits.

3.3 SSDS O&M Plan

Brewster Subaru contains five (5) SSDS on site. CDM Smith inspects each system annually for operability. The inspection includes logging the condition of all fans, gauges, piping, fittings, and building floors and walls. CDM Smith logs the gauge readings for each fan and takes photographs to include in the report. The inspection data is recorded in the Periodic Operations Visit Form. The forms are forwarded to the NYSDEC site project manager (PM) and the Statewide SSDS Inspection and Maintenance Contract manager. SSDS O&M is completed by the Statewide SSDS contractor as necessary based on the results of the annual inspection. A sample Periodic Operations Visit Form is provided in the SMP (Appendix J). The forms completed during the 2018 inspection are in **Appendix K**.

3.4 Operation and Maintenance Compliance

The O&M activities for the Site as specified in the ROD are summarized in Table 3-1 below. The right column contains the dates of compliance for each activity during the 2018 reporting period.

Table 3-1 2018 O&M Activity Compliance

Activity	Required Frequency (X)			2018 Compliance Dates
	Monthly	Annually	As Needed	
Air Stripper Tray Cleaning (GWTS)		X	X	January, March,
Flow Meter Wheel Cleaning (GWTS)	X		X	January, March, April, June, July, August, October, December
VFD Filter Change (GWTS)			X	December
Weed Whack Site (GWTS)			X	April, May, June, July, October
Groundwater Well Inspection		X	X	May
SSDS Inspection		X		May
Site-Wide Inspection		X		May

All O&M activities were completed as outlined in Section 3.1.2 except for flow meter wheel cleaning. Each O&M activity performed in 2018 is summarized in Section 3.5.

3.5 Evaluation of O&M Activities

3.5.1 Groundwater Treatment System O&M Activities

During 2018, Aztech performed monthly O&M visits to the groundwater treatment system to inspect the equipment for obvious leaks, corrosion, fouling of the air stripper trays, pressure loss in the blower, and other potential issues. During this reporting period, the flow meter wheels were cleaned eight times, the VFD filters were changed once, grounds maintenance was performed five times, the air stripper trays were cleaned one time, and the exterior inlet screens were cleaned seven times.

Additional general system maintenance during this reporting period is included in Table 3-2 below.

Table 3-2 2018 Groundwater Treatment System Maintenance

Date	Maintenance
1/31/2018	Replaced gaskets on air stripper doors for proper seal
2/13/2018	Troubleshoot conduit integrity/ signal circuitry issues at ERTEW5
3/1/2018	Replaced breaker for ERTEW6
5/2/2018	Repair screen on air stripper intake
6/14/2018	Removed ProControl and modem (no connectivity). Replaced with new modem
7/5/2018	System down to prevent further leaking from air stripper
8/15/2018	Replaced breaker for ERTEW5 and ERTEW7; Cleaned air stripper gaskets and replaced metal tie downs
10/23/2018	ERTEW5 not reporting flow on arrival. Cleaned and operational

3.5.1.1 System Power O&M

The system experienced few power outages during 2018 that impacted the overall run time and treatment volume. Table 3-3 outlines the system shutdown dates and explanations with further details provided in this section.

Table 3-3 2018 Groundwater Treatment System Power Failure

Date	Explanation
6/14/2018	System down on arrival due to ProControl maintenance. Restarted
7/5/2018	System down on arrival. Restarted only to sample, then shut down to avoid flooding.
9/8/2018	System down on arrival. Restarted.
11/9/2018	System down on arrival. Restarted.

The system was down on arrival on June 14, July 5, September 8 and November 9, 2018. The system returned to normal operation after it was manually reset.

The system was down on arrival due to a problem with the ERTEW5 conduit and circuitry on February 13. Aztech performed troubleshooting on the conduit and circuitry and manually restarted the system.

Aztech performed troubleshooting on the air stripper that was leaking on July 5. The system was down on arrival due to power issues. The system was left off to prevent flooding until air stripper maintenance and cleaning could be completed. Aztech returned to the site on August 15 to replace the breakers for ERTEW5 and ERTEW7. During monthly sampling by Aztech on September 8, the system was down on arrival, and when the ProControl was reset to battery back-up, the VFD was tripped due to a power overload. The system was restarted and returned to normal operation.

3.5.1.2 Fax Reports O&M

The GWTS Pro Control system was designed to automatically generate a daily status report, which includes system status, air pressure and temperature, as well as flow rates and cumulative flow for extraction wells ERTEW5, ERTEW6, and ERTEW7. These status reports were emailed daily by the system to CDM Smith and Aztech. Since September 2014, communication issues with the Pro Control system prevent the system from emailing daily system reports. The issue was resolved with assistance from Verizon in May 2015 and reports were received between May 1 and June 21, 2015. However, the reports continue to fail from June 21, 2015 to present day, even after modem replacement on July 9, 2015. Aztech reported flow rates for 2018 through the O&M logs through December 31, 2018.

3.5.2 Groundwater Monitoring Well O&M Activities

CDM Smith maintained compliance with the monitoring well O&M plan in 2018. During the May 2018 annual site inspection, well gauging, and sampling, CDM Smith identified damage to the wells as shown in Table 3-4. These maintenance concerns are also listed under the *Action Items* column in Tables 4A through 4C in **Appendix A**.

Table 3-4 2018 Groundwater Well Damage

Monitoring Well ID	Description of Damage
DGC-18S	Cannot open, rusted bolt through lock hole
DGC-1I	Concrete pad cracked at grade
DGC-1S	Outer cap broken
DGC-11I	Inner casing bent
DGC-11A	Inner casing bent
TH-6	Bent

TIC = top of inner casing

The flush mount covers for wells ERT8I, 8S, and 8D were reported broken after each recent inspection. The ERT-8 well cluster is an area of high vehicular traffic for the local department of transportation. Their fleet includes large machinery and dump trucks. It was recommended that an H-20 (minimum) rated cover be installed over these wells to prevent the flush mount covers from breaking.

The DGC14 well cluster is located behind Brewster Subaru, adjacent to where the business keeps its dumpster. CDM Smith recommends installing bollards around the well cluster to protect them from further damage.

All well concerns were reported to NYSDEC and Aztech. On June 9, 2017 Aztech reviewed the repairs to be completed to obtain a cost estimate from outside contractors. As of December 31, 2017, no estimates have been submitted to complete the well repairs for issues identified during the May 2017 site inspection.

CDM Smith removed all tubing present in the groundwater wells upon arrival in November 2018, in preparation for emergent contaminate sampling of PFAS/ 1,4-Dioxane sampling. New high-density polyethylene (HDPE) tubing was used for low flow groundwater pumping and sampling and removed from the wells following sample collection.

3.5.3 SSDS System O&M Activities

CDM Smith inspected the SSDS systems during annual groundwater sampling in May ,2018. All five mitigation fans on site were operating per visual and auditory inspection. No system issues or damage was reported. CDM Smith recorded the May 2017 inspection results in Periodic Operations Visit Forms (**Appendix K**) and submitted them to NYSDEC's Statewide SSDS Inspection and Maintenance Contract manager.

Section 4

Monitoring Plan

This PRR assesses whether the Site has been managed as set forth in the ROD (EPA 1986), ESD (US EPA 2009), EC/IC Plan (CDM Smith 2016), and SMP (CDM Smith 2017).

4.1 Monitoring Plan Requirements

4.1.1 Groundwater Treatment System Monitoring

The ProControl software installed on the GWTS is designed to submit daily faxes reporting the flow and total volume treated for each extraction well. The fax system is out of service, therefore Aztech reports these parameters through remote access via email or during site O&M readings to CDM Smith to be maintained in project records.

Aztech records the system parameters onsite onto a System Check Log Sheet (**Appendix G**) during monthly O&M activities. Aztech also samples each extraction well, the combined influent, and the treated effluent from the groundwater treatment system. The samples are delivered to Adirondack Environmental Services (AES) in Albany, NY for chemical analysis. All samples are analyzed by US EPA Method E601 Purgeable Halocarbons (POX). AES submits the reports to CDM Smith by email for review.

4.1.2 Groundwater Well Monitoring

4.1.2.1 Groundwater Monitoring Well Sampling

A network of 83 monitoring wells was installed on-site to monitor up- and down-gradient groundwater conditions. The wells were installed during multiple investigations north and south of the Croton River. Most of the wells were named in association with their depth; shallow (S) (2-17 ft. bgs), intermediate (I) (13-40 ft. bgs), and deep (D) (41-105 ft. bgs).

Approximately 35 wells at the Site were monitored annually for the first five years of the SMP. The frequency after the initial five-year period was determined by NYSDEC and remains unchanged. CDM Smith collects the groundwater samples using low flow sampling techniques until water quality parameters stabilize. The samples in 2018 were submitted to Test America for analysis by US EPA Method 8260 + Methyl tert-butyl ether (MTBE) VOCs by Gas Chromatography/Mass Spectrometry (GC/MS).

Analytical results are returned to CDM Smith in NYSDEC Analytical Services Protocols (ASP) Category B format. This deliverable is submitted to, a third-party data validator. The validation is completed in accordance with NYSDEC Data Usability Summary Report (DUSR) guidance. The validated analytical results are compared to) NYSDEC TOGS 1.1.1 and the NYS Drinking Water Standard (DWS). The data validator report is still pending due to issues with the validator.

4.1.2.2 Groundwater Well Water Level Monitoring

CDM Smith gauges the groundwater monitoring wells annually. The depth to water within each well to be sampled is measured by a water level probe from the top of well casing. All water level

data is recorded in the field book. CDM Smith uses the recorded water depths to estimate the direction of groundwater flow across the Site.

4.2 Monitoring Plan Compliance

The following table confirms compliance in accordance with the monitoring plan.

Table 4-1 2018 Monitoring Plan Compliance

Activity	Required Frequency (X)		Compliance Dates
	Monthly	Annually	
GWTS System Sampling	X		January, February, April, May, June, July, August, September, October, November, December
Groundwater Monitoring Well Sampling		X	May 2018
Water Level Monitoring		X	May 2018

The GWTS has complied with Effluent Limitations and Monitoring Requirements set by NYSDEC DOW and enforced by NYSDEC Division of Environmental Remediation (DER) since its startup in March 2008. A new Effluent Limitations and Monitoring Requirements Memorandum was issued by NYSDEC DOW on August 6, 2013 (**Appendix B**). The limitations and monitoring requirements were unchanged from the previous memorandum at 10 µg/L for the COCs (PCE, TCE, DCE, and Vinyl Chloride).

In May 2018, CDM Smith sampled 19 groundwater monitoring wells by low-flow method and 3 GWTS extraction well ports in compliance with the Field Activities Plan (FAP). All samples were shipped to Test America for VOC analysis.

CDM Smith measured water levels in 54 wells in May 2018. Six wells (DGC-11S, ERT-8S, ERT-8I, ERT-10I, ERT-10D, TH-13) were not gauged because of well damage or no access. Additionally, well DGC7D was not gauged because it is artesian. CDM Smith measured the depth to well bottom and conducted photoionization detector (PID) readings of the well headspace where inner caps were in-place upon arrival. All results were recorded in the field books (**Appendix L**).

4.3 Evaluation of Monitoring Activities

4.3.1 Groundwater Treatment Plant Sampling

4.3.1.1 Pumping Rates

The GWTS ProControl system automatically records pumping rates for each extraction well. The system measures instantaneous pumping rates in gallons per minute (gpm) as well as cumulative pumping volumes. The combined influent flowmeter is broken, therefore the total combined volume pumped by the system is later calculated by adding the volumes from the three extraction wells. Pumping volumes and other information collected on the GWTS is reported in **Appendix A** (Tables 1 through 3).

The system pumped and treated approximately 167,628,675 gallons of water between February 29, 2008 and December 31, 2018. Well ERTEW5 pumped at an average rate of 9 gpm between January 5 and December 31, 2018. Wells ERTEW6 and ERTEW7 pumped at average rates of 11 and 10 gpm, respectively in 2018.

Well ERTEW7 pumped 3,484,889 gallons of groundwater between January 5 and December 31, 2018. Wells ERTEW5 and ERTEW6 pumped 1,586,985 and 3,522,076 gallons, respectively, in 2018.

4.3.1.2 Groundwater Treatment System Analytical

The 2018 analytical data from the GWTS sampling is summarized in Table 4-2. The 2017 values are shown to serve as a comparison.

Table 4-2 GWTS Analytical Summary 2017 and 2018 COC Concentration Averages

Sample Location	2017 Average Concentration (µg/L)				2018 Average Concentration (µg/L)			
	DCE	TCE	PCE	VC	DCE	TCE	PCE	VC
ERTEW5	15	<10	**723**	<10	19.1	<10	**692.5**	<10
ERTEW6	<10	<10	111	<10	4.1	2.2	34.5	ND
ERTEW7	16	<10	41	<10	10.5	5.6	22.2	<1
Combined Influent	13	<10	**223**	<10	<10	<10	**162.5**	<10
Effluent	ND	ND	ND	ND	ND	ND	<10	ND

Table 4-2 shows the average concentration of all COCs in comparison to NYSDEC DOW limitation of 10 µg/L from 2017 and 2018. Concentrations of COCs decreased or remained below the limitation value from 2017 to 2018 at the GWTS sampling locations.

Effluent concentrations for all COCs were below detection limits and below the NYSDEC DOW limitation of 10 µg/L in 2018. GWTS effluent has not exceeded the DOW limitations since system startup.

Complete analytical summary reports for monthly and annual GWTS sampling are included in **Appendices C and D**, respectively. **Appendix A** Table 2 provides a sample results summary for the system influent, effluent, and each extraction well from March 2008 through December 2018. **Appendix E/F** shows effluent and combined influent Historical Monthly GWTS COC concentration trend plots for each well for all detections between March 2008 and December 2018.

During 2018, the GWTS combined influent reported a mean DCE concentration of 9.9 µg/L. The highest concentration was reported in January at 17 µg/L. The lowest concentration was reported as 3.5 µg/L in August.

The PCE concentration in the combined influent fluctuated, reporting a low of 140 µg/L in February and a high of 320 µg/L in July. The 2018 average PCE concentration was 180 µg/L, a decrease from 2017 (223 µg/L). PCE has been detected in the combined influent every sampling period between 2008 and 2018.

Vinyl Chloride and TCE were not-detected above DOW discharge limitations in 2018.

4.3.2 Groundwater Monitoring Well Sampling

The on-site groundwater monitoring wells were installed to depths ranging from 6 to 105 feet below top of well. The wells are used to monitor plume migration and evaluate groundwater treatment effectiveness. The NYSDEC PM identified a list of wells to be sampled annually. CDM Smith collected groundwater samples from 19 wells on May 2 and 3, 2018.

Appendix A, Tables 5A through 5C provide a summary of the analytical results for the 2018 groundwater well sampling. The complete laboratory report is included in **Appendix D**. **Appendix F** includes groundwater analytical result trend plots for COCs through December 2018 and **Appendix H** includes historical COC isoconcentration plots.

The shallow monitoring wells are screened within the upper 12-feet of sediments, consisting primarily of somewhat finer grained alluvium and upper glacial outwash materials. The only exception is DGC5S, which is screened from 8.7 to 18.7 ft. bgs. The intermediate wells are screened between 15 and 73 feet bgs, within sediments consisting primarily of coarser grained glaciofluvial sand and gravel. The exception is DGC20I, screened from 1.7 to 11.7 ft. bgs. The groundwater elevation data collected in May 2018 is summarized in Table 4 of **Appendix A**.

PCE is the most prevalent groundwater contaminant at this site. The isoconcentration map for PCE (**Figure 6**) indicates two major contaminant areas for this constituent. One area is at DGC6I (10 µg/L). This area radiates northwest to CDM3 (9 µg/L), southwest to DGC16I (7.6 µg/L), and northeast to DGC12IA (23 µg/L). The second PCE area is at ERTEW6 (20 µg/L) and ERTEW7 (34 µg/L). PCE contamination does not extend north of the village well field or south of the GWTS extraction wells.

DCE is the second most prevalent groundwater contaminant at this site. The isoconcentration map for DCE (**Figure 8**) indicates one contaminant area for DCE. The area radiates from DGC7I (62 µg/L), continuing west to DGC6I (10 µg/L), and southeast to ERTEW5 (26 µg/L) and ERTEW7 (16 µg/L). The DCE at these locations may represent degradation products of PCE. Groundwater containing DCE above the cleanup standard of 5 µg/L does not appear to extend north to the municipal well field or south of the GWTS extraction wells.

TCE is the third most prevalent groundwater contaminant at the Site. The isoconcentration map for TCE (**Figure 7**) indicates one contaminant area. The contaminate area radiates from ERT6I (550 µg/L) extending northwest to ERTEW5 (5.6 µg/L). Detections below the cleanup objective concentration of 5 µg/L were reported to the southwest at GMS04, the northwest at ERT5I, and the northeast at DGC18I and TH13. The 2017 results showed this area extended west to GMS02 and northwest to TH7. GMS02 and TH7 results were non-detect in 2018. No detections were reported north to the municipal well field or south of the site groundwater treatment system.

VC was detected above the 2 µg/L cleanup objective concentration at ERTEW5 with a concentration of 540 µg/L. It was also detected at ERT6I (99 µg/L) and ERT1S (94 µg/L) See **Figure 9** for the isoconcentration map.

It appears that there are two remaining contaminant areas at the Site: the area at the extraction wells for the groundwater treatment system, the area northeast of the former Brady/Stannard

dealership, extending northwest across the river to CDM3, and at DGC12IA. This is consistent with the analytical results from the previous annual sampling activities.

4.3.2.1 Shallow Groundwater Sample Analytical Results

CDM Smith collected three groundwater samples from the shallow aquifer at the Site. **Appendix A** Table 5A provides a summary of groundwater analytical results for VOCs in the shallow depth wells during the May 2018 sampling.

PCE, TCE, and DCE were not detected above the AWQS in the shallow wells sampled.

Benzene, ethylbenzene, and xylene were not detected above AWQS for shallow wells sampled. Toluene was detected but below AWQS. These chemicals have been detected at this well DGC19S in prior sampling events since 2008. This well is located next to the former Smith-Cairns dealership, the location of a voluntary spill site. These chemical detections are likely a result of that spill.

4.3.2.2 Intermediate Groundwater Sample Analytical Results

CDM Smith collected a total of 19 groundwater samples from the intermediate depth monitoring wells at the Site in 2018. **Appendix A** Table 5B provides a summary of the corresponding groundwater analytical results. Isoconcentration plots of PCE, TCE, DCE, and Vinyl Chloride exceedances are included as **Figures 6** through **Figure 9**, respectively.

VOCs were detected above the NYS AQWS in 13 of the 19 sampled intermediate depth wells as follows:

- DCE was detected in 1 well at a concentration of 4 µg/L in well DGC6I;
- PCE was detected in 7 wells at concentrations ranging from 6.3 µg/L in well DGC9I to 2,300 µg/L in well ERT6I;
- TCE was detected in 3 wells at concentrations ranging from 5.4 µg/L in well DGC9I and 550 µg/L in ERT6I; and
- Vinyl Chloride was detected in 2 wells at concentrations ranging from 5.6 µg/L in well ERTEW5 and 99 µg/L in well ERT6I.

4.3.2.3 Deep Groundwater Sample Analytical Results

CDM Smith collected groundwater samples from two deep wells in 2018 (CDM-1, CDM-3). **Appendix A** Table 5C provides a summary of groundwater analytical results for the deep wells.

CDM-3 reported a detection for PCE of 9 µg/L, above the AWQS and NYS DWS of 5 µg/L. CDM-2 was below the AWQS and NYS DWS limit. No other detections were reported from the deep wells.

4.3.2.4 Quality Control / Quality Assurance for Groundwater Samples

CDM Smith collected one duplicate sample for every 20 groundwater samples in compliance with the Quality Assurance Project Plan (QAPP). One field and one trip blank per sample cooler were submitted for analysis to verify that no samples were contaminated by field equipment or on route to the laboratory. Field blanks are generated by running lab-provided deionized water

through the polyethylene and silicone tubing and collected in a lab-preserved 40 ml vial for analysis.

The analytical results for duplicate TH-6-20180502 (MS/MSD) were consistent with original sample TH-6-20180502. The same contaminants were reported. TIC Isopropyl Alcohol was also reported in TH-6-20180502 (21 µg/L) TIC Isopropyl Alcohol was not present in the duplicate sample results.

The results for sample DGC-18I-20180503 (MS/MSD) were consistent with the results from original sample DGC18I-20180503. The same contaminants (Acetone and TIC Isopropyl Alcohol) were not detected in both sample results.

Two trip and two field blanks were submitted with sample coolers and analyzed for VOCs. No contaminants were reported in the blank samples (TRIP BLANK, Trip Blank_2, Field Blank – 20180502, and Field Blank-2-20180503).

4.3.2.5 Data Validation

Data validation for the 2018 annual sampling is incomplete at this time. CDM Smith will amend the PRR with the validated data once received from the data validator.

4.3.3 Groundwater Level Monitoring

On May 2, 2018, CDM Smith performed annual groundwater well gauging, measuring the depth to water at 54 wells using water level meters. Groundwater elevations were calculated from the depth to water measurements based on the historical well construction data. Groundwater elevation measurements were recorded under pumping conditions at the GWTS and Village wells. The data is summarized in Tables 4A through 4C in **Appendix A**.

Extraction wells ERTEW5, EW6, and EW7 were pumping during the gauging activities, and appear to have had drawdown effect on the nearby wells. The groundwater in shallow wells appears to be flowing towards the TH11A from the south, however there is a divide approximately 400 ft. north of the extraction wells. Shallow groundwater south of that divide is being pulled towards the extraction wells because of pumping activities (**Figure 3**).

Intermediate depth wells may or may not be in the same unconfined aquifer as the shallow wells; sufficient boring logs are not available to make this determination. The groundwater appears to be flowing towards the village wellfield north of the river towards TH11B, with elevation measured as 331.19 ft. amsl (**Figure 4**). There also appears to be a low point at ERT2I (331.76 ft. amsl) and ERT5I (332.50 ft. amsl), adjacent to the extraction wells.

The groundwater contours for the deep wells (**Figure 5**) show the water flowing towards the River from the north and south, with a low area around the three CDM wells to the northwest and northeast at DGC1D.

CDM Smith was unable to gauge some of the wells due to damage, as is noted in Section 3.5.2. No tubing was present within the wells upon measurement.

Section 5
Remedy Evaluation

5.1 Groundwater Treatment System

The groundwater treatment system treated approximately 168,046,342 gallons of water from system start-up in February 2008 through December 31, 2018. Aztech monitors the treatment system remotely, performs monthly sampling of the system influent, extraction wells, and discharge, and completes system maintenance as necessary.

Concentrations of PCE, DCE, TCE and Vinyl Chloride in the combined influent to the groundwater treatment system have decreased significantly since system sampling began in March 2008. Table 5-1 shows the maximum, minimum, and latest COC concentrations from the combined system influent samples collected between March 2008 and December 2018. Trend charts for all sampling activity COC concentrations for the 2007 groundwater treatment system can be found in **Appendix F**.

Table 5-1 System Combined Influent Chemical of Concern Concentrations

Chemical of Concern (COC)	Maximum (µg/L)	Maximum Date	Minimum (µg/L)	Minimum Date	Average 2018 (µg/L)	December 2018 (µg/L)
Cis-1,2-Dichloroethylene (DCE)	460	7/25/2008	6.3	11/15/2013	10.5	10
Trichloroethylene (TCE)	17	6/20/2008	ND	various	4.9	5.6
Tetrachloroethylene (PCE)	1400	3/31/2009	57	4/10/2013	177.5	140
Vinyl Chloride (VC)	81	7/25/2008	ND	various	2.3	1.5

The combined influent concentrations for DCE, TCE, PCE, and VC have reduced by 98, 71, 87, and 97%, respectively, from their maximum concentration to the 2018 average. The GWTS continues to remove COCs from the groundwater and prevent downgradient migration of contaminants. The extraction wells appear to be providing containment and have reduced COC concentrations in groundwater since start-up.

The mass removals for VOCs (Appendix A, Tables 3A through 3D) were calculated using analytical sample data and pumping rates dated March 2008 to December 2018 from wells ERTEW5, ERTEW6, and ERTEW7.

Since monitoring began in March 2008, the GWTS has removed an estimated 532 pounds of VOCs from the groundwater. Most of the VOC extraction has been PCE from well ERTEW5 (462 lbs. or 87% total VOCs). The monthly extraction data for ERTEW5 is shown in Appendix A, Table 3A.

5.2 Groundwater Wells

Annual groundwater well sampling was completed on May 9 and 10, 2017. CDM Smith sampled 21 wells located on- and off-site. All wells sampled this year were gauged on May 2, 2018.

The gauging data for these wells is shown in the field log book (**Appendix L**) and in Tables 4A-4C in **Appendix A**. The locations of all 2018 COC detections above the NYS AWQS are listed in Table 5-2.

Table 5-2 2018 Groundwater Sampling Chemical of Concern Exceedances

Chemical of Concern (COC)	Well
Cis-1,2-Dichloroethylene (DCE)	CDM-3; DGC-1I; DGC-6I; DGC-9I; DGC-12IA; DGC-16I; DGC-17I; ERT-6I; ERT-EW6; ERT-EW-7
Tetrachloroethylene (PCE)	CDM-3; DGC-1I; DGC-6I; DGC-9I; DGC-12IA; DGC-16I; DGC-17I; ERT-6I; ERT-EW6; ERT-EW-7
Trichloroethylene (TCE)	DGC-9I; DGC-6I; ERT-EW5; ERT-EW7
Vinyl Chloride	ERT-15; ERT6I; ERT-EW5 ERT1S

Groundwater analytical results indicate the presence of VOCs near the extraction wells, surrounding the former Brady Stannard dealership and along the Croton River to the north and south.

The presence of DCE and VC over the AWQS but no PCE in well ERT1S suggests that it is in the later stages of PCE breakdown into its associated byproducts. Wells DGC7I and DGC19I also suggest this by the presence of DCE only. However, wells CDM3, DGC6I, DGC12IA, DGC16I, and DGC17I all reported concentrations of PCE exceeding the AWQS of 5 µg/L.

Comparing annual groundwater sampling results from 2017 and 2018 concentrations exceeding the AWQS increased at DGC9I for DCE, at CDM3, DGC1I, DGC6I and DGC9I for PCE, and ERT1S for TCE. There were no increases for Vinyl Chloride. The concentration change summary can be seen in Table 5-3. Comparing annual groundwater data between 2017 and 2018.

Table 5-3 Contaminant of Concern Concentration Change by Well from 2017 to 2018

Well	COC Concentration Change in µg/L from 2017 to 2018			
	DCE	TCE	PCE	VC
CDM3	ND	ND	**8 TO 9**	ND
DGC1I	ND	ND	**ND TO 9.5**	ND
DGC3I	< 5	< 5	< 5	ND
DGC6I	12 TO 10	< 5	**12 TO 10**	ND
DGC7I	61 TO 62	< 5	< 5	< 2
DGC8I	ND	ND	< 5	ND
DGC9I	**ND TO 60**	**< 5 TO 5.4**	**< 5 TO 6.3**	ND
DGC12IA	ND	ND	**22 TO 23**	ND
DGC16I	ND	10 TO 8	**< 5 TO 7.6**	ND
DGC17I	39 TO 21	6 TO 5	7 TO 6	ND
ERT19D	ND	ND	ND	ND
DGC19I	5	< 5	ND	ND
ERT1S	549 TO 130	ND	<5	261 TO 94
ERT8I	ND	ND	< 5	ND
GMS02	ND	ND	5 TO ND	ND
TH7	< 5	< 5	**ND TO <5**	<2

The 2015 sampling detected a PCE concentration of 7J µg/L at CDM1, the first detection at the well since sampling began in December 2010. In 2017 and 2018 there were no detected COC concentrations at CDM1.

The PCE concentration at CDM3 decreased from 8 µg/L in 2012 through 2014 to 6 µg/L in 2016. CDM3 was not sampled in 2015. CDM3 increased from 7.5 µg/L in 2017 to 9 µg/L in 2018.

The PCE levels at DGC1I increased from 1 µg/L in 2009 and 2010, to 8 µg/L in 2015 and 2016. PCE was not detected at DGC1I in 2017 and increased to 9.5 µg/L in 2018.

The DCE concentrations continued to decrease at DGC6I from 19 to 18 µg/L in 2015 and 2016, respectively, to 12 µg/L in 2017. The PCE concentration has continually increased yearly from 2015 to 2017 (8, 10, and 12 µg/L). DCE concentrations again decreased in 2018 to 10 µg/L.

The DCE concentration at DGC7I decreased from 75 to 62 µg/L after a period of increase between 2013 and 2015. DCE decreased further to 61 µg/L in 2017, but increased in 2018 to 62 µg/L. All other COCs at DGC7I remain non-detect.

DGC12IA was sampled for the first time in 2014 and had a PCE detection of 35 µg/L. This concentration decreased significantly in 2015 to 6 µg/L and increased to 26 µg/L in 2016. PCE decreased to 22 µg/L in 2017 and increased to 23 µg/L in 2018. No other COCs have been detected at DGC12IA.

The PCE and TCE concentrations at DGC16I decreased between 2014 and 2015. The TCE concentration increased from 2 to 10 µg/L in 2016. TCE decreased to 8 µg/L in 2017 and was not detected in 2018.

The DCE concentration at DGC17I continues to fluctuate. The first reported DCE concentration was in 2013 of 34 µg/L. This decreased to 22 µg/L in 2014 then increased to 62 µg/L in 2015. DCE has continued to decrease from 50 to 39 µg/L in 2016 and 2017, respectively. DCE continued to increase in 2018, being detected at 21 µg/L. The PCE concentration has also fluctuated from a maximum of 15 µg/L in 2010 to 1 µg/L in 2014. The concentration and has increased since 2014, reporting 3 and 6 µg/L in 2015 and 2016, respectively. PCE decreased to 5 µg/L in 2017. PCE decreased in 2018 to 3.6 µg/L in 2018. The TCE concentration has varied from 2 µg/L in 2008 and 2009, to 6 µg/L in 2011, to 2 µg/L in 2014. The TCE concentration has increased since 2015, reporting 5 and 7 µg/L in 2015 and 2016, respectively. TCE decreased to 6 µg/L in 2017 and 3.4 µg/L in 2018.

Well ERT1S was sampled for the first time in 2014 and reported zero COC detections. The 2015 sampling reported detections of each COC. The concentrations of all COCs decreased at ERT1S between 2015 and 2016, then increased in 2017. In 2018, all COCs have decreased for ERT1S.

TH7 COC concentrations continue to fluctuate but have generally decreased since 2012. The DCE concentration has been decreasing since 2013 and decreased in 2016 to 12 µg/L and to 5 µg/L in 2017. DCE was <5 µg/L in 2018. The PCE concentration increased to 17 µg/L in 2016 and was not detected in 2017. In 2018, PCE increased from being not detected to being <5 µg/L.

Appendix F contains trend charts for all wells with historical COC detections.

Section 6

Engineering and Institutional Controls

The EC/IC Plan is included as part of the SMP in **Appendix J**. The EC/ICs at the Site currently consist of:

- O&M and monitoring of the Brewster Village Well Field GWTS (responsibility of the Village of Brewster);
- O&M and monitoring of the onsite GWTS;
- Criteria for GWTS closeout;
- Requirement that new wells installed in Putnam County are permitted by the County Department of Health, preventing installation of drinking water wells in the contaminated plume;
- Requirement that the local planning board must contact US EPA prior to the approval of any construction on the dealership property and vicinity of the Site;
- The Site Excavation Work Plan (EWP);
- Periodic inspection requirements;
- Notification requirements; and
- The reporting plan.

6.1 EC/IC Requirements and Compliance

Determination of compliance with the EC/IC at the Site is partially based on the following criteria:

- The EC/IC(s) applied at the Site are in place and unchanged from the previous certification;
- Nothing has occurred that would impair the ability of such controls to protect the public health and the environment, or constitute a violation or failure to comply with any element of the SMP for such controls; and
- Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of such controls.

The EC/IC complies with the above requirements.

6.1.1 On-Site GWTS

O&M and monitoring of the Brewster Village Well Field GWTS is not part of this contract. Work for this EC will not be included in this report.

The objective of the onsite GWTS is to treat the VOC plume in the saturated zone under the Subaru dealership building. Performance of the GWTS is evaluated through review of the analytical results of monthly samples over time. If the concentrations of COCs are decreasing, the GWTS is successful. The GWTS performance is also evaluated by its ability to run consistently without shutdowns or equipment failure.

The onsite GWTS continues to treat the VOC plume as seen in a reduction of COC concentrations since its startup in 2008. However, the PCE concentration has plateaued in the range of 200 to 300 µg/L since 2010. An O&M manual for the GWTS was drafted in 2016 and should be closely followed to determine that all system components are being maintained at the proper frequency per manufacturer recommendations. Any part replacements or adjustments should be made in accordance with these recommendations. If replacements are made (as necessary) and the COC concentrations continue to plateau, it is recommended that a RSO be completed for this remedial program under the approval of the NYSDEC.

The ProControl system is failing to submit daily email reports of the system parameters. The system must be logged into remotely to record the parameters. The ProControl system should be further analyzed to identify the problem with submitting daily email reports. If necessary, it should be replaced.

6.2 EC/IC Certification

Certification of the EC/IC is to be completed upon acceptance of its edits by the NYSDEC Project Manager.

Section 7
Cost Evaluation

The total cost for operation and maintenance of the treatment system, long term monitoring, sampling activities, and analytical, and reporting between January and December 2018 was approximately $95,845. The full expense breakdown for years 2008 through 2018 is in Table 7-1 below.

Table 7-1 Annual Cost Breakdown for 2008 through 2018

Year	Plant O&M	Costs for Annual Sampling	Long Term Monitoring and Reporting	Costs for Monthly Sampling Analytical	Total Annual Cost
2008	$48,030.00	$4,749.00	$36,944.30	$2,734.82	$92,458.12
2009	$27,886.45	$4,299.00	$43,265.38	$2,734.82	$78,185.65
2010	$24,488.30	$5,464.25	$23,213.80	$2,734.82	$55,901.17
2011	$38,923.83	$6,896.42	$62,861.96	$2,283.88	$110,966.09
2012	$21,629.36	$4,164.95	$46,222.80	$ *	$72,017.11
2013	$71,484.05	$4,183.06	$61,576.79	$ *	$137,243.90
2014	$56,032.03	$5,432.95	$64,722.55	$ *	$126,187.53
2015	$31,924.20	$6,384.78	$32,735.83	$2,394.00	$73,438.81
2016	$23,950.99	$6,505.56	$59,439.44	$2,591.60	$92,487.59
2017	$31,084.25	$6,420.90	$42,661.70	$2,299.00	$76,044.95
2018	$43,955.00	$*	$51,890.00	$*	$95,845.00

Analytical costs for monthly sampling are included in Plant O&M from November 2011 Through December 2014
Plant O&M and Monthly Sampling Analytical do not include December 2017 costs.
Cost for Annual Sampling do not include 2017 third-party validator costs.
Adirondack Lab's invoices included in Aztech's costs.

7.1 Cost Summary

The plant O&M costs are billed by Aztech for monthly site visits to maintain the groundwater treatment system, report parameters, and collect samples from the system influent and effluent. These costs include materials purchased for maintenance and repairs, travel expenses (gasoline, thruway tolls, and hotel), waste disposal, equipment rentals, and electricity. Costs incurred in addition to routine O&M since system startup are as follows.

- (2008) Upgrading the system with the VFD and the Pro Control auto dialer, including materials, labor, and pilot testing.
- (2013) ERTEW6 well replacement.
- (2015) ERTEW6 level transducer and wiring replacement.

- (2016) ERTEW5 well pump, motor, and transducer replacement, monitoring well repairs, new treatment building lock, pest abatement for the carpenter ants, and additional site visit expenses to perform the repairs.
- (2017) ERTEW5 new motor and pump head installation, cellular modem replacement, copying well DGC16S key, air stripper leak repairs, removal of blower and blower wheel replacement, and ERTEW5 flow meter repairs.

Annual sampling costs are billed by CDM Smith and include the costs for chemical analysis, data validation, equipment rental, sample shipment, LVE, PPE, and per diem. Annual sampling occurs in the spring and consists of sampling between 20 and 30 wells annually.

The long-term monitoring and reporting costs, which are billed by CDM Smith, include costs associated with project management and annual periodic reporting throughout the year. This cost also includes labor and travel expenses for annual sampling. The 2014 costs include preliminary activities under a new contract and data management for historical data. The 2015 costs include development of the contract amendment through December 2017. The 2016 costs include the development of new trend plots and analysis of historical data provided by the US EPA, including monitoring well construction record documents.

The analytical costs for monthly sampling, now billed by Adirondack Labs to Aztech, were estimated for 2008 and 2009 based on invoices available from 2010. The 2015 and 2016 analytical costs were derived from the invoices submitted by Aztech to NYSDEC. Adirondack Labs completes the data analysis for monthly system influent and effluent samples, including EDD development and submittal to CDM Smith.

Section 8

Conclusions and Recommendations

8.1 Conclusions

8.1.1 Groundwater Treatment System

The GWTS continues to remove COCs from the groundwater to address the contamination coming from under the Subaru dealership building and to prevent migration downgradient. Trend plots were generated from all analytical results at the GWTS and are in **Appendix F**.

The GWTS combined influent trend plot shows a general decrease of DCE, TCE, and VC. The PCE concentration continues to fluctuate with an average concentration of 332 µg/L.

None of the GWTS trend plots indicate a clear continuous decrease in COC concentration. Spikes in COC concentration are irregular and do not indicate a trend due to season. While the influent COC concentrations remain above the NYS AWQS, the GWTS should continue to run with monitoring and maintenance as specified in the SMP.

The groundwater treatment system treated approximately 8,593,950 gallons of water between January 5 and December 31, 2018. The GWTS average combined influent PCE concentration increased from 205 to 226 µg/L from 2014 to 2015, decreased to 217 µg/L in 2016, increased to 222 µg/L in 2017 and decreased to 177.5 µg/L in 2018. This is showing progress toward meeting the remedial objectives as stated in the ROD by reducing the concentrations from the 700-750 µg/L range reported in 2008 and 2009, but no significant reduction of COC concentrations has occurred.

8.1.2 Annual Groundwater Sampling

On May 2, 2018, CDM Smith collected groundwater elevation data from 54 wells on and offsite (**Appendix A** Table 4). The following conclusions generated by CDM Smith are based on an evaluation and interpretation of the groundwater monitoring data collected between 2008 and 2018.

Groundwater flow at this Site consists of shallow and deeper groundwater flow zones. Intermediate depth wells may or may not be in the same unconfined aquifer as the shallow wells. Water in the shallow and deeps zones flows towards the Croton River on both sides. Water measured in the intermediate depth wells was observed flowing towards the river from the south, and away from the river towards the wetlands to the north.

Two plumes of PCE are present at the site: the area at the extraction wells north of the Subaru dealership and a larger plume that radiates north from DGC12IA across the river to DGC6I. One TCE plume is present at the area north of the Subaru dealership at the extraction wells for the GWTS. The plume flows northeast past the Brady Stannard dealership to DGC17I. One plume is present for DCE radiating outward from DGC7I south to the extraction wells and west to DGC6I (see attached **Figures 6 through 8**). While two plumes of vinyl chloride have been present historically, the 2018 results show a single plume near the GWTS extraction well ERTEW5, as seen since 2014. The

GWTS extraction wells ERTEW5, ERTEW6, and ERTEW7 were installed near the principal source area.

Comparing the 2018 data to historical data, it appears that the contaminant sources downgradient have decreased and that the remedial system and natural attenuation are reducing COC concentrations across the Site. Additionally, between 2009 and 2011, an increase in sitewide PCE, DCE, and vinyl chloride concentrations was observed. However, the 2012 through 2018 sitewide sampling results for the same parameters showed lower overall concentrations, as compared to 2011. Continued monitoring will show whether the trend of decreasing concentrations of COCs over the Site is maintained.

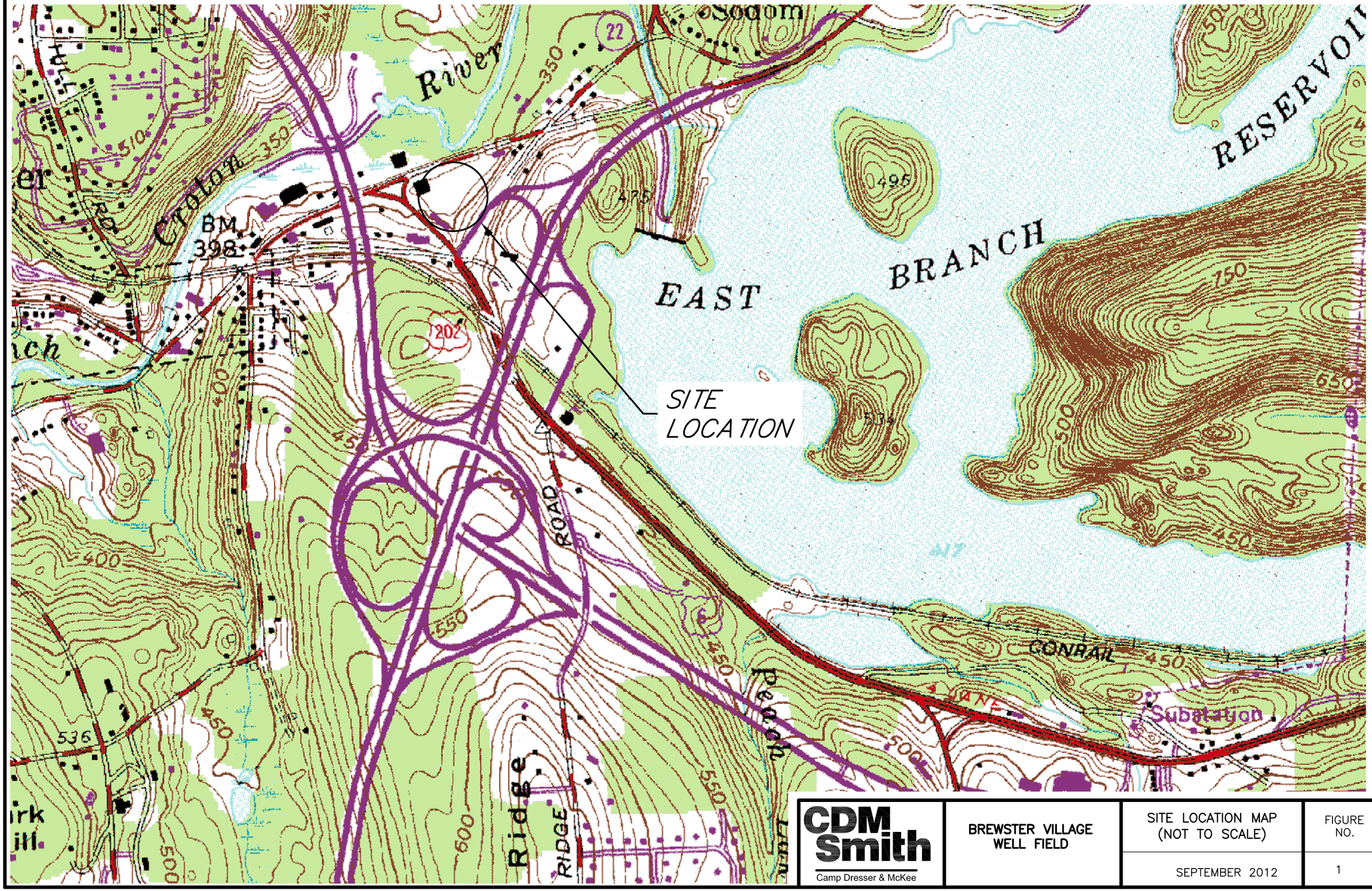
Review of the historical data showed one VOC plume from the source area at the current location of the treatment system towards the old groundwater treatment system location and old extraction wells EW1 through EW4. When this system was shut down and the new system started, it may have created a split in the plume near the Brady Stannard dealership, leaving part of the plume behind. Further monitoring in this area is recommended to be sure concentrations continue to decrease.

The concentrations at the source have plateaued and appear that groundwater is being sourced from a significant source under the building. Further investigation could assist in identifying a hotspot area that could be treated insitu to reduce the source and shorten the groundwater remediation. It is also important to note the GWTS is showing significant signs of wear and tear over the years and may need to be upgraded or replaced in the near future.

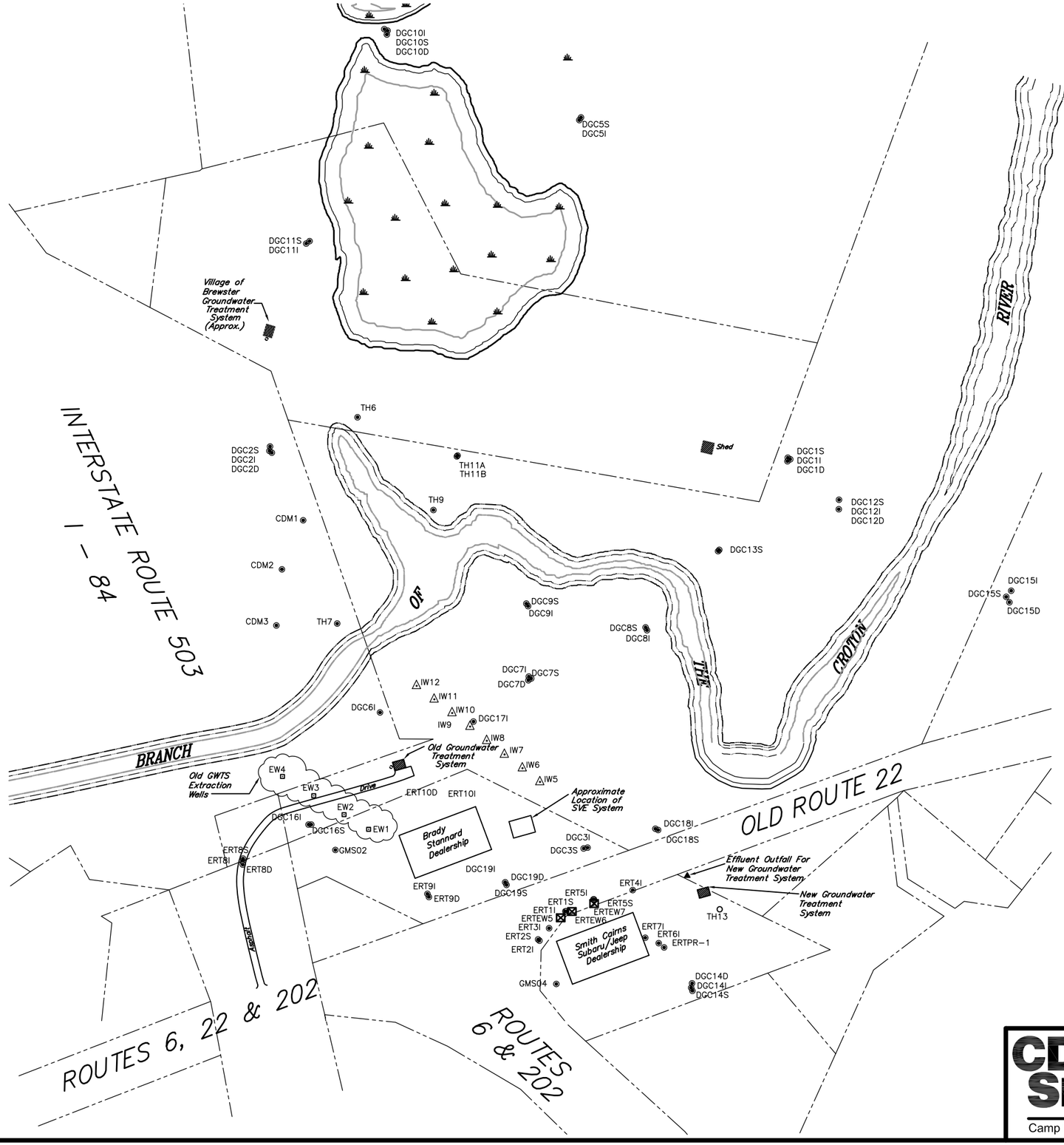
8.2 Recommendations

CDM Smith makes the following recommendations for the Brewster Well Field site.

- Monitor the groundwater treatment system monthly and perform annual groundwater sampling in 2019. CDM Smith shall complete a review of the 2018 trend plots, to determine which wells should be sampled.
- Experiment with cycling wells ERTEW6 and ERTEW7 to increase recovery but keep ERTEW5 on due to its high concentrations.
- Evaluate investigating the source below the Subaru building for possible insitu treatment to reduce the source area.
- Organize historical data through 2018 and input it into EQuIS, gINT, and AutoCAD to develop reference figures. Use the figures to identify historically highly concentrated areas of contamination and potential remedial system optimization (RSO) measures to improve contaminant removal.



CDM Smith Camp Dresser & McKee	BREWSTER VILLAGE WELL FIELD	SITE LOCATION MAP (NOT TO SCALE) SEPTEMBER 2012	FIGURE NO. 1



LEGEND

◉ *DG5I*	MONITORING WELL WITH DESIGNATION
⊡ *EW1*	OLD GWTS EXTRACTION WELL WITH DESIGNATION
△ *IW1*	OLD GWTS INJECTION WELL WITH DESIGNATION
⊠ *ERT-EW5*	NEW GWTS EXTRACTION WELL WITH DESIGNATION
— — — — —	APPROXIMATE PROPERTY LINE

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

True North at 74° 30' West Longitude

N

1" = 200'

100 0 200

CDM Smith
Camp Dresser & McKee

BREWSTER VILLAGE WELL FIELD

SITE PLAN

SEPTEMBER 2012

FIGURE NO. 2

Well	Top of Casing (ft amsl)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)	Depth to Bottom (ft bgs)
DGC1S	336.66	5.85	330.81	9.00
DGC2S	338.22	NG	NG	9.00
DGC3S	336.81	3.87	332.94	12.80
DGC5S	340.99	NG	NG	22.00
DGC7S	335.03	3.05	331.98	9.00
DGC8S	335.68	3.75	331.93	9.50
DGC9S	334.45	2.45	332	9.50
DGC10S	336.63	NG	NG	10.30
DGC11S	339.99	NG	NG	9.00
DGC12S	337.02	5.73	331.29	10.00
DGC13S	335.84	4.9	330.94	9.00
DGC14S	342.24	8.3	333.94	11.50
DGC15S	344.36	NG	NG	13.00
DGC16S	340.92	7.73	333.19	10.00
DGC18S	338.87	NG	NG	10.00
DGC19S	337.76	5.58	332.18	12.00
ERT1S	338.05	5.64	332.41	13.85
ERT2S	338.20	5.95	332.25	Unknown
ERT5S	338.08	NG	NG	Unknown
ERT8S	341.43	3.75	331.93	15.18
TH11A	332.62	1.54	331.08	Unknown

Legend
Contour (ft amsl)
- 330
- 331
- 332
- 333
- 334
- 335
- Monitoring Well (Groundwater Elevation)
- 2007 GWTS Extraction Well
- 1991 Extraction Well
- 1991 Injection Well

Notes:
1. NG - Not Gauged
2. All groundwater elevation contours are provided in feet above mean see level (ft amsl).
3. GWTS - Groundwater Treatment System
4. BTOC - Below Top of Casing

Groundwater Contours for Shallow Wells - May 2018

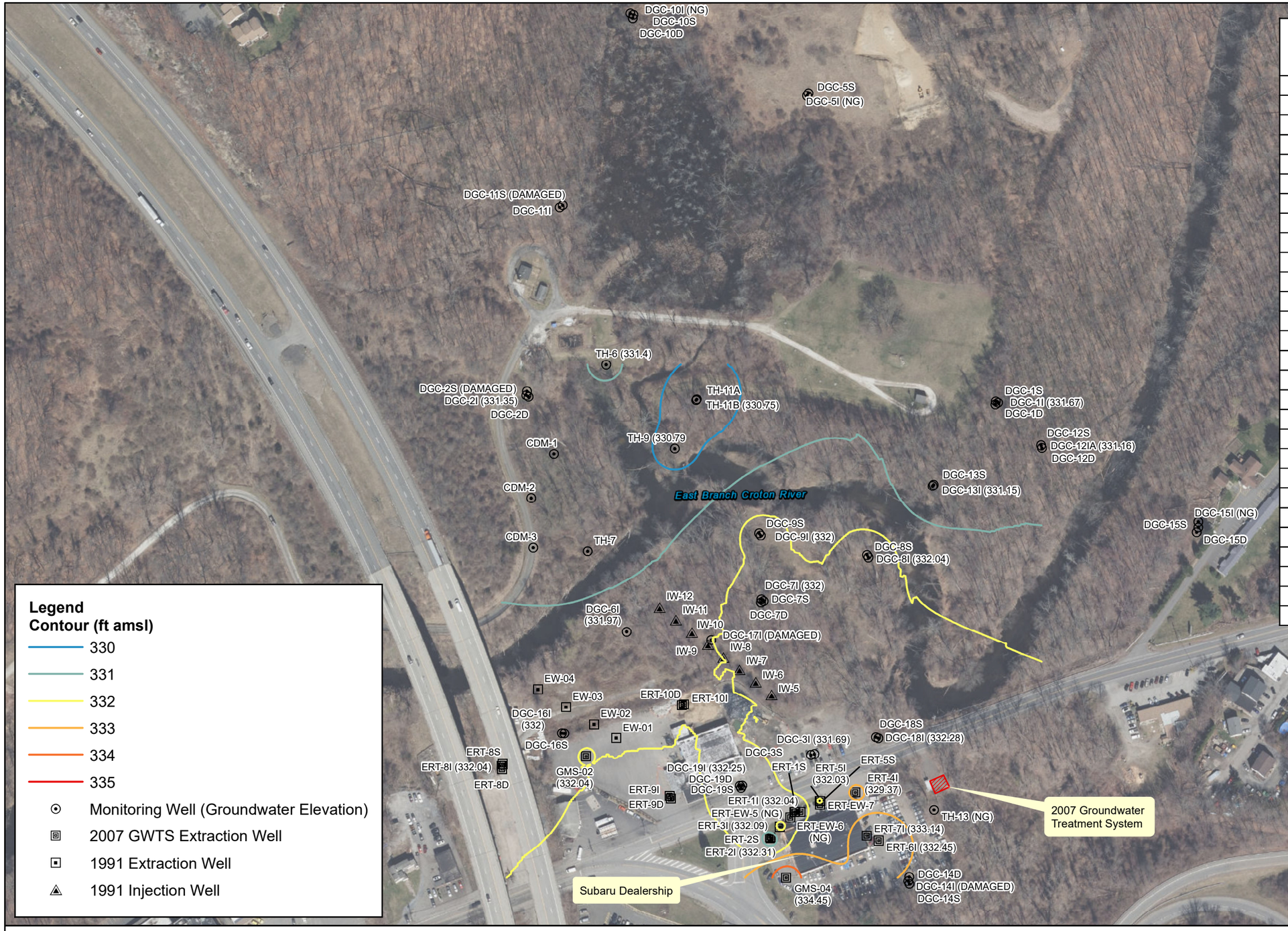
1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 3

CDM Smith

HARROLDAM \\ALBSVR2\Alb2_Projects\NYSDEC D007621\WA#8 - Brewster Village Well Field\Brewster 2018 PRR\Shapefiles\Fig3_Shallow_GW_Contour_2017.mxd 2/12/2019



Well	Top of Casing (ft amsl)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)	Depth to Bottom (ft bgs)
DGC1I	336.61	5.5	331.11	67.50
DGC2I	338.55	7.20	331.35	27.60
DGC3I	336.34	4.65	331.69	52.50
DGC6I	338.47	6.5	331.97	42.00
DGC7I	334.60	2.6	332	77.00
DGC8I	336.09	4.05	332.04	82.00
DGC9I	334.17	2.6	332	52.00
DGC12IA	337.81	6.65	331.16	52.00
DGC13I	334.43	3.28	331.15	67.00
DGC14I	341.07	8.55	332.52	Unknown
DGC16I	340.00	8	332	43.00
DGC18I	339.28	7	332.28	62.00
DGC19I	337.90	5.65	332.25	42.00
ERT1I	337.94	5.9	332.04	Unknown
ERT2I	338.31	6	332.31	Unknown
ERT3I	338.64	6.55	332.09	Unknown
ERT4I	338.47	9.1	329.37	Unknown
ERT5I	338.03	6	332.03	Unknown
ERT6I	339.65	7.2	332.45	Unknown
ERT7I	339.99	7.4	332.59	Unknown
ERT8I	341.70	NG	-	39.75
ERT9I	339.51	7.45	332.06	28.50
GMS02	339.59	7.55	332.04	Unknown
GMS04	339.60	5.15	334.45	Unknown
TH6	337.05	5.65	331.4	22.90
TH7	337.35	6.3	331.05	35.00
TH9	333.64	2.85	330.79	28.20
TH11B	334.70	3.95	330.75	Unknown

Legend
Contour (ft amsl)
- 330
- 331
- 332
- 333
- 334
- 335
- Monitoring Well (Groundwater Elevation)
- 2007 GWTS Extraction Well
- 1991 Extraction Well
- 1991 Injection Well

N

Notes:
1. NG - Not Gauged
2. All groundwater elevation contours are provided in feet above mean see level (ft amsl).
3. GWTS - Groundwater Treatment System
4. BTOC - Below Top of Casing

Groundwater Contours for Intermediate Wells - May 2018

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 4

CDM Smith

HARROLDAM Z:\NY5DEC D007621\WA#8 - Brewster Village Well Field\Brewster 2018 PRR\Shapefiles\NEW\Fig4_Intermediate_GW_Contour_2018.mxd 2/12/2019

Well	Top of Casing (ft amsl)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)	Depth to Bottom (ft bgs)
CDM1	342.42	10.58	331.22	52.00
CDM2	349.88	18.15	331.18	Unknown
CDM3	352.30	20.35	331.38	Unknown
DGC1D	336.63	4.80	331.38	103.00
DGC2D	338.43	3.77	333.93	39.10
DGC7D	335.00	NG	-	112.00
DGC10D	336.61	NG	-	66.00
DGC14D	341.12	1.18	339.62	80.20
DGC15D	342.69	NG	-	106.20
ERT8D	341.99	NG	-	56.68
ERT9D	339.63	7.05	332.08	41.00
ERT10D	337.89	NG	-	40.00
ERT19D	338.04	5.51	332.19	34.00

Legend
Contour (ft amsl)
- 332
- 333
- 334
- 335
- 336
- 337
- 338
- 339
- Monitoring Well (Groundwater Elevation)
- 2007 GWTS Extraction Well
- 1991 Extraction Well
- 1991 Injection Well

Notes:
1. NG - Not Gauged
2. All groundwater elevation contours are provided in feet above mean see level (ft amsl).
3. GWTS - Groundwater Treatment System
4. BTOC - Below Top of Casing

Groundwater Contours for Deep Wells - May 2018

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 5

CDM Smith

Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM2	5/1/2018	331.18	0.38 J	0.28 J	ND	ND
CDM3	5/1/2018	331.38	9	1.1	0.26 J	ND
DGC1I	5/1/2018	331.11	9.5	0.58 J	ND	ND
DGC3I	5/1/2018	331.69	4.7	0.77 J	1.9	ND
DGC6I	5/1/2018	331.97	10	4.1	10	ND
DGC7I	5/1/2018	332	1.1	1.3	62	1
DGC9I	5/1/2018	332.02	6.3	5.4	60	0.3 J
DGC12IA	5/1/2018	331.16	23	ND	ND	ND
DGC14I	5/1/2018	332.52	ND	ND	ND	ND
DGC16I	5/1/2018	332	7.6	1.1	ND	ND
DGC17I	5/1/2018	332	3.6	3.4	21	ND
DGC18I	5/1/2018	332.28	ND	ND	ND	ND
DGC19I	5/1/2018	332.25	1.9	0.63 J	5	0.82 J
ERT6I	5/1/2018	332.45	2300	550	1800	99
ERTEW5	5/1/2018	NG	540	2.5	26	5.6
ERTEW6	5/1/2018	NG	20	0.86 J	4.4	ND
ERTEW7	5/1/2018	NG	34	9.7	16	0.26 J
TH6	5/1/2018	331.40	ND	ND	ND	ND
TH7	5/1/2018	331.05	4.1	1.2	2.9	0.59 J



N

Notes:

1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater PCE Concentrations for Intermediate Wells - May 2018

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 6

CDM Smith

Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM2	5/1/2018	331.18	0.38 J	0.28 J	ND	ND
CDM3	5/1/2018	331.38	9	1.1	0.26 J	ND
DGC1I	5/1/2018	331.11	9.5	0.58 J	ND	ND
DGC3I	5/1/2018	331.69	4.7	0.77 J	1.9	ND
DGC6I	5/1/2018	331.97	10	4.1	10	ND
DGC7I	5/1/2018	332	1.1	1.3	62	1
DGC9I	5/1/2018	332.02	6.3	5.4	60	0.3 J
DGC12IA	5/1/2018	331.16	23	ND	ND	ND
DGC14I	5/1/2018	332.52	ND	ND	ND	ND
DGC16I	5/1/2018	332	7.6	1.1	ND	ND
DGC17I	5/1/2018	332	3.6	3.4	21	ND
DGC18I	5/1/2018	332.28	ND	ND	ND	ND
DGC19I	5/1/2018	332.25	1.9	0.63 J	5	0.82 J
ERT6I	5/1/2018	332.45	2300	550	1800	99
ERTEW5	5/1/2018	NG	540	2.5	26	5.6
ERTEW6	5/1/2018	NG	20	0.86 J	4.4	ND
ERTEW7	5/1/2018	NG	34	9.7	16	0.26 J
TH6	5/1/2018	331.40	ND	ND	ND	ND
TH7	5/1/2018	331.05	4.1	1.2	2.9	0.59 J

DGC-10I (NS)
DGC-5I (NS)
DGC-11I (NS)
TH-6 (ND)
DGC-2I (NS)
TH-11B (NS)
DGC-1I (0.58 J)
DGC-12IA (ND)
CDM-1 (NS)
TH-9 (NS)
CDM-2 (0.28 J)
East Branch Croton River
DGC-13I (NS)
DGC-15I (NS)
DGC-9I (5.4)
CDM-3 (1.1)
TH-7 (1.2)
DGC-8I (NS)
DGC-7I (1.3)
DGC-6I (4.1)
DGC-17I (3.4)
ERT-10I (NS)
DGC-16I (1.1)
GMS-02 (NS)
DGC-3I (0.77 J)
DGC-18I (ND)
ERT-8I (NS)
DGC-19I (0.63 J)
ERT-5I (NS)
ERT-4I (NS)
ERT-9I (NS)
ERT-1I (NS)
TH-13 (NS)
ERT-EW-5 (2.5)
ERT-EW-7 (9.7)
ERT-EW-6
ERT-2I (NS)
ERT (0.86 J) (NS)
ERT-6I (550)
ERT-7I (NS)
Subaru Dealership
GMS-04 (NS)
DGC-14I (ND)
2007 Groundwater Treatment System

Legend
Contours (ug/L)
- 1
- 5
- 100
- 500
- Monitoring Well (Concentration)
- 2007 GWTS Extraction Well
- 1991 Extraction Well
- 1991 Injection Well

N

Notes:
1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater TCE Concentrations for Intermediate Wells - May 2018

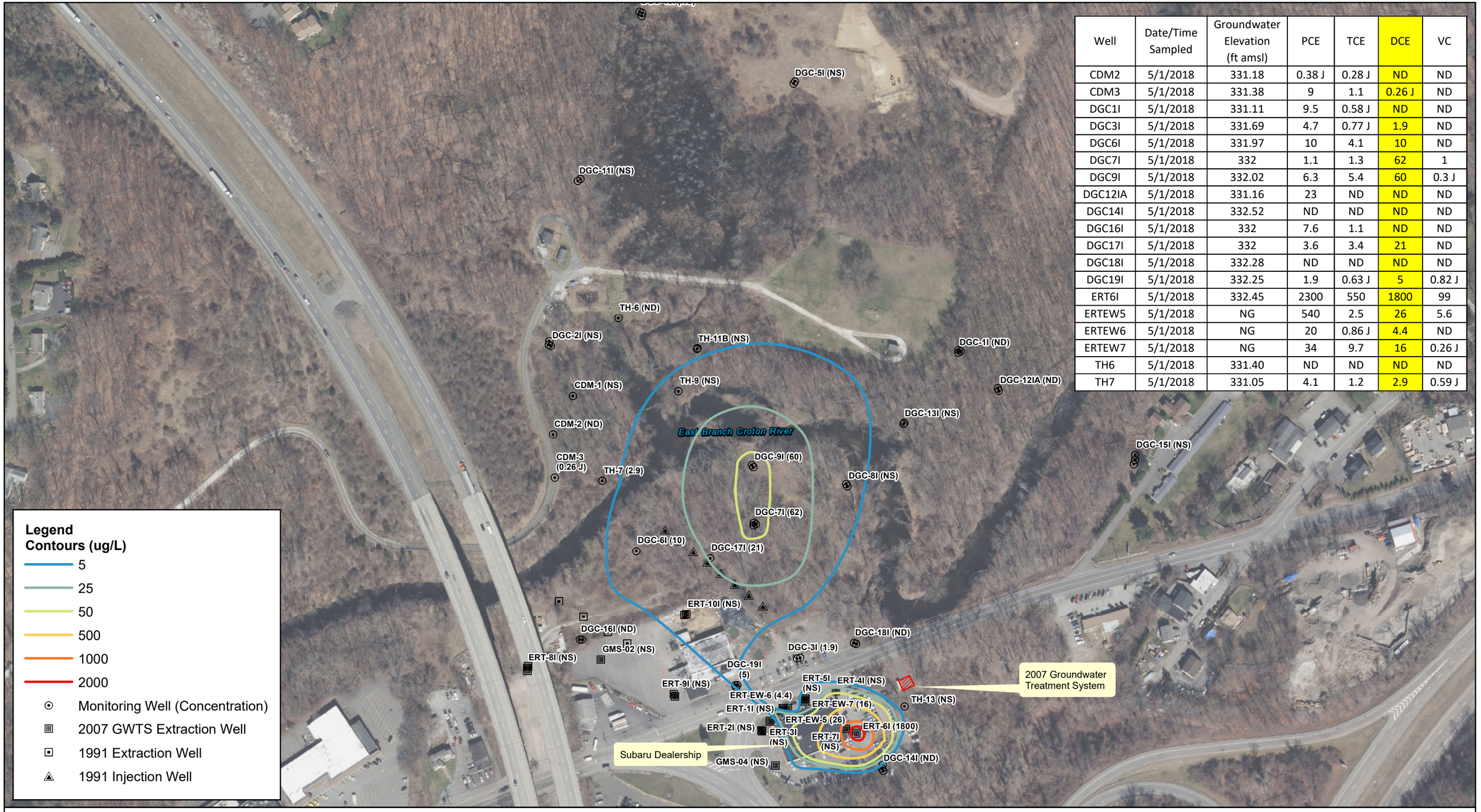
1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 7

CDM Smith

Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM2	5/1/2018	331.18	0.38 J	0.28 J	ND	ND
CDM3	5/1/2018	331.38	9	1.1	0.26 J	ND
DGC1I	5/1/2018	331.11	9.5	0.58 J	ND	ND
DGC3I	5/1/2018	331.69	4.7	0.77 J	1.9	ND
DGC6I	5/1/2018	331.97	10	4.1	10	ND
DGC7I	5/1/2018	332	1.1	1.3	62	1
DGC9I	5/1/2018	332.02	6.3	5.4	60	0.3 J
DGC12IA	5/1/2018	331.16	23	ND	ND	ND
DGC14I	5/1/2018	332.52	ND	ND	ND	ND
DGC16I	5/1/2018	332	7.6	1.1	ND	ND
DGC17I	5/1/2018	332	3.6	3.4	21	ND
DGC18I	5/1/2018	332.28	ND	ND	ND	ND
DGC19I	5/1/2018	332.25	1.9	0.63 J	5	0.82 J
ERT6I	5/1/2018	332.45	2300	550	1800	99
ERTEW5	5/1/2018	NG	540	2.5	26	5.6
ERTEW6	5/1/2018	NG	20	0.86 J	4.4	ND
ERTEW7	5/1/2018	NG	34	9.7	16	0.26 J
TH6	5/1/2018	331.40	ND	ND	ND	ND
TH7	5/1/2018	331.05	4.1	1.2	2.9	0.59 J



N

Notes:

1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater DCE Concentrations for Intermediate Wells - May 2018

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 8

CDM Smith

HARROLDAM \\ALBSVR2\Alb2_Projects\NYSDEC D007621\WA#8 - Brewster Village Well Field\Brewster 2018 PRR\Shapefiles\NEW\Fig8_DCE_InterGW_Contour_2018.mxd 2/14/2019

Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM2	5/1/2018	331.18	0.38 J	0.28 J	ND	ND
CDM3	5/1/2018	331.38	9	1.1	0.26 J	ND
DGC1I	5/1/2018	331.11	9.5	0.58 J	ND	ND
DGC3I	5/1/2018	331.69	4.7	0.77 J	1.9	ND
DGC6I	5/1/2018	331.97	10	4.1	10	ND
DGC7I	5/1/2018	332	1.1	1.3	62	1
DGC9I	5/1/2018	332.02	6.3	5.4	60	0.3 J
DGC12IA	5/1/2018	331.16	23	ND	ND	ND
DGC14I	5/1/2018	332.52	ND	ND	ND	ND
DGC16I	5/1/2018	332	7.6	1.1	ND	ND
DGC17I	5/1/2018	332	3.6	3.4	21	ND
DGC18I	5/1/2018	332.28	ND	ND	ND	ND
DGC19I	5/1/2018	332.25	1.9	0.63 J	5	0.82 J
ERT6I	5/1/2018	332.45	2300	550	1800	99
ERTEW5	5/1/2018	NG	540	2.5	26	5.6
ERTEW6	5/1/2018	NG	20	0.86 J	4.4	ND
ERTEW7	5/1/2018	NG	34	9.7	16	0.26 J
TH6	5/1/2018	331.40	ND	ND	ND	ND
TH7	5/1/2018	331.05	4.1	1.2	2.9	0.59 J



N

Notes:
1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

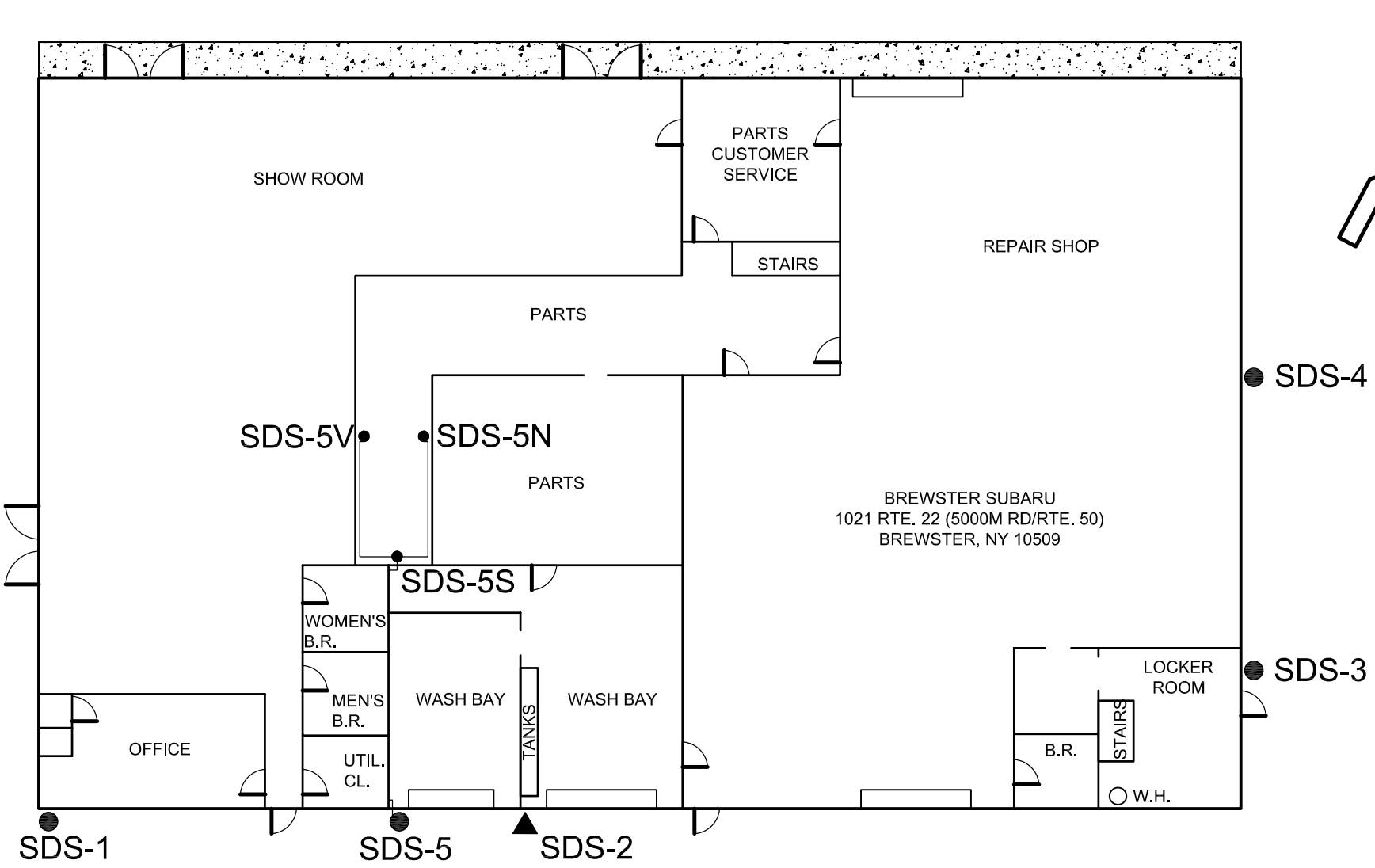
Groundwater VC Concentrations for Intermediate Wells - May 2018

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 9

CDM Smith



SUB SLAB WELL
HIGH FLOW VAPOR MITIGATION UNIT (RADONAWAY HS 2000)
VERY HIGH FLOW VAPOR MITIGATION UNIT (RADONAWAY HS 5000)

CDM Smith

Camp Dresser McKee & Smith

Sub-Slab Depressurization System Location Map
NYSDEC Brewster Village Well Field

Figure 11 - Draft Project Calendar
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Activity	January	February	March	April	May	June	July	August	September	October	November	December	Notes
Aztech													
Flow wheel cleaning	X			X		X	X	X		X		X	
GWTS Sampling	X	X	X	X	X	X	X	X	X	X	X	X	
O&M Report	X	X	X	X	X	X	X	X	X	X	X	X	
Site Maintenance	X	X	X	X	X	X	X	X	X	X	X	X	
Surge and Pump Ex. Wells Clean Lines to GWTS			X										
Develop ERTEW5				X									
Cycle Extraction Wells				X					X			X	
Air Stripper Tray Cleaning (GWTS)	X												Annual
VFD Filter Replacement												X	As-needed
Adirondack Environmental Services													
Analytical Report & EDDs	X	X	X	X	X	X	X	X	X	X	X	X	
Village of Brewster													
Quarterly Analytical Report	X			X			X			X			
CDM Smith													
PRR Due		X											
Groundwater Well Inspection					X								
SSDS Inspection					X								
Site-Wide Inspection					X								
Groundwater Well Gauging					X								
Goundwater Well Sampling					X								
Remedial System Optimization						X	X	X	X	X	X		
Emerging Contaminant Sampling											X		
Laboratory													
GW Well Analytical Report & EDDs						X							
Nancy Potak													
Third-Party Analytical Validation							X						

Appendix A 2018 PRR Data Tables

Table 1	Groundwater Treatment System Pumping Volumes February 2008 through December 2018
Table 2A	Groundwater Treatment System Analytical Results - ERTEW5 March 2008 through December 2018
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Table 4A	Groundwater Gauging Summary – Shallow Wells May 2018
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Table 5A	Groundwater Analytical Results – Shallow Wells May 2018
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Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
2/29/2008	18	1,324,645	18	272,925	13	2,453,764	48	4,051,335
3/7/2008	17	1,495,321	20	353,840	13	2,584,020	49	4,433,181
3/14/2008	12	1,523,959	24	354,009	14	2,606,916	51	4,484,884
3/24/2008	15	1,750,021	24	486,976	14	2,825,147	54	5,062,144
3/31/2008	17	1,904,268	23	487,705	15	2,976,897	55	5,368,871
4/7/2008	18	2,056,320	21	522,759	16	3,143,507	56	5,722,586
4/14/2008	20	2,186,467	19	532,393	16	3,312,573	55	6,031,433
4/21/2008	14	2,331,913	23	537,358	15	3,529,825	53	6,399,096
4/29/2008	12	2,498,257	23	576,003	14	3,646,299	50	6,720,559
5/12/2008	16	2,678,554	21	597,223	16	3,824,564	54	7,100,341
5/19/2008	13	2,822,973	15	617,080	15	3,989,764	42	7,429,817
6/6/2008	21	3,150,964	13	636,937	13	4,377,679	47	8,165,580
6/13/2008	19	3,198,989	15	637,075	14	4,422,679	49	8,258,744
6/19/2008	19	3,281,586	19	689,236	12	4,488,708	49	8,459,529
6/24/2008	17	3,403,374	0	755,704	13	4,575,187	29	8,734,266
7/11/2008	23	3,553,688	21	808,440	16	4,687,311	60	9,049,439
7/18/2008	22	3,556,987	21	809,268	16	4,693,278	59	9,059,533
7/25/2008	23	3,557,866	21	809,653	16	4,699,287	60	9,066,805
7/31/2008	21	3,705,618	21	830,214	16	4,810,950	58	9,346,782
8/7/2008	0	3,730,163	22	832,633	22	4,897,020	44	9,459,815
8/29/2008	22	3,839,326	4	880,496	19	5,173,524	46	9,893,347
9/5/2008	22	4,059,790	4	893,340	17	5,185,288	43	10,138,418
9/12/2008	0	4,110,414	0	902,050	0	5,223,644	0	10,236,108
9/19/2008	24	4,334,401	3	935,953	15	5,380,150	42	10,650,504
9/26/2008	23	4,570,708	3	965,118	15	5,525,211	40	11,061,037
10/3/2008	23	4,794,546	2	985,183	12	5,658,214	37	11,437,943
10/10/2008	23	5,024,665	2	991,915	10	5,765,005	34	11,781,585
10/17/2008	23	5,254,819	0	1,005,207	8	5,853,736	31	12,113,762
10/24/2008	22	5,482,619	0	1,005,207	6	5,921,258	28	12,409,084
10/31/2008	19	5,579,304	2	1,005,207	5	5,946,426	25	12,530,937
11/7/2008	11	5,733,990	2	1,005,213	3	5,984,844	16	12,724,047
11/14/2008	9	5,827,978	2	1,005,213	0	5,989,913	11	12,823,104
11/21/2008	25	5,945,312	2	1,005,213	21	6,039,624	47	12,990,149

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
11/28/2008	0	6,018,782	0	1,005,213	0	6,100,954	0	13,124,949
12/5/2008	0	6,018,938	0	1,005,217	0	6,101,083	0	13,125,238
12/12/2008	21	6,130,099	2	1,005,233	12	6,168,418	35	13,303,750
12/19/2008	21	6,340,169	2	1,005,233	12	6,290,243	34	13,635,645
12/26/2008	21	6,549,295	2	1,005,233	13	6,413,932	35	13,968,460
1/2/2009	21	6,764,422	2	1,005,233	13	6,544,977	35	14,314,632
1/9/2009	21	6,974,646	2	1,005,233	6	6,655,737	28	14,635,616
1/16/2009	21	7,184,524	2	1,005,233	6	6,720,821	29	14,910,578
1/22/2009	20	7,399,747	2	1,005,233	12	6,796,877	34	15,201,857
1/30/2009	21	7,597,792	2	1,005,233	14	6,927,807	37	15,530,832
2/6/2009	20	7,800,828	2	1,005,233	14	7,065,627	35	15,871,688
2/13/2009	20	8,003,109	2	1,005,284	14	7,201,647	36	16,210,040
2/20/2009	20	8,208,958	0	1,005,311	14	7,339,821	34	16,554,090
2/27/2009	19	8,409,772	3	1,008,404	14	7,480,880	36	16,899,056
3/6/2009	20	8,603,872	2	1,033,408	14	7,622,559	36	17,259,839
3/13/2009	19	8,798,462	1	1,039,346	14	7,760,276	35	17,598,084
3/20/2009	0	8,985,333	0	1,039,346	0	7,894,976	0	17,919,655
3/27/2009	0	8,985,371	2	1,039,724	14	7,974,378	16	17,999,473
4/3/2009	23	9,080,490	3	1,051,725	13	8,108,801	38	18,241,016
4/10/2009	22	9,005,445	2	1,309,261	14	8,850,317	39	19,165,023
4/17/2009	22	9,230,579	2	1,326,865	14	8,994,419	38	19,551,863
4/24/2009	22	9,454,950	2	1,343,269	14	9,135,992	38	19,934,211
5/1/2009	22	9,677,877	0	1,348,423	0	9,157,480	22	20,183,780
5/8/2009	23	9,903,262	2	1,352,674	17	9,203,189	42	20,459,125
5/13/2009	23	10,132,152	3	1,371,924	15	9,370,768	41	20,874,844
5/22/2009	23	10,364,045	1	1,388,107	15	9,520,355	38	21,272,507
5/29/2009	23	10,593,596	4	1,397,138	15	9,670,056	41	21,660,790
6/5/2009	23	10,822,856	3	1,433,580	15	9,817,544	40	22,073,980
6/12/2009	23	11,051,550	0	1,440,959	14	9,964,730	37	22,457,239
6/19/2009	23	11,280,232	0	1,440,959	15	10,110,527	37	22,831,718
6/26/2009	22	11,507,414	0	1,440,959	15	10,256,087	37	23,204,460
7/3/2009	22	11,729,902	4	1,457,145	15	10,403,479	41	23,590,526
7/10/2009	22	11,948,899	3	1,492,360	15	10,553,833	39	23,995,092
7/17/2009	23	12,169,364	4	1,519,709	16	10,709,598	42	24,398,671
7/24/2009	23	12,395,868	0	1,536,898	16	10,872,462	39	24,805,228
7/31/2009	22	12,621,557	1	1,541,562	16	11,034,486	40	25,197,605

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
8/7/2009	0	12,841,386	0	1,568,039	0	11,190,981	0	25,600,406
8/14/2009	23	12,965,100	3	1,589,389	15	11,271,133	40	25,825,622
8/21/2009	23	13,191,453	1	1,605,456	15	11,418,603	39	26,215,512
8/28/2009	22	13,329,379	4	1,627,865	17	11,515,573	43	26,472,817
9/4/2009	23	13,552,964	1	1,658,310	16	11,676,814	40	26,888,088
9/11/2009	22	13,780,933	5	1,670,500	15	11,838,762	42	27,290,195
9/18/2009	22	14,004,880	2	1,710,085	15	11,987,317	39	27,702,282
9/21/2009	22	14,100,481	0	1,715,640	14	12,049,764	36	27,865,885
10/10/2009	21	14,696,773	0	1,789,234	14	12,474,464	36	28,960,471
10/16/2009	22	14,884,177	2	1,790,697	14	12,592,100	37	29,266,974
10/23/2009	21	15,102,130	0	1,805,085	12	12,721,781	34	29,628,996
10/30/2009	21	15,319,405	4	1,821,273	14	12,851,239	39	29,991,917
11/6/2009	21	15,536,486	1	1,850,685	13	12,985,991	35	30,373,162
11/13/2009	22	15,753,743	0	1,856,116	11	13,104,365	32	30,714,224
11/20/2009	22	15,971,893	4	1,865,049	9	13,205,493	35	31,042,435
11/27/2009	22	16,191,094	3	1,901,197	7	13,288,778	32	31,381,069
12/4/2009	22	16,409,755	2	1,930,267	6	13,355,321	30	31,695,343
12/11/2009	22	16,628,065	2	1,949,840	5	13,409,910	29	31,987,815
12/18/2009	22	16,847,048	2	1,968,738	4	13,452,423	27	32,268,209
12/25/2009	22	17,066,320	4	1,990,404	3	13,485,536	30	32,542,260
1/1/2010	22	17,289,203	2	2,024,958	1	13,510,510	25	32,824,671
1/8/2010	22	17,513,559	1	2,037,056	0	13,514,324	23	33,064,939
1/16/2010	22	17,767,494	4	2,064,469	18	13,608,913	44	33,440,876
1/22/2010	21	17,955,205	3	2,094,307	18	13,763,315	42	33,812,827
1/29/2010	21	18,172,073	3	2,106,666	18	13,944,634	43	34,223,373
2/5/2010	21	18,386,794	3	2,135,908	19	14,132,871	43	34,655,573
2/12/2010	21	18,599,611	1	2,153,547	19	14,322,820	42	35,075,978
2/19/2010	21	18,810,800	0	2,161,762	19	14,513,626	40	35,486,188
2/26/2010	21	19,020,352	5	2,181,147	19	14,705,158	45	35,906,657
3/5/2010	21	19,230,932	4	2,226,889	19	14,899,606	45	36,357,427
3/12/2010	21	19,442,651	0	2,244,498	19	15,093,866	41	36,781,015
3/19/2010	21	19,605,155	0	2,244,499	20	15,243,931	41	37,093,585
3/26/2010	21	19,819,250	0	2,244,499	20	15,441,415	41	37,505,164
4/2/2010	22	20,033,778	4	2,254,781	20	15,638,664	45	37,927,223
4/9/2010	21	20,249,638	4	2,292,699	20	15,838,145	45	38,380,482
4/16/2010	21	20,465,225	4	2,330,078	20	16,036,607	44	38,831,910

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
4/23/2010	21	20,673,210	0	2,361,230	20	16,230,432	41	39,264,872
4/30/2010	51	20,969,658	13	2,409,102	49	16,509,303	113	39,888,063
5/7/2010	51	21,489,031	13	2,541,276	49	16,999,876	113	41,030,183
5/14/2010	20	21,930,807	5	2,653,523	19	17,415,852	45	42,000,182
5/28/2010	21	22,043,416	0	2,680,814	19	17,519,746	40	42,243,976
6/4/2010	21	22,253,471	0	2,680,814	19	17,710,009	40	42,644,294
6/11/2010	20	22,460,100	3	2,694,248	19	17,899,106	43	43,053,454
6/18/2010	20	22,666,323	3	2,725,487	19	18,089,994	42	43,481,804
6/25/2010	20	22,870,099	3	2,757,235	19	18,278,397	42	43,905,731
7/2/2010	20	23,074,083	3	2,788,332	18	18,465,127	42	44,327,542
7/9/2010	20	23,277,784	3	2,815,392	18	18,649,548	41	44,742,724
7/16/2010	20	23,481,578	2	2,839,524	18	18,832,346	41	45,153,448
7/23/2010	20	23,684,915	2	2,861,691	18	19,012,695	40	45,559,301
7/30/2010	20	23,888,172	3	2,885,947	17	19,189,721	41	45,963,840
8/6/2010	20	24,026,434	2	2,901,796	17	19,307,649	40	46,235,879
8/13/2010	21	24,226,613	3	2,921,321	17	19,477,587	41	46,625,521
8/20/2010	21	24,354,035	0	2,926,677	17	19,585,547	38	46,866,259
8/27/2010	21	24,552,045	0	2,926,677	17	19,753,479	38	47,232,201
9/4/2010	21	24,770,095	0	2,926,702	17	19,938,322	38	47,635,119
9/10/2010	21	24,947,865	0	2,926,702	17	20,089,590	38	47,964,157
9/17/2010	21	25,155,254	0	2,926,702	17	20,263,737	38	48,345,693
9/24/2010	20	25,362,426	0	2,926,702	16	20,432,955	37	48,722,083
10/1/2010	21	25,569,214	4	2,938,100	16	20,596,768	40	49,104,082
10/8/2010	21	25,776,178	3	2,972,218	16	20,756,987	40	49,505,383
10/15/2010	20	25,982,271	3	3,001,898	16	20,914,773	39	49,898,942
10/22/2010	20	26,188,052	3	3,028,160	15	21,070,167	38	50,286,379
10/29/2010	20	26,392,138	4	3,055,781	15	21,223,367	39	50,671,286
11/5/2010	20	26,595,402	3	3,091,585	15	21,374,372	39	51,061,359
11/12/2010	0	26,717,210	3	3,123,944	15	21,524,936	18	51,366,090
11/19/2010	0	26,717,210	3	3,152,327	15	21,676,368	18	51,545,905
11/26/2010	0	26,717,210	2	3,176,091	15	21,826,482	17	51,719,783
12/1/2010	0	26,717,566	5	3,192,309	14	21,932,918	19	51,842,793
12/3/2010	0	26,717,566	4	3,205,075	14	21,974,533	19	51,897,174
12/10/2010	0	26,717,566	4	3,247,114	14	22,119,817	19	52,084,497
12/17/2010	0	26,717,749	4	3,287,041	15	22,267,057	19	52,271,847

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
12/24/2010	0	26,717,749	4	3,327,788	15	22,418,492	19	52,464,029
12/31/2010	0	26,717,751	4	3,369,000	15	22,572,707	19	52,659,458
1/7/2011	0	26,717,751	4	3,409,741	16	22,729,060	20	52,856,552
1/14/2011	0	26,717,751	4	3,450,597	15	22,884,949	19	53,053,297
1/21/2011	0	26,717,751	4	3,491,679	16	23,040,503	20	53,249,933
1/28/2011	0	26,717,787	4	3,520,135	16	23,150,995	20	53,388,917
2/4/2011	0	26,717,787	4	3,554,739	16	23,310,519	19	53,583,045
2/11/2011	0	26,717,787	3	3,588,760	16	23,471,474	19	53,778,021
2/18/2011	0	26,717,787	3	3,622,611	16	23,632,754	19	53,973,152
2/25/2011	16	26,737,926	3	3,656,277	16	23,794,082	35	54,188,285
3/4/2011	16	26,897,935	3	3,688,023	16	23,955,653	35	54,541,611
3/11/2011	12	26,990,253	3	3,707,599	12	24,046,064	27	54,743,916
3/18/2011	20	27,158,404	3	3,738,555	17	24,194,196	40	55,091,155
3/25/2011	19	27,355,498	3	3,769,208	18	24,370,898	40	55,495,604
4/1/2011	19	27,550,241	4	3,803,779	18	24,541,071	41	55,895,091
4/8/2011	21	27,750,613	4	3,843,208	0	24,672,766	25	56,266,587
4/15/2011	21	27,958,624	4	3,881,533	0	24,791,005	24	56,631,162
4/22/2011	21	28,167,760	0	3,915,379	0	24,896,988	21	56,980,127
4/29/2011	20	28,357,999	0	3,915,381	18	24,917,803	39	57,191,183
5/3/2011	21	28,475,197	0	3,915,381	18	25,021,332	39	57,411,910
5/17/2011	20	28,877,883	7	4,061,172	18	25,377,573	46	58,316,628
5/20/2011	20	28,964,754	7	4,092,579	18	25,455,131	46	58,512,464
5/27/2011	20	29,165,527	7	4,165,914	18	25,636,444	45	58,967,885
6/3/2011	19	29,357,158	7	4,239,463	18	25,815,824	44	59,412,445
6/12/2011	19	29,540,498	7	4,315,701	18	26,001,555	44	59,857,754
6/17/2011	19	29,674,554	7	4,368,183	18	26,129,170	44	60,171,907
6/23/2011	19	29,834,057	7	4,431,219	18	26,282,382	43	60,547,658
6/3/2011	19	29,357,158	7	4,239,463	18	25,815,824	44	59,412,445
6/10/2011	0	29,518,090	0	4,306,903	0	25,980,320	0	59,805,313
6/17/2011	19	29,674,554	7	4,368,183	18	26,129,170	44	60,171,907
6/24/2011	18	29,860,609	7	4,441,774	18	26,307,973	44	60,610,356
7/1/2011	18	30,044,088	7	4,515,776	18	26,486,570	43	61,046,434
7/8/2011	19	30,143,963	7	4,556,005	17	26,581,510	44	61,281,478
7/15/2011	18	30,327,971	7	4,629,947	17	26,756,946	43	61,714,864
7/22/2011	18	30,510,750	7	4,704,323	18	26,931,911	43	62,146,984

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
7/29/2011	18	30,692,132	7	4,778,725	17	27,106,478	43	62,577,335
8/5/2011	18	30,871,619	8	4,853,975	17	27,281,222	42	63,006,816
8/12/2011	18	31,048,569	7	4,928,928	17	27,455,872	42	63,433,369
8/19/2011	17	31,224,852	7	5,003,279	17	27,630,406	42	63,858,537
8/26/2011	17	31,331,255	7	5,048,044	17	27,735,661	42	64,114,960
9/2/2011	13	31,458,168	7	5,109,977	18	27,882,951	38	64,451,096
9/9/2011	0	31,570,282	0	5,170,857	0	28,028,963	0	64,770,102
9/16/2011	13	31,694,007	7	5,241,797	18	28,201,758	38	65,137,562
9/23/2011	13	31,825,759	7	5,314,935	18	28,381,312	38	65,522,006
9/30/2011	13	31,957,820	7	5,387,569	18	28,561,112	38	65,906,501
10/7/2011	14	32,102,216	7	5,459,876	18	28,738,280	39	66,300,372
10/14/2011	0	32,221,639	0	5,519,204	0	28,885,059	0	66,625,902
10/21/2011	14	32,301,105	7	5,558,499	18	28,982,745	39	66,842,349
10/28/2011	14	32,444,336	7	5,629,229	18	29,161,237	39	67,234,802
11/4/2011	13	32,546,225	7	5,681,825	18	29,295,150	38	67,523,200
11/11/2011	13	32,680,311	7	5,751,636	18	29,475,517	38	67,907,464
11/18/2011	14	32,814,830	7	5,820,146	18	29,655,760	38	68,290,736
11/25/2011	14	32,955,752	7	5,887,572	18	29,836,798	39	68,680,122
12/2/2011	14	33,097,520	7	5,954,478	18	30,019,093	39	69,071,091
12/9/2011	14	33,235,898	7	6,020,718	18	30,202,032	39	69,458,648
12/16/2011	13	33,351,327	6	6,076,575	18	30,359,137	37	69,787,039
12/23/2011	13	33,497,565	6	6,150,285	18	30,569,996	37	70,217,846
12/30/2011	12	33,622,658	6	6,214,184	19	30,755,809	37	70,592,651
1/6/2012	12	33,744,380	6	6,277,272	19	30,942,401	37	70,964,053
1/13/2012	13	33,829,509	6	6,319,408	18	31,072,213	37	71,221,130
1/20/2012	13	33,960,769	6	6,376,682	19	31,257,916	37	71,595,367
1/27/2012	13	34,091,737	6	6,432,833	19	31,444,964	37	71,969,534
2/3/2012	13	34,222,936	5	6,487,731	19	31,633,189	37	72,343,856
2/10/2012	13	34,353,053	5	6,541,426	19	31,821,697	37	72,716,176
2/17/2012	11	34,462,968	5	6,593,470	19	32,014,228	35	73,070,666
2/24/2012	11	34,569,583	5	6,644,843	19	32,207,659	35	73,422,085
3/2/2012	11	34,675,777	5	6,694,544	19	32,401,549	35	73,771,870
3/9/2012	11	34,783,143	5	6,742,010	19	32,596,203	35	74,121,356
3/16/2012	11	34,889,114	5	6,788,766	19	32,789,016	35	74,466,896
3/23/2012	16	35,004,130	4	6,819,118	19	32,974,838	39	74,798,086

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
3/30/2012	16	35,164,779	3	6,854,163	19	33,167,625	38	75,186,567
4/6/2012	16	35,323,621	3	6,888,218	19	33,359,192	38	75,571,031
4/13/2012	16	35,480,298	3	6,921,216	19	33,551,770	38	75,953,284
4/20/2012	16	35,638,921	3	6,952,867	19	33,745,487	38	76,337,275
4/27/2012	16	35,800,880	3	6,983,043	19	33,938,814	38	76,722,737
5/4/2012	16	35,963,419	3	7,011,632	19	34,131,737	38	77,106,788
5/11/2012	16	36,125,131	3	7,038,652	19	34,324,351	38	77,488,134
5/18/2012	16	36,286,925	2	7,063,922	19	34,516,443	37	77,867,290
5/25/2012	16	36,446,617	2	7,087,276	19	34,707,775	37	78,241,668
6/1/2012	16	36,602,887	0	7,099,725	19	34,898,201	35	78,600,813
6/15/2012	14	36,903,629	2	7,124,839	19	35,273,756	35	79,302,224
6/22/2012	14	37,048,593	1	7,140,327	18	35,459,453	34	79,648,373
7/13/2012	14	37,386,013	1	7,156,708	19	35,910,079	33	80,452,800
7/20/2012	14	37,505,888	1	7,163,097	19	36,075,028	33	80,744,013
7/27/2012	14	37,645,059	0	7,164,203	19	36,265,378	32	81,074,640
8/3/2012	0	37,750,889	0	7,164,216	0	36,410,925	0	81,326,030
8/10/2012	15	37,791,205	1	7,166,042	19	36,459,963	35	81,417,210
8/17/2012	16	37,946,720	1	7,171,091	19	36,651,260	35	81,769,071
8/24/2012	15	38,101,563	1	7,171,093	19	36,843,157	35	82,115,813
8/31/2012	15	38,255,498	0	7,171,093	19	37,034,579	34	82,461,170
9/7/2012	15	38,410,697	0	7,171,093	18	37,223,079	34	82,804,869
9/14/2012	16	38,568,221	0	7,171,093	19	37,411,744	35	83,151,058
9/21/2012	16	38,726,691	0	7,171,093	19	37,600,394	35	83,498,178
9/28/2012	16	38,886,144	1	7,171,115	19	37,789,981	35	83,847,240
10/5/2012	16	39,047,953	1	7,173,855	19	37,979,352	36	84,201,160
10/12/2012	16	39,210,823	1	7,174,852	19	38,169,117	36	84,554,792
10/19/2012	16	39,373,958	0	7,174,861	19	38,359,323	35	84,908,142
10/26/2012	16	39,536,784	1	7,174,861	19	38,550,179	36	85,261,824
11/2/2012	0	39,617,654	0	7,174,861	0	38,649,859	0	85,442,374
11/9/2012	16	39,682,111	0	7,174,865	19	38,735,115	35	85,592,091
11/16/2012	16	39,843,287	0	7,174,865	19	38,928,561	35	85,946,713
11/23/2012	16	40,004,455	0	7,174,865	19	39,122,468	35	86,301,788
11/30/2012	16	40,165,783	0	7,174,865	19	39,315,402	35	86,656,050
12/7/2012	16	40,311,885	0	7,174,867	19	39,492,289	35	86,979,041
12/14/2012	16	40,471,645	0	7,174,867	19	39,683,387	35	87,329,899

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
12/21/2012	16	40,632,416	0	7,174,867	19	39,874,884	35	87,682,167
12/28/2012	16	40,793,305	0	7,174,867	19	40,066,343	35	88,034,515
1/4/2013	16	40,955,027	0	7,174,867	19	40,258,181	35	88,388,075
1/11/2013	13	41,100,733	0	7,174,867	19	40,446,569	31	88,722,169
1/18/2013	13	41,232,420	0	7,174,867	19	40,632,235	32	89,039,522
1/25/2013	14	41,366,184	0	7,174,867	18	40,816,038	33	89,357,089
2/1/2013	15	41,512,395	0	7,174,867	18	40,997,462	32	89,684,724
2/7/2013	0	41,619,820	0	7,174,868	0	41,131,213	0	89,925,901
2/15/2013	15	41,784,626	0	7,174,867	21	41,366,400	36	90,325,893
2/22/2013	14	41,931,854	0	7,174,867	22	41,580,272	36	90,686,993
3/1/2013	17	42,083,911	0	7,174,867	22	41,794,620	39	91,053,398
3/8/2013	17	42,255,636	0	7,174,867	22	42,014,544	39	91,445,047
3/15/2013	17	42,426,056	0	7,174,867	22	42,233,201	39	91,834,124
3/22/2013	0	42,546,830	0	7,174,867	22	42,455,465	22	92,177,162
3/29/2013	0	42,546,830	0	7,174,868	22	42,679,502	22	92,401,200
4/5/2013	0	42,546,830	0	7,174,868	23	42,904,728	23	92,626,426
4/12/2013	0	42,546,830	0	7,174,868	22	43,130,161	22	92,851,859
4/19/2013	0	42,546,830	0	7,174,868	22	43,353,397	22	93,075,095
4/26/2013	0	42,546,830	0	7,174,868	22	43,582,418	22	93,304,116
5/3/2013	0	42,546,830	0	7,174,868	22	43,807,382	22	93,529,080
5/10/2013	20	42,616,623	0	7,174,869	23	43,990,246	43	93,781,738
5/17/2013	18	42,811,404	0	7,174,869	23	44,216,824	41	94,203,097
5/24/2013	18	42,996,601	0	7,174,869	23	44,423,611	41	94,595,081
5/31/2013	18	43,181,087	0	7,174,869	23	44,644,460	41	95,000,416
6/7/2013	18	43,320,235	0	7,174,869	22	44,781,185	40	95,276,289
6/14/2013	22	43,520,552	0	7,174,869	23	44,927,834	45	95,623,255
6/19/2013	20	43,669,366	0	7,174,869	23	45,022,142	43	95,866,377
6/26/2013	19	43,907,167	0	7,174,869	22	45,289,792	42	96,371,828
7/3/2013	18	44,099,009	0	7,174,869	22	45,516,436	41	96,790,314
7/9/2013	18	44,203,860	0	7,174,869	23	45,645,954	40	97,024,683
7/27/2013	16	44,436,047	0	7,174,869	22	45,952,640	38	97,563,556
8/2/2013	16	44,569,682	0	7,174,869	22	46,142,102	38	97,886,653
8/9/2013	15	44,722,061	0	7,174,869	22	46,364,904	37	98,261,834
8/16/2013	17	44,857,113	0	7,174,870	22	46,555,743	39	98,587,726
8/23/2013	17	45,026,410	0	7,174,893	22	46,774,571	39	98,975,874

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
8/28/2013	17	45,147,224	0	7,174,893	22	46,929,663	38	99,251,780
9/6/2013	17	45,362,749	3	7,195,154	21	47,202,085	40	99,759,988
9/13/2013	0	45,522,051	0	7,210,005	0	47,401,239	0	100,133,295
9/20/2013	0	45,522,051	0	7,210,005	0	47,401,239	0	100,133,295
9/27/2013	17	45,535,413	0	7,210,005	21	47,417,771	38	100,163,189
10/4/2013	19	45,720,357	0	7,210,005	21	47,631,244	40	100,561,606
10/11/2013	19	45,903,534	3	7,214,096	0	47,825,611	21	100,943,241
10/18/2013	18	46,086,572	2	7,242,195	0	47,825,611	20	101,154,378
10/25/2013	0	46,188,175	0	7,250,540	0	47,825,681	0	101,264,396
11/1/2013	18	46,281,373	0	7,250,540	0	47,826,604	18	101,358,517
11/8/2013	17	46,456,330	0	7,250,540	0	47,826,604	17	101,533,474
11/15/2013	17	46,631,325	0	7,250,540	0	47,826,604	17	101,708,469
11/22/2013	17	46,800,936	0	7,250,540	0	47,830,428	17	101,881,904
11/29/2013	15	46,915,045	0	7,250,540	0	47,830,428	15	101,996,013
12/6/2013	15	47,067,060	0	7,250,540	0	47,830,428	15	102,148,028
12/13/2013	15	47,215,842	0	7,250,540	21	47,881,428	35	102,347,810
12/20/2013	14	47,361,300	0	7,250,540	21	48,096,595	36	102,708,435
12/27/2013	14	47,505,253	0	7,250,540	22	48,314,012	36	103,069,805
1/1/2014	14	47,607,434	0	7,250,540	22	48,469,948	36	103,327,922
1/3/2014	14	47,648,112	0	7,250,540	22	48,532,420	36	103,431,072
1/9/2014	14	47,769,493	0	7,250,540	21	48,720,118	35	103,740,151
1/17/2014	14	47,926,394	0	7,250,540	22	48,966,064	35	104,142,998
1/24/2014	14	48,063,918	0	7,250,540	22	49,184,746	35	104,499,204
1/31/2014	13	48,198,325	0	7,250,540	22	49,403,655	35	104,852,520
2/7/2014	13	48,330,074	0	7,250,540	22	49,622,873	34	105,203,487
2/14/2014	13	48,459,964	0	7,250,540	22	49,842,438	35	105,552,942
2/21/2014	13	48,542,730	0	7,250,540	21	49,985,489	34	105,778,759
2/28/2014	12	48,665,523	0	7,250,540	22	50,203,625	34	106,119,688
3/4/2014	0	48,700,336	0	7,250,540	0	50,267,858	0	106,218,734
3/19/2014	11	48,939,080	0	7,250,540	22	50,728,219	32	106,917,839
4/5/2014	11	49,207,078	1	7,254,180	22	51,252,416	34	107,713,674
4/11/2014	11	49,301,862	0	7,257,430	22	51,442,608	33	108,001,900
4/12/2014	11	49,317,580	0	7,257,430	22	51,474,129	33	108,049,139
4/24/2014	10	49,308,863	14	7,266,428	21	51,456,605	45	108,031,896
4/25/2014	0	49,311,389	0	7,269,675	0	51,461,655	0	108,042,719

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
5/2/2014	9	49,366,875	14	7,346,034	22	51,581,969	45	108,294,878
5/9/2014	9	49,460,961	14	7,483,660	22	51,798,615	45	108,743,236
5/16/2014	9	49,552,930	14	7,620,566	21	52,012,824	44	109,186,320
5/23/2014	9	49,642,021	13	7,756,307	21	52,225,829	43	109,624,157
5/30/2014	8	49,724,469	13	7,890,952	21	52,438,495	43	110,053,916
6/6/2014	0	49,776,132	0	7,978,174	0	52,577,880	0	110,332,186
6/13/2014	8	49,783,396	13	7,990,619	22	52,597,952	43	110,371,967
6/20/2014	7	49,857,591	13	8,124,571	21	52,814,110	41	110,796,272
6/27/2014	6	49,918,651	13	8,258,258	21	53,028,637	40	111,205,546
7/4/2014	0	49,973,257	0	8,383,803	0	53,230,579	0	111,587,639
7/11/2014	5	50,001,744	13	8,454,032	21	53,344,189	39	111,799,965
7/18/2014	5	50,048,055	13	8,584,904	21	53,556,332	38	112,189,291
7/25/2014	4	50,092,785	13	8,713,818	21	53,766,740	38	112,573,343
8/1/2014	3	50,132,446	13	8,841,358	21	53,979,683	37	112,953,487
8/8/2014	3	50,164,627	13	8,968,395	21	54,193,255	37	113,326,277
8/15/2014	3	50,196,536	12	9,095,239	21	54,405,588	37	113,697,363
8/22/2014	2	50,223,866	13	9,221,777	21	54,617,875	36	114,063,518
8/29/2014	2	50,244,131	13	9,347,955	21	54,828,403	35	114,420,489
9/5/2014	0	50,253,298	2	9,440,823	21	55,002,550	23	114,696,671
9/9/2014	1	50,255,452	0	9,444,152	21	55,074,964	22	114,774,568
10/1/2014	11	50,588,092	14	9,799,564	21	55,752,916	45	116,140,572
11/6/2014	12	50,909,135	0	10,162,170	22	56,898,580	34	117,969,885
12/3/2014	11	51,135,012	0	10,162,174	14	57,442,900	25	118,740,086
12/8/2014		51,236,262		10,162,202		57,125,232		118,523,696
1/7/2015	13	51,767,388	0	10,162,202	20	57,847,958	33	119,777,548
3/2/2015	13	52,748,316	0	10,162,202	20	58,025,442	33	120,935,960
4/10/2015	13	52,913,247	12	10,162,427	21	59,133,255	45	122,208,929
5/7/2015	13	53,350,645	12	10,395,686	20	59,799,946	44	123,546,277
6/3/2015	13	53,854,329	13	10,880,638	19	60,545,600	44	125,280,567
7/9/2015	13	54,459,634	13	11,463,928	19	61,448,208	44	127,371,770
8/12/2015	11	54,833,914	0	11,464,153	20	62,055,007	31	128,353,074
9/1/2015	11	55,002,845	0	11,464,153	20	62,358,981	31	128,825,979
9/22/2015		55,292,765		11,464,614		62,891,761		129,649,140
10/6/2015		55,458,688		11,464,623		63,217,733		130,141,044
10/14/2015		55,560,013		11,464,630		63,439,224		130,463,867

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
10/20/2015		55,622,934		11,464,697		63,554,961		130,642,592
10/27/2015		55,639,056		11,464,697		63,588,771		130,692,524
11/3/2015		55,676,955		11,464,697		63,668,528		130,810,180
11/10/2015	10	55,709,923	0	11,464,796	20	63,738,123	29	130,912,842
12/1/2015	10	55,961,992	10	11,645,423	17	64,207,706	36	131,815,121
12/8/2015		56,056,271		11,740,359		64,364,877		132,161,507
12/15/2015		56,134,099		11,818,545		64,491,507		132,444,151
12/22/2015		56,232,861		11,916,867		64,652,612		132,802,340
12/29/2015		56,269,785		11,953,279		64,712,886		132,935,950
1/4/2016	10	56,306,261	10	11,989,721	16	64,773,624	36	133,069,606
1/5/2016		56,318,999		12,002,019		64,793,993		133,115,011
1/12/2016		56,418,885		12,100,676		64,955,383		133,474,944
1/19/2016		56,518,960		12,198,677		65,116,447		133,834,084
1/25/2016	10	56,589,165	10	12,271,107	14	65,262,840	34	134,123,112
2/2/2016	10	56,655,224	10	12,331,951	16	65,328,006	36	134,315,181
2/9/2016		56,739,279		12,414,029		65,459,258		134,612,566
2/16/2016		56,842,778		12,514,488		65,616,425		134,973,691
2/23/2016		56,944,500		12,612,545		65,769,213		135,326,258
3/1/2016		57,047,009		12,711,325		65,918,804		135,677,138
3/7/2016	10	57,136,099	10	12,797,105	15	66,045,719	34	135,978,923
3/8/2016		57,149,528		12,810,294		66,064,906		136,024,728
3/15/2016		57,210,988		12,840,158		66,107,942		136,159,088
3/22/2016		57,305,381		12,933,843		66,236,491		136,475,715
3/29/2016		57,393,292		13,021,008		66,355,922		136,770,222
4/12/2016		57,508,545		13,136,592		66,511,987	0	137,157,124
4/14/2016	10	57,546,160	11	13,186,109	14	66,608,745	35	137,341,014
4/19/2016		57,616,288		13,244,513		66,655,734		137,516,535
4/26/2016		57,715,544		13,341,378		66,785,760		137,842,682
5/3/2016		57,814,947		13,437,499		66,914,847		138,167,293
5/10/2016		57,866,003		13,487,668		66,980,308		138,333,979
5/12/2016	9	57,898,186	10	13,519,539	14	67,020,241	33	138,437,966
5/17/2016		57,954,533		13,588,202		67,119,668		138,662,403
5/24/2016		58,042,352		13,674,969		67,242,482		138,959,803
5/31/2016		58,080,126		13,712,517		67,292,057		139,084,700
6/7/2016	11	58,178,073	10	13,825,812	14	67,416,881	34	139,420,766

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
6/14/2016		58,224,485		13,854,351		67,483,662		139,562,498
6/21/2016		58,311,614		13,939,918		67,597,319		139,848,851
6/28/2016		58,409,984		14,033,048		67,722,788		140,165,820
7/5/2016		58,485,528		14,103,793		67,819,944		140,409,265
7/7/2016	10	58,515,879	10	14,133,724	14	67,860,996	34	140,510,599
7/12/2016		58,587,717		14,203,003		67,956,861		140,747,581
7/19/2016		58,686,705		14,297,728		68,086,733		141,071,166
7/26/2016		58,790,307		14,396,470		68,220,759		141,407,536
8/2/2016		58,885,615		14,488,131		68,345,518		141,719,264
8/4/2016	10	58,917,692	10	14,518,936	13	68,387,412	34	141,824,040
8/9/2016		58,989,758		14,587,664		68,481,960		142,059,382
8/16/2016		59,026,235		14,641,269		68,554,644		142,222,148
8/23/2016		59,026,235		14,684,124		68,615,188		142,325,547
8/30/2016		59,026,235		14,690,407		68,623,508		142,340,150
9/6/2016	0	59,026,235	10	14,785,308	14	68,751,459	24	142,563,002
9/13/2016		59,026,235		14,882,048		68,893,990		142,802,273
9/20/2016		59,026,235		14,973,905		69,029,633		143,029,773
9/27/2016		59,026,235		15,069,534		69,170,802		143,266,571
10/4/2016		59,026,235		15,168,382		69,315,588		143,510,205
10/11/2016		59,026,235		15,235,348		69,415,635		143,677,218
10/14/2016	12	59,026,368	9	15,281,654	15	69,486,074	35	143,794,096
10/18/2016		59,030,912		15,337,032		69,570,587		143,938,531
10/25/2016		59,030,912		15,431,818		69,715,607		144,178,337
11/1/2016	0	59,030,912	10	15,532,296	15	69,867,063	25	144,430,271
11/8/2016		59,030,913		15,593,907		69,959,784		144,584,604
11/15/2016		59,030,913		15,626,372		70,004,525		144,661,810
11/22/2016		59,030,913		15,727,788		70,136,875		144,895,576
11/29/2016		59,030,913		15,771,808		70,194,828		144,997,549
12/5/2016	0	59,030,913	10	15,857,756	14	70,309,195	24	145,197,864
12/6/2016		59,030,913		15,981,326		70,327,300		145,339,539
12/13/2016		59,030,913		15,970,350		70,467,273		145,468,536
12/20/2016		59,030,913		16,071,764		70,613,292		145,715,969
12/27/2016		59,030,913		16,166,301		70,753,281		145,950,495
1/4/2017	0	59,030,913	10	16,203,168	14	70,807,611	24	146,041,692
1/31/2017	12	59,253,596	10	16,535,644	14	71,266,451	36	147,055,691

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
3/1/2017	11	59,711,599	11	16,948,744	12	71,766,631	34	148,426,974
4/5/2017	12	60,180,593	11	17,370,445	13	72,222,164	36	149,773,202
4/21/2017	12	60,292,706	11	17,471,158	13	72,348,544	36	150,112,408
5/3/2017	11	60,538,173	10	17,692,003	13	72,627,566	35	150,857,742
6/9/2017	0	61,044,812	0	18,142,210	0	73,222,926	0	152,409,948
7/24/2017	12	61,047,679	10	18,144,839	14	73,226,440	36	152,418,958
8/3/2017	12	61,210,749	11	18,287,644	16	73,430,661	39	152,929,054
9/7/2017	12	61,239,154	11	18,725,524	14	74,120,825	36	154,085,503
10/4/2017	12	61,687,013	11	19,084,783	15	74,670,556	37	155,442,352
10/10/2017		61,782,816		19,161,732		74,786,000		155,730,548
10/17/2017		61,868,360		19,233,716		74,879,572		155,981,648
10/24/2017		61,967,831		19,315,131		74,991,921		156,274,883
10/31/2017		62,083,897		19,410,692		75,125,092		156,619,681
11/6/2017	12	62,153,779	11	19,467,952	13	75,205,259	36	156,826,990
11/14/2017		62,281,459		19,575,770		75,355,414		157,212,643
11/21/2017		62,405,666		19,670,864		75,502,206		157,578,736
11/28/2017		62,521,299		19,755,593		75,639,542		157,916,434
12/5/2017		62,629,195		19,833,187		75,766,158		158,228,540
12/6/2017	12	62,652,093	11	19,849,545	13	75,792,697	36	158,294,335
12/12/2017		62,748,449		19,918,528		75,905,330		158,572,307
12/19/2017	12	62,752,902	10	19,984,598	13	75,988,909		158,726,409
12/26/2017		62,862,906		20,065,989		76,105,830		159,034,725
1/5/2018	11	63,012,690	11	20,173,746	10	76,265,956	32	159,452,392
1/31/2018		63,059,813	10	20,259,526	14	76,398,343	24	159,717,682
2/1/2018	11	63,060,302	10	20,435,162	14	76,625,047	35	160,120,511
3/1/2018	11	63,198,867	11	20,439,379	13	76,859,355	34	160,497,601
4/3/2018	11	63,222,571	10	20,868,887	11	77,338,860	32	161,430,318
5/2/2018	11	63,661,622	11	21,299,282	11	77,827,681	32	162,788,585
6/7/2018	10	63,862,331	11	21,674,045	11	78,211,466	31	163,747,842
6/14/2018	10	63,862,617	12	21,674,275	13	78,211,794	34	163,748,686
7/5/2018	9	63,920,609	11	21,725,877	10	78,281,155	30	163,927,641
8/15/2018	10	63,921,394	12	21,726,779	5	78,281,592	26	163,929,765
9/8/2018	10	64,051,843	12	21,872,454	8	78,356,305	30	164,280,602
10/23/2018	11	64,060,913	12	22,608,363	6	78,826,203	28	165,495,479
11/9/2018	8	64,294,396	12	22,860,773	10	79,007,152	30	166,162,321

Table 1 - Groundwater Treatment System Pumping Volumes
February 2008 through December 2018

Date	ERTEW5		ERTEW6		ERTEW7		Combined Influent	
	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)	Flow Rate (gpm)	Cumulative Flow (gal)
12/6/2018	2	64,523,021	11	23,297,264	10	79,387,062	23	167,207,347
12/31/2018	2	64,599,675	11	23,695,822	10	79,750,845	23	168,046,342

Table 2A - Groundwater Treatment System Analytical Results ERTEW5
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
3/31/2008	160		10		1600		19	
4/30/2008	130		11		1600		27	
5/28/2008	120		8		420		15	
6/20/2008	110		8		760		9	
7/25/2008	41		8		2000		2	
8/29/2008	97		4		1800		19	
9/30/2008	67		3		1500		11	
10/30/2008	< 200		4		3000		9	
12/22/2008	41		2	J	1100	E	11	
1/22/2009	42		2	J	1300	E	7	J
2/25/2009	73		3	J	1400	ED	12	
3/31/2009	50		7	J	4100	E	2	J
5/1/2009	37		2	J	660	D	8	
5/29/2009	29		2	J	840	E	4	J
6/30/2009	35		2	J	1100	E	5	J
7/29/2009	32		2	J	1600	D	3	J
8/25/2009	34		2	J	610	D	3	J
9/24/2009	42		< 5		470		< 5	
10/27/2009	46		< 5		460		< 5	
11/23/2009	44		< 5		550		< 5	
12/22/2009	59		< 5		510		< 5	
1/28/2010	64		< 10		580		< 10	
2/23/2010	58		< 10		530		< 10	
3/31/2010	62		< 10		550		< 10	
4/20/2010	71		< 10		640		< 10	
5/26/2010	80		< 10		1100		< 10	
6/23/2010	48		< 10		450		< 10	
7/28/2010	49		< 10		410		< 10	
8/31/2010	64		< 10		420		< 10	
9/29/2010	47		< 10		400		< 10	
10/28/2010	45		< 10		420		< 10	

Table 2A - Groundwater Treatment System Analytical Results ERTEW5
March 2008 through December 2018

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
11/30/2010	140		< 10		610		< 10	
12/28/2010	380		19		100		<10	
1/25/2011	310		15		530		70	
2/24/2011	340		29		1300		12	
3/29/2011	27		< 10		570		< 10	
4/28/2011	24		< 10		660		< 10	
5/25/2011	20		< 10		580		< 10	
6/30/2011	18		< 10		670		< 10	
7/28/2011	15		< 10		570		< 10	
8/30/2011	14		< 10		580		< 10	
9/30/2011	10		< 10		530		< 10	
12/14/2011	< 10		< 10		550		< 10	
1/11/2012	< 10		< 10		550		< 10	
2/10/2012	< 10		< 10		550		< 10	
3/13/2012	< 10		< 10		580		< 10	
4/10/2012	< 10		< 10		450		< 10	
5/10/2012	11		< 10		400		< 10	
6/5/2012	16		< 10		380		< 10	
8/1/2012	22		< 10		430		< 10	
8/23/2012	25		< 10		410		< 10	
9/27/2012	35		< 10		500		< 10	
12/4/2012	20		< 10		410		< 10	
1/16/2013	36		< 10		530		< 10	
2/7/2013	42		< 10		510		< 10	
3/13/2013	39		< 10		560		< 10	
4/10/2013	NS		NS		NS		NS	
4/30/2013	NS		NS		NS		NS	
6/6/2013	39		5.4		640		12	
7/11/2013	28		<5		590		<5	
8/20/2013	27		<5		610		6.5	
9/12/2013	29		<5		550		<5	
10/10/2013	28		<5		550		9	
11/15/2013	17		<5		420		<5	
12/11/2013	14		<5		500		5.6	
12/31/2013	16		<5		450		5.8	

Table 2A - Groundwater Treatment System Analytical Results ERTEW5
March 2008 through December 2018

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
2/18/2014	**19**		<5		**670**		<5	
3/13/2014	**16**		<5		**500**		<5	
4/9/2014	**26**		<5		**580**		6.2	
5/8/2014	**35**		<5		**610**		<5	
6/3/2014	**56**		<5		**600**		8.8	
7/9/2014	**21**		<5		**780**		<5	
8/6/2014	**14**		<5		**830**		<5	
9/4/2014	9.2		<5		**840**		<5	
10/1/2014	**24**		<5		**510**		7.3	
11/6/2014	**27**		<5		**420**		<5	
12/3/2014	**18**		6.6		**760**		<5	
1/7/2015	**27**		<5		**550**		<5	
3/2/2015	**22**		5.6		**770**		<5	
4/10/2015	**21**		<5		**700**		5.1	
5/7/2015	**22**		<5		**470**		<5	
6/3/2015	**23**		<5		**680**		<5	
7/9/2015	**21**		<5		**690**		<5	
8/12/2015	**18**		<5		**640**		<5	
9/1/2015	**14**		<5		**610**		<5	
10/14/2015	2.8		<1		**74**		<1	
11/10/2015	**17**		<5		**930**		<5	
12/1/2015	**21**		<10		**810**		<10	
1/4/2016	**29**		<10		**1100**		<10	
2/2/2016	**17**		<10		**660**		<10	
3/7/2016	2.6		<1.0		**86**		<1.0	
4/14/2016	**20**		**13**		**50**		1.6	
5/12/2016	**23**		<10		**910**		<10	
6/7/2016	**20**		<10		**860**		<10	
7/7/2016	**13**		<10		**860**		<10	
8/4/2016	**11**		<10		**750**		<10	
9/6/2016	NS		NS		NS		NS	
11/1/2016	NS		NS		NS		NS	
12/5/2016	NS		NS		NS		NS	
1/4/2017	NS		NS		NS		NS	
1/31/2017	<10		<10		**760**		<10	

Table 2A - Groundwater Treatment System Analytical Results ERTEW5
March 2008 through December 2018

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
3/1/2017	**16**		<10		**530**		<10	
4/5/2017	**29**		<10		**980**		<10	
5/3/2017	**13**		<10		**650**		<10	
7/25/2017	<10		<10		**860**		<10	
8/3/2017	**13**		<10		**850**		<10	
9/7/2017	**15**		<10		**980**		<10	
10/4/2017	**22**		<10		**570**		<10	
11/6/2017	**20**		<10		**670**		<10	
12/6/2017	**19**		<10		**380**		<10	
1/5/2018	**19**		<10		**520**		<10	
2/1/2018	**16**		<10		**590**		<10	
4/3/2018	**18**		<10		**610**		<10	
5/2/2018	**22**		<10		**550**		**<10**	
6/7/2018	**11**		<10		**270**		<10	
7/5/2018	**36**		**25**		**1400**		**<10**	
8/15/2018	**12**		<10		**640**		**<10**	
9/5/2018	<10		**19**		**960**		<10	
10/23/2018	**28**		6.3		**750**		7.9	
12/6/2018	**43**		**12**		**1400**		<10	
12/31/2018	**65**		**19**		**1300**		**12**	

Notes
Shaded cells represent values that exceed the NYSDEC SPDES Discharge Quality Criteria

Table 2B - Groundwater Treatment System Analytical Results ERTEW6
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
3/31/2008	190		12		1500		21	
4/30/2008	780		37		180		230	
5/28/2008	320		18		140		79	
6/20/2008	470		47		180		130	
7/25/2008	1500		35		170		270	
8/29/2008	1200		42		280		190	
9/30/2008	630		12		57		110	
10/30/2008	1100		< 100		43		140	
12/22/2008	880	ED	30		180		100	
1/22/2009	710	E	25		140		110	
2/25/2009	1300	ED	36		99		130	
3/31/2009	1100	E	30		110		190	
5/1/2009	320	D	8	J	25		76	
5/29/2009	280	D	2	J	14		49	
6/30/2009	340	E	< 10		19	B	85	
7/29/2009	390	D	< 10		11		52	
8/25/2009	520	D	4	J	21		68	
9/24/2009	290		< 5		20		59	
10/27/2009	280		< 5		10		53	
11/23/2009	600		9.7		89		< 5	
12/22/2009	410		14		120		62	
1/28/2010	270		9.1		45		48	
2/23/2010	69		1.9		24		6.5	
3/31/2010	200		6.5		88		13	
4/20/2010	200		7.7		100		14	
5/26/2010	880		11		45		95	
6/23/2010	290		15		110		32	
7/28/2010	250		12		63		33	

Table 2B - Groundwater Treatment System Analytical Results ERTEW6
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
8/31/2010	230		< 5		120		38	
9/29/2010	280		< 5		42		45	
10/28/2010	320		11		47		47	
11/30/2010	330		13		140		48	
12/28/2010	410		25		150		17	
1/25/2011	280		12		570		60	
2/24/2011	320		12		1400		< 10	
3/29/2011	570		76		320		32	
4/28/2011	630		100		450		54	
5/25/2011	360		40		110		49	
6/30/2011	320		17		55		49	
7/28/2011	210		12		38		27	
8/30/2011	350		11		37		74	
9/30/2011	380		18		55		76	
12/14/2011	360		16		41		18	
1/11/2012	350		14		34		25	
2/10/2012	310		10		30		38	
3/29/2012	280		< 10		29		36	
4/10/2012	260		< 10		23		34	
5/10/2012	180		< 10		21		33	
6/5/2012	190		< 5		10		38	
8/1/2012	230		< 5		13		54	
8/23/2012	170		< 5		8.5		55	
9/27/2012	170		< 5		12		65	
12/4/2012	130		< 5		10		79	
1/16/2013	120		<5		47		75	
2/7/2013	NS		NS		NS		NS	
3/13/2013	NS		NS		NS		NS	
4/10/2013	NS		NS		NS		NS	

Table 2B - Groundwater Treatment System Analytical Results ERTEW6
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
4/30/2013	NS		NS		NS		NS	
6/6/2013	NS		NS		NS		NS	
7/11/2013	NS		NS		NS		NS	
8/20/2013	NS		NS		NS		NS	
9/12/2013	**28**		<5		**530**		<5	
10/10/2013	<1		<1		<1		<1	
11/15/2013	NS		NS		NS		NS	
12/11/2013	NS		NS		NS		NS	
12/31/2013	NS		NS		NS		NS	
2/18/2014	NS		NS		NS		NS	
3/13/2014	NS		NS		NS		NS	
4/9/2014	NS		NS		NS		NS	
5/8/2014	4.2		1		**32**		<1	
6/3/2014	**15**		1.1		**43**		<1	
7/9/2014	**13**		2.3		**240**		<1	
8/6/2014	**20**		3.1		**450**		<2	
9/4/2014	8.1		<5		**250**		<5	
10/1/2014	10		1.8		**62**		<1	
11/6/2014	7.6		6.4		**98**		<1	
12/3/2014	NS		NS		NS		NS	
1/7/2015	NS		NS		NS		NS	
3/2/2015	NS		NS		NS		NS	
4/10/2015	1		3.2		**49**		<1	
5/7/2015	4		<1		**11**		<1	
6/3/2015	6.3		<1		**17**		<1	
7/9/2015	9.2		1.7		**62**		<1	
8/12/2015	8.5		5.9		**64**		1.8	
9/1/2015	NS		NS		NS		NS	
10/14/2015	**19**		5.5		**170**		<1	

Table 2B - Groundwater Treatment System Analytical Results ERTEW6
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
11/10/2015	**94**		**25**		**680**		<5	
12/1/2015	<5		<5		**200**		<5	
1/4/2016	1.8		1.2		**79**		<1.0	
2/2/2016	6.6		1.3		**100**		<1.0	
3/7/2016	5.3		<1.0		**49**		<1.0	
4/14/2016	5.6		1.5		**37**		<1.0	
5/12/2016	4.6		1.3		**49**		<1.0	
6/7/2016	4.7		1.2		**67**		<1.0	
7/7/2016	6.6		1.4		**110**		<1.0	
8/4/2016	6.4		1.1		**97**		<1.0	
9/6/2016	6.6		1.4		**160**		<1.0	S-
11/1/2016	5.3	S+	1.6	S+	**250**	S+M-E	<1.0	
12/5/2016	<5.0		<5.0		**550**		<5.0	
1/4/2017	<5.0		<5.0		**530**		<5.0	
1/31/2017	5.8		<5.0		**140**		<5.0	
3/1/2017	4.8		<1.0		**36**		<1.0	
4/5/2017	<1.0		1.3		**22**		<1.0	
5/3/2017	4.8		1.7		**22**		<1.0	
7/25/2017	<1.0		2.9		**42**		<1.0	
8/3/2017	8.8		2		**41**		1.6	
9/7/2017	6		1.4		**120**		<1.0	
10/4/2017	5.1		<1.0		**100**		<1.0	
11/6/2017	3.9		1.2		**85**			
12/6/2107	4.8		<1.0		**85**	**S**	<1.0	
1/5/2018	4.1		1		**62**		<1.0	
2/1/2018	<1		1.5		**24**		<1.0	
4/3/2018	4.4		<1		**30**		<1.0	
5/2/2018	4.2		<1		**19**		<1.0	
6/7/2018	6		<1		**17**		<1.0	

Table 2B - Groundwater Treatment System Analytical Results ERTEW6
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
7/5/2018	<1.0		2.2		**35**		<1.0	
8/15/2018	<1.0		4.5		**64**		<1.0	
9/5/2018	1.6		1.7		**25**		<1.0	
10/23/2018	6.6		2.7		**43**		<1.0	
12/6/2018	5.4		1.8		**90**		<1.0	
12/31/2018	7.9		1.1		**52**		<1.0	

Notes

Shaded cells represent values that exceed the NYSDEC SPDES Discharge Quality Criteria

Table 2C Groundwater Treatment System Analytical Results ERTEW7
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
3/31/2008	10		6		**48**		10	
4/30/2008	9		6		**49**		2	
5/28/2008	8		4		**49**		10	
6/20/2008	8		5		**50**		10	
7/25/2008	9		3		**37**		10	
8/29/2008	**11**		5		**44**		1	
9/30/2008	**13**		7		**53**		2	
10/30/2008	**16**		8		**57**		< 10	
12/22/2008	**11**		6	J	**45**		1	J
1/22/2009	9	J	6	J	**38**		< 10	
2/25/2009	6	J	4	J	**34**		< 10	
3/31/2009	5	J	3	J	**31**		< 10	
5/1/2009	NS		NS		NS		NS	
5/29/2009	**23**		5	J	**470**	E	< 10	
6/30/2009	9	J	5	J	**57**	B	< 10	
7/29/2009	7	J	4	J	**45**		< 10	
8/25/2009	10	J	5	J	**52**		< 10	
9/24/2009	**16**		5.9		**46**		< 1	
10/27/2009	**18**		6.4		**49**		< 1	
11/23/2009	**16**		7.3		**41**		< 1	
12/22/2009	**19**		**12**		**40**		< 1	
1/28/2010	**13**		6.4		**40**		< 1	
2/23/2010	**13**		5.1		**34**		< 1	
3/31/2010	**11**		5.7		**39**		< 1	
4/20/2010	10		5.1		**39**		< 1	
5/26/2010	10		5.4		**34**		< 1	

Table 2C Groundwater Treatment System Analytical Results ERTEW7
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
6/23/2010	**13**		4.7		**42**		< 1	
7/28/2010	**22**		5.7		**58**		< 1	
8/31/2010	**29**		6.1		**66**		2	
9/29/2010	**42**		9.1		**73**		< 1	
10/28/2010	**40**		10		**57**		< 1	
11/30/2010	**36**		9.9		**56**		< 1	
12/28/2010	**37**		9.7		**53**		< 1	
1/25/2011	**36**		10		**56**		1.2	
2/24/2011	**38**		**11**		**68**		< 1	
3/29/2011	**15**		8.8		**42**		< 1	
4/28/2011	6.8		2.8		**22**		< 1	
5/25/2011	7		5.6		**36**		< 1	
6/30/2011	7.1		5.8		**37**		< 1	
7/28/2011	5		3.1		**28**		< 1	
8/30/2011	**11**		6.3		**40**		< 1	
9/30/2011	8.5		5.5		**30**		< 1	
12/14/2011	8.2		5.7		**30**		< 1	
1/11/2012	7.3		4.9		**27**		< 1	
2/10/2012	6.6		3.5		**25**		< 1	
3/29/2012	6		2.6		**23**		< 1	
4/10/2012	6.8		2.9		**24**		< 1	
5/10/2012	7.2		2.8		**22**		< 1	
6/5/2012	7.5		2.6		**27**		< 1	
8/1/2012	**17**		4.9		**49**		< 1	
8/23/2012	**19**		5.2		**47**		< 1	
9/27/2012	**28**		6.6		**57**		< 1	
12/4/2012	**27**		7.9		**64**		2	

Table 2C Groundwater Treatment System Analytical Results ERTEW7
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
1/16/2013	27		9.1		77		2	
2/7/2013	21		9.3		53		<1	
3/13/2013	20		7.5		50		<1	
4/10/2013	20		7.4		64		2	
4/30/2013	25		6.9		64		<5	
6/6/2013	<1		7.3		55		1.8	
7/11/2013	16		8.4		45		1.7	
8/20/2013	27		10		<1		3.1	
9/12/2013	33		11		74		<1	
10/10/2013	40		13		87		4.9	
11/15/2013	16		6.4		18		<1	
12/11/2013	6.7		2.7		15		<1	
12/31/2013	17		<1		43		2.9	
2/18/2014	22		10		52		<1	
3/13/2014	25		8.5		49		1.9	
4/9/2014	24		9.5		48		2.2	
5/8/2014	17		8.9		38		1.3	
6/3/2014	34		9.5		50		<1	
7/9/2014	27		9.3		63		1.9	
8/6/2014	46		13		79		4.2	
9/4/2014	47		14		75		<1	
10/1/2014	47		13		62		3.2	
11/6/2014	43		11		53		2.9	
12/3/2014	17		7		25		<1	
1/7/2015	29		10		39		4.3	
3/2/2015	12		7.2		34		<1	
4/10/2015	14		9.5		41		1.4	

Table 2C Groundwater Treatment System Analytical Results ERTEW7
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
5/7/2015	14		7.6		25		1.2	
6/3/2015	16		7.5		56		<1	
7/9/2015	18		9.4		54		<1	
8/12/2015	15		7.2		42		<1	
9/1/2015	18		6.9		43		1.6	
10/14/2015	26		8.6		63		1.1	
11/10/2015	28		11		69		2	
12/1/2015	34		14		56		2.1	
1/4/2016	22		11		43		<1.0	
2/2/2016	29		11		52		1.7	
3/7/2016	22		11		46		1.4	
4/14/2016	19		<10		760		<10	
5/12/2016	17		11		51		<1.0	
6/7/2016	15		7		24		<1.0	
7/7/2016	19		9.9		59		2.4	
8/4/2016	25		8.6		59		2	
9/6/2016	24		7.9		61		2.1	S-
11/1/2016	44		14		66		3.5	
12/5/2016	34		13		59		<1.0	
1/4/2017	20		8.7		45		1.0	
1/31/2017	26		12		46		2.6	
3/1/2017	19		10		38		<1.0	
4/5/2017	8.6		7.1		28		<1.0	
5/3/2017	12		9.1		36		<1.0	
7/25/2017	1.7		1.4		17		<1.0	
8/3/2017	9.2		5.8		33		<1.0	
9/7/2017	17		9.6		63		2.8	

Table 2C Groundwater Treatment System Analytical Results ERTEW7
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
10/4/2017	**23**		6.8		**52**		1.3	
11/6/2017	**18**		9.3		**48**		<1.0	
12/6/2017	**26**		7.2		**45**	**S**	<1.0	
1/5/2018	**25**		8		**40**		<1	
2/1/2018	8.2		5.1		**16**		<1	
4/3/2018	**14**		8.6		**33**		<1	
5/2/2018	**14**		9.6		**35**		<1	
6/7/2018	**12**		5.5		**19**		<1	
7/5/2018	5.4		4.3		**17**		<1	
8/15/2018	1.4		1.6		8.1		<1	
9/5/2018	4.1		1.8		9.6		<1	
10/23/2018	8.2		**12**		**36**		<1	
12/6/2018	9.2		10		**37**		<1	
12/31/2018	10		6.8		**34**		<1	

Notes

Shaded cells represent values that exceed the NYSDEC SPDES Discharge Quality Criteria

Table 2A Groundwater Treatment System Analytical Results Combined Influent
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
3/31/2008	110		9		880		15	
4/30/2008	72		9		780		14	
5/28/2008	160		10		240		13	
6/20/2008	190		17		390		33	
7/25/2008	480		17		820		81	
8/29/2008	110		7		670		26	
9/30/2008	65		4		570		11	
10/30/2008	98		5		1200		12	
12/22/2008	45		5	J	1000	ED	11	
1/22/2009	52		4	J	830	E	11	
2/25/2009	60		4	J	910	E	11	
3/31/2009	64		6	J	3000	E	3	J
5/1/2009	110		4	J	510	D	12	
5/29/2009	23				470	E	< 10	
6/30/2009	27		3	J	630	E	4	J
7/29/2009	21		2	J	710	D	2	J
8/25/2009	45		3	J	410	D	5	J
9/24/2009	34		< 5		270		< 5	
10/27/2009	43		< 5		310		< 5	
11/23/2009	83		5.7		410		< 5	
12/22/2009	98		6.8		410		7.1	
1/28/2010	60		5.7		310		< 5	
2/23/2010	36		< 5		280		< 5	
3/31/2010	44		5.2		260		< 5	
4/20/2010	47		5.9		310		< 5	
5/26/2010	100		6.9		510		6.8	
6/23/2010	51		5.9		270		< 5	
7/28/2010	45		5.5		230		< 5	

Table 2A Groundwater Treatment System Analytical Results Combined Influent
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
8/31/2010	50		5.8		250		9.3	
9/29/2010	68		7.6		230		< 5	
10/28/2010	60		7.5		250		< 5	
11/30/2010	72		5.7		360		< 5	
12/28/2010	85		9.8		64		< 5	
1/25/2011	72		10		140		10	
2/24/2011	66		9.5		230		< 5	
3/29/2011	54		9.4		340		< 5	
4/28/2011	42		7.7		330		< 5	
5/25/2011	66		11		310		6.8	
6/30/2011	58		6.1		300		7.5	
7/28/2011	43		< 5		260		< 5	
8/30/2011	60		5		250		12	
9/30/2011	54		6.3		230		9.9	
12/14/2011	44		5.1		230		< 5	
1/11/2012	38		< 5		240		< 5	
2/10/2012	29		< 5		230		< 5	
3/29/2012	27		< 5		200		< 5	
4/10/2012	15		< 5		210		< 5	
5/10/2012	22		< 5		200		< 5	
6/5/2012	16		< 5		190		< 5	
8/1/2012	25		< 5		210		< 5	
8/23/2012	16		< 5		160		< 5	
9/27/2012	28		< 5		220		< 5	
12/4/2012	23		< 5		250		< 5	
1/16/2013	35		7		270		<5	
2/7/2013	30		7.5		250		<5	

Table 2A Groundwater Treatment System Analytical Results Combined Influent
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
3/13/2013	28		6.9		260		<5	
4/30/2013	NS		NS		NS		NS	
6/6/2013	24		7.6		320		4.8	
7/11/2013	21		8.8		280		<5	
8/20/2013	26		7.5		280		<5	
9/12/2013	30		8.5		200		<2	
10/10/2013	19		2.2		370		4.9	
11/15/2013	6.3		3.6		160		<2	
12/11/2013	14		7		440		<5	
12/31/2013	16		5.4		200		<5	
2/18/2014	21		8.2		260		<2	
3/13/2014	22		6.8		200		2.1	
4/9/2014	24		6.6		210		3.5	
5/8/2014	16		4.4		130		2.1	
6/3/2014	36		6.4		120		2.6	
7/9/2014	32		6.7		210		2.2	
8/6/2014	32		8.4		250		2.5	
9/4/2014	27		8.2		190		<2	
10/1/2014	29		6.3		200		3.5	
11/6/2014	33		6.8		190		2.4	
12/3/2014	18		7.4		290		<2	
1/7/2015	30		7.8		220		4.9	
3/2/2015	16		7		280		<2	
4/10/2015	16		7.5		220		2.2	
5/7/2015	13		5.3		130		<2	
6/3/2015	14		4		200		<2	
7/9/2015	19		6.1		250		<2	

Table 2A Groundwater Treatment System Analytical Results Combined Influent
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
8/12/2015	**17**		7.2		**230**		<2	
9/1/2015	**17**		5.8		**200**		<2	
10/14/2015	**24**		7.4		**260**		<2	
11/10/2015	**46**		6.9		**230**		**84**	
12/1/2015	**21**		7.9		**270**		2.6	
1/4/2016	**23**		8.1		**250**		<2.0	
2/2/2016	**20**		6.9		**220**		<2.0	
3/7/2016	8.6		2.7		**110**		<1.0	
4/14/2016	**16**		6.7		**210**		<2.0	
5/12/2016	**13**		5.7		**260**		<2.0	
6/7/2016	**14**		6.5		**260**		<2.0	
7/7/2016	**15**		5.4		**280**		2	
8/4/2016	**15**		4.5		**220**		<2.0	
9/6/2016	**18**		5.6		**100**		<2.0	S-
11/1/2016	**30**		8.9		**240**		2.3	
12/5/2016	**23**		8.2		**240**		2.1	
1/4/2017	**15**		6.7		**270**		<2.0	
1/31/2017	**18**		6.78		**230**		2.7	
3/1/2017	**12**		4.8		**180**		<2.0	
4/5/2017	**11**		5.1		**280**		<2.0	
5/3/2017	10		5.3		**170**		<2.0	
7/25/2017	3.2		3.9		**210**		<2.0	
8/3/2017	10		3.8		**220**		<2.0	
9/7/2017	**13**		4.8		**270**		3.0	
10/4/2017	**20**		3.9		**200**		<2.0	
11/6/2017	**15**		5.1		**210**		**<2.0**	
12/6/2017	**18**		5.6		**210**		<2.0	

Table 2A Groundwater Treatment System Analytical Results Combined Influent
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
1/5/2018	**17**		5.2		**170**		<2.0	
2/1/2018	7.7		4.7		**140**		<2.0	
3/1/2018	9.7		4.4		**150**		2.4	
4/3/2018	**12**		5		**160**		2.1	
5/2/2018	**11**		3.9		**150**		<2.0	
6/7/2018	7.6		3.7		**150**		1.8	
7/5/2018	10		8.6		**320**		<2.0	
8/15/2018	3.5		2.6		**200**		<2.0	
9/5/2018	**11**		3.2		**180**		<2.0	
10/23/2018	**15**		7.2		**260**		3.5	
12/6/2018	10		5.6		**140**		1.5	
12/31/2018	**11**		4.5		**110**		<2.0	

Notes

Shaded cells represent values that exceed the NYSDEC SPDES Discharge Quality Criteria

Table 2E - Groundwater Treatment System Analytical Results - Effluent
March 2008 - December 2018
Periodic Review Report 2018
Brewster Wellfield Site #340012

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
3/31/2008	< 1		< 1		< 1		< 1	
4/30/2008	< 1		< 1		< 1		< 1	
5/28/2008	0.1		< 1		< 1		< 2	
6/20/2008	7		0.3		5		0.2	
7/25/2008	< 1		< 1		< 1		< 2	
8/29/2008	4		0.2		4		0.2	
9/30/2008	< 1		< 1		< 1		< 2	
10/30/2008	< 1		< 1		< 1		< 1	
12/22/2008	<1		<1		<1		<1	
1/22/2009	< 1		< 1		< 1		< 1	
2/25/2009	< 1		< 1		< 1		< 1	
3/31/2009	< 1		< 1		< 1		< 1	
5/1/2009	< 1		< 1		< 1		< 1	
5/29/2009	2		0.2	J	9		0.1	J
6/30/2009	0.2	J	< 1		0.6	J	< 1	
7/29/2009	0.2	J	< 1		0.4	J	< 1	
8/25/2009	0.2	J	< 1		0.3	J	< 1	
9/24/2009	< 1		< 1		< 1		< 1	
10/27/2009	< 1		< 1		< 1		< 1	
11/23/2009	< 1		< 1		< 1		< 1	
12/22/2009	< 1		< 1		< 1		< 1	
1/28/2010	< 1		< 1		< 1		< 1	
2/23/2010	< 1		< 1		< 1		< 1	
3/31/2010	< 1		< 1		< 1		< 1	
4/20/2010	< 1		< 1		< 1		< 1	
5/26/2010	4		< 1		7.5		< 1	
6/23/2010	< 1		< 1		< 1		< 1	
7/28/2010	< 1		< 1		< 1		< 1	
8/31/2010	< 1		< 1		< 1		< 1	
9/29/2010	< 1		< 1		< 1		< 1	
10/28/2010	< 1		< 1		< 1		< 1	
11/30/2010	< 1		< 1		< 1		< 1	
12/28/2010	< 1		< 1		< 1		< 1	
1/25/2011	< 1		< 1		< 1		< 1	
2/24/2011	< 1		< 1		< 1		< 1	
3/29/2011	< 1		< 1		< 1		< 1	
4/28/2011	< 1		< 1		< 1		< 1	
5/25/2011	< 1		< 1		< 1		< 1	
6/30/2011	< 1		< 1		1.1		< 1	
7/28/2011	< 1		< 1		< 1		< 1	
8/30/2011	< 1		< 1		< 1		< 1	
9/30/2011	< 1		< 1		< 1		< 1	

Table 2E - Groundwater Treatment System Analytical Results - Effluent
March 2008 - December 2018
Periodic Review Report 2018
Brewster Wellfield Site #340012

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
12/14/2011	< 1		< 1		< 1		< 1	
1/11/2012	< 1		< 1		< 1		< 1	
2/10/2012	< 1		< 1		< 1		< 1	
3/29/2012	< 1		< 1		< 1		< 1	
4/10/2012	< 1		< 1		< 1		< 1	
5/10/2012	< 1		< 1		< 1		< 1	
6/5/2012	< 1		< 1		< 1		< 1	
8/1/2012	< 1		< 1		1.3		< 1	
8/23/2012	< 1		< 1		< 1		< 1	
9/27/2012	< 1		< 1		< 1		< 1	
12/4/2012	< 1		< 1		< 1		< 1	
1/16/2013	<1		<1		<1		<1	
2/7/2013	<1		<1		<1		<1	
3/13/2013	<1		<1		<1		<1	
4/10/2013	<1		<1		<1		<1	
4/30/2013	<1		<1		<1		<1	
6/6/2013	<1		<1		<1		<1	
7/11/2013	<1		<1		<1		<1	
8/20/2013	<1		<1		<1		<1	
9/12/2013	<1		<1		2		<1	
10/10/2013	<1		<1		<1		<1	
11/15/2013	<1		<1		<1		<1	
12/11/2013	<1		<1		<1		<1	
12/31/2013	<1		<1		<1		<1	
2/18/2014	<1		<1		<1		<1	
3/13/2014	<1		<1		<1		<1	
4/9/2014	<1		<1		<1		<1	
5/8/2014	<1		<1		<1		<1	
6/3/2014	<1		<1		<1		<1	
7/9/2014	<1		<1		<1		<1	
8/6/2014	<1		<1		<1		<1	
9/4/2014	<1		<1		<1		<1	
10/1/2014	<1		<1		<1		<1	
11/6/2014	<1		<1		<1		<1	
12/3/2014	<1		<1		<1		<1	
1/7/2015	<1		<1		<1		<1	
3/2/2015	<1		<1		<1		<1	
4/10/2015	<1		<1		<1		<1	
5/7/2015	<1		<1		<1		<1	
6/3/2015	<1		<1		<1		<1	
7/9/2015	<1		<1		<1		<1	
8/12/2015	<1		<1		<1		<1	

Table 2E - Groundwater Treatment System Analytical Results - Effluent
March 2008 - December 2018
Periodic Review Report 2018
Brewster Wellfield Site #340012

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
9/1/2015	<1		<1		<1		<1	
10/14/2015	<1		<1		<1		<1	
11/10/2015	<1		<1		<1		<1	
12/1/2015	<1		<1		<1		<1	
1/4/2016	<1		<1		<1		<1	
2/2/2016	<1		<1		<1		<1	
3/7/2016	<1		<1		<1		<1	
4/14/2016	<1		<1		<1		<1	
5/12/2016	<1.0		<1.0		<1.0		<1.0	
6/7/2016	<1.0		<1.0		<1.0		<1.0	
7/7/2016	<1.0		<1.0		<1.0		<1.0	
8/4/2016	<1.0		<1.0		<1.0		<1.0	
9/6/2016	<1.0		<1.0		<1.0		<1.0	S-
11/1/2016	<1.0		<1.0		<1.0		<1.0	
12/5/2016	<1.0		<1.0		<1.0		<1.0	
1/4/2017	<1.0		<1.0		<1.0		<1.0	
1/31/2017	<1.0		<1.0		<1.0		<1.0	
3/1/2017	<1.0		<1.0		<1.0		<1.0	
4/5/2017	<1.0		<1.0		<1.0		<1.0	
5/3/2017	<1.0		<1.0		<1.0		<1.0	
7/25/2017	<1.0		<1.0		<1.0		<1.0	
8/3/2017	<1.0		<1.0		<1.0		<1.0	
9/7/2017	<1.0		<1.0		<1.0		<1.0	
10/4/2017	<1.0		<1.0		<1.0		<1.0	
11/6/2017	<1.0		<1.0		<1.0		<1.0	
12/6/2017	<1.0		<1.0		<1.0		<1.0	
1/5/2018	<1.0		<1.0		<1.0		<1.0	
2/1/2018	<1.0		<1.0		<1.0		<1.0	
3/1/2018	<1.0		<1.0		1.2		<1.0	
4/3/2018	<1.0		<1.0		<1.0		<1.0	
5/2/2018	<1.0		<1.0		<1.0		<1.0	
6/7/2018	<1.0		<1.0		<1.0		<1.0	
7/5/2018	<1.0		<1.0		<1.0		<1.0	
8/15/2018	<1.0		<1.0		<1.0		<1.0	
9/5/2018	<1.0		<1.0		<1.0		<1.0	
10/23/2018	<1.0		<1.0		<1.0		<1.0	
12/6/2018	<1.0		<1.0		<1.0		<1.0	
12/31/2018	<1.0		<1.0		<1.0		<1.0	

Notes

Shaded cells represent values that exceed the NYSDEC SPDES Discharge Quality Criteria

Table 2E - Groundwater Treatment System Analytical Results - Effluent
March 2008 - December 2018
Periodic Review Report 2018
Brewster Wellfield Site #340012

SPDES Contaminant	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
SPDES Discharge Criteria (ug/L)	10	Q	10	Q	10	Q	10	Q
2018 Averages	DCE		TCE		PCE		VC	
	<1.0		<1.0		1.2		<1.0	
2018 Highs	<1.0		<1.0		1.2		<1.0	
2018 Lows	<1.0		<1.0		<1.0		<1.0	

Table 3A VOC Removal Summary - ERTEW5
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
3/31/2008	579,623	160	0.77	10	0.05	1,600	7.74	19	0.09
4/30/2008	593,988	130	0.64	11	0.05	1,600	7.93	27	0.13
5/28/2008	324,716	160	0.43	10	0.03	1,600	4.34	19	0.05
6/20/2008	458,613	110	0.42	8	0.03	760	2.91	9	0.03
7/25/2008	276,280	41	0.09	8	0.02	2,000	4.61	2	0.00
8/29/2008	281,460	97	0.23	4	0.01	1,800	4.23	19	0.04
9/30/2008	731,382	67	0.41	3	0.02	1,500	9.15	11	0.07
10/30/2008	1,008,596	0	0.00	4	0.03	3,000	25.25	9	0.08
12/22/2008	969,991	0	0.00	4	0.03	3,000	24.28	9	0.07
1/22/2009	1,048,497	42	0.37	2	0.02	1,300	11.37	7	0.06
2/25/2009	811,980	73	0.49	3	0.02	1,400	9.49	12	0.08
3/31/2009	670,718	50	0.28	7	0.04	4,100	22.95	2	0.01
5/1/2009	597,387	37	0.18	2	0.01	660	3.29	8	0.04
5/29/2009	915,719	29	0.22	2	0.02	840	6.42	4	0.03
6/30/2009	1,136,306	35	0.33	2	0.02	1,100	10.43	5	0.05
7/29/2009	891,655	35	0.26	2	0.01	1,100	8.18	5	0.04
8/25/2009	707,822	35	0.21	2	0.01	1,100	6.50	5	0.03
9/24/2009	1,367,394	42	0.48	0	0.00	470	5.36	0	0.00
10/27/2009	622,632	46	0.24	0	0.00	460	2.39	0	0.00
11/23/2009	871,689	44	0.32	0	0.00	550	4.00	0	0.00
12/22/2009	875,226	59	0.43	0	0.00	510	3.72	0	0.00
1/28/2010	1,105,753	64	0.59	0	0.00	580	5.35	0	0.00
2/23/2010	848,279	58	0.41	0	0.00	530	3.75	0	0.00
3/31/2010	1,013,426	62	0.52	0	0.00	550	4.65	0	0.00
4/20/2010	935,880	71	0.55	0	0.00	640	5.00	0	0.00
5/26/2010	1,073,758	80	0.72	0	0.00	1,100	9.86	0	0.00
6/23/2010	826,683	48	0.33	0	0.00	450	3.10	0	0.00

Table 3A VOC Removal Summary - ERTEW5
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
7/28/2010	1,018,073	49	0.42	0	0.00	410	3.48	0	0.00
8/31/2010	881,923	64	0.47	0	0.00	420	3.09	0	0.00
9/29/2010	592,331	47	0.23	0	0.00	400	1.98	0	0.00
10/28/2010	822,924	45	0.31	0	0.00	420	2.88	0	0.00
11/30/2010	325,072	140	0.38	0	0.00	610	1.65	0	0.00
12/28/2010	185	380	0.00	19	0.00	100	0.00	0	0.00
1/25/2011	36	310	0.00	15	0.00	530	0.00	70	0.00
2/24/2011	20,139	340	0.06	29	0.00	1,300	0.22	12	0.00
3/29/2011	812,315	27	0.18	0	0.00	570	3.86	0	0.00
4/28/2011	807,758	24	0.16	0	0.00	660	4.45	0	0.00
5/25/2011	807,528	20	0.13	0	0.00	580	3.91	0	0.00
6/30/2011	878,561	18	0.13	0	0.00	670	4.91	0	0.00
7/28/2011	648,044	15	0.08	0	0.00	570	3.08	0	0.00
8/30/2011	766,036	15	0.10	0	0.00	580	3.71	0	0.00
9/30/2011	499,652	10	0.04	0	0.00	530	2.21	0	0.00
12/14/2011	1,393,507	0	0.00	0	0.00	550	6.40	0	0.00
1/11/2012	478,182	0	0.00	0	0.00	550	2.19	0	0.00
2/10/2012	523,544	0	0.00	0	0.00	550	2.40	0	0.00
3/13/2012	536,061	0	0.00	0	0.00	580	2.59	0	0.00
4/10/2012	591,184	0	0.00	0	0.00	450	2.22	0	0.00
5/10/2012	644,833	11	0.06	0	0.00	400	2.15	0	0.00
6/5/2012	778,498	16	0.10	0	0.00	380	2.47	0	0.00
8/1/2012	847,260	22	0.16	0	0.00	430	3.04	0	0.00
8/23/2012	350,674	25	0.07	0	0.00	410	1.20	0	0.00
9/27/2012	784,581	35	0.23	0	0.00	500	3.27	0	0.00
12/4/2012	1,907,161	20	0.32	0	0.00	410	6.52	0	0.00

Table 3A VOC Removal Summary - ERTEW5
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
1/16/2013	572,879	36	0.17	0	0.00	530	2.53	0	0.00
2/7/2013	565,670	42	0.20	0	0.00	510	2.41	0	0.00
3/13/2013	614,976	39	0.20	0	0.00	560	2.87	0	0.00
4/10/2013	0	0	0.00	0	0.00	0	0.00	0	0.00
4/30/2013	634,257	0	0.00	0	0.00	0	0.00	0	0.00
6/6/2013	634,257	39	0.21	5	0.03	640	3.39	12	0.06
7/11/2013	528,880	28	0.12	0	0.00	590	2.60	0	0.00
8/20/2013	711,177	27	0.16	0	0.00	610	3.62	7	0.04
9/12/2013	388,189	29	0.09	0	0.00	550	1.78	0	0.00
10/10/2013	652,762	28	0.15	0	0.00	550	3.00	9	0.05
11/15/2013	726,870	17	0.10	0	0.00	420	2.55	0	0.00
12/11/2013	300,797	14	0.04	0	0.00	500	1.25	6	0.01
12/31/2013	391,592	16	0.05	0	0.00	450	1.47	6	0.02
2/18/2014	467,198	19	0.07	0	0.00	670	2.61	0	0.00
3/13/2014	541,555	16	0.07	0	0.00	500	2.26	0	0.00
4/9/2014	159,797	26	0.03	0	0.00	580	0.77	6	0.01
5/8/2014	357,594	35	0.10	0	0.00	610	1.82	0	0.00
6/3/2014	194,182	56	0.09	0	0.00	600	0.97	9	0.01
7/9/2014	213,795	21	0.04	0	0.00	780	1.39	0	0.00
8/6/2014	111,685	14	0.01	0	0.00	830	0.77	0	0.00
9/4/2014	343,961	9	0.03	0	0.00	840	2.41	0	0.00
10/1/2014	321,043	24	0.06	0	0.00	510	1.37	7	0.02
11/6/2014	225,877	27	0.05	0	0.00	420	0.79	0	0.00
12/3/2014	632,376	18	0.09	7	0.03	760	4.01	0	0.00
1/7/2015	980,928	27	0.22	0	0.00	550	4.50	0	0.00
3/2/2015	164,931	22	0.03	6	0.01	770	1.06	0	0.00
4/10/2015	437,398	21	0.08	0	0.00	700	2.55	5	0.02

Table 3A VOC Removal Summary - ERTEW5
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
5/7/2015	503,684	22	0.09	0	0.00	470	1.98	0	0.00
6/3/2015	605,305	23	0.12	0	0.00	680	3.43	0	0.00
7/9/2015	374,280	21	0.07	0	0.00	690	2.15	0	0.00
8/12/2015	168,931	18	0.03	0	0.00	640	0.90	0	0.00
9/1/2015	455,843	14	0.05	0	0.00	610	2.32	0	0.00
10/14/2015	218,267	3	0.01	0	0.00	74	0.13	0	0.00
11/10/2015	285,037	17	0.04	0	0.00	930	2.21	0	0.00
12/1/2015	307,793	21	0.05	0	0.00	810	2.08	0	0.00
1/4/2016	344,269	29	0.08	0	0.00	1,100	3.16	0	0.00
2/2/2016	348,963	17	0.05	0	0.00	660	1.92	0	0.00
3/7/2016	480,875	3	0.01	0	0.00	86	0.35	0	0.00
4/14/2016	410,061	20	0.07	13	0.04	50	0.17	2	0.01
5/12/2016	352,026	23	0.07	0	0.00	910	2.67	0	0.00
6/7/2016	279,887	20	0.05	0	0.00	860	2.01	0	0.00
7/7/2016	337,806	13	0.04	0	0.00	860	2.42	0	0.00
8/4/2016	401,813	11	0.04	0	0.00	750	2.51	0	0.00
9/6/2016	108,543	NS	0.00	NS	0.00	NS	0.00	NS	0.00
11/1/2016	36,477	NS	0.00	NS	0.00	NS	0.00	NS	0.00
12/5/2016	0	NS	0.00	NS	0.00	NS	0.00	NS	0.00
1/4/2017	0	NS	0.00	NS	0.00	NS	0.00	NS	0.00
1/30/2017	222,683	0	0.00	0	0.00	760	1.41	0	0.00
3/1/2017	458,003	16	0.06	0	0.00	530	2.03	0	0.00
4/5/2017	468,994	29	0.11	0	0.00	980	3.84	0	0.00
5/3/2017	112,113	13	0.01	0	0.00	650	0.61	0	0.00
7/24/2017	509,506	0	0.00	0	0.00	860	3.66	0	0.00
8/3/2017	163,070	13	0.02	0	0.00	850	1.16	0	0.00
9/7/2017	28,405	15	0.00	0	0.00	980	0.23	0	0.00

Table 3A VOC Removal Summary - ERTEW5
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
10/4/2017	447,859	22	0.08	0	0.00	570	2.13	0	0.00
11/6/2017	466,766	20	0.08	0	0.00	670	2.61	0	0.00
12/6/2017	498,314	19	0.00	0	0.00	380	1.58	0	0.00
1/5/2018	0	19	0.00	0	0.00	520	0.00	0	0.00
2/1/2018	489	16	0.00	0	0.00	590	0.00	0	0.00
4/3/2018	23,704	18	0.00	0	0.00	610	0.12	0	0.00
5/2/2018	439,051	22	0.07	0	0.00	550	2.02	0	0.00
6/7/2018	200,709	11	0.02	0	0.00	270	0.45	0	0.00
7/5/2018	57,992	36	0.02	25	0.01	1400	0.68	0	0.00
8/15/2018	785	12	0.00	0	0.00	640	0.00	0	0.00
9/5/2018	130,449	0	0.00	19	0.02	960	1.04	0	0.00
10/23/2018	9,070	28	0.00	6.3	0.00	750	0.06	7.9	0.00
12/6/2018	228,625	43	0.08	12	0.02	1400	2.67	0	0.00
12/31/2018	76,654	65	0.04	19	0.01	1300	0.83	12	0.01

Legend

Conc. = concentration
gal = U.S. gallon
lb = pound
NS = Not sampled
µg/L = micrograms per liter

Table 3B VOC Removal Summary - ERTEW6
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
3/31/2008	214,780	190	0.34	12	0.02	1,500	2.69	21	0.04
4/30/2008	88,298	780	0.57	37	0.03	180	0.13	230	0.17
5/28/2008	41,077	190	0.07	12	0.00	1,500	0.51	21	0.01
6/20/2008	72,155	470	0.28	47	0.03	180	0.11	130	0.08
7/25/2008	120,417	1,500	1.51	35	0.04	170	0.17	270	0.27
8/29/2008	70,844	1,200	0.71	42	0.02	280	0.17	190	0.11
9/30/2008	84,622	630	0.44	12	0.01	57	0.04	110	0.08
10/30/2008	40,089	1,100	0.37	0	0.00	43	0.01	140	0.05
12/22/2008	26	1,100	0.00	0	0.00	43	0.00	140	0.00
1/22/2009	0	710	0.00	25	0.00	140	0.00	110	0.00
2/25/2009	3,171	1,300	0.03	36	0.00	99	0.00	130	0.00
3/31/2009	43,321	1,100	0.40	30	0.01	110	0.04	190	0.07
5/1/2009	296,698	320	0.79	8	0.02	25	0.06	76	0.19
5/29/2009	48,715	280	0.11	2	0.00	14	0.01	49	0.02
6/30/2009	60,007	340	0.17	0	0.00	19	0.01	85	0.04
7/29/2009	84,417	340	0.24	0	0.00	19	0.01	85	0.06
8/25/2009	86,303	340	0.24	0	0.00	19	0.01	85	0.06
9/24/2009	161,369	290	0.39	0	0.00	20	0.03	59	0.08
10/27/2009	32,039	280	0.07	0	0.00	10	0.00	53	0.01
11/23/2009	79,924	600	0.40	10	0.01	89	0.06	0	0.00
12/22/2009	89,207	410	0.31	14	0.01	120	0.09	62	0.05
1/28/2010	116,262	270	0.26	9	0.01	45	0.04	48	0.05
2/23/2010	74,481	69	0.04	2	0.00	24	0.01	7	0.00
3/31/2010	73,634	200	0.12	7	0.00	88	0.05	13	0.01
4/20/2010	154,321	200	0.26	8	0.01	100	0.13	14	0.02
5/26/2010	271,712	880	2.00	11	0.02	45	0.10	95	0.22
6/23/2010	76,421	290	0.18	15	0.01	110	0.07	32	0.02

Table 3B VOC Removal Summary - ERTEW6
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
7/28/2010	128,712	250	0.27	12	0.01	63	0.07	33	0.04
8/31/2010	40,755	230	0.08	0	0.00	120	0.04	38	0.01
9/29/2010	0	280	0.00	0	0.00	42	0.00	45	0.00
10/28/2010	117,681	320	0.31	11	0.01	47	0.05	47	0.05
11/30/2010	120,310	330	0.33	13	0.01	140	0.14	48	0.05
12/28/2010	176,691	410	0.60	25	0.04	150	0.22	17	0.03
1/25/2011	151,135	280	0.35	12	0.02	570	0.72	60	0.08
2/24/2011	136,142	320	0.36	12	0.01	1,400	1.59	0	0.00
3/29/2011	147,502	570	0.70	76	0.09	320	0.39	32	0.04
4/28/2011	111,602	630	0.59	100	0.09	450	0.42	54	0.05
5/25/2011	250,533	360	0.75	40	0.08	110	0.23	49	0.10
6/30/2011	349,862	320	0.93	17	0.05	55	0.16	49	0.14
7/28/2011	262,949	210	0.46	12	0.03	38	0.08	27	0.06
8/30/2011	331,252	350	0.97	11	0.03	37	0.10	74	0.20
9/30/2011	277,592	380	0.88	18	0.04	55	0.13	76	0.18
12/14/2011	689,006	360	2.07	16	0.09	41	0.24	18	0.10
1/11/2012	242,833	350	0.71	14	0.03	34	0.07	25	0.05
2/10/2012	222,018	310	0.57	10	0.02	30	0.06	38	0.07
3/13/2012	247,340	280	0.58	0	0.00	29	0.06	36	0.07
4/10/2012	132,450	260	0.29	0	0.00	23	0.03	34	0.04
5/10/2012	117,436	180	0.18	0	0.00	21	0.02	33	0.03
6/5/2012	86,187	190	0.14	0	0.00	10	0.01	38	0.03
8/1/2012	39,377	230	0.08	0	0.00	13	0.00	54	0.02
8/23/2012	6,877	170	0.01	0	0.00	9	0.00	55	0.00
9/27/2012	22	170	0.00	0	0.00	12	0.00	65	0.00
12/4/2012	3,752	130	0.00	0	0.00	10	0.00	79	0.00
1/16/2013	0	120	0.00	0	0.00	47	0.00	75	0.00

Table 3B VOC Removal Summary - ERTEW6
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
2/7/2013	0	0	0.00	0	0.00	0	0.00	0	0.00
3/13/2013	0	0	0.00	0	0.00	0	0.00	0	0.00
4/10/2013	0	0	0.00	0	0.00	0	0.00	0	0.00
4/30/2013	0	0	0.00	0	0.00	0	0.00	0	0.00
6/6/2013	0	0	0.00	0	0.00	0	0.00	0	0.00
7/11/2013	0	0	0.00	0	0.00	0	0.00	0	0.00
8/20/2013	24	0	0.00	0	0.00	0	0.00	0	0.00
9/12/2013	35,112	28	0.01	0	0.00	530	0.16	0	0.00
10/10/2013	40,535	0	0.00	0	0.00	0	0.00	0	0.00
11/15/2013	0	0	0.00	0	0.00	0	0.00	0	0.00
12/11/2013	0	0	0.00	0	0.00	0	0.00	0	0.00
12/31/2013	0	0	0.00	0	0.00	0	0.00	0	0.00
2/18/2014	0	0	0.00	0	0.00	0	0.00	0	0.00
3/13/2014	3,640	0	0.00	0	0.00	0	0.00	0	0.00
4/9/2014	91,854	0	0.00	0	0.00	0	0.00	0	0.00
5/8/2014	544,918	4	0.02	1	0.00	32	0.15	0	0.00
6/3/2014	367,306	15	0.05	1	0.00	43	0.13	0	0.00
7/9/2014	583,100	13	0.06	2	0.01	240	1.17	0	0.00
8/6/2014	506,597	20	0.08	3	0.01	450	1.90	0	0.00
9/4/2014	451,609	8	0.03	0	0.00	250	0.94	0	0.00
10/1/2014	362,606	10	0.03	2	0.01	62	0.19	0	0.00
11/6/2014	4	8	0.00	6	0.00	98	0.00	0	0.00
12/3/2014	28	0	0.00	0	0.00	0	0.00	0	0.00
1/7/2015	173,122	0	0.00	0	0.00	0	0.00	0	0.00
3/2/2015	225	0	0.00	0	0.00	0	0.00	0	0.00
4/10/2015	233,259	1	0.00	3	0.01	49	0.10	0	0.00
5/7/2015	484,952	4	0.02	0	0.00	11	0.04	0	0.00

Table 3B VOC Removal Summary - ERTEW6
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
6/3/2015	583,290	6	0.03	0	0.00	17	0.08	0	0.00
7/9/2015	225	9	0.00	2	0.00	62	0.00	0	0.00
8/12/2015	0	9	0.00	6	0.00	64	0.00	2	0.00
9/1/2015	470	0	0.00	0	0.00	0	0.00	0	0.00
10/14/2015	74	19	0.00	6	0.00	170	0.00	0	0.00
11/10/2015	180,726	94	0.14	25	0.04	680	1.03	0	0.00
12/1/2015	307,856	0	0.00	0	0.00	200	0.51	0	0.00
1/4/2016	344,298	2	0.01	1	0.00	79	0.23	0	0.00
2/2/2016	342,230	7	0.02	1	0.00	100	0.29	0	0.00
3/7/2016	465,154	5	0.02	0	0.00	49	0.19	0	0.00
4/14/2016	389,004	6	0.02	2	0.00	37	0.12	0	0.00
5/12/2016	333,430	5	0.01	1	0.00	49	0.14	0	0.00
6/7/2016	306,273	5	0.01	1	0.00	67	0.17	0	0.00
7/7/2016	307,912	7	0.02	1	0.00	110	0.28	0	0.00
8/4/2016	385,212	6	0.02	1	0.00	97	0.31	0	0.00
9/6/2016	266,372	7	0.01	1	0.00	160	0.36	0	0.00
11/1/2016	294,384	5	0.01	2	0.00	250	0.61	0	0.00
12/5/2016	332,636	0	0.00	0	0.00	550	1.53	0	0.00
1/4/2017	345,412	0	0.00	0	0.00	530	1.53	0	0.00
1/30/2017	332,476	6	0.02	0	0.00	140	0.39	0	0.00
3/1/2017	413,100	5	0.02	0	0.00	36	0.12	0	0.00
4/5/2017	421,701	0	0.00	0	0.00	22	0.08	0	0.00
5/3/2017	321,558	5	0.01	0	0.00	22	0.06	0	0.00
7/24/2017	452,836	0	0.00	0	0.00	42	0.16	0	0.00
8/3/2017	142,805	9	0.01	0	0.00	41	0.05	0	0.00
9/7/2017	437,880	6	0.02	0	0.00	120	0.44	0	0.00
10/4/2017	359,259	5	0.02	0	0.00	100	0.30	0	0.00

Table 3B VOC Removal Summary - ERTEW6
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
11/6/2017	383,169	4	0.01	0	0.00	85	0.27	0	0.00
12/6/2017	381,593	5	0.02	0	0.00	85	0.27	0	0.00
1/5/2018	149,784	4.1	0.01	1	0.00	62	0.08	0	0.00
2/1/2018	489	0	0.00	1.5	0.00	24	0.00	0	0.00
4/3/2018	23,704	4.4	0.00	0	0.00	30	0.01	0	0.00
5/2/2018	439,051	4.2	0.02	0	0.00	19	0.07	0	0.00
6/7/2018	200,709	6	0.01	0	0.00	17	0.03	0	0.00
7/5/2018	57,992	0	0.00	2.2	0.00	35	0.02	0	0.00
8/15/2018	785	0	0.00	4.5	0.00	64	0.00	0	0.00
9/5/2018	130,449	1.6	0.00	1.7	0.00	25	0.03	0	0.00
10/23/2018	9,070	6.6	0.00	2.7	0.00	43	0.00	0	0.00
12/6/2018	228,625	5.4	0.01	1.8	0.00	90	0.17	0	0.00
12/31/2018	76,654	7.9	0.01	1.1	0.00	52	0.03	0	0.00

Table 3C VOC Removal Summary - ERTEW7
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
3/31/2008	523,133	10	0.04	6	0.03	48	0.21	10	0.04
4/30/2008	669,402	9	0.05	6	0.03	49	0.27	2	0.01
5/28/2008	343,465	10	0.03	6	0.02	48	0.14	10	0.03
6/20/2008	498,944	8	0.03	5	0.02	50	0.21	10	0.04
7/25/2008	210,579	9	0.02	3	0.01	37	0.07	10	0.02
8/29/2008	474,237	11	0.04	5	0.02	44	0.17	1	0.00
9/30/2008	351,687	13	0.04	7	0.02	53	0.16	2	0.01
10/30/2008	421,215	16	0.06	8	0.03	57	0.20	0	0.00
12/22/2008	467,506	16	0.06	8	0.03	57	0.22	0	0.00
1/22/2009	513,875	9	0.04	6	0.03	38	0.16	0	0.00
2/25/2009	553,073	6	0.03	4	0.02	34	0.16	0	0.00
3/31/2009	627,921	5	0.03	3	0.02	31	0.16	0	0.00
5/1/2009	1,048,679	0	0.00	0	0.00	0	0.00	0	0.00
5/29/2009	512,576	23	0.10	5	0.02	470	2.01	0	0.00
6/30/2009	733,423	9	0.06	5	0.03	57	0.35	0	0.00
7/29/2009	631,007	9	0.05	5	0.03	57	0.30	0	0.00
8/25/2009	481,087	9	0.04	5	0.02	57	0.23	0	0.00
9/24/2009	958,891	16	0.13	6	0.05	46	0.37	0	0.00
10/27/2009	376,775	18	0.06	6	0.02	49	0.15	0	0.00
11/23/2009	437,539	16	0.06	7	0.03	41	0.15	0	0.00
12/22/2009	196,758	19	0.03	12	0.02	40	0.07	0	0.00
1/28/2010	459,098	13	0.05	6	0.02	40	0.15	0	0.00
2/23/2010	760,524	13	0.08	5	0.03	34	0.22	0	0.00
3/31/2010	933,506	11	0.09	6	0.04	39	0.30	0	0.00
4/20/2010	870,639	10	0.07	5	0.04	39	0.28	0	0.00
5/26/2010	1,010,443	10	0.08	5	0.05	34	0.29	0	0.00
6/23/2010	758,651	13	0.08	5	0.03	42	0.27	0	0.00

Table 3C VOC Removal Summary - ERTEW7
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
7/28/2010	911,324	22	0.17	6	0.04	58	0.44	0	0.00
8/31/2010	748,601	29	0.18	6	0.04	66	0.41	2	0.01
9/29/2010	494,633	42	0.17	9	0.04	73	0.30	0	0.00
10/28/2010	626,599	40	0.21	10	0.05	57	0.30	0	0.00
11/30/2010	603,115	36	0.18	10	0.05	56	0.28	0	0.00
12/28/2010	639,789	37	0.20	10	0.05	53	0.28	0	0.00
1/25/2011	578,288	36	0.17	10	0.05	56	0.27	1	0.01
2/24/2011	643,087	38	0.20	11	0.06	68	0.36	0	0.00
3/29/2011	746,989	15	0.09	9	0.05	42	0.26	0	0.00
4/28/2011	376,732	7	0.02	3	0.01	22	0.07	0	0.00
5/25/2011	718,641	7	0.04	6	0.03	36	0.22	0	0.00
6/30/2011	850,126	7	0.05	6	0.04	37	0.26	0	0.00
7/28/2011	619,908	5	0.03	3	0.02	28	0.14	0	0.00
8/30/2011	776,473	11	0.07	6	0.04	40	0.26	0	0.00
9/30/2011	678,161	9	0.05	6	0.03	30	0.17	0	0.00
12/14/2011	1,798,025	8	0.12	6	0.09	30	0.45	0	0.00
1/11/2012	713,076	7	0.04	5	0.03	27	0.16	0	0.00
2/10/2012	749,484	7	0.04	4	0.02	25	0.16	0	0.00
3/13/2012	967,319	6	0.05	3	0.02	23	0.19	0	0.00
4/10/2012	762,754	7	0.04	3	0.02	24	0.15	0	0.00
5/10/2012	772,581	7	0.05	3	0.02	22	0.14	0	0.00
6/5/2012	949,405	8	0.06	3	0.02	27	0.21	0	0.00
8/1/2012	1,137,369	17	0.16	5	0.05	49	0.47	0	0.00
8/23/2012	432,232	19	0.07	5	0.02	47	0.17	0	0.00
9/27/2012	946,824	28	0.22	7	0.05	57	0.45	0	0.00
12/4/2012	2,276,362	27	0.51	8	0.15	64	1.22	2	0.04
1/16/2013	749,695	27	0.17	9	0.06	77	0.48	2	0.01

Table 3C VOC Removal Summary - ERTEW7
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
2/7/2013	764,234	21	0.13	9	0.06	53	0.34	0	0.00
3/13/2013	1,099,230	20	0.18	8	0.07	50	0.46	0	0.00
4/10/2013	902,916	20	0.15	7	0.06	64	0.48	2	0.02
4/30/2013	1,062,042	25	0.22	7	0.06	64	0.57	0	0.00
6/6/2013	1,062,042	0	0.00	7	0.06	55	0.49	2	0.02
7/11/2013	662,848	16	0.09	8	0.05	45	0.25	2	0.01
8/20/2013	977,023	27	0.22	10	0.08	0	0.00	3	0.03
9/12/2013	488,108	33	0.13	11	0.04	74	0.30	0	0.00
10/10/2013	407,910	40	0.14	13	0.04	87	0.30	5	0.02
11/15/2013	4,747	16	0.00	6	0.00	18	0.00	0	0.00
12/11/2013	51,000	7	0.00	3	0.00	15	0.01	0	0.00
12/31/2013	588,520	17	0.08	0	0.00	43	0.21	3	0.01
2/18/2014	799,970	22	0.15	10	0.07	52	0.35	0	0.00
3/13/2014	1,258,030	25	0.26	9	0.09	49	0.51	2	0.02
4/9/2014	329,553	24	0.07	10	0.03	48	0.13	2	0.01
5/8/2014	856,526	17	0.12	9	0.06	38	0.27	1	0.01
6/3/2014	590,142	34	0.17	10	0.05	50	0.25	0	0.00
7/9/2014	951,046	27	0.21	9	0.07	63	0.50	2	0.02
8/6/2014	848,720	46	0.33	13	0.09	79	0.56	4	0.03
9/4/2014	924,513	47	0.36	14	0.11	75	0.58	0	0.00
10/1/2014	1,145,664	47	0.45	13	0.12	62	0.59	3	0.03
11/6/2014	770,201	43	0.28	11	0.07	53	0.34	3	0.02
12/3/2014	405,058	17	0.06	7	0.02	25	0.08	0	0.00
1/7/2015	177,484	29	0.04	10	0.01	39	0.06	4	0.01
3/2/2015	1,107,813	12	0.11	7	0.07	34	0.31	0	0.00
4/10/2015	666,691	14	0.08	10	0.05	41	0.23	1	0.01
5/7/2015	745,654	14	0.09	8	0.05	25	0.16	1	0.01

Table 3C VOC Removal Summary - ERTEW7
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
6/3/2015	902,608	16	0.12	8	0.06	56	0.42	0	0.00
7/9/2015	606,799	18	0.09	9	0.05	54	0.27	0	0.00
8/12/2015	303,974	15	0.04	7	0.02	42	0.11	0	0.00
9/1/2015	858,752	18	0.13	7	0.05	43	0.31	2	0.01
10/14/2015	450,795	26	0.10	9	0.03	63	0.24	1	0.00
11/10/2015	539,178	28	0.13	11	0.05	69	0.31	2	0.01
12/1/2015	505,180	34	0.14	14	0.06	56	0.24	2	0.01
1/4/2016	565,918	22	0.10	11	0.05	43	0.20	0	0.00
2/2/2016	554,382	29	0.13	11	0.05	52	0.24	2	0.01
3/7/2016	717,713	22	0.13	11	0.07	46	0.28	1	0.01
4/14/2016	563,026	19	0.09	0	0.00	760	3.57	0	0.00
5/12/2016	411,496	17	0.06	11	0.04	51	0.18	0	0.00
6/7/2016	396,640	15	0.05	7	0.02	24	0.08	0	0.00
7/7/2016	444,115	19	0.07	10	0.04	59	0.22	2	0.01
8/4/2016	526,416	25	0.11	9	0.04	59	0.26	2	0.01
9/6/2016	364,047	24	0.07	8	0.02	61	0.19	2	0.01
11/1/2016	412,030	44	0.15	14	0.05	66	0.23	4	0.01
12/5/2016	474,989	34	0.13	13	0.05	59	0.23	0	0.00
1/4/2017	498,416	20	0.08	9	0.04	45	0.19	1	0.00
1/30/2017	458,840	26	0.10	12	0.05	46	0.18	3	0.01
3/1/2017	500,180	19	0.08	10	0.04	38	0.16	0	0.00
4/5/2017	455,533	9	0.03	7.1	0.03	28	0.11	0	0.00
5/3/2017	405,402	12	0.04	9.1	0.03	36	0.12	0	0.00
7/24/2017	598,874	2	0.01	1.4	0.01	17	0.08	0	0.00
8/3/2017	204,221	9	0.02	5.8	0.01	33	0.06	0	0.00
9/7/2017	690,164	17	0.10	9.6	0.06	63	0.36	0	0.00
10/4/2017	549,731	23	0.11	6.8	0.03	52	0.24	0	0.00

Table 3C VOC Removal Summary - ERTEW7
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
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Sample Date	Flow (gal)	cis 1,2-Dichloroethene		Trichloroethene		Tetrachloroethene		Vinyl Chloride	
		Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)	Conc. (µg/l)	Mass (lb)
11/6/2017	534,703	18	0.08	9.3	0.04	48	0.21	0	0.00
12/6/2017	587,438	26	0.13	7.2	0.04	45	0.22	0	0.00
1/5/2018	417,667	25	0.09	8	0.03	40	0.14	0	0.00
2/1/2018	402,829	8.2	0.03	5.1	0.02	16	0.05	0	0.00
4/3/2018	932,717	14	0.11	8.6	0.07	33	0.26	0	0.00
5/2/2018	1,358,267	14	0.16	9.6	0.11	35	0.40	0	0.00
6/7/2018	959,257	12	0.10	5.5	0.04	19	0.15	0	0.00
7/5/2018	178,955	5.4	0.01	4.3	0.01	17	0.03	0	0.00
8/15/2018	2,124	1	0.00	1.6	0.00	8.1	0.00	0	0.00
9/5/2018	350,837	4.1	0.01	1.8	0.01	9.6	0.03	0	0.00
10/23/2018	1,214,877	8.2	0.08	12	0.12	36	0.36	0	0.00
12/6/2018	1,045,026	9.2	0.08	10	0.09	37	0.32	0	0.00
12/31/2018	838,995	10	0.07	6.8	0.05	34	0.24	0	0.00

Table 3D VOC Removal Summary - Combined Influent
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Mass Extracted by Compound (lb)				Total VOCs removed for interval (lbs)
	cis 1,2-Dichloroethene	Trichloroethene	Tetrachloroethene	Vinyl Chloride	
3/31/2008	1.16	0.10	10.64	0.17	12.06
4/30/2008	1.27	0.12	8.34	0.31	10.04
5/28/2008	0.53	0.05	4.99	0.09	5.65
6/20/2008	0.74	0.08	3.22	0.15	4.20
7/25/2008	1.62	0.06	4.85	0.29	6.82
8/29/2008	0.98	0.05	4.57	5.55	11.15
9/30/2008	0.89	0.05	9.35	0.15	10.44
10/30/2008	0.42	0.06	25.46	0.12	26.07
12/22/2008	0.06	0.06	24.50	0.07	24.70
1/22/2009	0.41	0.04	11.54	0.06	12.05
2/25/2009	0.56	0.04	9.65	0.08	10.33
3/31/2009	0.70	0.07	23.15	0.08	24.00
5/1/2009	0.98	0.03	3.35	0.23	4.59
5/29/2009	0.43	0.04	8.43	0.05	8.96
6/30/2009	0.56	0.05	10.79	0.09	11.49
7/29/2009	0.55	0.04	8.50	0.10	9.18
8/25/2009	0.49	0.03	6.74	0.09	7.35
9/24/2009	1.00	0.05	5.76	0.08	6.88
10/27/2009	0.37	0.02	2.55	0.01	2.95
11/23/2009	0.78	0.03	4.21	0.00	5.02
12/22/2009	0.77	0.03	3.88	0.05	4.72
1/28/2010	0.90	0.03	5.55	0.05	6.53
2/23/2010	0.54	0.03	3.98	0.00	4.56
3/31/2010	0.73	0.05	5.01	0.01	5.80
4/20/2010	0.88	0.05	5.41	0.02	6.36
5/26/2010	2.80	0.07	10.24	0.22	13.33
6/23/2010	0.60	0.04	3.44	0.02	4.10
7/28/2010	0.85	0.06	3.99	0.04	4.94

Table 3D VOC Removal Summary - Combined Influent
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Mass Extracted by Compound (lb)				Total VOCs removed for interval (lbs)
	cis 1,2-Dichloroethene	Trichloroethene	Tetrachloroethene	Vinyl Chloride	
8/31/2010	0.73	0.04	3.54	0.03	4.34
9/29/2010	0.41	0.04	2.28	0.00	2.72
10/28/2010	0.83	0.06	3.23	0.05	4.17
11/30/2010	0.89	0.06	2.08	0.05	3.08
12/28/2010	0.80	0.09	0.50	0.03	1.42
1/25/2011	0.53	0.06	0.99	0.08	1.66
2/24/2011	0.62	0.08	2.17	0.00	2.88
3/29/2011	0.98	0.15	4.52	0.04	5.69
4/28/2011	0.77	0.10	4.94	0.05	5.86
5/25/2011	0.93	0.12	4.35	0.10	5.50
6/30/2011	1.12	0.09	5.33	0.14	6.69
7/28/2011	0.57	0.04	3.31	0.06	3.98
8/30/2011	1.13	0.07	4.07	0.20	5.48
9/30/2011	0.97	0.07	2.51	0.18	3.73
12/14/2011	2.19	0.18	7.08	0.10	9.56
1/11/2012	0.75	0.06	2.42	0.05	3.28
2/10/2012	0.62	0.04	2.61	0.07	3.34
3/13/2012	0.63	0.02	2.84	0.07	3.56
4/10/2012	0.33	0.02	2.40	0.04	2.78
5/10/2012	0.28	0.02	2.31	0.03	2.65
6/5/2012	0.30	0.02	2.69	0.03	3.04
8/1/2012	0.39	0.05	3.51	0.02	3.97
8/23/2012	0.15	0.02	1.37	0.00	1.54
9/27/2012	0.45	0.05	3.72	0.00	4.23
12/4/2012	0.84	0.15	7.74	0.04	8.77
1/16/2013	0.34	0.06	3.02	0.01	3.43
2/7/2013	0.33	0.06	2.75	0.00	3.14

Table 3D VOC Removal Summary - Combined Influent
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Mass Extracted by Compound (lb)				Total VOCs removed for interval (lbs)
	cis 1,2-Dichloroethene	Trichloroethene	Tetrachloroethene	Vinyl Chloride	
3/13/2013	0.38	0.07	3.33	0.00	3.78
4/10/2013	0.15	0.06	0.48	0.02	0.70
4/30/2013	0.22	0.06	0.57	0.00	0.85
6/6/2013	0.21	0.09	3.87	0.08	4.25
7/11/2013	0.21	0.05	2.85	0.01	3.12
8/20/2013	0.38	0.08	3.62	0.06	4.15
9/12/2013	0.24	0.04	2.24	0.00	2.52
10/10/2013	0.29	0.04	3.29	0.07	3.69
11/15/2013	0.10	0.00	2.55	0.00	2.65
12/11/2013	0.04	0.00	1.26	0.01	1.31
12/31/2013	0.14	0.00	1.68	0.03	1.85
2/18/2014	0.22	0.07	2.96	0.00	3.25
3/13/2014	0.33	0.09	2.77	0.02	3.22
4/9/2014	0.10	0.03	0.91	0.01	1.05
5/8/2014	0.25	0.07	2.24	0.01	2.56
6/3/2014	0.30	0.05	1.35	0.01	1.72
7/9/2014	0.31	0.08	3.06	0.02	3.47
8/6/2014	0.42	0.11	3.24	0.03	3.79
9/4/2014	0.42	0.11	3.93	0.00	4.46
10/1/2014	0.54	0.13	2.15	0.05	2.87
11/6/2014	0.33	0.07	1.13	0.02	1.55
12/3/2014	0.15	0.06	4.09	0.00	4.31
1/7/2015	0.26	0.01	4.56	0.01	4.84
3/2/2015	0.14	0.07	1.37	0.00	1.59
4/10/2015	0.16	0.06	2.88	0.03	3.12
5/7/2015	0.20	0.05	2.18	0.01	2.43
6/3/2015	0.27	0.06	3.94	0.00	4.26
7/9/2015	0.16	0.05	2.43	0.00	2.63

Table 3D VOC Removal Summary - Combined Influent
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Mass Extracted by Compound (lb)				Total VOCs removed for interval (lbs)
	cis 1,2-Dichloroethene	Trichloroethene	Tetrachloroethene	Vinyl Chloride	
8/12/2015	0.06	0.02	1.01	0.00	1.09
9/1/2015	0.18	0.05	2.63	0.01	2.87
10/14/2015	0.10	0.03	0.37	0.00	0.51
11/10/2015	0.31	0.09	3.55	0.01	3.95
12/1/2015	0.20	0.06	2.83	0.01	3.10
1/4/2016	0.19	0.06	3.59	0.00	3.84
2/2/2016	0.20	0.05	2.45	0.01	2.71
3/7/2016	0.16	0.07	0.81	0.01	1.05
4/14/2016	0.18	0.05	3.86	0.01	4.09
5/12/2016	0.14	0.04	2.98	0.00	3.16
6/7/2016	0.11	0.03	2.26	0.00	2.39
7/7/2016	0.12	0.04	2.93	0.01	3.10
8/4/2016	0.17	0.04	3.09	0.01	3.30
9/6/2016	0.09	0.03	0.54	0.01	0.66
11/1/2016	0.16	0.05	0.84	0.01	1.07
12/5/2016	0.13	0.05	1.76	0.00	1.95
1/4/2017	0.08	0.04	1.71	0.00	1.84
1/30/2017	0.12	0.05	1.98	0.01	2.15
3/1/2017	0.16	0.04	2.31	0.00	2.51
4/5/2017	0.15	0.03	4.02	0.00	4.19
5/3/2017	0.07	0.03	0.79	0.00	0.89
7/24/2017	0.01	0.01	3.90	0.00	3.92
8/3/2017	0.04	0.01	1.26	0.00	1.32
9/7/2017	0.12	0.06	1.03	0.00	1.21
10/4/2017	0.20	0.03	2.67	0.00	2.90
11/6/2017	0.17	0.04	3.10	0.00	3.31
12/6/2017	0.14	0.04	2.07	0.00	2.25

Table 3D VOC Removal Summary - Combined Influent
March 2008 through December 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample Date	Mass Extracted by Compound (lb)				Total VOCs removed for interval (lbs)
	cis 1,2-Dichloroethene	Trichloroethene	Tetrachloroethene	Vinyl Chloride	
1/5/2018	0.09	0.03	0.22	0.00	0.34
2/1/2018	0.03	0.02	0.06	0.00	0.10
4/3/2018	0.11	0.07	0.38	0.00	0.56
5/2/2018	0.25	0.11	2.48	0.00	2.84
6/7/2018	0.12	0.04	0.63	0.00	0.80
7/5/2018	0.02	0.02	0.72	0.00	0.76
8/15/2018	0.00	0.00	0.00	0.00	0.00
9/5/2018	0.01	0.03	1.10	0.00	1.14
10/23/2018	0.09	0.12	0.42	0.00	0.63
12/6/2018	0.17	0.11	3.17	0.00	3.44
12/31/2018	0.11	0.06	1.10	0.01	1.28

Table 4A Groundwater Gauging Summary - Shallow Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Well Name	Well Description	Depth to Water			Top of Casing Elevation		Groundwater Elevation		Depth to bottom	
DGC1S	Shallow	5.85	ft btoc		336.66	ft amsl	330.81	ft amsl	9.00	ft bgs
DGC2S	Shallow	NG			338.22	ft amsl			9.00	ft bgs
DGC3S	Shallow	3.87	ft btoc		336.81	ft amsl	332.94	ft amsl	12.80	ft bgs
DGC5S	Shallow	NG			340.99	ft amsl			22.00	ft bgs
DGC6S	Shallow	NG			u/k				10.00	ft bgs
DGC7S	Shallow	3.05	ft btoc		335.03	ft amsl	331.98	ft amsl	9.00	ft bgs
DGC8S	Shallow	3.75	ft btoc		335.68	ft amsl	331.93	ft amsl	9.50	ft bgs
DGC9S	Shallow	2.45	ft btoc		334.45	ft amsl	332.00	ft amsl	9.50	ft bgs
DGC10S	Shallow	NG			336.63	ft amsl			10.30	ft bgs
DGC11S	Shallow	NG			336.99	ft amsl			9.00	ft bgs
DGC12S	Shallow	5.73	ft btoc		337.02	ft amsl	331.29	ft amsl	10.00	ft bgs
DGC13S	Shallow	4.90	ft btoc		335.84	ft amsl	330.94	ft amsl	9.00	ft bgs
DGC14S	Shallow	8.30	ft btoc		342.24	ft amsl	333.94	ft amsl	11.50	ft bgs
DGC15S	Shallow	NG			344.36	ft amsl			13.00	ft bgs
DGC16S	Shallow	7.73	ft btoc		340.92	ft amsl	333.19	ft amsl	10.00	ft bgs
DGC17S	Shallow	NG			u/k				10.00	ft bgs
DGC18S	Shallow	NG			338.87	ft amsl			10.00	ft bgs
DGC19S	Shallow	5.58	ft btoc		337.76	ft amsl	332.18	ft amsl	12.00	ft bgs
ERT1S	Shallow	5.64	ft btoc		338.05	ft amsl	332.41	ft amsl	13.85	ft bgs
ERT2S	Shallow	5.95	ft btoc		338.20	ft amsl	332.25	ft amsl	16.75	ft bgs
ERT5S	Shallow	NG			338.08	ft amsl			u/k	
ERT8S	Shallow	5.80	ft btoc		341.43	ft amsl	335.63	ft amsl	15.18	ft bgs
TH11A	Shallow	1.54	ft btoc		332.62	ft amsl	331.08	ft amsl	9.92	ft bgs

Table 4B Groundwater Gauging Summary - Intermediate Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Well Name	Well Description	Depth to Water			Top of Casing Elevation		Groundwater Elevation		Depth to bottom	
DGC1I	Intermediate	5.50	ft btoc		336.61	ft amsl	331.11	ft amsl	67.50	ft bgs
DGC2I	Intermediate	7.20	ft btoc		338.55	ft amsl	331.35	ft amsl	27.60	ft bgs
DGC3I	Intermediate	4.65	ft btoc		336.34	ft amsl	331.69	ft amsl	52.50	ft bgs
DGC5I	Intermediate	NG			341.97	ft amsl			80.90	ft bgs
DGC6I	Intermediate	6.50	ft btoc		338.47	ft amsl	331.97	ft amsl	42.00	ft bgs
DGC7I	Intermediate	2.60	ft btoc		334.60	ft amsl	332.00	ft amsl	77.00	ft bgs
DGC8I	Intermediate	4.05	ft btoc		336.09	ft amsl	332.04	ft amsl	82.00	ft bgs
DGC9I	Intermediate	2.15	ft btoc		334.17	ft amsl	332.02	ft amsl	52.00	ft bgs
DGC10I	Intermediate	NG			338.43	ft amsl			50.50	ft bgs
DGC11I	Intermediate	NG			336.67	ft amsl			30.10	ft bgs
DGC12IA	Intermediate	6.65	ft btoc		337.81	ft amsl	331.16	ft amsl	52.00	ft bgs
DGC13I	Intermediate	3.28	ft btoc		334.43	ft amsl	331.15	ft amsl	67.00	ft bgs
DGC14I	Intermediate	8.55			341.07	ft amsl		ft amsl	50.40	ft bgs
DGC15I	Intermediate	NG			342.76	ft amsl			55.00	ft bgs
DGC16I	Intermediate	8.00	ft btoc		340.00	ft amsl	332.00	ft amsl	43.00	ft bgs
DGC17I	Intermediate	4.10			336.10	ft amsl	332.00		50.00	ft bgs
DGC18I	Intermediate	7.00	ft btoc		339.28	ft amsl	332.28	ft amsl	62.00	ft bgs
DGC19I	Intermediate	5.65	ft btoc		337.90	ft amsl	332.25	ft amsl	42.00	ft bgs
DGC-20I	Intermediate	NG			u/k				13.50	ft bgs
ERT10I	Intermediate	NG			337.91	ft amsl			24.00	ft bgs
ERT1I	Intermediate	5.90	ft btoc		337.94	ft amsl	332.04	ft amsl	33.94	ft bgs
ERT2I	Intermediate	6.00	ft btoc		338.31	ft amsl	332.31	ft amsl	33.75	ft bgs
ERT3I	Intermediate	6.55	ft btoc		338.64	ft amsl	332.09	ft amsl	28.90	ft bgs
ERT4I	Intermediate	9.10	ft btoc		338.47	ft amsl	329.37	ft amsl	22.60	ft bgs
ERT5I	Intermediate	6.00	ft btoc		338.03	ft amsl	332.03	ft amsl	33.20	ft bgs
ERT6I	Intermediate	7.20	ft btoc		339.65	ft amsl	332.45	ft amsl	26.78	ft bgs
ERT7I	Intermediate	7.40	ft btoc		339.99	ft amsl	332.59	ft amsl	26.40	ft bgs
ERT8I	Intermediate	NG	ft btoc		341.70	ft amsl		ft amsl	39.75	ft bgs

Table 4B Groundwater Gauging Summary - Intermediate Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012

ERT9I	Intermediate	7.45	ft btoc	NYSDEC Work Assignment #D007621	339.51	ft amsl	332.06	ft amsl	28.50	ft bgs
ERTEW5	Intermediate	NG			337.78	ft amsl			34.50	ft bgs
ERTEW6	Intermediate	NG			u/k				33.75	ft bgs
ERTEW7	Intermediate	NG			337.86	ft amsl			36.30	ft bgs
GMS02	Intermediate	7.55	ft btoc		339.59	ft amsl	332.04	ft amsl	35.50	ft bgs
GMS04	Intermediate	5.15	ft btoc		339.60	ft amsl	334.45	ft amsl	29.05	ft bgs
TH11B	Intermediate	3.95	ft btoc		334.70	ft amsl	330.75	ft amsl	24.15	ft bgs
TH12	Intermediate	NG			u/k				35.00	ft bgs
TH13	Intermediate	NG			338.20	ft amsl			u/k	
TH6	Intermediate	5.65	ft btoc		337.05	ft amsl	331.40	ft amsl	22.90	ft bgs
TH7	Intermediate	6.30	ft btoc		337.35	ft amsl	331.05	ft amsl	35.00	ft bgs
TH9	Intermediate	2.85	ft btoc		333.64	ft amsl	330.79	ft amsl	28.20	ft bgs

Table 4C Groundwater Gauging Summary - Deep Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Well Name	Well Description	Depth to Water			Top of Casing Elevation		Groundwater Elevation		Depth to bottom	
CDM 1	Deep	11.20	ft btoc		342.42	ft amsl	331.22	ft amsl	52.00	ft bgs
CDM 2	Deep	18.70	ft btoc		349.88	ft amsl	331.18	ft amsl	49.12	ft bgs
CDM 3	Deep	20.92	ft btoc		352.30	ft amsl	331.38	ft amsl	46.34	ft bgs
DGC1D	Deep	5.25	ft btoc		336.63	ft amsl	331.38	ft amsl	103.00	ft bgs
DGC2D	Deep	4.50	ft btoc		338.43	ft amsl	333.93	ft amsl	39.10	ft bgs
DGC7D	Deep	NG			335.00	ft amsl			112.00	ft bgs
DGC10D	Deep	NG			336.61	ft amsl			66.00	ft bgs
DGC11D	Deep	NG			u/k				u/k	
DGC14D	Deep	1.18	ft btoc		341.12	ft amsl	339.94	ft amsl	80.20	ft bgs
DGC15D	Deep	NG			342.69	ft amsl			106.20	ft bgs
DGC19D	Deep	5.85	ft btoc		338.04	ft amsl	332.19	ft amsl	34.00	ft bgs
ERT10D	Deep	NG			337.89	ft amsl			40.00	ft bgs
ERT8D	Deep	NG	ft btoc		341.99	ft amsl		ft amsl	56.68	ft bgs
ERT9D	Deep	7.55	ft btoc		339.63	ft amsl	332.08	ft amsl	41.00	ft bgs

Table 5A Groundwater Analytical Results - Shallow Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample ID	NYSDEC AWQS and Guidance Values	NYS Drinking Water Standards	TH-11A	
Sampling Date			5/2/2018	
Unit | Qualifier			(µg/l)	Q
1,1,1-TRICHLOROETHANE	5	5	0.19	U
1,1,2,2-TETRACHLOROETHANE	5	5	0.19	U
1,1,2-TRICHLOROETHANE			0.19	U
1,1-DICHLOROETHANE	5	5	0.24	U
1,1-DICHLOROETHENE	5		0.25	U
1,2-DICHLOROETHANE			0.2	U
1,2-DICHLOROETHENE (TOTAL)			0.25	U
1,2-DICHLOROPROPANE	5	5	0.25	
2-BUTANONE (METHYL ETHYL KETONE)	10	10	2.6	U
2-HEXANONE			1.3	U
4-METHYL-2-PENTANONE (METHYL ISOBUTYL KETONE)			0.81	U
ACETONE	50		2.7	U
BENZENE	0.7	5	0.2	U
BROMODICHLOROMETHANE			0.17	U
BROMOFORM			0.29	U
BROMOMETHANE			0.35	U
CARBON DISULFIDE	50		0.22	U
CARBON TETRACHLORIDE	5		0.18	U
CHLOROBENZENE	5		0.18	U
CHLOROETHANE	50		0.36	U
CHLOROFORM	7		0.23	U
CHLOROMETHANE			0.36	U
CIS-1,2-DICHLOROETHENE	5	5	0.21	U
CIS-1,3-DICHLOROPROPENE			0.17	U
DIBROMOCHLOROMETHANE	50		0.17	U
ETHYLBENZENE	5	5	0.19	U
METHYL TERT-BUTYL ETHER			0.17	U
METHYLENE CHLORIDE	5		1	U
STYRENE			0.28	U
TETRACHLOROETHENE (PCE)	5	5	0.14	U
TOLUENE	5	5	0.17	U
TRANS-1,2-DICHLOROETHENE	5	5	0.23	U
TRANS-1,3-DICHLOROPROPENE	5		0.17	U
TRICHLOROETHENE (TCE)	5	5	0.2	U
VINYL CHLORIDE	2	2	0.18	U
XYLENE (TOTAL)	5	5	0.58	U

Legend

D = Analyzed at a dilution factor

Table 5A Groundwater Analytical Results - Shallow Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Table 5A Groundwater Analytical Results - Shallow Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Table 5B Groundwater Analytical Results - Intermediate Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample ID	NYSDEC AWQS and Guidance Values	NYS Drinking Water Standards	CDM-2		CDM-3	
Sampling Date			5/1/2018		5/1/2018	
Unit | Qualifier			(µg/l)	Q	(µg/l)	Q
1,1,1-Trichloroethane	5	5	0.19	U	0.19	U
1,1,2,2-Tetrachloroethane	5	5	0.19	U	0.19	U
1,1,2-Trichloro-1,2,2-trifluoroethane			0.15	U	0.15	U
1,1,2-Trichloroethane	5	5	0.19	U	0.19	U
1,1-Dichloroethane	5		0.24	U	0.24	U
1,1-Dichloroethene			0.25	U	0.25	U
1,2-Dichloroethane			0.2	U	0.2	U
1,2-Dichloropropane	5	5	0.25	U	0.25	U
2-Butanone (MEK)	10	10	2.6	U	2.6	U
2-Hexanone			1.3	U	1.3	U
4-Methyl-2-pentanone (MIBK)			0.81	U	0.81	U
Acetone	50		2.7	U	2.7	U
Benzene	0.7	5	0.2	U	0.2	U
Bromoform			0.29	U	0.29	U
Bromomethane			0.35	U	0.35	U
Carbon disulfide			0.22	U	0.22	U
Carbon tetrachloride	50		0.18	U	0.18	U
Chlorobenzene	5		0.18	U	0.18	U
Chloroethane	5		0.36	U	0.36	U
Chloroform	50		0.23	U	0.23	U
Chloromethane	7		0.36	U	0.36	U
cis-1,2-Dichloroethene			0.21	U	0.26	J
Bromodichloromethane	5	5	0.17	U	0.17	U
Dichlorodifluoromethane			0.17	U	0.17	U
Ethylbenzene	50		0.19	U	0.19	U
Methyl tert-butyl ether	5	5	0.17	U	0.17	U
Methylene Chloride			1	U	1	U
Tetrachloroethene	5		0.38	J	9	
Toluene			0.17	U	0.17	U
trans-1,2-Dichloroethene	5	5	0.23	U	0.23	U
trans-1,3-Dichloropropene	5	5	0.17	U	0.17	U
Trichloroethene	5	5	0.28	J	1.1	
Vinyl chloride	5		0.18	U	0.18	U
Xylenes, Total	5	5	0.58	U	0.58	U
cis-1,3-Dichloropropene	2	2	0.17	U	0.17	U
Styrene	5	5	0.28	U	0.28	U

Table 5B Groundwater Analytical Results - Intermediate Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

DGC-1I		DGC-3I		DGC-6I		DGC-7I		DGC-9I	
5/1/2018		5/1/2018		5/1/2018		5/1/2018		5/1/2018	
(µg/l)	Q	(µg/l)	Q	(µg/l)	Q	(µg/l)	Q	(µg/l)	Q
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
0.81	U	0.81	U	0.81	U	0.81	U	0.81	U
2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
0.29	U	0.29	U	0.29	U	0.29	U	0.29	U
0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
0.18	U	0.18	U	2.8		0.18	U	0.18	U
0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
0.21	U	1.9		10		62		60	
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.17	U	0.17	J	0.38	J	0.17	U	0.17	U
1	U	1	U	1	U	1	U	1	U
9.5		4.7		10		1.1		6.3	
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.23	U	0.23	U	0.23	U	1.7		0.66	J
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.58	J	0.77	J	4.1		1.3		5.4	
0.18	U	0.18	U	0.18	U	1		0.3	J
0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.28	U	0.28	U	0.28	U	0.28	U	0.28	U

Table 5B Groundwater Analytical Results - Intermediate Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

DGC-12IA		DGC-14I		DGC-16I		DGC-17I		DGC-18I	
5/1/2018		5/1/2018		5/1/2018		5/1/2018		5/1/2018	
(µg/l)	Q	(µg/l)	Q	(µg/l)	Q	(µg/l)	Q	(µg/l)	Q
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
0.81	U	0.81	U	0.81	U	0.81	U	0.81	U
2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
0.29	U	0.29	U	0.29	U	0.29	U	0.29	U
0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
0.18	U	0.18	U	0.18	U	0.77	J	0.18	U
0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
0.21	U	0.21	U	0.21	U	21		0.21	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.17	U	0.17	U	0.3	J	0.17	U	0.17	U
1	U	1	U	1	U	1	U	1	U
23		0.14	U	7.6		3.6		0.14	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.23	U	0.23	U	0.23	U	0.4	J	0.23	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.2	U	0.2	U	1.1		3.4		0.2	U
0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.28	U	0.28	U	0.28	U	0.28	U	0.28	U

Table 5B Groundwater Analytical Results - Intermediate Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

DGC-19I		ERT-6I		ERTEW5		ERTEW6		ERTEW7	
5/1/2018		5/1/2018		5/1/2018		5/1/2018		5/1/2018	
(µg/l)	Q	(µg/l)	Q	(µg/l)	Q	(µg/l)	Q	(µg/l)	Q
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.24	U	0.24	U	0.24	U	0.24	U	0.24	U
0.25	U	4		0.25	U	0.25	U	0.25	U
0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
0.81	U	0.81	U	0.81	U	0.81	U	0.81	U
2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
2.1		0.2	U	0.64	J	0.2	U	0.2	U
0.29	U	0.29	U	0.29	U	0.29	U	0.29	U
0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
5		1800		26		4.4		16	
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
1	U	1	U	1	U	1	U	1	U
1.9		2300		540		20		34	
0.17	U	0.58	J	0.17	U	0.17	U	0.17	U
0.23	U	16		0.32	J	0.23	U	0.23	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.63	J	550		2.5		0.86	J	9.7	
0.82	J	99		5.6		0.18	U	0.26	J
0.58	U	0.58	U	0.58	U	0.58	U	0.58	U
0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
0.28	U	0.28	U	0.28	U	0.28	U	0.28	U

Table 5B Groundwater Analytical Results - Intermediate Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

TH-6		TH-7	
5/1/2018		5/1/2018	
(µg/l)	Q	(µg/l)	Q
0.19	U	0.19	U
0.19	U	0.19	U
0.15	U	0.15	U
0.19	U	0.19	U
0.24	U	0.24	U
0.25	U	0.25	U
0.2	U	0.2	U
0.25	U	0.25	U
2.6	U	2.6	U
1.3	U	1.3	U
0.81	U	0.81	U
2.7	U	2.7	U
0.2	U	0.2	U
0.29	U	0.29	U
0.35	U	0.35	U
0.22	U	0.22	U
0.18	U	0.18	U
0.18	U	0.18	U
0.36	U	0.36	U
0.23	U	0.23	U
0.36	U	0.36	U
0.21	U	2.9	
0.17	U	0.17	U
0.17	U	0.17	U
0.19	U	0.19	U
0.17	U	0.17	U
1	U	1	U
0.14	U	4.1	
0.17	U	0.17	U
0.23	U	0.23	U
0.17	U	0.17	U
0.2	U	1.2	
0.18	U	0.59	J
0.58	U	0.58	U
0.17	U	0.17	U
0.28	U	0.28	U

Table 5C Groundwater Analytical Results - Deep Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Sample ID	NYSDEC AWQS and Guidance Values (µg/l)	NYS Drinking Water Standards (µg/l)	CDM-2		CDM-3	
Sampling Date			NS		NS	
Unit | Qualifier			(µg/l)	Q	(µg/l)	Q
1,1,1-Trichloroethane	5	5	0.19	U	0.19	U
1,1,2,2-Tetrachloroethane	5	5	0.19	U	0.19	U
1,1,2-Trichloro-1,2,2-trifluoroethan			0.15	U	0.15	U
1,1,2-Trichloroethane	5	5	0.19	U	0.19	U
1,1-Dichloroethane	5		0.24	U	0.24	U
1,1-Dichloroethene			0.25	U	0.25	U
1,2-Dichloroethane			0.2	U	0.2	U
1,2-Dichloropropane	5	5	0.25	U	0.25	U
2-Butanone (MEK)	10	10	2.6	U	2.6	U
2-Hexanone			1.3	U	1.3	U
4-Methyl-2-pentanone (MIBK)			0.81	U	0.81	U
Acetone	50		2.7	U	2.7	U
Benzene	0.7	5	0.2	U	0.2	U
Bromoform			0.29	U	0.29	U
Bromomethane			0.35	U	0.35	U
Carbon disulfide			0.22	U	0.22	U
Carbon tetrachloride	50		0.18	U	0.18	U
Chlorobenzene	5		0.18	U	0.18	U
Chloroethane	5		0.36	U	0.36	U
Chloroform	50		0.23	U	0.23	U
Chloromethane	7		0.36	U	0.36	U
cis-1,2-Dichloroethene			0.21	U	0.26	J
Bromodichloromethane	5	5	0.17	U	0.17	U
Dichlorodifluoromethane			0.17	U	0.17	U
Ethylbenzene	50		0.19	U	0.19	U
Methyl tert-butyl ether	5	5	0.17	U	0.17	U
Methylene Chloride			1	U	1	U
Tetrachloroethene	5		0.38	J	9	
Toluene			0.17	U	0.17	U
trans-1,2-Dichloroethene	5	5	0.23	U	0.23	U
trans-1,3-Dichloropropene	5	5	0.17	U	0.17	U
Trichloroethene	5	5	0.28	J	1.1	
Vinyl chloride	5		0.18	U	0.18	U
Xylenes, Total	5	5	0.58	U	0.58	U
cis-1,3-Dichloropropene	2	2	0.17	U	0.17	U
Styrene	5	5	0.28	U	0.28	U

Table 5C Groundwater Analytical Results - Deep Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Table 5C Groundwater Analytical Results - Deep Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

Table 5C Groundwater Analytical Results - Deep Wells
May 2018
Periodic Review Report 2018
Brewster Village Well Field - Site 3-40-012
NYSDEC Work Assignment #D007621

New York State Department of Environmental Conservation
Division of Water
Bureau of Water Permits, 4th Floor
625 Broadway, Albany, New York 12233-3505
Phone: (518) 402-8111 • **FAX:** (518) 402-9029
Website: www.dec.state.ny.us



Joe Martens
Commissioner

MEMORANDUM

TO: Susan Edwards, Remedial Section D, DER
FROM: Sudhir mahatma, BWP, DOW
SUBJECT: **Brewster Wellfield , Site # 3-40-012**
DRAINAGE BASIN: 13-02
DATE: Aug 06, 2013

In response to your request dated July 16,2013 and email of July 23,2013 from Carl Hoffman , attached please find effluent limitations and monitoring requirements for the above noted remediation discharge.

The DOW does not have any regulatory authority over a discharge from a State, PRP, or Federal Superfund Site. DER will be responsible for ensuring compliance with the attached effluent limitations and monitoring requirements, and approval of all engineering submissions. Footnote 1 identifies the appropriate DER Section Chief as the place to send all effluent results, engineering submissions, and modification requests. The Regional Water Engineer should be kept appraised of the status of this discharge and, in accordance with the attached criteria, receive a copy of the effluent results for informational purposes.

If you have any questions, please call me at 2-8126 .

Attachment (Effluent Limitations and Monitoring Requirements)

cc: Regional Water Engineer R-3(w/attach)
Shayne Mitchell, BWP Section Chief, DOW (w/attach)
Ron Entringer, DOW (w/attach)

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning Aug 2013

and lasting until July 2018

the discharges from the treatment facility to East Branch of Croton River ,water index number H-31-P44-24 , Class A(T) , shall be limited and monitored by the operator as specified below:

Outfall Number and Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements	
	Monthly Avg.	Daily Max		Measurement Frequency	Sample Type
Outfall 001 - Treated Groundwater Remediation Discharge:					
Flow	Monitor	72,000	GPD	Continuous	Meter
pH (range)	6.5 to 8.5		SU	Weekly (7)	Grab
Tetrachloroethylene	Monitor	10	ug/l	Weekly (7)	Grab
Trichloroethylene	Monitor	10	ug/l	Weekly (7)	Grab
1,2-(trans) Dichloroethylene	Monitor	10	ug/l	Weekly (7)	Grab
1,2-(cis) Dichloroethylene	Monitor	10	ug/l	Weekly (7)	Grab
1,1,1 Trichloroethane	Monitor	10	ug/l	Weekly (7)	Grab
1,1,2,2 Tetrachloroethane	Monitor	10	ug/l	Weekly (7)	Grab
1,1 Dichloroethane	Monitor	10	ug/l	Weekly (7)	Grab
Vinyl Chloride	Monitor	10	ug/l	Weekly (7)	Grab
Chloroform	Monitor	10	ug/l	Weekly (7)	Grab
Chlorobenzene	Monitor	10	ug/l	Weekly (7)	Grab
1,2 Dichlorobenzene	Monitor	10	ug/l	Weekly (7)	Grab
Iron, Total	Monitor	4,000	ug/l	Monthly	Grab

Additional Conditions:

(1) Discharge is not authorized until such time as an engineering submission showing the method of treatment is approved by the Department. The discharge rate may not exceed the effective or design treatment system capacity. All monitoring data, engineering submissions and modification requests must be submitted to:

Susan Edwards , Remedial Section D,
Division of Environmental Remediation
NYSDEC, 625 Broadway, Albany, New York 12233- 7017
518-402- 9813

With a copy sent to:

Regional Water Engineer, Region-3
21 South Putt Corners Rd.
New Paltz , NY 12561
845-256-3179

(2) Only site generated wastewater is authorized for treatment and discharge.

(3) Authorization to discharge is valid only for the period noted above but may be renewed if appropriate. A request for renewal must be received 6 months prior to the expiration date to allow for a review of monitoring data and reassessment of monitoring requirements.

(4) Both concentration (mg/l or µg/l) and mass loadings (lbs/day) must be reported to the Department for all parameters except flow and pH.

(5) Any use of corrosion/scale inhibitors, biocidal-type compounds, or other water treatment chemicals used in the treatment process must be approved by the department prior to use.

(6) This discharge and administration of this discharge must comply with the substantive requirements of 6NYCRR Part 750.

(7) Minimum measurement frequency of all parameters(except flow) shall be MONTHLY following a period of 24 consecutive weekly sampling events if they do not show any exceedance of the stated discharge limits. If the discharge limit of any parameter is exceeded , the measurement frequency of all parameters shall be WEEKLY, till a period of 8 (eight) consecutive sampling events that show no exceedance , at which point MONTHLY monitoring resumes.

Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

January 10, 2018

Joe Sabanos
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 180105040
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear Joe Sabanos:

Adirondack Environmental Services, Inc received 6 samples on 1/5/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:**	*10-Jan-18*
Project:	Brewster Village Wells, NY-Putnam Co		
Lab Order:	180105040		

Sample containers were supplied by Adirondack Environmental Services.

Qualifiers:

ND - Not Detected at reporting limit
J - Analyte detected below quantitation limit
B - Analyte detected in Blank
X - Exceeds maximum contamination limit
H - Hold time exceeded
N - Matrix Spike below acceptable limits
N+ - Matrix Spike is above acceptable limits
C - Details are above in Case Narrative
S - LCS Spike recovery is below acceptable limits
S+ - LCS Spike recovery is above acceptable limits
Z - Duplication outside acceptable limits
T - Tentatively Identified Compound-Estimated
E -Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *10-Jan-18*

CLIENT: Aztech Technologies
Work Order: **180105040**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Effluent
Collection Date: 1/5/2018
Lab Sample ID: 180105040-001
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	1/8/2018 1:23:00 PM
Chloromethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Bromomethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Chloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Chloroform	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Bromoform	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 1:23:00 PM
Surr: 4-Bromofluorobenzene	**93.5**	76.1-125		%REC	1	1/8/2018 1:23:00 PM

Adirondack Environmental Services, Inc

Date: *10-Jan-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**180105040**	**Collection Date:**	1/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180105040-002
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	2.0	S	µg/L	2	1/8/2018 6:26:00 PM
Chloromethane	**2.1**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Vinyl chloride	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Bromomethane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Chloroethane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Trichlorofluoromethane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
1,1-Dichloroethene	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Methylene chloride	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
trans-1,2-Dichloroethene	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
1,1-Dichloroethane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
cis-1,2-Dichloroethene	**17**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Chloroform	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
1,1,1-Trichloroethane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Carbon tetrachloride	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
1,2-Dichloroethane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Trichloroethene	**5.2**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Bromodichloromethane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
1,2-Dichloropropane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
cis-1,3-Dichloropropene	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
trans-1,3-Dichloropropene	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
1,1,2-Trichloroethane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Tetrachloroethene	**170**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Dibromochloromethane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Chlorobenzene	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Bromoform	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
1,1,2,2-Tetrachloroethane	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
1,3-Dichlorobenzene	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
1,4-Dichlorobenzene	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
1,2-Dichlorobenzene	**ND**	2.0		µg/L	2	1/8/2018 6:26:00 PM
Surr: 4-Bromofluorobenzene	**88.9**	76.1-125		%REC	2	1/8/2018 6:26:00 PM

Adirondack Environmental Services, Inc

Date: *10-Jan-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 5
Work Order:	**180105040**	**Collection Date:**	1/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180105040-003
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	5.0	S	µg/L	5	1/8/2018 6:50:00 PM
Chloromethane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Vinyl chloride	**5.1**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Bromomethane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Chloroethane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Trichlorofluoromethane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
1,1-Dichloroethene	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Methylene chloride	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
trans-1,2-Dichloroethene	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
1,1-Dichloroethane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
cis-1,2-Dichloroethene	**19**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Chloroform	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
1,1,1-Trichloroethane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Carbon tetrachloride	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
1,2-Dichloroethane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Trichloroethene	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Bromodichloromethane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
1,2-Dichloropropane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
cis-1,3-Dichloropropene	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
trans-1,3-Dichloropropene	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
1,1,2-Trichloroethane	**6.0**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Tetrachloroethene	**520**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Dibromochloromethane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Chlorobenzene	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Bromoform	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
1,1,2,2-Tetrachloroethane	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
1,3-Dichlorobenzene	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
1,4-Dichlorobenzene	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
1,2-Dichlorobenzene	**ND**	5.0		µg/L	5	1/8/2018 6:50:00 PM
Surr: 4-Bromofluorobenzene	**93.0**	76.1-125		%REC	5	1/8/2018 6:50:00 PM

Adirondack Environmental Services, Inc

Date: *10-Jan-18*

CLIENT: Aztech Technologies
Work Order: **180105040**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 6
Collection Date: 1/5/2018
Lab Sample ID: 180105040-004
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	1/8/2018 5:40:00 PM
Chloromethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Bromomethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Chloroethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
cis-1,2-Dichloroethene	**4.1**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Chloroform	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Trichloroethene	**1.0**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Tetrachloroethene	**62**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Bromoform	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 5:40:00 PM
Surr: 4-Bromofluorobenzene	**88.6**	76.1-125		%REC	1	1/8/2018 5:40:00 PM

Adirondack Environmental Services, Inc

Date: *10-Jan-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 7
Work Order:	**180105040**	**Collection Date:**	1/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180105040-005
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	1/8/2018 6:02:00 PM
Chloromethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Bromomethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Chloroethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
cis-1,2-Dichloroethene	**25**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Chloroform	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Trichloroethene	**8.0**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Tetrachloroethene	**40**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Bromoform	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 6:02:00 PM
Surr: 4-Bromofluorobenzene	**86.3**	76.1-125		%REC	1	1/8/2018 6:02:00 PM

Adirondack Environmental Services, Inc

Date: *10-Jan-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Trip Blank Lot# VOA-F30.1
Work Order:	**180105040**	**Collection Date:**	1/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180105040-006
PO#:	C200302	**Matrix:**	TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	1/8/2018 1:45:00 PM
Chloromethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Bromomethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Chloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Chloroform	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Bromoform	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	1/8/2018 1:45:00 PM
Surr: 4-Bromofluorobenzene	**92.1**	76.1-125		%REC	1	1/8/2018 1:45:00 PM

Adirondack Environmental Services Inc.
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#: 180105040

A full service analytical research laboratory offering solutions to environmental concerns

Client Name:	Address:	
NYS DEC Region 3	625 Broadway Albany NY	
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Garth Barrett
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
001	Effluent	1-5-18	10:30	A/P	H2O		X	2	E-601
002	Combined Influent	1-5-18	10:35	A/P	H2O		X	2	E-601
003	Well 5	1-5-18	10:40	A/P	H2O		X	2	E-601
004	Well 6	1-5-18	10:45	A/P	H2O		X	2	E-601
005	Well 7	1-5-18	10:50	A/P	H2O		X	2	E-601
006	Trip Blank			A/P	H2O		X	1	E-601
	Lot# VOA-F30.1			A/P					
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					

Shipment Arrived Via:
FedEx UPS Client AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
Sampling@aztechtech.com
ATalbot@aztechtech.com
JSabanos@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Garth Barrett	1-5-18	1405			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	**Received for Laboratory by:**	Date	Time
				1/5/18	2:07 PM

Sample Temperature	**Properly Preserved**	**Received Within Holding Times**
Ambient Chilled	Y N	Y N
Chilling Process begun		
Notes: 4°C	Notes:	Notes:



Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

February 06, 2018

Joe Sabanos
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 180202043
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear Joe Sabanos:

Adirondack Environmental Services, Inc received 6 samples on 2/2/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:** *06-Feb-18*
Project:	Brewster Village Wells, NY-Putnam Co	
Lab Order:	180202043	

Sample containers were supplied by Adirondack Environmental Services.

Qualifiers:

ND - Not Detected at reporting limit
J - Analyte detected below quantitation limit
B - Analyte detected in Blank
X - Exceeds maximum contamination limit
H - Hold time exceeded
N - Matrix Spike below acceptable limits
N+ - Matrix Spike is above acceptable limits
C - Details are above in Case Narrative
S - LCS Spike recovery is below acceptable limits
S+ - LCS Spike recovery is above acceptable limits
Z - Duplication outside acceptable limits
T - Tentatively Identified Compound-Estimated
E -Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *06-Feb-18*

CLIENT: Aztech Technologies
Work Order: **180202043**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Effluent
Collection Date: 2/1/2018
Lab Sample ID: 180202043-001
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Chloromethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Bromomethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Chloroethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Chloroform	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Bromoform	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 1:58:00 PM
Surr: 4-Bromofluorobenzene	**99.2**	76.1-125		%REC	1	2/5/2018 1:58:00 PM

Adirondack Environmental Services, Inc

Date: *06-Feb-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**180202043**	**Collection Date:**	2/1/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180202043-002
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Chloromethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Vinyl chloride	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Bromomethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Chloroethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Trichlorofluoromethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
1,1-Dichloroethene	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Methylene chloride	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
trans-1,2-Dichloroethene	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
1,1-Dichloroethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
cis-1,2-Dichloroethene	**7.7**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Chloroform	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
1,1,1-Trichloroethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Carbon tetrachloride	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
1,2-Dichloroethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Trichloroethene	**4.7**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Bromodichloromethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
1,2-Dichloropropane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
cis-1,3-Dichloropropene	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
trans-1,3-Dichloropropene	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
1,1,2-Trichloroethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Tetrachloroethene	**140**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Dibromochloromethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Chlorobenzene	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Bromoform	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
1,1,2,2-Tetrachloroethane	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
1,3-Dichlorobenzene	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
1,4-Dichlorobenzene	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
1,2-Dichlorobenzene	**ND**	2.0		µg/L	2	2/5/2018 5:13:00 PM
Surr: 4-Bromofluorobenzene	**98.0**	76.1-125		%REC	2	2/5/2018 5:13:00 PM

Adirondack Environmental Services, Inc

Date: *06-Feb-18*

CLIENT: Aztech Technologies
Work Order: **180202043**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 5
Collection Date: 2/1/2018
Lab Sample ID: 180202043-003
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Chloromethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Vinyl chloride	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Bromomethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Chloroethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Trichlorofluoromethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
1,1-Dichloroethene	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Methylene chloride	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
trans-1,2-Dichloroethene	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
1,1-Dichloroethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
cis-1,2-Dichloroethene	**16**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Chloroform	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
1,1,1-Trichloroethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Carbon tetrachloride	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
1,2-Dichloroethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Trichloroethene	**7.5**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Bromodichloromethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
1,2-Dichloropropane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
cis-1,3-Dichloropropene	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
trans-1,3-Dichloropropene	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
1,1,2-Trichloroethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Tetrachloroethene	**590**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Dibromochloromethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Chlorobenzene	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Bromoform	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
1,1,2,2-Tetrachloroethane	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
1,3-Dichlorobenzene	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
1,4-Dichlorobenzene	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
1,2-Dichlorobenzene	**ND**	5.0		µg/L	5	2/5/2018 5:37:00 PM
Surr: 4-Bromofluorobenzene	**102**	76.1-125		%REC	5	2/5/2018 5:37:00 PM

Adirondack Environmental Services, Inc

Date: *06-Feb-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 6
Work Order:	**180202043**	**Collection Date:**	2/1/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180202043-004
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Chloromethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Bromomethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Chloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Methylene chloride	**ND**	1.0	N	µg/L	1	2/5/2018 4:49:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
cis-1,2-Dichloroethene	**ND**	1.0	N	µg/L	1	2/5/2018 4:49:00 PM
Chloroform	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Trichloroethene	**1.5**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
1,2-Dichloropropane	**ND**	1.0	N	µg/L	1	2/5/2018 4:49:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Tetrachloroethene	**24**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Bromoform	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:49:00 PM
Surr: 4-Bromofluorobenzene	**92.9**	76.1-125		%REC	1	2/5/2018 4:49:00 PM

Adirondack Environmental Services, Inc

Date: *06-Feb-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 7
Work Order:	**180202043**	**Collection Date:**	2/1/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180202043-005
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Chloromethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Bromomethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Chloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
cis-1,2-Dichloroethene	**8.2**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Chloroform	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Trichloroethene	**5.1**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Tetrachloroethene	**16**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Bromoform	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:27:00 PM
Surr: 4-Bromofluorobenzene	**93.6**	76.1-125		%REC	1	2/5/2018 4:27:00 PM

Adirondack Environmental Services, Inc

Date: *06-Feb-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Trip Blank Lot# VOA-F30.1
Work Order:	**180202043**	**Collection Date:**	2/1/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180202043-006
PO#:	C200302	**Matrix:**	TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Chloromethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Bromomethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Chloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Methylene chloride	**1.3**	1.0		µg/L	1	2/5/2018 4:06:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Chloroform	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Bromoform	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	2/5/2018 4:06:00 PM
Surr: 4-Bromofluorobenzene	**99.1**	76.1-125		%REC	1	2/5/2018 4:06:00 PM

Adirondack Environmental Services Inc.
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#: 180202043

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY	
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Carl Hoffman
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
001	Effluent	2/1/18	215	A/P	H2O		X	2	E-601
002	Combined Influent	2/1/18	217	A/P	H2O		X	2	E-601
003	Well 5	2/1/18	220	A/P	H2O		X	2	E-601
004	Well 6	2/1/18	225	A/P	H2O		X	2	E-601
005	Well 7	2/1/18	230	A/P	H2O		X	2	E-601
006	Trip Blank			A/P	H2O		X	1	E-601
	Lot# VOA-F30 1 JM 2/2/18			A/P					
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					

Shipment Arrived Via:
FedEx UPS (Client) AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
sampling@aztechtech.com
ATA1604@aztechtech.com
JSabanos@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com
ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	2/1/18	5:15			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	**Received for Laboratory by:**	Date	Time
				2/2/18	11:47 AM

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient Chilled (Chilling Process begun)	(Y) N	(Y) N
Notes: IOC	Notes:	Notes:

180202043

Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Adirondack Environmental Services, Inc.

Experience is the solution

314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

March 13, 2018

Joe Sabanos
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 180301040
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear Joe Sabanos:

Adirondack Environmental Services, Inc received 6 samples on 3/1/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:**	*13-Mar-18*
Project:	Brewster Village Wells, NY-Putnam Co		
Lab Order:	180301040		

Sample containers were supplied by Adirondack Environmental Services.

Qualifiers:

ND - Not Detected at reporting limit
J - Analyte detected below quantitation limit
B - Analyte detected in Blank
X - Exceeds maximum contamination limit
H - Hold time exceeded
N - Matrix Spike below acceptable limits
N+ - Matrix Spike is above acceptable limits
C - Details are above in Case Narrative
S - LCS Spike recovery is below acceptable limits
S+ - LCS Spike recovery is above acceptable limits
Z - Duplication outside acceptable limits
T - Tentatively Identified Compound-Estimated
E -Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *13-Mar-18*

CLIENT: Aztech Technologies
Work Order: **180301040**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Effluent
Collection Date: 3/1/2018
Lab Sample ID: 180301040-001
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Chloromethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Bromomethane	**ND**	1.0	S	µg/L	1	3/9/2018 10:54:00 PM
Chloroethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Chloroform	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Tetrachloroethene	**1.2**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Bromoform	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	3/9/2018 10:54:00 PM
Surr: 4-Bromofluorobenzene	**100**	76.1-125		%REC	1	3/9/2018 10:54:00 PM

Adirondack Environmental Services, Inc

Date: *13-Mar-18*

CLIENT: Aztech Technologies
Work Order: **180301040**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Combined Influent
Collection Date: 3/1/2018
Lab Sample ID: 180301040-002
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Chloromethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Vinyl chloride	**2.4**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Bromomethane	**ND**	2.0	S	µg/L	2	3/10/2018 5:21:00 AM
Chloroethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Trichlorofluoromethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
1,1-Dichloroethene	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Methylene chloride	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
trans-1,2-Dichloroethene	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
1,1-Dichloroethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
cis-1,2-Dichloroethene	**9.7**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Chloroform	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
1,1,1-Trichloroethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Carbon tetrachloride	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
1,2-Dichloroethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Trichloroethene	**4.4**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Bromodichloromethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
1,2-Dichloropropane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
cis-1,3-Dichloropropene	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
trans-1,3-Dichloropropene	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
1,1,2-Trichloroethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Tetrachloroethene	**150**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Dibromochloromethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Chlorobenzene	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Bromoform	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
1,1,2,2-Tetrachloroethane	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
1,3-Dichlorobenzene	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
1,4-Dichlorobenzene	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
1,2-Dichlorobenzene	**ND**	2.0		µg/L	2	3/10/2018 5:21:00 AM
Surr: 4-Bromofluorobenzene	**103**	76.1-125		%REC	2	3/10/2018 5:21:00 AM

Adirondack Environmental Services, Inc

Date: *13-Mar-18*

CLIENT: Aztech Technologies
Work Order: **180301040**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 5
Collection Date: 3/1/2018
Lab Sample ID: 180301040-003
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Chloromethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Vinyl chloride	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Bromomethane	**ND**	5.0	S	µg/L	5	3/10/2018 5:46:00 AM
Chloroethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Trichlorofluoromethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
1,1-Dichloroethene	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Methylene chloride	**5.4**	5.0		µg/L	5	3/10/2018 5:46:00 AM
trans-1,2-Dichloroethene	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
1,1-Dichloroethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
cis-1,2-Dichloroethene	**16**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Chloroform	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
1,1,1-Trichloroethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Carbon tetrachloride	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
1,2-Dichloroethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Trichloroethene	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Bromodichloromethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
1,2-Dichloropropane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
cis-1,3-Dichloropropene	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
trans-1,3-Dichloropropene	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
1,1,2-Trichloroethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Tetrachloroethene	**630**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Dibromochloromethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Chlorobenzene	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Bromoform	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
1,1,2,2-Tetrachloroethane	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
1,3-Dichlorobenzene	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
1,4-Dichlorobenzene	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
1,2-Dichlorobenzene	**ND**	5.0		µg/L	5	3/10/2018 5:46:00 AM
Surr: 4-Bromofluorobenzene	**105**	76.1-125		%REC	5	3/10/2018 5:46:00 AM

Adirondack Environmental Services, Inc

Date: *13-Mar-18*

CLIENT: Aztech Technologies
Work Order: **180301040**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 6
Collection Date: 3/1/2018
Lab Sample ID: 180301040-004
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Chloromethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Vinyl chloride	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Bromomethane	**ND**	1.0	S	µg/L	1	3/10/2018 3:53:00 AM
Chloroethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Chloroform	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Trichloroethene	**1.8**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Tetrachloroethene	**26**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Bromoform	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	3/10/2018 3:53:00 AM
Surr: 4-Bromofluorobenzene	**96.1**	76.1-125		%REC	1	3/10/2018 3:53:00 AM

Adirondack Environmental Services, Inc

Date: *13-Mar-18*

CLIENT: Aztech Technologies
Work Order: **180301040**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 7
Collection Date: 3/1/2018
Lab Sample ID: 180301040-005
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Chloromethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Vinyl chloride	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Bromomethane	**ND**	1.0	S	µg/L	1	3/10/2018 4:14:00 AM
Chloroethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
cis-1,2-Dichloroethene	**11**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Chloroform	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Trichloroethene	**6.4**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Tetrachloroethene	**26**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Bromoform	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	3/10/2018 4:14:00 AM
Surr: 4-Bromofluorobenzene	**103**	76.1-125		%REC	1	3/10/2018 4:14:00 AM

Adirondack Environmental Services, Inc

Date: *13-Mar-18*

CLIENT: Aztech Technologies
Work Order: **180301040**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Trip Blank Lot# VOA-F31.1
Collection Date: 3/1/2018
Lab Sample ID: 180301040-006
Matrix: TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Chloromethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Bromomethane	**ND**	1.0	S	µg/L	1	3/9/2018 11:16:00 PM
Chloroethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Chloroform	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Bromoform	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	3/9/2018 11:16:00 PM
Surr: 4-Bromofluorobenzene	**101**	76.1-125		%REC	1	3/9/2018 11:16:00 PM

Adirondack Environmental Services Inc.®
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#: 180301040

A full service analytical research laboratory offering solutions to environmental concerns

Client Name:	Address:	
NYS DEC Region 3	625 Broadway Albany NY	
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: CARL ALDRICH
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
001	Effluent	3/1/18	1120	A/P	H2O		X	2	E-601
002	Combined Influent		1125	A/P	H2O		X	2	E-601
003	Well 5		1130	A/P	H2O		X	2	E-601
004	Well 6		1135	A/P	H2O		X	2	E-601
005	Well 7		1140	A/P	H2O		X	2	E-601
006	Trip Blank			A/P	H2O		X	1	E-601
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					

Shipment Arrived Via:
FedEx UPS Client AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
sampling@aztechtech.com
ATalbot@aztechtech.com
JSabanos@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	3/1/18	230			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	**Received for Laboratory by:**	Date	Time
				3/1/18	2:33 PM

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient Chilled	Y N	Y N
Chilling Process begun		
Notes: 3°C	Notes:	Notes:

180301040

Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

April 11, 2018

Joe Sabanos
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 180403032
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear Joe Sabanos:

Adirondack Environmental Services, Inc received 6 samples on 4/3/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:**	*11-Apr-18*
Project:	Brewster Village Wells, NY-Putnam Co		
Lab Order:	180403032		

Sample containers were supplied by Adirondack Environmental Services.

Qualifiers:

ND - Not Detected at reporting limit
J - Analyte detected below quantitation limit
B - Analyte detected in Blank
X - Exceeds maximum contamination limit
H - Hold time exceeded
N - Matrix Spike below acceptable limits
N+ - Matrix Spike is above acceptable limits
C - Details are above in Case Narrative
S - LCS Spike recovery is below acceptable limits
S+ - LCS Spike recovery is above acceptable limits
Z - Duplication outside acceptable limits
T - Tentatively Identified Compound-Estimated
E -Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *11-Apr-18*

CLIENT: Aztech Technologies
Work Order: **180403032**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Effluent
Collection Date: 4/3/2018
Lab Sample ID: 180403032-001
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Chloromethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Bromomethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Chloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Chloroform	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Bromoform	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:13:00 PM
Surr: 4-Bromofluorobenzene	**88.1**	76.1-125		%REC	1	4/4/2018 6:13:00 PM

Adirondack Environmental Services, Inc

Date: *11-Apr-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**180403032**	**Collection Date:**	4/3/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180403032-002
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Chloromethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Vinyl chloride	**2.1**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Bromomethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Chloroethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Trichlorofluoromethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
1,1-Dichloroethene	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Methylene chloride	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
trans-1,2-Dichloroethene	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
1,1-Dichloroethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
cis-1,2-Dichloroethene	**12**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Chloroform	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
1,1,1-Trichloroethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Carbon tetrachloride	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
1,2-Dichloroethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Trichloroethene	**5.0**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Bromodichloromethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
1,2-Dichloropropane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
cis-1,3-Dichloropropene	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
trans-1,3-Dichloropropene	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
1,1,2-Trichloroethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Tetrachloroethene	**160**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Dibromochloromethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Chlorobenzene	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Bromoform	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
1,1,2,2-Tetrachloroethane	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
1,3-Dichlorobenzene	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
1,4-Dichlorobenzene	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
1,2-Dichlorobenzene	**ND**	2.0		µg/L	2	4/4/2018 8:47:00 PM
Surr: 4-Bromofluorobenzene	**90.7**	76.1-125		%REC	2	4/4/2018 8:47:00 PM

Adirondack Environmental Services, Inc

Date: *11-Apr-18*

CLIENT: Aztech Technologies
Work Order: **180403032**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 5
Collection Date: 4/3/2018
Lab Sample ID: 180403032-003
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Chloromethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Vinyl chloride	**7.8**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Bromomethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Chloroethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Trichlorofluoromethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
1,1-Dichloroethene	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Methylene chloride	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
trans-1,2-Dichloroethene	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
1,1-Dichloroethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
cis-1,2-Dichloroethene	**18**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Chloroform	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
1,1,1-Trichloroethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Carbon tetrachloride	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
1,2-Dichloroethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Trichloroethene	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Bromodichloromethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
1,2-Dichloropropane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
cis-1,3-Dichloropropene	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
trans-1,3-Dichloropropene	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
1,1,2-Trichloroethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Tetrachloroethene	**610**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Dibromochloromethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Chlorobenzene	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Bromoform	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
1,1,2,2-Tetrachloroethane	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
1,3-Dichlorobenzene	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
1,4-Dichlorobenzene	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
1,2-Dichlorobenzene	**ND**	5.0		µg/L	5	4/4/2018 9:12:00 PM
Surr: 4-Bromofluorobenzene	**85.5**	76.1-125		%REC	5	4/4/2018 9:12:00 PM

Adirondack Environmental Services, Inc

Date: *11-Apr-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 6
Work Order:	**180403032**	**Collection Date:**	4/3/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180403032-004
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Chloromethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Bromomethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Chloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
cis-1,2-Dichloroethene	**4.4**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Chloroform	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Tetrachloroethene	**30**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Bromoform	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:35:00 PM
Surr: 4-Bromofluorobenzene	**84.0**	76.1-125		%REC	1	4/4/2018 6:35:00 PM

Adirondack Environmental Services, Inc

Date: *11-Apr-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 7
Work Order:	**180403032**	**Collection Date:**	4/3/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180403032-005
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Chloromethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Bromomethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Chloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
cis-1,2-Dichloroethene	**14**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Chloroform	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Trichloroethene	**8.6**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Tetrachloroethene	**33**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Bromoform	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 6:56:00 PM
Surr: 4-Bromofluorobenzene	**86.9**	76.1-125		%REC	1	4/4/2018 6:56:00 PM

Adirondack Environmental Services, Inc

Date: *11-Apr-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Trip Blank Lot# VOA-F30.1
Work Order:	**180403032**	**Collection Date:**	4/3/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180403032-006
PO#:	C200302	**Matrix:**	TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Chloromethane	**3.8**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Bromomethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Chloroethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Methylene chloride	**2.0**	1.0		µg/L	1	4/4/2018 7:18:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Chloroform	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Bromoform	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	4/4/2018 7:18:00 PM
Surr: 4-Bromofluorobenzene	**90.1**	76.1-125		%REC	1	4/4/2018 7:18:00 PM

Adirondack Environmental Services Inc.
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#: 180403032

A full service analytical research laboratory offering solutions to environmental concerns

Client Name:	Address:	
NYS DEC Region 3	625 Broadway Albany NY	
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Carl Hoffman
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
001	Effluent	4/3/18	1000	A P	H2O		X	2	E-601
002	Combined Influent		1005	A P	H2O		X	2	E-601
003	Well 5		1010	A P	H2O		X	2	E-601
004	Well 6		1015	A P	H2O		X	2	E-601
005	Well 7		1020	A P	H2O		X	2	E-601
006	Trip Blank			A P	H2O		X	1	E-601
				A P					
				A P					
				A P					
				A P					
				A P					
				A P					

Shipment Arrived Via:
FedEx UPS (Client) AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☑ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
Sampling@aztechtech.com
ATalbot@aztechtech.com
JSabanos@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com
ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4/3/18				
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory by:	Date	Time
				4/3/18	1:14pm

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient (Chilled)	(Y) N	(Y) N
Chilling Process begun		
Notes: 4.0	Notes:	Notes:



Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

May 15, 2018

Joe Sabanos
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 180502034
PO#: 3400012

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear Joe Sabanos:

Adirondack Environmental Services, Inc received 6 samples on 5/2/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:**	*15-May-18*
Project:	Brewster Village Wells, NY-Putnam Co		
Lab Order:	180502034		

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:		
	ND : Not Detected at reporting limit	C: CCV below acceptable Limits
	J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
	B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
	X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
	H: Hold time exceeded	Z: Duplication outside acceptable limits
	N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
	N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *15-May-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Effluent
Work Order:	**180502034**	**Collection Date:**	5/2/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180502034-001
PO#:	3400012	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Chloromethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Bromomethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Chloroethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Chloroform	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Bromoform	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 7:53:00 PM
Surr: 4-Bromofluorobenzene	**99.9**	76.1-125		%REC	1	5/11/2018 7:53:00 PM

Adirondack Environmental Services, Inc

Date: *15-May-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**180502034**	**Collection Date:**	5/2/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180502034-002
PO#:	3400012	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Chloromethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Vinyl chloride	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Bromomethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Chloroethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Trichlorofluoromethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
1,1-Dichloroethene	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Methylene chloride	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
trans-1,2-Dichloroethene	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
1,1-Dichloroethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
cis-1,2-Dichloroethene	**11**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Chloroform	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
1,1,1-Trichloroethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Carbon tetrachloride	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
1,2-Dichloroethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Trichloroethene	**3.9**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Bromodichloromethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
1,2-Dichloropropane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
cis-1,3-Dichloropropene	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
trans-1,3-Dichloropropene	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
1,1,2-Trichloroethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Tetrachloroethene	**150**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Dibromochloromethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Chlorobenzene	**3.6**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Bromoform	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
1,1,2,2-Tetrachloroethane	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
1,3-Dichlorobenzene	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
1,4-Dichlorobenzene	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
1,2-Dichlorobenzene	**ND**	2.0		µg/L	2	5/12/2018 1:41:00 AM
Surr: 4-Bromofluorobenzene	**96.0**	76.1-125		%REC	2	5/12/2018 1:41:00 AM

Adirondack Environmental Services, Inc

Date: *15-May-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 5
Work Order:	**180502034**	**Collection Date:**	5/2/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180502034-003
PO#:	3400012	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Chloromethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Vinyl chloride	**6.0**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Bromomethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Chloroethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Trichlorofluoromethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
1,1-Dichloroethene	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Methylene chloride	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
trans-1,2-Dichloroethene	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
1,1-Dichloroethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
cis-1,2-Dichloroethene	**22**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Chloroform	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
1,1,1-Trichloroethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Carbon tetrachloride	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
1,2-Dichloroethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Trichloroethene	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Bromodichloromethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
1,2-Dichloropropane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
cis-1,3-Dichloropropene	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
trans-1,3-Dichloropropene	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
1,1,2-Trichloroethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Tetrachloroethene	**550**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Dibromochloromethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Chlorobenzene	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Bromoform	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
1,1,2,2-Tetrachloroethane	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
1,3-Dichlorobenzene	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
1,4-Dichlorobenzene	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
1,2-Dichlorobenzene	**ND**	5.0		µg/L	5	5/12/2018 2:06:00 AM
Surr: 4-Bromofluorobenzene	**106**	76.1-125		%REC	5	5/12/2018 2:06:00 AM

Adirondack Environmental Services, Inc

Date: *15-May-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 6
Work Order:	**180502034**	**Collection Date:**	5/2/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180502034-004
PO#:	3400012	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Chloromethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Bromomethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Chloroethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
cis-1,2-Dichloroethene	**4.2**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Chloroform	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Tetrachloroethene	**19**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Bromoform	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 10:45:00 PM
Surr: 4-Bromofluorobenzene	**87.2**	76.1-125		%REC	1	5/11/2018 10:45:00 PM

Adirondack Environmental Services, Inc

Date: *15-May-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 7
Work Order:	**180502034**	**Collection Date:**	5/2/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180502034-005
PO#:	3400012	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Chloromethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Bromomethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Chloroethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
cis-1,2-Dichloroethene	**14**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Chloroform	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Trichloroethene	**9.6**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Tetrachloroethene	**35**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Bromoform	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 11:07:00 PM
Surr: 4-Bromofluorobenzene	**105**	76.1-125		%REC	1	5/11/2018 11:07:00 PM

Adirondack Environmental Services, Inc

Date: *15-May-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Trip Blank
Work Order:	**180502034**	**Collection Date:**	5/2/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180502034-006
PO#:	3400012	**Matrix:**	TRIP BLANK

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Chloromethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Bromomethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Chloroethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Chloroform	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Bromoform	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	5/11/2018 8:14:00 PM
Surr: 4-Bromofluorobenzene	**91.0**	76.1-125		%REC	1	5/11/2018 8:14:00 PM

Adirondack Environmental Services Inc
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#: 180502034

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY		
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Michael Deyette	
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:	
Client Fax No:			

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
001	Effluent	5/2/18	10:25	A P	H2O		X	2	E-601
002	Combined Influent	5/2/18	10:27	A P	H2O		X	2	E-601
003	Well 5	5/2/18	10:30	A P	H2O		X	2	E-601
004	Well 6	5/2/18	10:32	A P	H2O		X	2	E-601
005	Well 7	5/2/18	10:35	A P	H2O		X	2	E-601
006	Trip Blank			A P	H2O		X	1	E-601
				A P					
				A P					
				A P					
				A P					
				A P					
				A P					

Shipment Arrived Via:
FedEx UPS (Client) AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
Sampling@aztechtech.com
ATalbot@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com
ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	5/2	1409			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory by:	Date	Time
				5/2/18	2:09pm

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient (Chilled) Chilling Process begun	(Y) N	(Y) N
Notes: 6°	Notes:	Notes:

180502034

Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

June 18, 2018

A. Talbot
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 180608008
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear A. Talbot:

Adirondack Environmental Services, Inc received 6 samples on 6/7/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:**	*18-Jun-18*
Project:	Brewster Village Wells, NY-Putnam Co		
Lab Order:	180608008		

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:

ND : Not Detected at reporting limit	C: CCV below acceptable Limits
J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
H: Hold time exceeded	Z: Duplication outside acceptable limits
N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *18-Jun-18*

CLIENT: Aztech Technologies
Work Order: **180608008**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Effluent
Collection Date: 6/7/2018
Lab Sample ID: 180608008-001
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **MG**
Dichlorodifluoromethane	**ND**	1.0	N	µg/L	1	6/14/2018 2:06:00 AM
Chloromethane	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Vinyl chloride	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Bromomethane	**ND**	1.0	N	µg/L	1	6/14/2018 2:06:00 AM
Chloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Trichlorofluoromethane	**ND**	1.0	N	µg/L	1	6/14/2018 2:06:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Chloroform	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
1,2-Dichloroethane	**ND**	1.0	N	µg/L	1	6/14/2018 2:06:00 AM
Trichloroethene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Tetrachloroethene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Bromoform	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 2:06:00 AM
Surr: 4-Bromofluorobenzene	**94.9**	76.1-125		%REC	1	6/14/2018 2:06:00 AM

Adirondack Environmental Services, Inc

Date: *18-Jun-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**180608008**	**Collection Date:**	6/7/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180608008-002
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **MG**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Chloromethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Vinyl chloride	**1.8**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Bromomethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Chloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
cis-1,2-Dichloroethene	**7.6**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Chloroform	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Trichloroethene	**3.7**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Tetrachloroethene	**150**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Bromoform	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 2:28:00 AM
Surr: 4-Bromofluorobenzene	**88.4**	76.1-125		%REC	1	6/14/2018 2:28:00 AM

Adirondack Environmental Services, Inc

Date: *18-Jun-18*

CLIENT: Aztech Technologies
Work Order: **180608008**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 5
Collection Date: 6/7/2018
Lab Sample ID: 180608008-003
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **MG**
Dichlorodifluoromethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Chloromethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Vinyl chloride	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Bromomethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Chloroethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Trichlorofluoromethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
1,1-Dichloroethene	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Methylene chloride	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
trans-1,2-Dichloroethene	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
1,1-Dichloroethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
cis-1,2-Dichloroethene	**11**	10		µg/L	10	6/15/2018 2:16:00 AM
Chloroform	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
1,1,1-Trichloroethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Carbon tetrachloride	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
1,2-Dichloroethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Trichloroethene	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Bromodichloromethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
1,2-Dichloropropane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
cis-1,3-Dichloropropene	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
trans-1,3-Dichloropropene	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
1,1,2-Trichloroethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Tetrachloroethene	**270**	10		µg/L	10	6/15/2018 2:16:00 AM
Dibromochloromethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Chlorobenzene	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Bromoform	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
1,1,2,2-Tetrachloroethane	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
1,3-Dichlorobenzene	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
1,4-Dichlorobenzene	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
1,2-Dichlorobenzene	**ND**	10		µg/L	10	6/15/2018 2:16:00 AM
Surr: 4-Bromofluorobenzene	**87.3**	76.1-125		%REC	10	6/15/2018 2:16:00 AM

Adirondack Environmental Services, Inc

Date: *18-Jun-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 6
Work Order:	**180608008**	**Collection Date:**	6/7/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180608008-004
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **MG**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Chloromethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Bromomethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Chloroethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
cis-1,2-Dichloroethene	**6.0**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Chloroform	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Tetrachloroethene	**17**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Bromoform	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 8:06:00 PM
Surr: 4-Bromofluorobenzene	**89.0**	76.1-125		%REC	1	6/14/2018 8:06:00 PM

Adirondack Environmental Services, Inc

Date: *18-Jun-18*

CLIENT: Aztech Technologies
Work Order: **180608008**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 7
Collection Date: 6/7/2018
Lab Sample ID: 180608008-005
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **MG**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Chloromethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Bromomethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Chloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
cis-1,2-Dichloroethene	**12**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Chloroform	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Trichloroethene	**5.5**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Tetrachloroethene	**19**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Bromoform	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 7:44:00 PM
Surr: 4-Bromofluorobenzene	**89.4**	76.1-125		%REC	1	6/14/2018 7:44:00 PM

Adirondack Environmental Services, Inc

Date: *18-Jun-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Trip Blank Lot# VOA-F34.1
Work Order:	**180608008**	**Collection Date:**	6/7/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180608008-006
PO#:	C200302	**Matrix:**	TRIP BLANK

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **MG**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Chloromethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Bromomethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Chloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Chloroform	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Bromoform	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	6/14/2018 7:23:00 PM
Surr: 4-Bromofluorobenzene	**91.3**	76.1-125		%REC	1	6/14/2018 7:23:00 PM

Adirondack Environmental Services Inc
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#: 180608008

A full service analytical research laboratory offering solutions to environmental concerns

Client Name:	Address:	
NYS DEC Region 3	625 Broadway Albany NY	
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Michael Doyette
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
001	Effluent	6/7/18	10:40	A/P	H2O		X	2	E-601
002	Combined Influent	6/7/18	10:45	A/P	H2O		X	2	E-601
003	Well 5	6/7/18	10:50	A/P	H2O		X	2	E-601
004	Well 6	6/7/18	10:55	A/P	H2O		X	2	E-601
005	Well 7	6/7/18	11:00	A/P	H2O		X	2	E-601
006	Trip Blank			A/P	H2O		X	1	E-601
	LOT# 1014-734.1			A/P					
	J.M. 6/7/18			A/P					
				A/P					
				A/P					
				A/P					
				A/P					

Shipment Arrived Via:
FedEx UPS (Client) AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
sampling@aztechtech.com
ATalbot@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com
ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	6/7/18	2:54			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	**Received for Laboratory by:**	Date	Time
				6/7/18	2:55pm

Sample Temperature
Ambient Chilled
Chilling Process begun
Notes: 12°

Properly Preserved
(Y) N
Notes:

Received Within Holding Times
(Y) N
Notes:

Demo
180608008

Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

July 18, 2018

Atalbot@aztechenv.com
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 180706004
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear Atalbot@aztechenv.com:

Adirondack Environmental Services, Inc received 5 samples on 7/5/2018 for the analyses presented in the following report.

These samples were received outside the acceptable temperature range of 2-6 °C

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:**	*18-Jul-18*
Project:	Brewster Village Wells, NY-Putnam Co		
Lab Order:	180706004		

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:

ND : Not Detected at reporting limit	C: CCV below acceptable Limits
J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
H: Hold time exceeded	Z: Duplication outside acceptable limits
N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *18-Jul-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Effluent
Work Order:	**180706004**	**Collection Date:**	7/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180706004-001
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Chloromethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Bromomethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Chloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Chloroform	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Bromoform	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 3:36:00 PM
Surr: 4-Bromofluorobenzene	**91.7**	76.1-125		%REC	1	7/11/2018 3:36:00 PM

Adirondack Environmental Services, Inc

Date: *18-Jul-18*

CLIENT: Aztech Technologies
Work Order: **180706004**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 5
Collection Date: 7/5/2018
Lab Sample ID: 180706004-002
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Chloromethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Vinyl chloride	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Bromomethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Chloroethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Trichlorofluoromethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
1,1-Dichloroethene	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Methylene chloride	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
trans-1,2-Dichloroethene	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
1,1-Dichloroethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
cis-1,2-Dichloroethene	**36**	10		µg/L	10	7/11/2018 6:55:00 PM
Chloroform	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
1,1,1-Trichloroethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Carbon tetrachloride	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
1,2-Dichloroethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Trichloroethene	**25**	10		µg/L	10	7/11/2018 6:55:00 PM
Bromodichloromethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
1,2-Dichloropropane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
cis-1,3-Dichloropropene	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
trans-1,3-Dichloropropene	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
1,1,2-Trichloroethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Tetrachloroethene	**1400**	10		µg/L	10	7/11/2018 6:55:00 PM
Dibromochloromethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Chlorobenzene	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Bromoform	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
1,1,2,2-Tetrachloroethane	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
1,3-Dichlorobenzene	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
1,4-Dichlorobenzene	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
1,2-Dichlorobenzene	**ND**	10		µg/L	10	7/11/2018 6:55:00 PM
Surr: 4-Bromofluorobenzene	**97.5**	76.1-125		%REC	10	7/11/2018 6:55:00 PM

Adirondack Environmental Services, Inc

Date: *18-Jul-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 6
Work Order:	**180706004**	**Collection Date:**	7/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180706004-003
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Chloromethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Vinyl chloride	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Bromomethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Chloroethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Chloroform	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Trichloroethene	**2.2**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Tetrachloroethene	**35**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Bromoform	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 12:09:00 AM
Surr: 4-Bromofluorobenzene	**102**	76.1-125		%REC	1	7/11/2018 12:09:00 AM

Adirondack Environmental Services, Inc

Date: *18-Jul-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 7
Work Order:	**180706004**	**Collection Date:**	7/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180706004-004
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Chloromethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Bromomethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Chloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
cis-1,2-Dichloroethene	**5.4**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Chloroform	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Trichloroethene	**4.3**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Tetrachloroethene	**17**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Bromoform	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	7/11/2018 3:58:00 PM
Surr: 4-Bromofluorobenzene	**106**	76.1-125		%REC	1	7/11/2018 3:58:00 PM

Adirondack Environmental Services, Inc

Date: *18-Jul-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**180706004**	**Collection Date:**	7/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180706004-005
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Chloromethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Vinyl chloride	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Bromomethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Chloroethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Trichlorofluoromethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
1,1-Dichloroethene	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Methylene chloride	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
trans-1,2-Dichloroethene	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
1,1-Dichloroethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
cis-1,2-Dichloroethene	**10**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Chloroform	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
1,1,1-Trichloroethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Carbon tetrachloride	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
1,2-Dichloroethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Trichloroethene	**8.6**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Bromodichloromethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
1,2-Dichloropropane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
cis-1,3-Dichloropropene	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
trans-1,3-Dichloropropene	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
1,1,2-Trichloroethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Tetrachloroethene	**320**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Dibromochloromethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Chlorobenzene	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Bromoform	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
1,1,2,2-Tetrachloroethane	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
1,3-Dichlorobenzene	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
1,4-Dichlorobenzene	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
1,2-Dichlorobenzene	**ND**	5.0		µg/L	5	7/11/2018 6:31:00 PM
Surr: 4-Bromofluorobenzene	**105**	76.1-125		%REC	5	7/11/2018 6:31:00 PM

Adirondack Environmental Services Inc.
314 North Pearl Street
Albany, New York 12207
518-434-4546/434-0891 FAX

CHAIN OF CUSTODY RECORD

AES Work Order # 180706004

Experience is the solution

A full service analytical research laboratory offering solutions to environmental concerns

Client Name:	Address:	
Aztech	5 McCrea Hill Rd, Ballston Spa, NY	
Send Report To:	**Project Name (Location)**	**Samplers: (Names)**
Carl Hoffman - NYSDEC	Brewster	Kris Aadahl
Client Phone No:	**Client Email:**	**PO Number:** / **Samplers: (Signature)**
		Kris Aadahl

AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.	Sample Type: Matrix	Comp	Grab	Number of Cont's	Analysis Required
001	effluent	7/5/18	1130 (A) P	GW		X	2	
002	well 5	7/5/18	1135 (A) P	GW		X	2	
003	well 6	7/5/18	1140 (A) P	GW		X	2	
004	well 7	7/5/18	1145 (A) P	GW		X	2	
005	combined influent	7/5/18	1200 A (P)	GW		X	2	
			A P					
			A P					
			A P					
			A P					
			A P					
			A P					
			A P					
			A P					
			A P					

Shipment Arrived Via:
FedEx UPS (Client) AES Other:_____

CC Report To / Special Instructions/Remarks:
atalbot@aztechenv.com

Turnaround Time Request:
☐ 1 Day ☐ 3 Day ☐ Normal
☐ 2 Day ☐ 5 Day
Note: Samples received after 3:30 pm are considered next business day

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
7/5/18 1522		
Relinquished by: (Signature)	**Received by: (Signature)**	**Date/Time**
Relinquished by: (Signature)	**Received for Laboratory by:**	**Date/Time**
		7/5/18 3:23pm

Temperature	AES Bottles	Properly Preserved	Received Within Holding Times
Ambient or (Chilled)	Y ☒ N ☐	(Y) N	(Y) N
Notes: 1.4°		Notes:	Notes:

WHITE - Lab Copy YELLOW - Sampler Copy

Adirondack Environmental Services,

180706004

Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

August 17, 2018

A. Talbot
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 180815095
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear A. Talbot:

Adirondack Environmental Services, Inc received 6 samples on 8/15/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Christopher Hess
QA Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:**	*17-Aug-18*
Project:	Brewster Village Wells, NY-Putnam Co		
Lab Order:	180815095		

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:

ND : Not Detected at reporting limit	C: CCV below acceptable Limits
J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
H: Hold time exceeded	Z: Duplication outside acceptable limits
N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *17-Aug-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Effluent
Work Order:	**180815095**	**Collection Date:**	8/15/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180815095-001
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Chloromethane	**ND**	1.0	S	µg/L	1	8/16/2018 6:56:00 PM
Vinyl chloride	**ND**	1.0	S	µg/L	1	8/16/2018 6:56:00 PM
Bromomethane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Chloroethane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Methylene chloride	**ND**	1.0	S	µg/L	1	8/16/2018 6:56:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
cis-1,2-Dichloroethene	**ND**	1.0	S	µg/L	1	8/16/2018 6:56:00 PM
Chloroform	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Bromoform	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0	S	µg/L	1	8/16/2018 6:56:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 6:56:00 PM
Surr: 4-Bromofluorobenzene	**94.2**	76.1-125		%REC	1	8/16/2018 6:56:00 PM

Adirondack Environmental Services, Inc

Date: *17-Aug-18*

CLIENT: Aztech Technologies
Work Order: **180815095**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 5
Collection Date: 8/15/2018
Lab Sample ID: 180815095-002
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
Chloromethane	**ND**	10	S	µg/L	10	8/16/2018 10:44:00 PM
Vinyl chloride	**ND**	10	S	µg/L	10	8/16/2018 10:44:00 PM
Bromomethane	**15**	10		µg/L	10	8/16/2018 10:44:00 PM
Chloroethane	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
Trichlorofluoromethane	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
1,1-Dichloroethene	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
Methylene chloride	**ND**	10	S	µg/L	10	8/16/2018 10:44:00 PM
trans-1,2-Dichloroethene	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
1,1-Dichloroethane	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
cis-1,2-Dichloroethene	**12**	10	S	µg/L	10	8/16/2018 10:44:00 PM
Chloroform	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
1,1,1-Trichloroethane	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
Carbon tetrachloride	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
1,2-Dichloroethane	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
Trichloroethene	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
Bromodichloromethane	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
1,2-Dichloropropane	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
cis-1,3-Dichloropropene	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
trans-1,3-Dichloropropene	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
1,1,2-Trichloroethane	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
Tetrachloroethene	**640**	10		µg/L	10	8/16/2018 10:44:00 PM
Dibromochloromethane	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
Chlorobenzene	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
Bromoform	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
1,1,2,2-Tetrachloroethane	**ND**	10	S	µg/L	10	8/16/2018 10:44:00 PM
1,3-Dichlorobenzene	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
1,4-Dichlorobenzene	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
1,2-Dichlorobenzene	**ND**	10		µg/L	10	8/16/2018 10:44:00 PM
Surr: 4-Bromofluorobenzene	**87.0**	76.1-125		%REC	10	8/16/2018 10:44:00 PM

Adirondack Environmental Services, Inc

Date: *17-Aug-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 6
Work Order:	**180815095**	**Collection Date:**	8/15/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180815095-003
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Chloromethane	**ND**	1.0	S	µg/L	1	8/16/2018 7:39:00 PM
Vinyl chloride	**ND**	1.0	S	µg/L	1	8/16/2018 7:39:00 PM
Bromomethane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Chloroethane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Methylene chloride	**ND**	1.0	S	µg/L	1	8/16/2018 7:39:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
cis-1,2-Dichloroethene	**ND**	1.0	S	µg/L	1	8/16/2018 7:39:00 PM
Chloroform	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Trichloroethene	**4.5**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Tetrachloroethene	**64**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Bromoform	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0	S	µg/L	1	8/16/2018 7:39:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 7:39:00 PM
Surr: 4-Bromofluorobenzene	**86.0**	76.1-125		%REC	1	8/16/2018 7:39:00 PM

Adirondack Environmental Services, Inc

Date: *17-Aug-18*

CLIENT: Aztech Technologies
Work Order: **180815095**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 7
Collection Date: 8/15/2018
Lab Sample ID: 180815095-004
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Chloromethane	**ND**	1.0	S	µg/L	1	8/16/2018 8:00:00 PM
Vinyl chloride	**ND**	1.0	S	µg/L	1	8/16/2018 8:00:00 PM
Bromomethane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Chloroethane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Methylene chloride	**ND**	1.0	S	µg/L	1	8/16/2018 8:00:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
cis-1,2-Dichloroethene	**1.4**	1.0	S	µg/L	1	8/16/2018 8:00:00 PM
Chloroform	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Trichloroethene	**1.6**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Tetrachloroethene	**8.1**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Bromoform	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0	S	µg/L	1	8/16/2018 8:00:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 8:00:00 PM
Surr: 4-Bromofluorobenzene	**101**	76.1-125		%REC	1	8/16/2018 8:00:00 PM

Adirondack Environmental Services, Inc

Date: *17-Aug-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**180815095**	**Collection Date:**	8/15/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180815095-005
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Chloromethane	**ND**	5.0	S	µg/L	5	8/16/2018 9:56:00 PM
Vinyl chloride	**ND**	5.0	S	µg/L	5	8/16/2018 9:56:00 PM
Bromomethane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Chloroethane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Trichlorofluoromethane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
1,1-Dichloroethene	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Methylene chloride	**ND**	5.0	S	µg/L	5	8/16/2018 9:56:00 PM
trans-1,2-Dichloroethene	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
1,1-Dichloroethane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
cis-1,2-Dichloroethene	**ND**	5.0	S	µg/L	5	8/16/2018 9:56:00 PM
Chloroform	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
1,1,1-Trichloroethane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Carbon tetrachloride	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
1,2-Dichloroethane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Trichloroethene	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Bromodichloromethane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
1,2-Dichloropropane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
cis-1,3-Dichloropropene	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
trans-1,3-Dichloropropene	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
1,1,2-Trichloroethane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Tetrachloroethene	**200**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Dibromochloromethane	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Chlorobenzene	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Bromoform	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
1,1,2,2-Tetrachloroethane	**ND**	5.0	S	µg/L	5	8/16/2018 9:56:00 PM
1,3-Dichlorobenzene	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
1,4-Dichlorobenzene	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
1,2-Dichlorobenzene	**ND**	5.0		µg/L	5	8/16/2018 9:56:00 PM
Surr: 4-Bromofluorobenzene	**93.4**	76.1-125		%REC	5	8/16/2018 9:56:00 PM

Adirondack Environmental Services, Inc

Date: *17-Aug-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Trip Blank
Work Order:	**180815095**	**Collection Date:**	8/15/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180815095-006
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Chloromethane	**ND**	1.0	S	µg/L	1	8/16/2018 7:17:00 PM
Vinyl chloride	**ND**	1.0	S	µg/L	1	8/16/2018 7:17:00 PM
Bromomethane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Chloroethane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Methylene chloride	**ND**	1.0	S	µg/L	1	8/16/2018 7:17:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
cis-1,2-Dichloroethene	**ND**	1.0	S	µg/L	1	8/16/2018 7:17:00 PM
Chloroform	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Bromoform	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0	S	µg/L	1	8/16/2018 7:17:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	8/16/2018 7:17:00 PM
Surr: 4-Bromofluorobenzene	**95.1**	76.1-125		%REC	1	8/16/2018 7:17:00 PM

Adirondack Environmental Services Inc.
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#: 180815095

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells
Client Phone No: 402-9813	PO #: 3400012
Client Fax No:	Samplers Name: Jonathan Graziane
	Samplers Signature:

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
001	Effluent	8/15	1245	A P	H2O		X	2	E-601
005	Combined Influent		1250	A P	H2O		X	2	E-601
002	Well 5		1255	A P	H2O		X	2	E-601
003	Well 6		1300	A P	H2O		X	2	E-601
004	Well 7		1305	A P	H2O		X	2	E-601
006	Trip Blank			A P	H2O		X	1	E-601
				A P					
				A P					
				A P					
				A P					
				A P					
				A P					

Shipment Arrived Via:
FedEx UPS Client AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
sampling@aztechtech.com
ATalbot@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	8/15	1512			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory by:	Date	Time
				8/15/18	3:13PM

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient Chilled	(Y) N	(Y) N
~~Chilling Process begun~~		
Notes: 90C	Notes:	Notes:



Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

September 07, 2018

Carl Hoffman
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 180905063
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear Carl Hoffman:

Adirondack Environmental Services, Inc received 6 samples on 9/5/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:** *07-Sep-18*
Project:	Brewster Village Wells, NY-Putnam Co	
Lab Order:	180905063	

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:

- ND : Not Detected at reporting limit
- J: Analyte detected below quantitation limit
- B: Analyte detected in Blank
- X : Exceeds maximum contamination limit
- H: Hold time exceeded
- N: Matrix Spike below acceptable limits
- N+: Matrix Spike is above acceptable limits
- C: CCV below acceptable Limits
- C+: CCV above acceptable Limits
- S: LCS Spike recovery is below acceptable limits
- S+: LCS Spike recovery is above acceptable limits
- Z: Duplication outside acceptable limits
- T : Tentatively Identified Compound-Estimated
- E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *07-Sep-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Effluent
Work Order:	**180905063**	**Collection Date:**	9/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180905063-001
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Chloromethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Vinyl chloride	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Bromomethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Chloroethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Chloroform	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Trichloroethene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Tetrachloroethene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Bromoform	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 12:48:00 AM
Surr: 4-Bromofluorobenzene	**108**	76.1-125		%REC	1	9/7/2018 12:48:00 AM

Adirondack Environmental Services, Inc

Date: *07-Sep-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**180905063**	**Collection Date:**	9/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180905063-002
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Chloromethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Vinyl chloride	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Bromomethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Chloroethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Trichlorofluoromethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
1,1-Dichloroethene	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Methylene chloride	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
trans-1,2-Dichloroethene	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
1,1-Dichloroethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
cis-1,2-Dichloroethene	**11**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Chloroform	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
1,1,1-Trichloroethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Carbon tetrachloride	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
1,2-Dichloroethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Trichloroethene	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Bromodichloromethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
1,2-Dichloropropane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
cis-1,3-Dichloropropene	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
trans-1,3-Dichloropropene	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
1,1,2-Trichloroethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Tetrachloroethene	**180**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Dibromochloromethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Chlorobenzene	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Bromoform	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
1,1,2,2-Tetrachloroethane	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
1,3-Dichlorobenzene	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
1,4-Dichlorobenzene	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
1,2-Dichlorobenzene	**ND**	5.0		µg/L	5	9/7/2018 2:17:00 AM
Surr: 4-Bromofluorobenzene	**93.0**	76.1-125		%REC	5	9/7/2018 2:17:00 AM

Adirondack Environmental Services, Inc

Date: *07-Sep-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 5
Work Order:	**180905063**	**Collection Date:**	9/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180905063-003
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Chloromethane	**21**	10		µg/L	10	9/7/2018 2:41:00 AM
Vinyl chloride	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Bromomethane	**38**	10		µg/L	10	9/7/2018 2:41:00 AM
Chloroethane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Trichlorofluoromethane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
1,1-Dichloroethene	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Methylene chloride	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
trans-1,2-Dichloroethene	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
1,1-Dichloroethane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
cis-1,2-Dichloroethene	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Chloroform	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
1,1,1-Trichloroethane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Carbon tetrachloride	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
1,2-Dichloroethane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Trichloroethene	**19**	10		µg/L	10	9/7/2018 2:41:00 AM
Bromodichloromethane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
1,2-Dichloropropane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
cis-1,3-Dichloropropene	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
trans-1,3-Dichloropropene	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
1,1,2-Trichloroethane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Tetrachloroethene	**960**	10		µg/L	10	9/7/2018 2:41:00 AM
Dibromochloromethane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Chlorobenzene	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Bromoform	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
1,1,2,2-Tetrachloroethane	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
1,3-Dichlorobenzene	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
1,4-Dichlorobenzene	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
1,2-Dichlorobenzene	**ND**	10		µg/L	10	9/7/2018 2:41:00 AM
Surr: 4-Bromofluorobenzene	**100**	76.1-125		%REC	10	9/7/2018 2:41:00 AM

Adirondack Environmental Services, Inc

Date: *07-Sep-18*

CLIENT: Aztech Technologies
Work Order: **180905063**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 6
Collection Date: 9/5/2018
Lab Sample ID: 180905063-004
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Chloromethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Vinyl chloride	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Bromomethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Chloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
cis-1,2-Dichloroethene	**1.6**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Chloroform	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Trichloroethene	**1.7**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Tetrachloroethene	**25**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Bromoform	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 1:53:00 AM
Surr: 4-Bromofluorobenzene	**138**	76.1-125	S	%REC	1	9/7/2018 1:53:00 AM

Adirondack Environmental Services, Inc

Date: *07-Sep-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 7
Work Order:	**180905063**	**Collection Date:**	9/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180905063-005
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Chloromethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Vinyl chloride	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Bromomethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Chloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
1,1-Dichloroethene	**ND**	1.0	N	µg/L	1	9/7/2018 1:31:00 AM
Methylene chloride	**ND**	1.0	N	µg/L	1	9/7/2018 1:31:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
cis-1,2-Dichloroethene	**4.1**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Chloroform	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Trichloroethene	**1.8**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Tetrachloroethene	**9.6**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Dibromochloromethane	**ND**	1.0	N	µg/L	1	9/7/2018 1:31:00 AM
Chlorobenzene	**ND**	1.0	N	µg/L	1	9/7/2018 1:31:00 AM
Bromoform	**ND**	1.0	N	µg/L	1	9/7/2018 1:31:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
1,3-Dichlorobenzene	**ND**	1.0	N	µg/L	1	9/7/2018 1:31:00 AM
1,4-Dichlorobenzene	**ND**	1.0	N	µg/L	1	9/7/2018 1:31:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 1:31:00 AM
Surr: 4-Bromofluorobenzene	**107**	76.1-125		%REC	1	9/7/2018 1:31:00 AM

Adirondack Environmental Services, Inc

Date: *07-Sep-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Trip Blank
Work Order:	**180905063**	**Collection Date:**	9/5/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	180905063-006
PO#:	C200302	**Matrix:**	TRIP BLANK

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Chloromethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Vinyl chloride	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Bromomethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Chloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Chloroform	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Trichloroethene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Tetrachloroethene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Bromoform	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	9/7/2018 1:10:00 AM
Surr: 4-Bromofluorobenzene	**105**	76.1-125		%REC	1	9/7/2018 1:10:00 AM

Adirondack Environmental Services Inc.
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#: 180905063

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY	
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Kris Aadahl
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature: Kris Aadahl
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
001	Effluent	9/5/18	1005	A P	H2O		X	2	E-601
002	Combined Influent	9/5/18	1036	A P	H2O		X	2	E-601
003	Well 5	9/5/18	1028	A P	H2O		X	2	E-601
004	Well 6	9/5/18	1031	A P	H2O		X	2	E-601
005	Well 7	9/5/18	1033	A P	H2O		X	2	E-601
006	Trip Blank			A P	H2O		X	1	E-601
				A P					
				A P					
				A P					
				A P					
				A P					
				A P					

Shipment Arrived Via:
FedEx UPS Client AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☑ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
sampling@aztechtech.com
ATalbot@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com
ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Kris Aadahl	9/5/18	1400			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory by:	Date	Time
			Kaitlin Nazarko	9/5/18	2:04pm

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient (Chilled) Chilling Process begun	(Y) N	(Y) N
Notes: 10°	Notes:	Notes:

180905063

Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Experience is the solution
314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

November 06, 2018

A. Talbot
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 181023061
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear A. Talbot:

Adirondack Environmental Services, Inc received 6 samples on 10/23/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:**	*06-Nov-18*
Project:	Brewster Village Wells, NY-Putnam Co		
Lab Order:	181023061		

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:

ND : Not Detected at reporting limit	C: CCV below acceptable Limits
J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
H: Hold time exceeded	Z: Duplication outside acceptable limits
N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *06-Nov-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Effluent
Work Order:	**181023061**	**Collection Date:**	10/23/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	181023061-001
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:06:00 AM
Chloromethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:06:00 AM
Vinyl chloride	**ND**	1.0	S	µg/L	1	10/30/2018 2:06:00 AM
Bromomethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:06:00 AM
Chloroethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:06:00 AM
Trichlorofluoromethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:06:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
Chloroform	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
Trichloroethene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
Tetrachloroethene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
Bromoform	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:06:00 AM
Surr: 4-Bromofluorobenzene	**96.8**	76.1-125		%REC	1	10/30/2018 2:06:00 AM

Adirondack Environmental Services, Inc

Date: *06-Nov-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**181023061**	**Collection Date:**	10/23/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	181023061-002
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	5.0	S	µg/L	5	10/30/2018 4:42:00 AM
Chloromethane	**ND**	5.0	S	µg/L	5	10/30/2018 4:42:00 AM
Vinyl chloride	**ND**	5.0	S	µg/L	5	10/30/2018 4:42:00 AM
Bromomethane	**ND**	5.0	S	µg/L	5	10/30/2018 4:42:00 AM
Chloroethane	**ND**	5.0	S	µg/L	5	10/30/2018 4:42:00 AM
Trichlorofluoromethane	**ND**	5.0	S	µg/L	5	10/30/2018 4:42:00 AM
1,1-Dichloroethene	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
Methylene chloride	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
trans-1,2-Dichloroethene	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
1,1-Dichloroethane	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
cis-1,2-Dichloroethene	**15**	5.0		µg/L	5	10/30/2018 4:42:00 AM
Chloroform	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
1,1,1-Trichloroethane	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
Carbon tetrachloride	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
1,2-Dichloroethane	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
Trichloroethene	**7.2**	5.0		µg/L	5	10/30/2018 4:42:00 AM
Bromodichloromethane	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
1,2-Dichloropropane	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
cis-1,3-Dichloropropene	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
trans-1,3-Dichloropropene	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
1,1,2-Trichloroethane	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
Tetrachloroethene	**260**	5.0		µg/L	5	10/30/2018 4:42:00 AM
Dibromochloromethane	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
Chlorobenzene	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
Bromoform	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
1,1,2,2-Tetrachloroethane	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
1,3-Dichlorobenzene	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
1,4-Dichlorobenzene	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
1,2-Dichlorobenzene	**ND**	5.0		µg/L	5	10/30/2018 4:42:00 AM
Surr: 4-Bromofluorobenzene	**100**	76.1-125		%REC	5	10/30/2018 4:42:00 AM

Adirondack Environmental Services, Inc

Date: *06-Nov-18*

CLIENT: Aztech Technologies
Work Order: **181023061**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 5
Collection Date: 10/23/2018
Lab Sample ID: 181023061-003
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	10	S	µg/L	10	10/30/2018 5:06:00 AM
Chloromethane	**ND**	10	S	µg/L	10	10/30/2018 5:06:00 AM
Vinyl chloride	**ND**	10	S	µg/L	10	10/30/2018 5:06:00 AM
Bromomethane	**ND**	10	S	µg/L	10	10/30/2018 5:06:00 AM
Chloroethane	**ND**	10	S	µg/L	10	10/30/2018 5:06:00 AM
Trichlorofluoromethane	**ND**	10	S	µg/L	10	10/30/2018 5:06:00 AM
1,1-Dichloroethene	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
Methylene chloride	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
trans-1,2-Dichloroethene	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
1,1-Dichloroethane	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
cis-1,2-Dichloroethene	**28**	10		µg/L	10	10/30/2018 5:06:00 AM
Chloroform	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
1,1,1-Trichloroethane	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
Carbon tetrachloride	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
1,2-Dichloroethane	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
Trichloroethene	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
Bromodichloromethane	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
1,2-Dichloropropane	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
cis-1,3-Dichloropropene	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
trans-1,3-Dichloropropene	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
1,1,2-Trichloroethane	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
Tetrachloroethene	**750**	10		µg/L	10	10/30/2018 5:06:00 AM
Dibromochloromethane	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
Chlorobenzene	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
Bromoform	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
1,1,2,2-Tetrachloroethane	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
1,3-Dichlorobenzene	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
1,4-Dichlorobenzene	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
1,2-Dichlorobenzene	**ND**	10		µg/L	10	10/30/2018 5:06:00 AM
Surr: 4-Bromofluorobenzene	**89.4**	76.1-125		%REC	10	10/30/2018 5:06:00 AM

Adirondack Environmental Services, Inc

Date: *06-Nov-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 6
Work Order:	**181023061**	**Collection Date:**	10/23/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	181023061-004
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:27:00 AM
Chloromethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:27:00 AM
Vinyl chloride	**ND**	1.0	S	µg/L	1	10/30/2018 2:27:00 AM
Bromomethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:27:00 AM
Chloroethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:27:00 AM
Trichlorofluoromethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:27:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
cis-1,2-Dichloroethene	**6.6**	1.0		µg/L	1	10/30/2018 2:27:00 AM
Chloroform	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
Trichloroethene	**2.7**	1.0		µg/L	1	10/30/2018 2:27:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
Tetrachloroethene	**43**	1.0		µg/L	1	10/30/2018 2:27:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
Bromoform	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:27:00 AM
Surr: 4-Bromofluorobenzene	**94.5**	76.1-125		%REC	1	10/30/2018 2:27:00 AM

Adirondack Environmental Services, Inc

Date: *06-Nov-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 7
Work Order:	**181023061**	**Collection Date:**	10/23/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	181023061-005
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:49:00 AM
Chloromethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:49:00 AM
Vinyl chloride	**ND**	1.0	S	µg/L	1	10/30/2018 2:49:00 AM
Bromomethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:49:00 AM
Chloroethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:49:00 AM
Trichlorofluoromethane	**ND**	1.0	S	µg/L	1	10/30/2018 2:49:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
cis-1,2-Dichloroethene	**8.2**	1.0		µg/L	1	10/30/2018 2:49:00 AM
Chloroform	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
Trichloroethene	**12**	1.0		µg/L	1	10/30/2018 2:49:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
Tetrachloroethene	**36**	1.0		µg/L	1	10/30/2018 2:49:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
Bromoform	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	10/30/2018 2:49:00 AM
Surr: 4-Bromofluorobenzene	**99.7**	76.1-125		%REC	1	10/30/2018 2:49:00 AM

Adirondack Environmental Services Inc.®
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#: 18102306l

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY	
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name:
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
C01	Effluent	10/23/18	11:55	A P	H2O		X	2	E-601
C02	Combined Influent	10/23/18	12:20	A P	H2O		X	2	E-601
C03	Well 5	10/23/18	12:15	A P	H2O		X	2	E-601
C04	Well 6	10/23/18	12:10	A P	H2O		X	2	E-601
C05	Well 7	10/23/18	12:00	A P	H2O		X	2	E-601
	Trip Blank			A P	H2O		X	1	E-601
				A P					
				A P					
				A P					
				A P					
				A P					
				A P					

Shipment Arrived Via:
FedEx UPS (Client) AES Other: _____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☑ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
sampling@aztechtech.com
ATalbot@aztechtech.com
Jeffrey.Dyber@dec.ny.gov
BlaumJP@cdm smith.com
[redacted] Roseyrock@nycap.rr.com (AT)

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/23/18	15:40			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	**Received for Laboratory by:** Kaitlin Nazarko	10/23/18	3:44pm

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient (Chilled) ~~Chilling Process begun~~	(Y) N	(Y) N
Notes: 6°C	Notes:	Notes:

181023061

Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Adirondack Environmental Services, Inc.

Experience is the solution

314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

December 13, 2018

A. Talbot
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 181206067
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear A. Talbot:

Adirondack Environmental Services, Inc received 6 samples on 12/6/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:**	*13-Dec-18*
Project:	Brewster Village Wells, NY-Putnam Co		
Lab Order:	181206067		

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:

ND : Not Detected at reporting limit	C: CCV below acceptable Limits
J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
H: Hold time exceeded	Z: Duplication outside acceptable limits
N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *13-Dec-18*

CLIENT: Aztech Technologies
Work Order: **181206067**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Effluent
Collection Date: 12/6/2018
Lab Sample ID: 181206067-001
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	12/10/2018 11:19:00 PM
Chloromethane	**ND**	1.0	S	µg/L	1	12/10/2018 11:19:00 PM
Vinyl chloride	**ND**	1.0	S	µg/L	1	12/10/2018 11:19:00 PM
Bromomethane	**ND**	1.0	S	µg/L	1	12/10/2018 11:19:00 PM
Chloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Chloroform	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Bromoform	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	12/10/2018 11:19:00 PM
Surr: 4-Bromofluorobenzene	**95.3**	76.1-125		%REC	1	12/10/2018 11:19:00 PM

Adirondack Environmental Services, Inc

Date: *13-Dec-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**181206067**	**Collection Date:**	12/6/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	181206067-002
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	2.0	S	µg/L	2	12/11/2018 4:23:00 AM
Chloromethane	**ND**	2.0	S	µg/L	2	12/11/2018 4:23:00 AM
Vinyl chloride	**ND**	2.0	S	µg/L	2	12/11/2018 4:23:00 AM
Bromomethane	**ND**	2.0	S	µg/L	2	12/11/2018 4:23:00 AM
Chloroethane	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
Trichlorofluoromethane	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
1,1-Dichloroethene	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
Methylene chloride	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
trans-1,2-Dichloroethene	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
1,1-Dichloroethane	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
cis-1,2-Dichloroethene	**10**	2.0	C+	µg/L	2	12/11/2018 4:23:00 AM
Chloroform	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
1,1,1-Trichloroethane	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
Carbon tetrachloride	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
1,2-Dichloroethane	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
Trichloroethene	**5.6**	2.0		µg/L	2	12/11/2018 4:23:00 AM
Bromodichloromethane	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
1,2-Dichloropropane	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
cis-1,3-Dichloropropene	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
trans-1,3-Dichloropropene	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
1,1,2-Trichloroethane	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
Tetrachloroethene	**140**	2.0		µg/L	2	12/11/2018 4:23:00 AM
Dibromochloromethane	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
Chlorobenzene	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
Bromoform	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
1,1,2,2-Tetrachloroethane	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
1,3-Dichlorobenzene	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
1,4-Dichlorobenzene	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
1,2-Dichlorobenzene	**ND**	2.0		µg/L	2	12/11/2018 4:23:00 AM
Surr: 4-Bromofluorobenzene	**96.6**	76.1-125		%REC	2	12/11/2018 4:23:00 AM

Adirondack Environmental Services, Inc

Date: *13-Dec-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 5
Work Order:	**181206067**	**Collection Date:**	12/6/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	181206067-003
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	10	S	µg/L	10	12/11/2018 4:48:00 AM
Chloromethane	**ND**	10	S	µg/L	10	12/11/2018 4:48:00 AM
Vinyl chloride	**ND**	10	S	µg/L	10	12/11/2018 4:48:00 AM
Bromomethane	**ND**	10	S	µg/L	10	12/11/2018 4:48:00 AM
Chloroethane	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
Trichlorofluoromethane	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
1,1-Dichloroethene	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
Methylene chloride	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
trans-1,2-Dichloroethene	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
1,1-Dichloroethane	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
cis-1,2-Dichloroethene	**43**	10	C+	µg/L	10	12/11/2018 4:48:00 AM
Chloroform	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
1,1,1-Trichloroethane	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
Carbon tetrachloride	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
1,2-Dichloroethane	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
Trichloroethene	**12**	10		µg/L	10	12/11/2018 4:48:00 AM
Bromodichloromethane	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
1,2-Dichloropropane	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
cis-1,3-Dichloropropene	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
trans-1,3-Dichloropropene	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
1,1,2-Trichloroethane	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
Tetrachloroethene	**1400**	10		µg/L	10	12/11/2018 4:48:00 AM
Dibromochloromethane	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
Chlorobenzene	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
Bromoform	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
1,1,2,2-Tetrachloroethane	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
1,3-Dichlorobenzene	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
1,4-Dichlorobenzene	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
1,2-Dichlorobenzene	**ND**	10		µg/L	10	12/11/2018 4:48:00 AM
Surr: 4-Bromofluorobenzene	**94.1**	76.1-125		%REC	10	12/11/2018 4:48:00 AM

Adirondack Environmental Services, Inc

Date: *13-Dec-18*

CLIENT: Aztech Technologies
Work Order: **181206067**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Well 6
Collection Date: 12/6/2018
Lab Sample ID: 181206067-004
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	12/11/2018 12:02:00 AM
Chloromethane	**ND**	1.0	S	µg/L	1	12/11/2018 12:02:00 AM
Vinyl chloride	**ND**	1.0	S	µg/L	1	12/11/2018 12:02:00 AM
Bromomethane	**ND**	1.0	S	µg/L	1	12/11/2018 12:02:00 AM
Chloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
cis-1,2-Dichloroethene	**5.4**	1.0	C+	µg/L	1	12/11/2018 12:02:00 AM
Chloroform	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
Trichloroethene	**1.8**	1.0		µg/L	1	12/11/2018 12:02:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
Tetrachloroethene	**90**	1.0		µg/L	1	12/11/2018 12:02:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
Bromoform	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	12/11/2018 12:02:00 AM
Surr: 4-Bromofluorobenzene	**99.4**	76.1-125		%REC	1	12/11/2018 12:02:00 AM

Adirondack Environmental Services, Inc

Date: *13-Dec-18*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 7
Work Order:	**181206067**	**Collection Date:**	12/6/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	181206067-005
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	12/11/2018 12:24:00 AM
Chloromethane	**ND**	1.0	S	µg/L	1	12/11/2018 12:24:00 AM
Vinyl chloride	**ND**	1.0	S	µg/L	1	12/11/2018 12:24:00 AM
Bromomethane	**ND**	1.0	S	µg/L	1	12/11/2018 12:24:00 AM
Chloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
Methylene chloride	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
cis-1,2-Dichloroethene	**9.2**	1.0	C+	µg/L	1	12/11/2018 12:24:00 AM
Chloroform	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
Carbon tetrachloride	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
Trichloroethene	**10**	1.0		µg/L	1	12/11/2018 12:24:00 AM
Bromodichloromethane	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
Tetrachloroethene	**37**	1.0		µg/L	1	12/11/2018 12:24:00 AM
Dibromochloromethane	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
Chlorobenzene	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
Bromoform	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	12/11/2018 12:24:00 AM
Surr: 4-Bromofluorobenzene	**104**	76.1-125		%REC	1	12/11/2018 12:24:00 AM

Adirondack Environmental Services, Inc

Date: *13-Dec-18*

CLIENT: Aztech Technologies
Work Order: **181206067**
Reference: Brewster Village Wells, NY-Putnam Co / DE
PO#: C200302

Client Sample ID: Trip Blank
Collection Date: 12/6/2018
Lab Sample ID: 181206067-006
Matrix: TRIP BLANK

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	12/10/2018 11:40:00 PM
Chloromethane	**ND**	1.0	S	µg/L	1	12/10/2018 11:40:00 PM
Vinyl chloride	**ND**	1.0	S	µg/L	1	12/10/2018 11:40:00 PM
Bromomethane	**ND**	1.0	S	µg/L	1	12/10/2018 11:40:00 PM
Chloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Chloroform	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
trans-1,3-Dichloropropene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
1,1,2-Trichloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Bromoform	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	12/10/2018 11:40:00 PM
Surr: 4-Bromofluorobenzene	**90.8**	76.1-125		%REC	1	12/10/2018 11:40:00 PM

Adirondack Environmental Services Inc.®
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

CHAIN OF CUSTODY RECORD

AES Work Order#: 181206067

EXPERIENCE IS THE SOLUTION

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY	
Send Report to: Jeffrey Dyber	Project Name (Location): Brewster Village Wells	Samplers Name: John Stutzke
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature: John Stutzke
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
001	Effluent	12/6	1035	A/P	H2O		X	2	E-601
002	Combined Influent	12/6	1040	A/P	H2O		X	2	E-601
003	Well 5	12/6	1045	A/P	H2O		X	2	E-601
004	Well 6	12/6	1050	A/P	H2O		X	2	E-601
005	Well 7	12/6	1055	A/P	H2O		X	2	E-601
006	Trip Blank			A/P	H2O		X	1	E-601
				A/P					
				A/P			X		
				A/P					
				A/P					
				A/P					
				A/P					

Shipment Arrived Via:
FedEx UPS Client AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
Jeffrey.dyber@dec.ny.gov
Atalbot@aztechenv.com
Blaumjp@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	12/6	1450			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	**Received for Laboratory by:** Kaitlin Nagurka	Date	Time
				12/6/18	254pm

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient (Chilled)	(Y) N	(Y) N
Chilling Process begun		
Notes: 8°C	Notes:	Notes:

181206067

Adirondack Environmental Services Inc.
Experience is the solution
314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

Adirondack Environmental Services, Inc.

Experience is the solution

314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

January 08, 2019

A. Talbot
Aztech Technologies
5 McCrea Hill Road
Ballston Spa, NY 12020

TEL: (518) 885-5383

Work Order No: 190103065
PO#: C200302

RE: Brewster Village Wells, NY-Putnam Co
DEC Reg 3 Monthly

Dear A. Talbot:

Adirondack Environmental Services, Inc received 6 samples on 1/3/2019 for the analyses presented in the following report.

These samples were received outside the acceptable temperature range of 2-6 °C

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

ELAP#: 10709

Krzysztof Trafalski
Laboratory Manager

Adirondack Environmental Services, Inc CASE NARRATIVE

CLIENT:	Aztech Technologies	**Date:**	*08-Jan-19*
Project:	Brewster Village Wells, NY-Putnam Co		
Lab Order:	190103065		

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:

ND : Not Detected at reporting limit	C: CCV below acceptable Limits
J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
H: Hold time exceeded	Z: Duplication outside acceptable limits
N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: *08-Jan-19*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Effluent
Work Order:	**190103065**	**Collection Date:**	12/31/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	190103065-001
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	1/4/2019 1:57:00 PM
Chloromethane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Bromomethane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Chloroethane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Chloroform	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
trans-1,3-Dichloropropene	**ND**	1.0	S	µg/L	1	1/4/2019 1:57:00 PM
1,1,2-Trichloroethane	**ND**	1.0	S	µg/L	1	1/4/2019 1:57:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Bromoform	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 1:57:00 PM
Surr: 4-Bromofluorobenzene	**118**	76.1-125		%REC	1	1/4/2019 1:57:00 PM

Adirondack Environmental Services, Inc

Date: *08-Jan-19*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Combined Influent
Work Order:	**190103065**	**Collection Date:**	12/31/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	190103065-002
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	2.0	S	µg/L	2	1/4/2019 5:35:00 PM
Chloromethane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Vinyl chloride	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Bromomethane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Chloroethane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Trichlorofluoromethane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
1,1-Dichloroethene	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Methylene chloride	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
trans-1,2-Dichloroethene	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
1,1-Dichloroethane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
cis-1,2-Dichloroethene	**11**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Chloroform	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
1,1,1-Trichloroethane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Carbon tetrachloride	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
1,2-Dichloroethane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Trichloroethene	**4.5**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Bromodichloromethane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
1,2-Dichloropropane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
cis-1,3-Dichloropropene	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
trans-1,3-Dichloropropene	**ND**	2.0	S	µg/L	2	1/4/2019 5:35:00 PM
1,1,2-Trichloroethane	**ND**	2.0	S	µg/L	2	1/4/2019 5:35:00 PM
Tetrachloroethene	**110**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Dibromochloromethane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Chlorobenzene	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Bromoform	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
1,1,2,2-Tetrachloroethane	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
1,3-Dichlorobenzene	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
1,4-Dichlorobenzene	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
1,2-Dichlorobenzene	**ND**	2.0		µg/L	2	1/4/2019 5:35:00 PM
Surr: 4-Bromofluorobenzene	**88.0**	76.1-125		%REC	2	1/4/2019 5:35:00 PM

Adirondack Environmental Services, Inc

Date: *08-Jan-19*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 5
Work Order:	**190103065**	**Collection Date:**	12/31/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	190103065-003
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	10	S	µg/L	10	1/4/2019 5:59:00 PM
Chloromethane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
Vinyl chloride	**12**	10		µg/L	10	1/4/2019 5:59:00 PM
Bromomethane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
Chloroethane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
Trichlorofluoromethane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
1,1-Dichloroethene	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
Methylene chloride	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
trans-1,2-Dichloroethene	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
1,1-Dichloroethane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
cis-1,2-Dichloroethene	**65**	10		µg/L	10	1/4/2019 5:59:00 PM
Chloroform	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
1,1,1-Trichloroethane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
Carbon tetrachloride	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
1,2-Dichloroethane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
Trichloroethene	**19**	10		µg/L	10	1/4/2019 5:59:00 PM
Bromodichloromethane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
1,2-Dichloropropane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
cis-1,3-Dichloropropene	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
trans-1,3-Dichloropropene	**ND**	10	S	µg/L	10	1/4/2019 5:59:00 PM
1,1,2-Trichloroethane	**ND**	10	S	µg/L	10	1/4/2019 5:59:00 PM
Tetrachloroethene	**1300**	10		µg/L	10	1/4/2019 5:59:00 PM
Dibromochloromethane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
Chlorobenzene	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
Bromoform	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
1,1,2,2-Tetrachloroethane	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
1,3-Dichlorobenzene	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
1,4-Dichlorobenzene	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
1,2-Dichlorobenzene	**ND**	10		µg/L	10	1/4/2019 5:59:00 PM
Surr: 4-Bromofluorobenzene	**117**	76.1-125		%REC	10	1/4/2019 5:59:00 PM

Adirondack Environmental Services, Inc

Date: *08-Jan-19*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 6
Work Order:	**190103065**	**Collection Date:**	12/31/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	190103065-004
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	1/4/2019 4:06:00 PM
Chloromethane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Bromomethane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Chloroethane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
cis-1,2-Dichloroethene	**7.9**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Chloroform	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Trichloroethene	**1.1**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
trans-1,3-Dichloropropene	**ND**	1.0	S	µg/L	1	1/4/2019 4:06:00 PM
1,1,2-Trichloroethane	**ND**	1.0	S	µg/L	1	1/4/2019 4:06:00 PM
Tetrachloroethene	**52**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Bromoform	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 4:06:00 PM
Surr: 4-Bromofluorobenzene	**111**	76.1-125		%REC	1	1/4/2019 4:06:00 PM

Adirondack Environmental Services, Inc

Date: *08-Jan-19*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Well 7
Work Order:	**190103065**	**Collection Date:**	12/31/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	190103065-005
PO#:	C200302	**Matrix:**	WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	1/4/2019 4:28:00 PM
Chloromethane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Bromomethane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Chloroethane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
cis-1,2-Dichloroethene	**10**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Chloroform	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Trichloroethene	**6.8**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
trans-1,3-Dichloropropene	**ND**	1.0	S	µg/L	1	1/4/2019 4:28:00 PM
1,1,2-Trichloroethane	**ND**	1.0	S	µg/L	1	1/4/2019 4:28:00 PM
Tetrachloroethene	**34**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Bromoform	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 4:28:00 PM
Surr: 4-Bromofluorobenzene	**114**	76.1-125		%REC	1	1/4/2019 4:28:00 PM

Adirondack Environmental Services, Inc

Date: *08-Jan-19*

CLIENT:	Aztech Technologies	**Client Sample ID:**	Trip Blank Lot# VOA-F27.2
Work Order:	**190103065**	**Collection Date:**	12/31/2018
Reference:	Brewster Village Wells, NY-Putnam Co / DE	**Lab Sample ID:**	190103065-006
PO#:	C200302	**Matrix:**	TRIP BLANK

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS - EPA 601/602						Analyst: **SMD**
Dichlorodifluoromethane	**ND**	1.0	S	µg/L	1	1/4/2019 2:18:00 PM
Chloromethane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Vinyl chloride	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Bromomethane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Chloroethane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Trichlorofluoromethane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
1,1-Dichloroethene	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Methylene chloride	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
trans-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
1,1-Dichloroethane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
cis-1,2-Dichloroethene	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Chloroform	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
1,1,1-Trichloroethane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Carbon tetrachloride	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
1,2-Dichloroethane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Trichloroethene	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Bromodichloromethane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
1,2-Dichloropropane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
cis-1,3-Dichloropropene	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
trans-1,3-Dichloropropene	**ND**	1.0	S	µg/L	1	1/4/2019 2:18:00 PM
1,1,2-Trichloroethane	**ND**	1.0	S	µg/L	1	1/4/2019 2:18:00 PM
Tetrachloroethene	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Dibromochloromethane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Chlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Bromoform	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
1,1,2,2-Tetrachloroethane	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
1,3-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
1,4-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
1,2-Dichlorobenzene	**ND**	1.0		µg/L	1	1/4/2019 2:18:00 PM
Surr: 4-Bromofluorobenzene	**113**	76.1-125		%REC	1	1/4/2019 2:18:00 PM

Adirondack Environmental Services Inc.

314 North Pearl Street
Albany, New York 12207
518-434-4546/434-0891 FAX

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CHAIN OF CUSTODY RECORD

AES Work Order # 190103065

Client Name:	Address:	
NYS DEC Region 3	625 Broadway, Albany, NY	
Send Report To:	**Project Name (Location)**	**Samplers: (Names)**
Jeffrey Dyber	Brewster Village Wells	Michael Dayette
Client Phone No:	**Client Email:**	**PO Number:**
402-9813		3400012

Samplers: (Signature) Michael Dayette

AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.		Sample Type Matrix	Comp	Grab	Number of Cont's	Analysis Required
001	Effluent	12/31/18	10:35	(A) P	H2O		X	2	E-601
002	combined Influent	12/31/18	10:35	(A) P	H2O		X	2	E-601
003	well 5	12/31/18	10:40	(A) P	H2O		X	2	E-601
004	well 6	12/31/18	10:45	(A) P	H2O		X	2	E-601
005	well 7	12/31/18	10:50	(A) P	H2O		X	2	E-601
006	Trip Blank			A P	H2O		X	2	E-601
	Lot # VOA-F27.2			A P					
	J.m. 1/3/19			A P					
				A P					
				A P					
				A P					
				A P					
				A P					
				A P					
				A P					

Shipment Arrived Via:

FedEx UPS Client AES Other:_____

Turnaround Time Request:

☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 Day ☐ 5 Day

Note: Samples received after 3:30 pm are considered next business day

CC Report To / Special Instructions/Remarks:

send report to: Robert.Strang@dec.ny.gov
Jeffrey.dyber@dec.ny.gov
Atalbot@aztechenv.com
Blaumjp@cdmsmith.com

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
[signature]		1/3/18 2:38
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received for Laboratory by: Kaitlin Nazarko	Date/Time 1/3/19 239pm

Temperature	AES Bottles		Properly Preserved	Received Within Holding Times
Ambient or (Chilled)	Y	N	(Y) N	(Y) N
Notes: 7°C	☑	☐	Notes:	Notes:

WHITE - Lab Copy YELLOW - Sampler Copy

Adirondack Environmental Ser

Demo
190103065

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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

(a) Neither **Adirondack Environmental Services, Inc.,** nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.'s** performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.

(b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.

(c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.

(d) In no event shall **Adirondack Environmental Services, Inc.,** its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.

(e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**

(f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.

(g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Nashville
2960 Foster Creighton Drive
Nashville, TN 37204
Tel: (615)726-0177

TestAmerica Job ID: 490-151420-1
Client Project/Site: Brewster Village Well Field
Revision: 1

For:
CDM Smith, Inc.
11 British American Blvd
Suite 200
Latham, New York 12110

Attn: Katelyn Reepmeyer

Authorized for release by:
5/21/2018 1:29:27 PM

Becky Mason, Project Manager II
(413)572-4000
becky.mason@testamericainc.com

LINKS

Review your project results through TotalAccess

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
490-151420-1	TH-6-20180502	Water	05/02/18 09:40	05/07/18 08:30
490-151420-2	DGC-9I-20180502	Water	05/02/18 14:15	05/07/18 08:30
490-151420-3	TH-7-20180502	Water	05/02/18 10:35	05/07/18 08:30
490-151420-4	FIELD BLANK-20180502	Water	05/02/18 14:20	05/07/18 08:30
490-151420-5	DGC-17I-20180502	Water	05/02/18 13:20	05/07/18 08:30
490-151420-6	DGC-16I-20180502	Water	05/02/18 12:30	05/07/18 08:30
490-151420-7	TRIP BLANK	Water	04/26/18 00:01	05/07/18 08:30
490-151420-8	DGC-7I-20180502	Water	05/02/18 14:00	05/07/18 08:30
490-151420-9	DGC-1I-20180502	Water	05/02/18 08:45	05/07/18 08:30
490-151420-10	CDM-2-20180502	Water	05/02/18 10:50	05/07/18 08:30
490-151420-11	TH-11A-20180502	Water	05/02/18 10:00	05/07/18 08:30
490-151420-12	DGC-12IA-20180502	Water	05/02/18 08:35	05/07/18 08:30
490-151420-13	DGC-6I-20180502	Water	05/02/18 13:00	05/07/18 08:30
490-151420-14	CDM-3-20180502	Water	05/02/18 11:30	05/07/18 08:30
490-151420-15	ERT-EW5-20180502	Water	05/02/18 15:05	05/07/18 08:30
490-151420-16	FD-01-20180502	Water	05/02/18 15:08	05/07/18 08:30
490-151420-17	ERT-EW6-20180502	Water	05/02/18 15:00	05/07/18 08:30
490-151420-18	ERT-EW7-20180502	Water	05/02/18 15:00	05/07/18 08:30
490-151420-19	GMS-04-20180503	Water	05/03/18 08:10	05/07/18 08:30
490-151420-20	DGC-14I-20180503	Water	05/03/18 09:00	05/07/18 08:30
490-151420-21	DGC-18I-20180503	Water	05/03/18 09:45	05/07/18 08:30
490-151420-22	ERT-6I-20180503	Water	05/03/18 08:10	05/07/18 08:30
490-151420-23	ERT-15-20180503	Water	05/03/18 09:10	05/07/18 08:30
490-151420-24	FD-02-20180503	Water	05/03/18 09:13	05/07/18 08:30
490-151420-25	DGC-3I-20180503	Water	05/03/18 10:10	05/07/18 08:30
490-151420-26	Field Blank-2-20180503	Water	05/03/18 10:30	05/07/18 08:30
490-151420-27	DGC-19I-20180503	Water	05/03/18 10:45	05/07/18 08:30
490-151420-28	Trip Blank_2	Water	04/26/18 00:01	05/07/18 08:30
490-151420-29	Trip Blank_3	Water	04/26/18 00:01	05/07/18 08:30

Case Narrative

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Job ID: 490-151420-1

Laboratory: TestAmerica Nashville

Narrative

Job Narrative
490-151420-1

Revised report: Per client request updated sample IDs on samples 490-151420-28 and 490-151420-29.

Comments
No additional comments.

Receipt
The samples were received on 5/7/2018 8:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.5º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS VOA TICs

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample ID: TH-6-20180502
Date Collected: 05/02/18 09:40
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 18:53	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 18:53	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 18:53	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 18:53	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 18:53	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 18:53	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 18:53	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 18:53	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 18:53	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 18:53	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 18:53	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 18:53	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 18:53	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 18:53	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 18:53	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 18:53	1
Acetone	ND		25	2.7	ug/L			05/07/18 18:53	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 18:53	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 18:53	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 18:53	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 18:53	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 18:53	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 18:53	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 18:53	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 18:53	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 18:53	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 18:53	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/07/18 18:53	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 18:53	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 18:53	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 18:53	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 18:53	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 18:53	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 18:53	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 18:53	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 18:53	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 18:53	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 18:53	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/07/18 18:53	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 18:53	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/07/18 18:53	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 18:53	1
Trichloroethene	ND		1.0	0.20	ug/L			05/07/18 18:53	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 18:53	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/07/18 18:53	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 18:53	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 18:53	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 18:53	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: TH-6-20180502
Date Collected: 05/02/18 09:40
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-1
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	21	J	ug/L		2.60	67-63-0		05/07/18 18:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		05/07/18 18:53	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/07/18 18:53	1
Toluene-d8 (Surr)	95		70 - 130		05/07/18 18:53	1
Dibromofluoromethane (Surr)	105		70 - 130		05/07/18 18:53	1

Client Sample ID: DGC-9I-20180502
Date Collected: 05/02/18 14:15
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 19:18	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 19:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 19:18	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 19:18	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 19:18	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 19:18	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 19:18	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 19:18	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 19:18	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 19:18	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 19:18	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 19:18	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 19:18	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 19:18	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 19:18	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 19:18	1
Acetone	ND		25	2.7	ug/L			05/07/18 19:18	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 19:18	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 19:18	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 19:18	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 19:18	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 19:18	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 19:18	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 19:18	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 19:18	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 19:18	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 19:18	1
cis-1,2-Dichloroethene	**60**		1.0	0.21	ug/L			05/07/18 19:18	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 19:18	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 19:18	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 19:18	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 19:18	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 19:18	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 19:18	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 19:18	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 19:18	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 19:18	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 19:18	1
Tetrachloroethene	**6.3**		1.0	0.14	ug/L			05/07/18 19:18	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 19:18	1
trans-1,2-Dichloroethene	**0.66**	**J**	1.0	0.23	ug/L			05/07/18 19:18	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 19:18	1
Trichloroethene	**5.4**		1.0	0.20	ug/L			05/07/18 19:18	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 19:18	1
Vinyl chloride	**0.30**	**J**	1.0	0.18	ug/L			05/07/18 19:18	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 19:18	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 19:18	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 19:18	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-9I-20180502
Date Collected: 05/02/18 14:15
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-2
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	27	J	ug/L		2.60	67-63-0		05/07/18 19:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		05/07/18 19:18	1
4-Bromofluorobenzene (Surr)	93		70 - 130		05/07/18 19:18	1
Toluene-d8 (Surr)	93		70 - 130		05/07/18 19:18	1
Dibromofluoromethane (Surr)	105		70 - 130		05/07/18 19:18	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: TH-7-20180502
Date Collected: 05/02/18 10:35
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-3
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 19:44	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 19:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 19:44	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 19:44	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 19:44	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 19:44	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 19:44	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 19:44	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 19:44	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 19:44	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 19:44	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 19:44	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 19:44	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 19:44	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 19:44	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 19:44	1
Acetone	ND		25	2.7	ug/L			05/07/18 19:44	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 19:44	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 19:44	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 19:44	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 19:44	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 19:44	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 19:44	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 19:44	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 19:44	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 19:44	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 19:44	1
cis-1,2-Dichloroethene	**2.9**		1.0	0.21	ug/L			05/07/18 19:44	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 19:44	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 19:44	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 19:44	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 19:44	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 19:44	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 19:44	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 19:44	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 19:44	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 19:44	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 19:44	1
Tetrachloroethene	**4.1**		1.0	0.14	ug/L			05/07/18 19:44	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 19:44	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/07/18 19:44	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 19:44	1
Trichloroethene	**1.2**		1.0	0.20	ug/L			05/07/18 19:44	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 19:44	1
Vinyl chloride	**0.59**	**J**	1.0	0.18	ug/L			05/07/18 19:44	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 19:44	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 19:44	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 19:44	1

Client Sample ID: TH-7-20180502
Date Collected: 05/02/18 10:35
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-3
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	47	J	ug/L		2.60	67-63-0		05/07/18 19:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		70 - 130		05/07/18 19:44	1
4-Bromofluorobenzene (Surr)	93		70 - 130		05/07/18 19:44	1
Toluene-d8 (Surr)	94		70 - 130		05/07/18 19:44	1
Dibromofluoromethane (Surr)	104		70 - 130		05/07/18 19:44	1

Client Sample ID: FIELD BLANK-20180502
Lab Sample ID: 490-151420-4
Date Collected: 05/02/18 14:20
Matrix: Water
Date Received: 05/07/18 08:30

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 16:44	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 16:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 16:44	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 16:44	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 16:44	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 16:44	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 16:44	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 16:44	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 16:44	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 16:44	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 16:44	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 16:44	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 16:44	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 16:44	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 16:44	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 16:44	1
Acetone	ND		25	2.7	ug/L			05/07/18 16:44	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 16:44	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 16:44	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 16:44	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 16:44	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 16:44	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 16:44	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 16:44	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 16:44	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 16:44	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 16:44	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/07/18 16:44	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 16:44	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 16:44	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 16:44	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 16:44	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 16:44	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 16:44	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 16:44	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 16:44	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 16:44	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 16:44	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/07/18 16:44	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 16:44	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/07/18 16:44	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 16:44	1
Trichloroethene	ND		1.0	0.20	ug/L			05/07/18 16:44	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 16:44	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/07/18 16:44	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 16:44	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 16:44	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 16:44	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: FIELD BLANK-20180502
Date Collected: 05/02/18 14:20
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-4
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	43	J	ug/L		2.60	67-63-0		05/07/18 16:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 130		05/07/18 16:44	1
4-Bromofluorobenzene (Surr)	94		70 - 130		05/07/18 16:44	1
Toluene-d8 (Surr)	95		70 - 130		05/07/18 16:44	1
Dibromofluoromethane (Surr)	107		70 - 130		05/07/18 16:44	1

Client Sample ID: DGC-17I-20180502
Date Collected: 05/02/18 13:20
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-5
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 20:10	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 20:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 20:10	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 20:10	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 20:10	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 20:10	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 20:10	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 20:10	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 20:10	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 20:10	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 20:10	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 20:10	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 20:10	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 20:10	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 20:10	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 20:10	1
Acetone	ND		25	2.7	ug/L			05/07/18 20:10	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 20:10	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 20:10	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 20:10	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 20:10	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 20:10	1
Chlorobenzene	**0.77**	**J**	1.0	0.18	ug/L			05/07/18 20:10	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 20:10	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 20:10	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 20:10	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 20:10	1
cis-1,2-Dichloroethene	**21**		1.0	0.21	ug/L			05/07/18 20:10	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 20:10	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 20:10	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 20:10	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 20:10	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 20:10	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 20:10	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 20:10	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 20:10	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 20:10	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 20:10	1
Tetrachloroethene	**3.6**		1.0	0.14	ug/L			05/07/18 20:10	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 20:10	1
trans-1,2-Dichloroethene	**0.40**	**J**	1.0	0.23	ug/L			05/07/18 20:10	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 20:10	1
Trichloroethene	**3.4**		1.0	0.20	ug/L			05/07/18 20:10	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 20:10	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/07/18 20:10	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 20:10	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 20:10	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 20:10	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-17I-20180502
Date Collected: 05/02/18 13:20
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-5
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	41	J	ug/L		2.60	67-63-0		05/07/18 20:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		05/07/18 20:10	1
4-Bromofluorobenzene (Surr)	93		70 - 130		05/07/18 20:10	1
Toluene-d8 (Surr)	94		70 - 130		05/07/18 20:10	1
Dibromofluoromethane (Surr)	106		70 - 130		05/07/18 20:10	1

Client Sample ID: DGC-16I-20180502

Date Collected: 05/02/18 12:30
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-6

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 20:35	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 20:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 20:35	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 20:35	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 20:35	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 20:35	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 20:35	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 20:35	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 20:35	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 20:35	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 20:35	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 20:35	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 20:35	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 20:35	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 20:35	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 20:35	1
Acetone	ND		25	2.7	ug/L			05/07/18 20:35	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 20:35	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 20:35	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 20:35	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 20:35	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 20:35	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 20:35	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 20:35	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 20:35	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 20:35	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 20:35	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/07/18 20:35	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 20:35	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 20:35	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 20:35	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 20:35	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 20:35	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 20:35	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 20:35	1
Methyl tert-butyl ether	**0.30**	**J**	1.0	0.17	ug/L			05/07/18 20:35	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 20:35	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 20:35	1
Tetrachloroethene	**7.6**		1.0	0.14	ug/L			05/07/18 20:35	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 20:35	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/07/18 20:35	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 20:35	1
Trichloroethene	**1.1**		1.0	0.20	ug/L			05/07/18 20:35	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 20:35	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/07/18 20:35	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 20:35	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 20:35	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 20:35	1

Client Sample ID: DGC-16I-20180502
Date Collected: 05/02/18 12:30
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-6
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	29	J	ug/L		2.60	67-63-0		05/07/18 20:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		70 - 130		05/07/18 20:35	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/07/18 20:35	1
Toluene-d8 (Surr)	93		70 - 130		05/07/18 20:35	1
Dibromofluoromethane (Surr)	107		70 - 130		05/07/18 20:35	1

Client Sample ID: TRIP BLANK
Date Collected: 04/26/18 00:01
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-7
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 17:10	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 17:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 17:10	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 17:10	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 17:10	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 17:10	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 17:10	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 17:10	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 17:10	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 17:10	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 17:10	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 17:10	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 17:10	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 17:10	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 17:10	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 17:10	1
Acetone	ND		25	2.7	ug/L			05/07/18 17:10	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 17:10	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 17:10	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 17:10	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 17:10	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 17:10	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 17:10	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 17:10	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 17:10	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 17:10	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 17:10	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/07/18 17:10	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 17:10	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 17:10	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 17:10	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 17:10	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 17:10	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 17:10	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 17:10	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 17:10	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 17:10	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 17:10	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/07/18 17:10	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 17:10	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/07/18 17:10	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 17:10	1
Trichloroethene	ND		1.0	0.20	ug/L			05/07/18 17:10	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 17:10	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/07/18 17:10	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 17:10	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 17:10	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 17:10	1

Client Sample ID: TRIP BLANK

Date Collected: 04/26/18 00:01
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-7

Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	35	J	ug/L		2.60	67-63-0		05/07/18 17:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		70 - 130		05/07/18 17:10	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/07/18 17:10	1
Toluene-d8 (Surr)	94		70 - 130		05/07/18 17:10	1
Dibromofluoromethane (Surr)	107		70 - 130		05/07/18 17:10	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-7I-20180502
Date Collected: 05/02/18 14:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-8
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 21:01	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 21:01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 21:01	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 21:01	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 21:01	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 21:01	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 21:01	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 21:01	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 21:01	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 21:01	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 21:01	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 21:01	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 21:01	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 21:01	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 21:01	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 21:01	1
Acetone	ND		25	2.7	ug/L			05/07/18 21:01	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 21:01	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 21:01	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 21:01	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 21:01	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 21:01	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 21:01	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 21:01	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 21:01	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 21:01	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 21:01	1
cis-1,2-Dichloroethene	**62**		1.0	0.21	ug/L			05/07/18 21:01	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 21:01	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 21:01	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 21:01	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 21:01	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 21:01	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 21:01	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 21:01	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 21:01	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 21:01	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 21:01	1
Tetrachloroethene	**1.1**		1.0	0.14	ug/L			05/07/18 21:01	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 21:01	1
trans-1,2-Dichloroethene	**1.7**		1.0	0.23	ug/L			05/07/18 21:01	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 21:01	1
Trichloroethene	**1.3**		1.0	0.20	ug/L			05/07/18 21:01	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 21:01	1
Vinyl chloride	**1.0**		1.0	0.18	ug/L			05/07/18 21:01	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 21:01	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 21:01	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 21:01	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-7I-20180502
Date Collected: 05/02/18 14:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-8
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	54		ug/L		2.60	67-63-0		05/07/18 21:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		05/07/18 21:01	1
4-Bromofluorobenzene (Surr)	94		70 - 130		05/07/18 21:01	1
Toluene-d8 (Surr)	95		70 - 130		05/07/18 21:01	1
Dibromofluoromethane (Surr)	108		70 - 130		05/07/18 21:01	1

Client Sample ID: DGC-1I-20180502
Date Collected: 05/02/18 08:45
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-9
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 01:43	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 01:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 01:43	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 01:43	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 01:43	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 01:43	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 01:43	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 01:43	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 01:43	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 01:43	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 01:43	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 01:43	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 01:43	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 01:43	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 01:43	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 01:43	1
Acetone	ND		25	2.7	ug/L			05/08/18 01:43	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 01:43	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 01:43	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 01:43	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 01:43	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 01:43	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 01:43	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 01:43	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 01:43	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 01:43	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 01:43	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/08/18 01:43	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 01:43	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 01:43	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 01:43	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 01:43	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 01:43	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 01:43	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 01:43	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 01:43	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 01:43	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 01:43	1
Tetrachloroethene	**9.5**		1.0	0.14	ug/L			05/08/18 01:43	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 01:43	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 01:43	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 01:43	1
Trichloroethene	**0.58**	**J**	1.0	0.20	ug/L			05/08/18 01:43	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 01:43	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 01:43	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 01:43	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 01:43	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 01:43	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-1I-20180502
Date Collected: 05/02/18 08:45
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-9
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	31	J	ug/L		2.60	67-63-0		05/08/18 01:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		05/08/18 01:43	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/08/18 01:43	1
Toluene-d8 (Surr)	93		70 - 130		05/08/18 01:43	1
Dibromofluoromethane (Surr)	106		70 - 130		05/08/18 01:43	1

Client Sample ID: CDM-2-20180502
Date Collected: 05/02/18 10:50
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-10
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 02:09	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 02:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 02:09	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 02:09	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 02:09	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 02:09	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 02:09	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 02:09	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 02:09	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 02:09	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 02:09	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 02:09	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 02:09	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 02:09	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 02:09	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 02:09	1
Acetone	ND		25	2.7	ug/L			05/08/18 02:09	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 02:09	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 02:09	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 02:09	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 02:09	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 02:09	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 02:09	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 02:09	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 02:09	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 02:09	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 02:09	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/08/18 02:09	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 02:09	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 02:09	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 02:09	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 02:09	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 02:09	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 02:09	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 02:09	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 02:09	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 02:09	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 02:09	1
Tetrachloroethene	**0.38**	**J**	1.0	0.14	ug/L			05/08/18 02:09	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 02:09	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 02:09	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 02:09	1
Trichloroethene	**0.28**	**J**	1.0	0.20	ug/L			05/08/18 02:09	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 02:09	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 02:09	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 02:09	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 02:09	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 02:09	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: CDM-2-20180502
Date Collected: 05/02/18 10:50
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-10
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	29	J	ug/L		2.60	67-63-0		05/08/18 02:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		70 - 130		05/08/18 02:09	1
4-Bromofluorobenzene (Surr)	94		70 - 130		05/08/18 02:09	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 02:09	1
Dibromofluoromethane (Surr)	103		70 - 130		05/08/18 02:09	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: TH-11A-20180502
Date Collected: 05/02/18 10:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-11
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 02:34	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 02:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 02:34	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 02:34	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 02:34	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 02:34	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 02:34	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 02:34	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 02:34	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 02:34	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 02:34	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 02:34	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 02:34	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 02:34	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 02:34	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 02:34	1
Acetone	ND		25	2.7	ug/L			05/08/18 02:34	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 02:34	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 02:34	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 02:34	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 02:34	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 02:34	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 02:34	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 02:34	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 02:34	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 02:34	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 02:34	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/08/18 02:34	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 02:34	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 02:34	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 02:34	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 02:34	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 02:34	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 02:34	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 02:34	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 02:34	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 02:34	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 02:34	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/08/18 02:34	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 02:34	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 02:34	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 02:34	1
Trichloroethene	ND		1.0	0.20	ug/L			05/08/18 02:34	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 02:34	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 02:34	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 02:34	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 02:34	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 02:34	1

Client Sample ID: TH-11A-20180502
Date Collected: 05/02/18 10:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-11
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					05/08/18 02:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		05/08/18 02:34	1
4-Bromofluorobenzene (Surr)	93		70 - 130		05/08/18 02:34	1
Toluene-d8 (Surr)	93		70 - 130		05/08/18 02:34	1
Dibromofluoromethane (Surr)	107		70 - 130		05/08/18 02:34	1

Client Sample ID: DGC-12IA-20180502

Date Collected: 05/02/18 08:35
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-12

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 03:00	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 03:00	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 03:00	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 03:00	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 03:00	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 03:00	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 03:00	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 03:00	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 03:00	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 03:00	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 03:00	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 03:00	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 03:00	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 03:00	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 03:00	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 03:00	1
Acetone	ND		25	2.7	ug/L			05/08/18 03:00	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 03:00	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 03:00	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 03:00	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 03:00	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 03:00	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 03:00	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 03:00	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 03:00	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 03:00	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 03:00	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/08/18 03:00	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 03:00	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 03:00	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 03:00	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 03:00	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 03:00	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 03:00	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 03:00	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 03:00	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 03:00	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 03:00	1
Tetrachloroethene	**23**		1.0	0.14	ug/L			05/08/18 03:00	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 03:00	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 03:00	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 03:00	1
Trichloroethene	ND		1.0	0.20	ug/L			05/08/18 03:00	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 03:00	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 03:00	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 03:00	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 03:00	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 03:00	1

Client Sample ID: DGC-12IA-20180502
Date Collected: 05/02/18 08:35
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-12
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	27	J	ug/L		2.60	67-63-0		05/08/18 03:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 130		05/08/18 03:00	1
4-Bromofluorobenzene (Surr)	93		70 - 130		05/08/18 03:00	1
Toluene-d8 (Surr)	93		70 - 130		05/08/18 03:00	1
Dibromofluoromethane (Surr)	101		70 - 130		05/08/18 03:00	1

Client Sample ID: DGC-6I-20180502
Date Collected: 05/02/18 13:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-13
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 03:26	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 03:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 03:26	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 03:26	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 03:26	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 03:26	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 03:26	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 03:26	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 03:26	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 03:26	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 03:26	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 03:26	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 03:26	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 03:26	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 03:26	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 03:26	1
Acetone	ND		25	2.7	ug/L			05/08/18 03:26	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 03:26	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 03:26	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 03:26	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 03:26	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 03:26	1
Chlorobenzene	**2.8**		1.0	0.18	ug/L			05/08/18 03:26	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 03:26	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 03:26	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 03:26	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 03:26	1
cis-1,2-Dichloroethene	**10**		1.0	0.21	ug/L			05/08/18 03:26	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 03:26	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 03:26	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 03:26	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 03:26	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 03:26	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 03:26	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 03:26	1
Methyl tert-butyl ether	**0.38**	**J**	1.0	0.17	ug/L			05/08/18 03:26	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 03:26	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 03:26	1
Tetrachloroethene	**10**		1.0	0.14	ug/L			05/08/18 03:26	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 03:26	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 03:26	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 03:26	1
Trichloroethene	**4.1**		1.0	0.20	ug/L			05/08/18 03:26	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 03:26	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 03:26	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 03:26	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 03:26	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 03:26	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-6I-20180502
Date Collected: 05/02/18 13:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-13
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	28	J	ug/L		2.60	67-63-0		05/08/18 03:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		70 - 130		05/08/18 03:26	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/08/18 03:26	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 03:26	1
Dibromofluoromethane (Surr)	107		70 - 130		05/08/18 03:26	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: CDM-3-20180502
Date Collected: 05/02/18 11:30
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-14
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 03:51	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 03:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 03:51	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 03:51	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 03:51	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 03:51	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 03:51	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 03:51	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 03:51	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 03:51	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 03:51	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 03:51	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 03:51	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 03:51	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 03:51	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 03:51	1
Acetone	ND		25	2.7	ug/L			05/08/18 03:51	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 03:51	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 03:51	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 03:51	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 03:51	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 03:51	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 03:51	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 03:51	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 03:51	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 03:51	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 03:51	1
cis-1,2-Dichloroethene	**0.26**	**J**	1.0	0.21	ug/L			05/08/18 03:51	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 03:51	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 03:51	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 03:51	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 03:51	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 03:51	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 03:51	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 03:51	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 03:51	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 03:51	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 03:51	1
Tetrachloroethene	**9.0**		1.0	0.14	ug/L			05/08/18 03:51	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 03:51	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 03:51	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 03:51	1
Trichloroethene	**1.1**		1.0	0.20	ug/L			05/08/18 03:51	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 03:51	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 03:51	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 03:51	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 03:51	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 03:51	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: CDM-3-20180502
Date Collected: 05/02/18 11:30
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-14
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	48	J	ug/L		2.60	67-63-0		05/08/18 03:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		05/08/18 03:51	1
4-Bromofluorobenzene (Surr)	93		70 - 130		05/08/18 03:51	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 03:51	1
Dibromofluoromethane (Surr)	100		70 - 130		05/08/18 03:51	1

Client Sample ID: ERT-EW5-20180502
Date Collected: 05/02/18 15:05
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-15
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 04:17	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 04:17	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 04:17	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 04:17	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 04:17	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 04:17	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 04:17	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 04:17	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 04:17	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 04:17	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 04:17	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 04:17	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 04:17	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 04:17	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 04:17	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 04:17	1
Acetone	ND		25	2.7	ug/L			05/08/18 04:17	1
Benzene	**0.64**	**J**	1.0	0.20	ug/L			05/08/18 04:17	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 04:17	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 04:17	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 04:17	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 04:17	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 04:17	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 04:17	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 04:17	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 04:17	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 04:17	1
cis-1,2-Dichloroethene	**26**		1.0	0.21	ug/L			05/08/18 04:17	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 04:17	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 04:17	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 04:17	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 04:17	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 04:17	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 04:17	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 04:17	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 04:17	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 04:17	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 04:17	1
Tetrachloroethene	**540**		5.0	0.70	ug/L			05/08/18 14:43	5
Toluene	ND		1.0	0.17	ug/L			05/08/18 04:17	1
trans-1,2-Dichloroethene	**0.32**	**J**	1.0	0.23	ug/L			05/08/18 04:17	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 04:17	1
Trichloroethene	**2.5**		1.0	0.20	ug/L			05/08/18 04:17	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 04:17	1
Vinyl chloride	**5.6**		1.0	0.18	ug/L			05/08/18 04:17	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 04:17	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 04:17	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 04:17	1

Client Sample ID: ERT-EW5-20180502
Date Collected: 05/02/18 15:05
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-15
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					05/08/18 04:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		05/08/18 04:17	1
1,2-Dichloroethane-d4 (Surr)	100		70 - 130		05/08/18 14:43	5
4-Bromofluorobenzene (Surr)	94		70 - 130		05/08/18 04:17	1
4-Bromofluorobenzene (Surr)	93		70 - 130		05/08/18 14:43	5
Toluene-d8 (Surr)	93		70 - 130		05/08/18 04:17	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 14:43	5
Dibromofluoromethane (Surr)	107		70 - 130		05/08/18 04:17	1
Dibromofluoromethane (Surr)	109		70 - 130		05/08/18 14:43	5

Client Sample ID: FD-01-20180502

Date Collected: 05/02/18 15:08
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-16

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 04:43	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 04:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 04:43	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 04:43	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 04:43	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 04:43	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 04:43	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 04:43	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 04:43	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 04:43	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 04:43	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 04:43	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 04:43	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 04:43	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 04:43	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 04:43	1
Acetone	ND		25	2.7	ug/L			05/08/18 04:43	1
Benzene	**0.64**	**J**	1.0	0.20	ug/L			05/08/18 04:43	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 04:43	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 04:43	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 04:43	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 04:43	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 04:43	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 04:43	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 04:43	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 04:43	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 04:43	1
cis-1,2-Dichloroethene	**28**		1.0	0.21	ug/L			05/08/18 04:43	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 04:43	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 04:43	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 04:43	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 04:43	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 04:43	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 04:43	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 04:43	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 04:43	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 04:43	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 04:43	1
Tetrachloroethene	**490**		5.0	0.70	ug/L			05/08/18 15:09	5
Toluene	ND		1.0	0.17	ug/L			05/08/18 04:43	1
trans-1,2-Dichloroethene	**0.33**	**J**	1.0	0.23	ug/L			05/08/18 04:43	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 04:43	1
Trichloroethene	**2.5**		1.0	0.20	ug/L			05/08/18 04:43	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 04:43	1
Vinyl chloride	**5.9**		1.0	0.18	ug/L			05/08/18 04:43	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 04:43	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 04:43	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 04:43	1

Client Sample ID: FD-01-20180502
Date Collected: 05/02/18 15:08
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-16
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					05/08/18 04:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 130		05/08/18 04:43	1
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		05/08/18 15:09	5
4-Bromofluorobenzene (Surr)	93		70 - 130		05/08/18 04:43	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/08/18 15:09	5
Toluene-d8 (Surr)	93		70 - 130		05/08/18 04:43	1
Toluene-d8 (Surr)	93		70 - 130		05/08/18 15:09	5
Dibromofluoromethane (Surr)	106		70 - 130		05/08/18 04:43	1
Dibromofluoromethane (Surr)	107		70 - 130		05/08/18 15:09	5

Client Sample ID: ERT-EW6-20180502

Date Collected: 05/02/18 15:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-17

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 05:08	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 05:08	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 05:08	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 05:08	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 05:08	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 05:08	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 05:08	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 05:08	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 05:08	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 05:08	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 05:08	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 05:08	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 05:08	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 05:08	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 05:08	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 05:08	1
Acetone	ND		25	2.7	ug/L			05/08/18 05:08	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 05:08	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 05:08	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 05:08	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 05:08	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 05:08	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 05:08	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 05:08	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 05:08	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 05:08	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 05:08	1
cis-1,2-Dichloroethene	**4.4**		1.0	0.21	ug/L			05/08/18 05:08	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 05:08	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 05:08	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 05:08	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 05:08	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 05:08	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 05:08	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 05:08	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 05:08	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 05:08	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 05:08	1
Tetrachloroethene	**20**		1.0	0.14	ug/L			05/08/18 05:08	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 05:08	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 05:08	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 05:08	1
Trichloroethene	**0.86**	**J**	1.0	0.20	ug/L			05/08/18 05:08	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 05:08	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 05:08	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 05:08	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 05:08	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 05:08	1

Client Sample ID: ERT-EW6-20180502

Date Collected: 05/02/18 15:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-17

Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	24	J	ug/L		2.60	67-63-0		05/08/18 05:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		05/08/18 05:08	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/08/18 05:08	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 05:08	1
Dibromofluoromethane (Surr)	106		70 - 130		05/08/18 05:08	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: ERT-EW7-20180502
Date Collected: 05/02/18 15:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-18
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 05:34	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 05:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 05:34	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 05:34	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 05:34	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 05:34	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 05:34	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 05:34	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 05:34	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 05:34	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 05:34	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 05:34	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 05:34	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 05:34	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 05:34	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 05:34	1
Acetone	ND		25	2.7	ug/L			05/08/18 05:34	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 05:34	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 05:34	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 05:34	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 05:34	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 05:34	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 05:34	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 05:34	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 05:34	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 05:34	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 05:34	1
cis-1,2-Dichloroethene	**16**		1.0	0.21	ug/L			05/08/18 05:34	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 05:34	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 05:34	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 05:34	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 05:34	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 05:34	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 05:34	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 05:34	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 05:34	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 05:34	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 05:34	1
Tetrachloroethene	**34**		1.0	0.14	ug/L			05/08/18 05:34	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 05:34	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 05:34	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 05:34	1
Trichloroethene	**9.7**		1.0	0.20	ug/L			05/08/18 05:34	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 05:34	1
Vinyl chloride	**0.26**	**J**	1.0	0.18	ug/L			05/08/18 05:34	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 05:34	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 05:34	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 05:34	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: ERT-EW7-20180502
Date Collected: 05/02/18 15:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-18
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	37	J	ug/L		2.60	67-63-0		05/08/18 05:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		05/08/18 05:34	1
4-Bromofluorobenzene (Surr)	94		70 - 130		05/08/18 05:34	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 05:34	1
Dibromofluoromethane (Surr)	104		70 - 130		05/08/18 05:34	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: GMS-04-20180503
Date Collected: 05/03/18 08:10
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-19
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 06:00	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 06:00	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 06:00	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 06:00	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 06:00	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 06:00	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 06:00	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 06:00	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 06:00	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 06:00	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 06:00	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 06:00	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 06:00	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 06:00	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 06:00	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 06:00	1
Acetone	ND		25	2.7	ug/L			05/08/18 06:00	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 06:00	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 06:00	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 06:00	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 06:00	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 06:00	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 06:00	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 06:00	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 06:00	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 06:00	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 06:00	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/08/18 06:00	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 06:00	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 06:00	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 06:00	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 06:00	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 06:00	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 06:00	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 06:00	1
Methyl tert-butyl ether	**2.0**		1.0	0.17	ug/L			05/08/18 06:00	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 06:00	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 06:00	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/08/18 06:00	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 06:00	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 06:00	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 06:00	1
Trichloroethene	ND		1.0	0.20	ug/L			05/08/18 06:00	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 06:00	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 06:00	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 06:00	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 06:00	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 06:00	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: GMS-04-20180503
Date Collected: 05/03/18 08:10
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-19
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tert-amyl methyl ether	0.26	J	ug/L		4.21	994-05-8		05/08/18 06:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		05/08/18 06:00	1
4-Bromofluorobenzene (Surr)	93		70 - 130		05/08/18 06:00	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 06:00	1
Dibromofluoromethane (Surr)	101		70 - 130		05/08/18 06:00	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-14I-20180503
Date Collected: 05/03/18 09:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-20
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 06:25	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 06:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 06:25	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 06:25	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 06:25	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 06:25	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 06:25	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 06:25	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 06:25	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 06:25	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 06:25	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 06:25	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 06:25	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 06:25	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 06:25	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 06:25	1
Acetone	ND		25	2.7	ug/L			05/08/18 06:25	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 06:25	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 06:25	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 06:25	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 06:25	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 06:25	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 06:25	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 06:25	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 06:25	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 06:25	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 06:25	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/08/18 06:25	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 06:25	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 06:25	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 06:25	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 06:25	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 06:25	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 06:25	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 06:25	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 06:25	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 06:25	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 06:25	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/08/18 06:25	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 06:25	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 06:25	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 06:25	1
Trichloroethene	ND		1.0	0.20	ug/L			05/08/18 06:25	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 06:25	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 06:25	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 06:25	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 06:25	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 06:25	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-14I-20180503
Date Collected: 05/03/18 09:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-20
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	30	J	ug/L		2.60	67-63-0		05/08/18 06:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		70 - 130		05/08/18 06:25	1
4-Bromofluorobenzene (Surr)	91		70 - 130		05/08/18 06:25	1
Toluene-d8 (Surr)	95		70 - 130		05/08/18 06:25	1
Dibromofluoromethane (Surr)	107		70 - 130		05/08/18 06:25	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-18I-20180503
Date Collected: 05/03/18 09:45
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-21
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 06:51	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 06:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 06:51	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 06:51	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 06:51	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 06:51	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 06:51	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 06:51	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 06:51	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 06:51	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 06:51	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 06:51	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 06:51	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 06:51	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 06:51	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 06:51	1
Acetone	ND		25	2.7	ug/L			05/08/18 06:51	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 06:51	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 06:51	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 06:51	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 06:51	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 06:51	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 06:51	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 06:51	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 06:51	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 06:51	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 06:51	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/08/18 06:51	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 06:51	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 06:51	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 06:51	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 06:51	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 06:51	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 06:51	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 06:51	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 06:51	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 06:51	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 06:51	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/08/18 06:51	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 06:51	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 06:51	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 06:51	1
Trichloroethene	ND		1.0	0.20	ug/L			05/08/18 06:51	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 06:51	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 06:51	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 06:51	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 06:51	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 06:51	1

Client Sample ID: DGC-18I-20180503
Date Collected: 05/03/18 09:45
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-21
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	30	J	ug/L		2.60	67-63-0		05/08/18 06:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		70 - 130		05/08/18 06:51	1
4-Bromofluorobenzene (Surr)	93		70 - 130		05/08/18 06:51	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 06:51	1
Dibromofluoromethane (Surr)	105		70 - 130		05/08/18 06:51	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: ERT-6I-20180503
Date Collected: 05/03/18 08:10
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-22
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 07:16	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 07:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 07:16	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 07:16	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 07:16	1
1,1-Dichloroethene	**4.0**		1.0	0.25	ug/L			05/08/18 07:16	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 07:16	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 07:16	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 07:16	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 07:16	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 07:16	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 07:16	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 07:16	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 07:16	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 07:16	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 07:16	1
Acetone	ND		25	2.7	ug/L			05/08/18 07:16	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 07:16	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 07:16	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 07:16	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 07:16	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 07:16	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 07:16	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 07:16	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 07:16	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 07:16	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 07:16	1
cis-1,2-Dichloroethene	**1800**		20	4.2	ug/L			05/08/18 15:34	20
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 07:16	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 07:16	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 07:16	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 07:16	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 07:16	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 07:16	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 07:16	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 07:16	1
Methylcyclohexane	**0.36**	**J**	5.0	0.090	ug/L			05/08/18 07:16	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 07:16	1
Tetrachloroethene	**2300**		20	2.8	ug/L			05/08/18 15:34	20
Toluene	**0.58**	**J**	1.0	0.17	ug/L			05/08/18 07:16	1
trans-1,2-Dichloroethene	**16**		1.0	0.23	ug/L			05/08/18 07:16	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 07:16	1
Trichloroethene	**550**		20	4.0	ug/L			05/08/18 15:34	20
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 07:16	1
Vinyl chloride	**99**		1.0	0.18	ug/L			05/08/18 07:16	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 07:16	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 07:16	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 07:16	1

Client Sample ID: ERT-6I-20180503
Date Collected: 05/03/18 08:10
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-22
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	30	J	ug/L		2.60	67-63-0		05/08/18 07:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		70 - 130		05/08/18 07:16	1
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		05/08/18 15:34	20
4-Bromofluorobenzene (Surr)	95		70 - 130		05/08/18 07:16	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/08/18 15:34	20
Toluene-d8 (Surr)	93		70 - 130		05/08/18 07:16	1
Toluene-d8 (Surr)	93		70 - 130		05/08/18 15:34	20
Dibromofluoromethane (Surr)	106		70 - 130		05/08/18 07:16	1
Dibromofluoromethane (Surr)	107		70 - 130		05/08/18 15:34	20

Client Sample ID: ERT-15-20180503
Date Collected: 05/03/18 09:10
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-23
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 07:42	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 07:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 07:42	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 07:42	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 07:42	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 07:42	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 07:42	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 07:42	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 07:42	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 07:42	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 07:42	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 07:42	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 07:42	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 07:42	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 07:42	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 07:42	1
Acetone	ND		25	2.7	ug/L			05/08/18 07:42	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 07:42	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 07:42	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 07:42	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 07:42	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 07:42	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 07:42	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 07:42	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 07:42	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 07:42	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 07:42	1
cis-1,2-Dichloroethene	**130**		1.0	0.21	ug/L			05/08/18 07:42	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 07:42	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 07:42	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 07:42	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 07:42	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 07:42	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 07:42	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 07:42	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 07:42	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 07:42	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 07:42	1
Tetrachloroethene	**0.78**	**J**	1.0	0.14	ug/L			05/08/18 07:42	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 07:42	1
trans-1,2-Dichloroethene	**2.8**		1.0	0.23	ug/L			05/08/18 07:42	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 07:42	1
Trichloroethene	ND		1.0	0.20	ug/L			05/08/18 07:42	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 07:42	1
Vinyl chloride	**94**		1.0	0.18	ug/L			05/08/18 07:42	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 07:42	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 07:42	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 07:42	1

Client Sample ID: ERT-15-20180503
Date Collected: 05/03/18 09:10
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-23
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	26	J	ug/L		2.60	67-63-0		05/08/18 07:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		70 - 130		05/08/18 07:42	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/08/18 07:42	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 07:42	1
Dibromofluoromethane (Surr)	107		70 - 130		05/08/18 07:42	1

Client Sample ID: FD-02-20180503

Date Collected: 05/03/18 09:13
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-24

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 08:08	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 08:08	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 08:08	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 08:08	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 08:08	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 08:08	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 08:08	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 08:08	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 08:08	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 08:08	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 08:08	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 08:08	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 08:08	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 08:08	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 08:08	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 08:08	1
Acetone	ND		25	2.7	ug/L			05/08/18 08:08	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 08:08	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 08:08	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 08:08	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 08:08	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 08:08	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 08:08	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 08:08	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 08:08	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 08:08	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 08:08	1
cis-1,2-Dichloroethene	**130**		1.0	0.21	ug/L			05/08/18 08:08	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 08:08	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 08:08	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 08:08	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 08:08	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 08:08	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 08:08	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 08:08	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 08:08	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 08:08	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 08:08	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/08/18 08:08	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 08:08	1
trans-1,2-Dichloroethene	**2.9**		1.0	0.23	ug/L			05/08/18 08:08	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 08:08	1
Trichloroethene	ND		1.0	0.20	ug/L			05/08/18 08:08	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 08:08	1
Vinyl chloride	**94**		1.0	0.18	ug/L			05/08/18 08:08	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 08:08	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 08:08	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 08:08	1

Client Sample ID: FD-02-20180503
Date Collected: 05/03/18 09:13
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-24
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	23	J	ug/L		2.60	67-63-0		05/08/18 08:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		05/08/18 08:08	1
4-Bromofluorobenzene (Surr)	94		70 - 130		05/08/18 08:08	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 08:08	1
Dibromofluoromethane (Surr)	104		70 - 130		05/08/18 08:08	1

Client Sample ID: DGC-3I-20180503
Date Collected: 05/03/18 10:10
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-25
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 08:33	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 08:33	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 08:33	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 08:33	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 08:33	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 08:33	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 08:33	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 08:33	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 08:33	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 08:33	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 08:33	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 08:33	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 08:33	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 08:33	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 08:33	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 08:33	1
Acetone	ND		25	2.7	ug/L			05/08/18 08:33	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 08:33	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 08:33	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 08:33	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 08:33	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 08:33	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 08:33	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 08:33	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 08:33	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 08:33	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 08:33	1
cis-1,2-Dichloroethene	**1.9**		1.0	0.21	ug/L			05/08/18 08:33	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 08:33	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 08:33	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 08:33	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 08:33	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 08:33	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 08:33	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 08:33	1
Methyl tert-butyl ether	**0.17**	**J**	1.0	0.17	ug/L			05/08/18 08:33	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 08:33	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 08:33	1
Tetrachloroethene	**4.7**		1.0	0.14	ug/L			05/08/18 08:33	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 08:33	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 08:33	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 08:33	1
Trichloroethene	**0.77**	**J**	1.0	0.20	ug/L			05/08/18 08:33	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 08:33	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 08:33	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 08:33	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 08:33	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 08:33	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-3I-20180503
Date Collected: 05/03/18 10:10
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-25
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	31	J	ug/L		2.60	67-63-0		05/08/18 08:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		70 - 130		05/08/18 08:33	1
4-Bromofluorobenzene (Surr)	94		70 - 130		05/08/18 08:33	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 08:33	1
Dibromofluoromethane (Surr)	102		70 - 130		05/08/18 08:33	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: Field Blank-2-20180503
Date Collected: 05/03/18 10:30
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-26
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 17:36	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 17:36	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 17:36	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 17:36	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 17:36	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 17:36	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 17:36	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 17:36	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 17:36	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 17:36	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 17:36	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 17:36	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 17:36	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 17:36	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 17:36	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 17:36	1
Acetone	ND		25	2.7	ug/L			05/07/18 17:36	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 17:36	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 17:36	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 17:36	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 17:36	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 17:36	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 17:36	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 17:36	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 17:36	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 17:36	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 17:36	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/07/18 17:36	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 17:36	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 17:36	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 17:36	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 17:36	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 17:36	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 17:36	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 17:36	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 17:36	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 17:36	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 17:36	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/07/18 17:36	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 17:36	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/07/18 17:36	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 17:36	1
Trichloroethene	ND		1.0	0.20	ug/L			05/07/18 17:36	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 17:36	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/07/18 17:36	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 17:36	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 17:36	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 17:36	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: Field Blank-2-20180503
Date Collected: 05/03/18 10:30
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-26
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	28	J	ug/L		2.60	67-63-0		05/07/18 17:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		05/07/18 17:36	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/07/18 17:36	1
Toluene-d8 (Surr)	94		70 - 130		05/07/18 17:36	1
Dibromofluoromethane (Surr)	105		70 - 130		05/07/18 17:36	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-19I-20180503
Date Collected: 05/03/18 10:45
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-27
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 08:59	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 08:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 08:59	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 08:59	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 08:59	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 08:59	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 08:59	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 08:59	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 08:59	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 08:59	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 08:59	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 08:59	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 08:59	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 08:59	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 08:59	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 08:59	1
Acetone	ND		25	2.7	ug/L			05/08/18 08:59	1
Benzene	**2.1**		1.0	0.20	ug/L			05/08/18 08:59	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 08:59	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 08:59	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 08:59	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 08:59	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 08:59	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 08:59	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 08:59	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 08:59	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 08:59	1
cis-1,2-Dichloroethene	**5.0**		1.0	0.21	ug/L			05/08/18 08:59	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 08:59	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 08:59	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 08:59	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 08:59	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 08:59	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 08:59	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 08:59	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 08:59	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 08:59	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 08:59	1
Tetrachloroethene	**1.9**		1.0	0.14	ug/L			05/08/18 08:59	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 08:59	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 08:59	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 08:59	1
Trichloroethene	**0.63**	**J**	1.0	0.20	ug/L			05/08/18 08:59	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 08:59	1
Vinyl chloride	**0.82**	**J**	1.0	0.18	ug/L			05/08/18 08:59	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 08:59	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 08:59	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 08:59	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-19I-20180503
Date Collected: 05/03/18 10:45
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-27
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Butane, 2-methyl-	3.0	T J N	ug/L		1.98	78-78-4		05/08/18 08:59	1
Isopropyl alcohol	20	J	ug/L		2.60	67-63-0		05/08/18 08:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		05/08/18 08:59	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/08/18 08:59	1
Toluene-d8 (Surr)	94		70 - 130		05/08/18 08:59	1
Dibromofluoromethane (Surr)	105		70 - 130		05/08/18 08:59	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: Trip Blank_2
Date Collected: 04/26/18 00:01
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-28
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 18:01	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 18:01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 18:01	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 18:01	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 18:01	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 18:01	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 18:01	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 18:01	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 18:01	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 18:01	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 18:01	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 18:01	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 18:01	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 18:01	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 18:01	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 18:01	1
Acetone	ND		25	2.7	ug/L			05/07/18 18:01	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 18:01	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 18:01	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 18:01	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 18:01	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 18:01	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 18:01	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 18:01	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 18:01	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 18:01	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 18:01	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/07/18 18:01	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 18:01	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 18:01	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 18:01	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 18:01	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 18:01	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 18:01	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 18:01	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 18:01	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 18:01	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 18:01	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/07/18 18:01	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 18:01	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/07/18 18:01	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 18:01	1
Trichloroethene	ND		1.0	0.20	ug/L			05/07/18 18:01	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 18:01	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/07/18 18:01	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 18:01	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 18:01	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 18:01	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: Trip Blank_2
Date Collected: 04/26/18 00:01
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-28
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	33	J	ug/L		2.60	67-63-0		05/07/18 18:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		05/07/18 18:01	1
4-Bromofluorobenzene (Surr)	93		70 - 130		05/07/18 18:01	1
Toluene-d8 (Surr)	94		70 - 130		05/07/18 18:01	1
Dibromofluoromethane (Surr)	106		70 - 130		05/07/18 18:01	1

Client Sample ID: Trip Blank_3
Date Collected: 04/26/18 00:01
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-29
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 18:27	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 18:27	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 18:27	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 18:27	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 18:27	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 18:27	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 18:27	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 18:27	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 18:27	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 18:27	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 18:27	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 18:27	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 18:27	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 18:27	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 18:27	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 18:27	1
Acetone	ND		25	2.7	ug/L			05/07/18 18:27	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 18:27	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 18:27	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 18:27	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 18:27	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 18:27	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 18:27	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 18:27	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 18:27	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 18:27	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 18:27	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/07/18 18:27	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 18:27	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 18:27	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 18:27	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 18:27	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 18:27	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 18:27	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 18:27	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 18:27	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 18:27	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 18:27	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/07/18 18:27	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 18:27	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/07/18 18:27	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 18:27	1
Trichloroethene	ND		1.0	0.20	ug/L			05/07/18 18:27	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 18:27	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/07/18 18:27	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 18:27	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 18:27	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 18:27	1

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: Trip Blank_3
Date Collected: 04/26/18 00:01
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-29
Matrix: Water

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Isopropyl alcohol	55		ug/L		2.60	67-63-0		05/07/18 18:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		05/07/18 18:27	1
4-Bromofluorobenzene (Surr)	92		70 - 130		05/07/18 18:27	1
Toluene-d8 (Surr)	95		70 - 130		05/07/18 18:27	1
Dibromofluoromethane (Surr)	107		70 - 130		05/07/18 18:27	1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 490-513064/6
Matrix: Water
Analysis Batch: 513064

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 12:19	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/07/18 12:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/07/18 12:19	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/07/18 12:19	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/07/18 12:19	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/07/18 12:19	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/07/18 12:19	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/07/18 12:19	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/07/18 12:19	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/07/18 12:19	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/07/18 12:19	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/07/18 12:19	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/07/18 12:19	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/07/18 12:19	1
2-Hexanone	ND		10	1.3	ug/L			05/07/18 12:19	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/07/18 12:19	1
Acetone	ND		25	2.7	ug/L			05/07/18 12:19	1
Benzene	ND		1.0	0.20	ug/L			05/07/18 12:19	1
Bromoform	ND		1.0	0.29	ug/L			05/07/18 12:19	1
Bromomethane	ND		1.0	0.35	ug/L			05/07/18 12:19	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/07/18 12:19	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/07/18 12:19	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/07/18 12:19	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/07/18 12:19	1
Chloroethane	ND		1.0	0.36	ug/L			05/07/18 12:19	1
Chloroform	ND		1.0	0.23	ug/L			05/07/18 12:19	1
Chloromethane	ND		1.0	0.36	ug/L			05/07/18 12:19	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/07/18 12:19	1
Cyclohexane	ND		5.0	0.13	ug/L			05/07/18 12:19	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/07/18 12:19	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/07/18 12:19	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/07/18 12:19	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/07/18 12:19	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/07/18 12:19	1
Methyl acetate	ND		10	0.58	ug/L			05/07/18 12:19	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/07/18 12:19	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/07/18 12:19	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/07/18 12:19	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/07/18 12:19	1
Toluene	ND		1.0	0.17	ug/L			05/07/18 12:19	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/07/18 12:19	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 12:19	1
Trichloroethene	ND		1.0	0.20	ug/L			05/07/18 12:19	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/07/18 12:19	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/07/18 12:19	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/07/18 12:19	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/07/18 12:19	1
Styrene	ND		1.0	0.28	ug/L			05/07/18 12:19	1

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					05/07/18 12:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		70 - 130		05/07/18 12:19	1
4-Bromofluorobenzene (Surr)	95		70 - 130		05/07/18 12:19	1
Toluene-d8 (Surr)	94		70 - 130		05/07/18 12:19	1
Dibromofluoromethane (Surr)	102		70 - 130		05/07/18 12:19	1

Lab Sample ID: LCS 490-513064/4
Matrix: Water
Analysis Batch: 513064

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	20.0	19.4		ug/L		97	78 - 135
1,1,2,2-Tetrachloroethane	20.0	19.4		ug/L		97	69 - 131
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	16.9		ug/L		84	77 - 129
1,1,2-Trichloroethane	20.0	18.8		ug/L		94	80 - 124
1,1-Dichloroethane	20.0	20.4		ug/L		102	78 - 125
1,1-Dichloroethene	20.0	19.8		ug/L		99	79 - 124
1,2,4-Trichlorobenzene	20.0	17.8		ug/L		89	63 - 133
1,2-Dibromo-3-Chloropropane	20.0	20.0		ug/L		100	54 - 125
1,2-Dichlorobenzene	20.0	18.9		ug/L		94	80 - 121
1,2-Dichloroethane	20.0	21.3		ug/L		107	77 - 121
1,2-Dichloropropane	20.0	20.8		ug/L		104	75 - 120
1,3-Dichlorobenzene	20.0	19.0		ug/L		95	80 - 122
1,4-Dichlorobenzene	20.0	19.1		ug/L		95	80 - 120
2-Butanone (MEK)	100	99.5		ug/L		99	62 - 133
2-Hexanone	100	92.7		ug/L		93	60 - 142
4-Methyl-2-pentanone (MIBK)	100	98.9		ug/L		99	60 - 137
Acetone	100	97.8		ug/L		98	54 - 145
Benzene	20.0	22.0		ug/L		110	80 - 121
Bromoform	20.0	20.4		ug/L		102	46 - 145
Bromomethane	20.0	15.4		ug/L		77	41 - 150
Carbon disulfide	20.0	20.0		ug/L		100	77 - 126
Carbon tetrachloride	20.0	19.1		ug/L		96	64 - 147
Chlorobenzene	20.0	19.3		ug/L		97	80 - 120
Dibromochloromethane	20.0	20.0		ug/L		100	69 - 133
Chloroethane	20.0	19.2		ug/L		96	72 - 120
Chloroform	20.0	19.9		ug/L		100	73 - 129
Chloromethane	20.0	18.0		ug/L		90	12 - 150
cis-1,2-Dichloroethene	20.0	22.3		ug/L		111	76 - 125
Cyclohexane	20.0	16.4		ug/L		82	73 - 122
Bromodichloromethane	20.0	20.9		ug/L		104	75 - 129
Dichlorodifluoromethane	20.0	15.9		ug/L		80	37 - 127
Ethylbenzene	20.0	18.4		ug/L		92	80 - 130
1,2-Dibromoethane	20.0	18.9		ug/L		94	80 - 129
Isopropylbenzene	20.0	18.1		ug/L		90	80 - 141
Methyl acetate	40.0	42.2		ug/L		105	64 - 150
Methyl tert-butyl ether	20.0	20.1		ug/L		101	72 - 133
Methylcyclohexane	20.0	17.1		ug/L		86	71 - 129
Methylene Chloride	20.0	21.6		ug/L		108	79 - 123
Tetrachloroethene	20.0	17.9		ug/L		90	80 - 126

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 490-513064/4
Matrix: Water
Analysis Batch: 513064

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Toluene	20.0	18.4		ug/L		92	80 - 126
trans-1,2-Dichloroethene	20.0	19.2		ug/L		96	79 - 126
trans-1,3-Dichloropropene	20.0	19.6		ug/L		98	63 - 134
Trichloroethene	20.0	21.2		ug/L		106	80 - 123
Trichlorofluoromethane	20.0	18.2		ug/L		91	65 - 124
Vinyl chloride	20.0	18.5		ug/L		92	68 - 120
cis-1,3-Dichloropropene	20.0	19.9		ug/L		99	74 - 140
Styrene	20.0	19.6		ug/L		98	80 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 130*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
Toluene-d8 (Surr)	*95*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*

Lab Sample ID: 490-151420-1 MS
Matrix: Water
Analysis Batch: 513064

Client Sample ID: TH-6-20180502
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		20.0	22.3		ug/L		111	68 - 144
1,1,2,2-Tetrachloroethane	ND		20.0	18.6		ug/L		93	56 - 145
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		20.0	23.3		ug/L		117	63 - 150
1,1,2-Trichloroethane	ND		20.0	18.4		ug/L		92	70 - 130
1,1-Dichloroethane	ND		20.0	20.7		ug/L		104	61 - 139
1,1-Dichloroethene	ND		20.0	23.3		ug/L		116	54 - 150
1,2,4-Trichlorobenzene	ND		20.0	17.4		ug/L		87	47 - 147
1,2-Dibromo-3-Chloropropane	ND		20.0	18.3		ug/L		91	38 - 138
1,2-Dichlorobenzene	ND		20.0	18.5		ug/L		93	70 - 130
1,2-Dichloroethane	ND		20.0	20.0		ug/L		100	64 - 136
1,2-Dichloropropane	ND		20.0	20.0		ug/L		100	67 - 130
1,3-Dichlorobenzene	ND		20.0	18.5		ug/L		92	68 - 131
1,4-Dichlorobenzene	ND		20.0	18.5		ug/L		93	70 - 130
2-Butanone (MEK)	ND		100	96.4		ug/L		96	50 - 143
2-Hexanone	ND		100	84.5		ug/L		84	44 - 150
4-Methyl-2-pentanone (MIBK)	ND		100	89.1		ug/L		89	50 - 140
Acetone	ND		100	90.2		ug/L		90	39 - 150
Benzene	ND		20.0	22.6		ug/L		113	55 - 147
Bromoform	ND		20.0	19.9		ug/L		100	53 - 150
Bromomethane	ND		20.0	13.4		ug/L		67	30 - 150
Carbon disulfide	ND		20.0	21.9		ug/L		109	35 - 150
Carbon tetrachloride	ND		20.0	23.5		ug/L		117	56 - 150
Chlorobenzene	ND		20.0	19.3		ug/L		97	70 - 130
Dibromochloromethane	ND		20.0	19.0		ug/L		95	66 - 140
Chloroethane	ND		20.0	20.3		ug/L		102	58 - 141
Chloroform	ND		20.0	20.6		ug/L		103	66 - 138
Chloromethane	ND		20.0	18.3		ug/L		91	10 - 150

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 490-151420-1 MS
Matrix: Water
Analysis Batch: 513064

Client Sample ID: TH-6-20180502
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	ND		20.0	22.3		ug/L		111	68 - 131
Cyclohexane	ND		20.0	23.3		ug/L		117	48 - 150
Bromodichloromethane	ND		20.0	20.9		ug/L		105	70 - 140
Dichlorodifluoromethane	ND		20.0	18.9		ug/L		94	10 - 150
Ethylbenzene	ND		20.0	18.7		ug/L		94	65 - 139
1,2-Dibromoethane	ND		20.0	18.4		ug/L		92	65 - 137
Isopropylbenzene	ND		20.0	19.3		ug/L		97	70 - 137
Methyl acetate	ND		40.0	39.1		ug/L		98	42 - 136
Methyl tert-butyl ether	ND		20.0	19.3		ug/L		96	55 - 141
Methylcyclohexane	ND		20.0	23.2		ug/L		116	59 - 150
Methylene Chloride	ND		20.0	21.1		ug/L		106	64 - 130
Tetrachloroethene	ND		20.0	19.8		ug/L		99	57 - 138
Toluene	ND		20.0	18.6		ug/L		93	64 - 136
trans-1,2-Dichloroethene	ND		20.0	21.4		ug/L		107	59 - 143
trans-1,3-Dichloropropene	ND		20.0	18.5		ug/L		93	63 - 142
Trichloroethene	ND		20.0	22.5		ug/L		112	63 - 135
Trichlorofluoromethane	ND		20.0	21.8		ug/L		109	44 - 150
Vinyl chloride	ND		20.0	20.5		ug/L		103	57 - 150
cis-1,3-Dichloropropene	ND		20.0	18.9		ug/L		94	70 - 133
Styrene	ND		20.0	19.2		ug/L		96	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 130*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
Toluene-d8 (Surr)	*93*		*70 - 130*
Dibromofluoromethane (Surr)	*104*		*70 - 130*

Lab Sample ID: 490-151420-1 MSD
Matrix: Water
Analysis Batch: 513064

Client Sample ID: TH-6-20180502
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		20.0	22.5		ug/L		113	68 - 144	1	17
1,1,2,2-Tetrachloroethane	ND		20.0	18.5		ug/L		92	56 - 145	1	20
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		20.0	23.0		ug/L		115	63 - 150	1	18
1,1,2-Trichloroethane	ND		20.0	18.5		ug/L		92	70 - 130	1	15
1,1-Dichloroethane	ND		20.0	21.0		ug/L		105	61 - 139	1	17
1,1-Dichloroethene	ND		20.0	23.0		ug/L		115	54 - 150	1	17
1,2,4-Trichlorobenzene	ND		20.0	17.6		ug/L		88	47 - 147	2	19
1,2-Dibromo-3-Chloropropane	ND		20.0	18.4		ug/L		92	38 - 138	1	24
1,2-Dichlorobenzene	ND		20.0	18.2		ug/L		91	70 - 130	2	15
1,2-Dichloroethane	ND		20.0	21.0		ug/L		105	64 - 136	5	17
1,2-Dichloropropane	ND		20.0	20.3		ug/L		102	67 - 130	1	17
1,3-Dichlorobenzene	ND		20.0	18.3		ug/L		92	68 - 131	1	15
1,4-Dichlorobenzene	ND		20.0	18.3		ug/L		92	70 - 130	1	15
2-Butanone (MEK)	ND		100	99.2		ug/L		99	50 - 143	3	19
2-Hexanone	ND		100	87.1		ug/L		87	44 - 150	3	15

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 490-151420-1 MSD
Matrix: Water
Analysis Batch: 513064

Client Sample ID: TH-6-20180502
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4-Methyl-2-pentanone (MIBK)	ND		100	89.2		ug/L		89	50 - 140	0	17
Acetone	ND		100	94.1		ug/L		94	39 - 150	4	21
Benzene	ND		20.0	23.0		ug/L		115	55 - 147	2	17
Bromoform	ND		20.0	19.4		ug/L		97	53 - 150	3	16
Bromomethane	ND		20.0	15.4		ug/L		77	30 - 150	14	50
Carbon disulfide	ND		20.0	21.9		ug/L		110	35 - 150	0	21
Carbon tetrachloride	ND		20.0	23.5		ug/L		117	56 - 150	0	19
Chlorobenzene	ND		20.0	19.5		ug/L		98	70 - 130	1	14
Dibromochloromethane	ND		20.0	19.2		ug/L		96	66 - 140	1	15
Chloroethane	ND		20.0	21.2		ug/L		106	58 - 141	4	20
Chloroform	ND		20.0	20.6		ug/L		103	66 - 138	0	18
Chloromethane	ND		20.0	18.8		ug/L		94	10 - 150	3	31
cis-1,2-Dichloroethene	ND		20.0	23.4		ug/L		117	68 - 131	5	17
Cyclohexane	ND		20.0	23.5		ug/L		118	48 - 150	1	16
Bromodichloromethane	ND		20.0	21.3		ug/L		106	70 - 140	2	18
Dichlorodifluoromethane	ND		20.0	18.0		ug/L		90	10 - 150	5	18
Ethylbenzene	ND		20.0	19.1		ug/L		95	65 - 139	2	15
1,2-Dibromoethane	ND		20.0	18.5		ug/L		93	65 - 137	1	15
Isopropylbenzene	ND		20.0	19.3		ug/L		97	70 - 137	0	16
Methyl acetate	ND		40.0	37.8		ug/L		94	42 - 136	4	31
Methyl tert-butyl ether	ND		20.0	19.6		ug/L		98	55 - 141	2	16
Methylcyclohexane	ND		20.0	23.5		ug/L		117	59 - 150	1	19
Methylene Chloride	ND		20.0	21.7		ug/L		109	64 - 130	3	17
Tetrachloroethene	ND		20.0	19.9		ug/L		100	57 - 138	1	16
Toluene	ND		20.0	18.9		ug/L		94	64 - 136	1	15
trans-1,2-Dichloroethene	ND		20.0	20.1		ug/L		100	59 - 143	6	16
trans-1,3-Dichloropropene	ND		20.0	18.7		ug/L		93	63 - 142	1	14
Trichloroethene	ND		20.0	22.8		ug/L		114	63 - 135	1	17
Trichlorofluoromethane	ND		20.0	21.9		ug/L		110	44 - 150	1	18
Vinyl chloride	ND		20.0	20.5		ug/L		103	57 - 150	0	17
cis-1,3-Dichloropropene	ND		20.0	19.4		ug/L		97	70 - 133	3	15
Styrene	ND		20.0	19.4		ug/L		97	70 - 130	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 130*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*
Toluene-d8 (Surr)	*94*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*70 - 130*

Lab Sample ID: MB 490-513216/6
Matrix: Water
Analysis Batch: 513216

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 01:18	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 01:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 01:18	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 01:18	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 490-513216/6
Matrix: Water
Analysis Batch: 513216

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 01:18	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 01:18	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 01:18	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 01:18	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 01:18	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 01:18	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 01:18	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 01:18	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 01:18	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 01:18	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 01:18	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 01:18	1
Acetone	ND		25	2.7	ug/L			05/08/18 01:18	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 01:18	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 01:18	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 01:18	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 01:18	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 01:18	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 01:18	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 01:18	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 01:18	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 01:18	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 01:18	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/08/18 01:18	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 01:18	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 01:18	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 01:18	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 01:18	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 01:18	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 01:18	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 01:18	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 01:18	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 01:18	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 01:18	1
Tetrachloroethene	ND		1.0	0.14	ug/L			05/08/18 01:18	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 01:18	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 01:18	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 01:18	1
Trichloroethene	ND		1.0	0.20	ug/L			05/08/18 01:18	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 01:18	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 01:18	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 01:18	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 01:18	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 01:18	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*					*05/08/18 01:18*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 490-513216/6
Matrix: Water
Analysis Batch: 513216

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 130*		*05/08/18 01:18*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*05/08/18 01:18*	*1*
Toluene-d8 (Surr)	*95*		*70 - 130*		*05/08/18 01:18*	*1*
Dibromofluoromethane (Surr)	*105*		*70 - 130*		*05/08/18 01:18*	*1*

Lab Sample ID: LCS 490-513216/3
Matrix: Water
Analysis Batch: 513216

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	20.0	20.2		ug/L		101	78 - 135
1,1,2,2-Tetrachloroethane	20.0	19.0		ug/L		95	69 - 131
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	16.8		ug/L		84	77 - 129
1,1,2-Trichloroethane	20.0	19.2		ug/L		96	80 - 124
1,1-Dichloroethane	20.0	20.8		ug/L		104	78 - 125
1,1-Dichloroethene	20.0	20.5		ug/L		102	79 - 124
1,2,4-Trichlorobenzene	20.0	18.2		ug/L		91	63 - 133
1,2-Dibromo-3-Chloropropane	20.0	20.0		ug/L		100	54 - 125
1,2-Dichlorobenzene	20.0	19.3		ug/L		96	80 - 121
1,2-Dichloroethane	20.0	22.0		ug/L		110	77 - 121
1,2-Dichloropropane	20.0	20.7		ug/L		103	75 - 120
1,3-Dichlorobenzene	20.0	19.3		ug/L		97	80 - 122
1,4-Dichlorobenzene	20.0	18.9		ug/L		94	80 - 120
2-Butanone (MEK)	100	103		ug/L		103	62 - 133
2-Hexanone	100	91.2		ug/L		91	60 - 142
4-Methyl-2-pentanone (MIBK)	100	94.1		ug/L		94	60 - 137
Acetone	100	93.1		ug/L		93	54 - 145
Benzene	20.0	22.9		ug/L		115	80 - 121
Bromoform	20.0	20.7		ug/L		104	46 - 145
Bromomethane	20.0	16.2		ug/L		81	41 - 150
Carbon disulfide	20.0	20.6		ug/L		103	77 - 126
Carbon tetrachloride	20.0	20.2		ug/L		101	64 - 147
Chlorobenzene	20.0	20.0		ug/L		100	80 - 120
Dibromochloromethane	20.0	19.9		ug/L		99	69 - 133
Chloroethane	20.0	20.1		ug/L		101	72 - 120
Chloroform	20.0	21.1		ug/L		105	73 - 129
Chloromethane	20.0	18.8		ug/L		94	12 - 150
cis-1,2-Dichloroethene	20.0	23.4		ug/L		117	76 - 125
Cyclohexane	20.0	17.7		ug/L		88	73 - 122
Bromodichloromethane	20.0	22.0		ug/L		110	75 - 129
Dichlorodifluoromethane	20.0	16.3		ug/L		81	37 - 127
Ethylbenzene	20.0	18.7		ug/L		93	80 - 130
1,2-Dibromoethane	20.0	19.1		ug/L		96	80 - 129
Isopropylbenzene	20.0	18.7		ug/L		94	80 - 141
Methyl acetate	40.0	42.1		ug/L		105	64 - 150
Methyl tert-butyl ether	20.0	20.8		ug/L		104	72 - 133
Methylcyclohexane	20.0	17.0		ug/L		85	71 - 129

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 490-513216/3
Matrix: Water
Analysis Batch: 513216

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	20.0	22.6		ug/L		113	79 - 123
Tetrachloroethene	20.0	18.1		ug/L		91	80 - 126
Toluene	20.0	18.6		ug/L		93	80 - 126
trans-1,2-Dichloroethene	20.0	19.6		ug/L		98	79 - 126
trans-1,3-Dichloropropene	20.0	19.5		ug/L		97	63 - 134
Trichloroethene	20.0	22.2		ug/L		111	80 - 123
Trichlorofluoromethane	20.0	18.5		ug/L		93	65 - 124
Vinyl chloride	20.0	18.9		ug/L		95	68 - 120
cis-1,3-Dichloropropene	20.0	19.8		ug/L		99	74 - 140
Styrene	20.0	20.1		ug/L		101	80 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 130*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*
Toluene-d8 (Surr)	*92*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*

Lab Sample ID: LCSD 490-513216/4
Matrix: Water
Analysis Batch: 513216

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	20.0	20.2		ug/L		101	78 - 135	0	15
1,1,2,2-Tetrachloroethane	20.0	19.2		ug/L		96	69 - 131	1	15
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.3		ug/L		86	77 - 129	3	16
1,1,2-Trichloroethane	20.0	19.7		ug/L		98	80 - 124	2	13
1,1-Dichloroethane	20.0	21.2		ug/L		106	78 - 125	2	17
1,1-Dichloroethene	20.0	20.5		ug/L		103	79 - 124	0	20
1,2,4-Trichlorobenzene	20.0	18.6		ug/L		93	63 - 133	2	15
1,2-Dibromo-3-Chloropropane	20.0	19.3		ug/L		96	54 - 125	4	19
1,2-Dichlorobenzene	20.0	19.0		ug/L		95	80 - 121	1	12
1,2-Dichloroethane	20.0	22.2		ug/L		111	77 - 121	1	13
1,2-Dichloropropane	20.0	21.0		ug/L		105	75 - 120	1	15
1,3-Dichlorobenzene	20.0	19.2		ug/L		96	80 - 122	0	13
1,4-Dichlorobenzene	20.0	19.1		ug/L		96	80 - 120	1	12
2-Butanone (MEK)	100	103		ug/L		103	62 - 133	0	19
2-Hexanone	100	90.7		ug/L		91	60 - 142	1	17
4-Methyl-2-pentanone (MIBK)	100	92.0		ug/L		92	60 - 137	2	21
Acetone	100	97.6		ug/L		98	54 - 145	5	23
Benzene	20.0	23.1		ug/L		115	80 - 121	1	12
Bromoform	20.0	21.0		ug/L		105	46 - 145	1	14
Bromomethane	20.0	16.5		ug/L		83	41 - 150	2	19
Carbon disulfide	20.0	20.7		ug/L		103	77 - 126	0	16
Carbon tetrachloride	20.0	20.6		ug/L		103	64 - 147	2	16
Chlorobenzene	20.0	19.8		ug/L		99	80 - 120	1	12
Dibromochloromethane	20.0	19.8		ug/L		99	69 - 133	0	13
Chloroethane	20.0	20.4		ug/L		102	72 - 120	1	15

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 490-513216/4
Matrix: Water
Analysis Batch: 513216

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform			20.0	21.1		ug/L		105	73 - 129	0	14
Chloromethane			20.0	19.2		ug/L		96	12 - 150	2	20
cis-1,2-Dichloroethene			20.0	24.1		ug/L		120	76 - 125	3	15
Cyclohexane			20.0	17.7		ug/L		88	73 - 122	0	16
Bromodichloromethane			20.0	21.9		ug/L		109	75 - 129	1	14
Dichlorodifluoromethane			20.0	17.1		ug/L		85	37 - 127	5	16
Ethylbenzene			20.0	18.6		ug/L		93	80 - 130	0	12
1,2-Dibromoethane			20.0	19.1		ug/L		96	80 - 129	0	13
Isopropylbenzene			20.0	18.6		ug/L		93	80 - 141	1	13
Methyl acetate			40.0	41.6		ug/L		104	64 - 150	1	18
Methyl tert-butyl ether			20.0	20.7		ug/L		104	72 - 133	1	16
Methylcyclohexane			20.0	17.7		ug/L		88	71 - 129	4	17
Methylene Chloride			20.0	22.1		ug/L		111	79 - 123	2	15
Tetrachloroethene			20.0	18.4		ug/L		92	80 - 126	1	17
Toluene			20.0	18.6		ug/L		93	80 - 126	0	13
trans-1,2-Dichloroethene			20.0	19.5		ug/L		98	79 - 126	0	15
trans-1,3-Dichloropropene			20.0	19.2		ug/L		96	63 - 134	1	13
Trichloroethene			20.0	22.1		ug/L		110	80 - 123	1	14
Trichlorofluoromethane			20.0	18.7		ug/L		94	65 - 124	1	22
Vinyl chloride			20.0	19.2		ug/L		96	68 - 120	2	15
cis-1,3-Dichloropropene			20.0	20.0		ug/L		100	74 - 140	1	15
Styrene			20.0	19.9		ug/L		99	80 - 127	1	12

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 130*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
Toluene-d8 (Surr)	*94*		*70 - 130*
Dibromofluoromethane (Surr)	*106*		*70 - 130*

Lab Sample ID: 490-151420-21 MS
Matrix: Water
Analysis Batch: 513216

Client Sample ID: DGC-18I-20180503
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		20.0	21.5		ug/L		107	68 - 144
1,1,2,2-Tetrachloroethane	ND		20.0	17.7		ug/L		88	56 - 145
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		20.0	22.2		ug/L		111	63 - 150
1,1,2-Trichloroethane	ND		20.0	18.4		ug/L		92	70 - 130
1,1-Dichloroethane	ND		20.0	20.4		ug/L		102	61 - 139
1,1-Dichloroethene	ND		20.0	22.6		ug/L		113	54 - 150
1,2,4-Trichlorobenzene	ND		20.0	16.6		ug/L		83	47 - 147
1,2-Dibromo-3-Chloropropane	ND		20.0	17.3		ug/L		87	38 - 138
1,2-Dichlorobenzene	ND		20.0	17.9		ug/L		90	70 - 130
1,2-Dichloroethane	ND		20.0	19.6		ug/L		98	64 - 136
1,2-Dichloropropane	ND		20.0	19.5		ug/L		98	67 - 130
1,3-Dichlorobenzene	ND		20.0	18.2		ug/L		91	68 - 131
1,4-Dichlorobenzene	ND		20.0	17.7		ug/L		88	70 - 130

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 490-151420-21 MS
Matrix: Water
Analysis Batch: 513216

Client Sample ID: DGC-18I-20180503
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Butanone (MEK)	ND		100	94.4		ug/L		94	50 - 143
2-Hexanone	ND		100	82.5		ug/L		82	44 - 150
4-Methyl-2-pentanone (MIBK)	ND		100	85.3		ug/L		85	50 - 140
Acetone	ND		100	85.8		ug/L		86	39 - 150
Benzene	ND		20.0	22.3		ug/L		112	55 - 147
Bromoform	ND		20.0	19.0		ug/L		95	53 - 150
Bromomethane	ND		20.0	14.0		ug/L		70	30 - 150
Carbon disulfide	ND		20.0	21.2		ug/L		106	35 - 150
Carbon tetrachloride	ND		20.0	23.0		ug/L		115	56 - 150
Chlorobenzene	ND		20.0	19.1		ug/L		96	70 - 130
Dibromochloromethane	ND		20.0	18.6		ug/L		93	66 - 140
Chloroethane	ND		20.0	19.8		ug/L		99	58 - 141
Chloroform	ND		20.0	19.9		ug/L		99	66 - 138
Chloromethane	ND		20.0	18.6		ug/L		93	10 - 150
cis-1,2-Dichloroethene	ND		20.0	22.6		ug/L		113	68 - 131
Cyclohexane	ND		20.0	22.8		ug/L		114	48 - 150
Bromodichloromethane	ND		20.0	20.7		ug/L		103	70 - 140
Dichlorodifluoromethane	ND		20.0	17.5		ug/L		88	10 - 150
Ethylbenzene	ND		20.0	18.5		ug/L		92	65 - 139
1,2-Dibromoethane	ND		20.0	17.5		ug/L		88	65 - 137
Isopropylbenzene	ND		20.0	19.1		ug/L		96	70 - 137
Methyl acetate	ND		40.0	35.3		ug/L		88	42 - 136
Methyl tert-butyl ether	ND		20.0	18.7		ug/L		93	55 - 141
Methylcyclohexane	ND		20.0	22.5		ug/L		112	59 - 150
Methylene Chloride	ND		20.0	21.0		ug/L		105	64 - 130
Tetrachloroethene	ND		20.0	19.6		ug/L		98	57 - 138
Toluene	ND		20.0	18.0		ug/L		90	64 - 136
trans-1,2-Dichloroethene	ND		20.0	19.4		ug/L		97	59 - 143
trans-1,3-Dichloropropene	ND		20.0	17.2		ug/L		86	63 - 142
Trichloroethene	ND		20.0	22.3		ug/L		111	63 - 135
Trichlorofluoromethane	ND		20.0	21.9		ug/L		110	44 - 150
Vinyl chloride	ND		20.0	19.9		ug/L		99	57 - 150
cis-1,3-Dichloropropene	ND		20.0	18.1		ug/L		91	70 - 133
Styrene	ND		20.0	19.0		ug/L		95	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 130*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*
Toluene-d8 (Surr)	*93*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*

Lab Sample ID: 490-151420-21 MSD
Matrix: Water
Analysis Batch: 513216

Client Sample ID: DGC-18I-20180503
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		20.0	20.7		ug/L		104	68 - 144	3	17
1,1,2,2-Tetrachloroethane	ND		20.0	16.9		ug/L		85	56 - 145	4	20

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 490-151420-21 MSD
Matrix: Water
Analysis Batch: 513216

Client Sample ID: DGC-18I-20180503
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		20.0	21.3		ug/L		107	63 - 150	4	18
1,1,2-Trichloroethane	ND		20.0	17.3		ug/L		86	70 - 130	6	15
1,1-Dichloroethane	ND		20.0	19.5		ug/L		97	61 - 139	5	17
1,1-Dichloroethene	ND		20.0	20.3		ug/L		101	54 - 150	11	17
1,2,4-Trichlorobenzene	ND		20.0	16.9		ug/L		85	47 - 147	2	19
1,2-Dibromo-3-Chloropropane	ND		20.0	17.3		ug/L		87	38 - 138	0	24
1,2-Dichlorobenzene	ND		20.0	17.3		ug/L		86	70 - 130	4	15
1,2-Dichloroethane	ND		20.0	19.0		ug/L		95	64 - 136	3	17
1,2-Dichloropropane	ND		20.0	18.6		ug/L		93	67 - 130	5	17
1,3-Dichlorobenzene	ND		20.0	17.4		ug/L		87	68 - 131	4	15
1,4-Dichlorobenzene	ND		20.0	17.2		ug/L		86	70 - 130	2	15
2-Butanone (MEK)	ND		100	95.7		ug/L		96	50 - 143	1	19
2-Hexanone	ND		100	81.0		ug/L		81	44 - 150	2	15
4-Methyl-2-pentanone (MIBK)	ND		100	83.5		ug/L		83	50 - 140	2	17
Acetone	ND		100	91.8		ug/L		92	39 - 150	7	21
Benzene	ND		20.0	21.3		ug/L		107	55 - 147	5	17
Bromoform	ND		20.0	18.2		ug/L		91	53 - 150	4	16
Bromomethane	ND		20.0	13.9		ug/L		70	30 - 150	0	50
Carbon disulfide	ND		20.0	20.6		ug/L		103	35 - 150	3	21
Carbon tetrachloride	ND		20.0	21.7		ug/L		109	56 - 150	6	19
Chlorobenzene	ND		20.0	18.0		ug/L		90	70 - 130	6	14
Dibromochloromethane	ND		20.0	17.7		ug/L		89	66 - 140	5	15
Chloroethane	ND		20.0	18.6		ug/L		93	58 - 141	6	20
Chloroform	ND		20.0	19.1		ug/L		96	66 - 138	4	18
Chloromethane	ND		20.0	17.0		ug/L		85	10 - 150	9	31
cis-1,2-Dichloroethene	ND		20.0	21.9		ug/L		109	68 - 131	3	17
Cyclohexane	ND		20.0	21.3		ug/L		106	48 - 150	7	16
Bromodichloromethane	ND		20.0	19.6		ug/L		98	70 - 140	5	18
Dichlorodifluoromethane	ND		20.0	17.0		ug/L		85	10 - 150	3	18
Ethylbenzene	ND		20.0	17.4		ug/L		87	65 - 139	6	15
1,2-Dibromoethane	ND		20.0	16.8		ug/L		84	65 - 137	4	15
Isopropylbenzene	ND		20.0	18.1		ug/L		91	70 - 137	5	16
Methyl acetate	ND		40.0	33.3		ug/L		83	42 - 136	6	31
Methyl tert-butyl ether	ND		20.0	18.2		ug/L		91	55 - 141	2	16
Methylcyclohexane	ND		20.0	21.8		ug/L		109	59 - 150	3	19
Methylene Chloride	ND		20.0	19.8		ug/L		99	64 - 130	6	17
Tetrachloroethene	ND		20.0	18.5		ug/L		93	57 - 138	6	16
Toluene	ND		20.0	17.2		ug/L		86	64 - 136	4	15
trans-1,2-Dichloroethene	ND		20.0	18.7		ug/L		94	59 - 143	3	16
trans-1,3-Dichloropropene	ND		20.0	16.7		ug/L		83	63 - 142	3	14
Trichloroethene	ND		20.0	21.2		ug/L		106	63 - 135	5	17
Trichlorofluoromethane	ND		20.0	21.3		ug/L		107	44 - 150	3	18
Vinyl chloride	ND		20.0	19.2		ug/L		96	57 - 150	3	17
cis-1,3-Dichloropropene	ND		20.0	17.0		ug/L		85	70 - 133	6	15
Styrene	ND		20.0	17.8		ug/L		89	70 - 130	7	24

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 490-151420-21 MSD
Matrix: Water
Analysis Batch: 513216

Client Sample ID: DGC-18I-20180503
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 130*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
Toluene-d8 (Surr)	*92*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*70 - 130*

Lab Sample ID: MB 490-513345/6
Matrix: Water
Analysis Batch: 513345

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 13:26	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.19	ug/L			05/08/18 13:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.15	ug/L			05/08/18 13:26	1
1,1,2-Trichloroethane	ND		1.0	0.19	ug/L			05/08/18 13:26	1
1,1-Dichloroethane	ND		1.0	0.24	ug/L			05/08/18 13:26	1
1,1-Dichloroethene	ND		1.0	0.25	ug/L			05/08/18 13:26	1
1,2,4-Trichlorobenzene	ND		1.0	0.20	ug/L			05/08/18 13:26	1
1,2-Dibromo-3-Chloropropane	ND		10	0.94	ug/L			05/08/18 13:26	1
1,2-Dichlorobenzene	ND		1.0	0.19	ug/L			05/08/18 13:26	1
1,2-Dichloroethane	ND		1.0	0.20	ug/L			05/08/18 13:26	1
1,2-Dichloropropane	ND		1.0	0.25	ug/L			05/08/18 13:26	1
1,3-Dichlorobenzene	ND		1.0	0.18	ug/L			05/08/18 13:26	1
1,4-Dichlorobenzene	ND		1.0	0.17	ug/L			05/08/18 13:26	1
2-Butanone (MEK)	ND		50	2.6	ug/L			05/08/18 13:26	1
2-Hexanone	ND		10	1.3	ug/L			05/08/18 13:26	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.81	ug/L			05/08/18 13:26	1
Acetone	ND		25	2.7	ug/L			05/08/18 13:26	1
Benzene	ND		1.0	0.20	ug/L			05/08/18 13:26	1
Bromoform	ND		1.0	0.29	ug/L			05/08/18 13:26	1
Bromomethane	ND		1.0	0.35	ug/L			05/08/18 13:26	1
Carbon disulfide	ND		1.0	0.22	ug/L			05/08/18 13:26	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			05/08/18 13:26	1
Chlorobenzene	ND		1.0	0.18	ug/L			05/08/18 13:26	1
Dibromochloromethane	ND		1.0	0.25	ug/L			05/08/18 13:26	1
Chloroethane	ND		1.0	0.36	ug/L			05/08/18 13:26	1
Chloroform	ND		1.0	0.23	ug/L			05/08/18 13:26	1
Chloromethane	ND		1.0	0.36	ug/L			05/08/18 13:26	1
cis-1,2-Dichloroethene	ND		1.0	0.21	ug/L			05/08/18 13:26	1
Cyclohexane	ND		5.0	0.13	ug/L			05/08/18 13:26	1
Bromodichloromethane	ND		1.0	0.17	ug/L			05/08/18 13:26	1
Dichlorodifluoromethane	ND		1.0	0.17	ug/L			05/08/18 13:26	1
Ethylbenzene	ND		1.0	0.19	ug/L			05/08/18 13:26	1
1,2-Dibromoethane	ND		1.0	0.21	ug/L			05/08/18 13:26	1
Isopropylbenzene	ND		1.0	0.33	ug/L			05/08/18 13:26	1
Methyl acetate	ND		10	0.58	ug/L			05/08/18 13:26	1
Methyl tert-butyl ether	ND		1.0	0.17	ug/L			05/08/18 13:26	1
Methylcyclohexane	ND		5.0	0.090	ug/L			05/08/18 13:26	1
Methylene Chloride	ND		5.0	1.0	ug/L			05/08/18 13:26	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 490-513345/6
Matrix: Water
Analysis Batch: 513345

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		1.0	0.14	ug/L			05/08/18 13:26	1
Toluene	ND		1.0	0.17	ug/L			05/08/18 13:26	1
trans-1,2-Dichloroethene	ND		1.0	0.23	ug/L			05/08/18 13:26	1
trans-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 13:26	1
Trichloroethene	ND		1.0	0.20	ug/L			05/08/18 13:26	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			05/08/18 13:26	1
Vinyl chloride	ND		1.0	0.18	ug/L			05/08/18 13:26	1
Xylenes, Total	ND		3.0	0.58	ug/L			05/08/18 13:26	1
cis-1,3-Dichloropropene	ND		1.0	0.17	ug/L			05/08/18 13:26	1
Styrene	ND		1.0	0.28	ug/L			05/08/18 13:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 130*		*05/08/18 13:26*	*1*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*05/08/18 13:26*	*1*
Toluene-d8 (Surr)	*95*		*70 - 130*		*05/08/18 13:26*	*1*
Dibromofluoromethane (Surr)	*107*		*70 - 130*		*05/08/18 13:26*	*1*

Lab Sample ID: LCS 490-513345/3
Matrix: Water
Analysis Batch: 513345

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	20.0	22.0		ug/L		110	78 - 135
1,1,2,2-Tetrachloroethane	20.0	19.4		ug/L		97	69 - 131
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	21.8		ug/L		109	77 - 129
1,1,2-Trichloroethane	20.0	19.9		ug/L		100	80 - 124
1,1-Dichloroethane	20.0	21.6		ug/L		108	78 - 125
1,1-Dichloroethene	20.0	21.3		ug/L		106	79 - 124
1,2,4-Trichlorobenzene	20.0	18.8		ug/L		94	63 - 133
1,2-Dibromo-3-Chloropropane	20.0	20.7		ug/L		104	54 - 125
1,2-Dichlorobenzene	20.0	19.4		ug/L		97	80 - 121
1,2-Dichloroethane	20.0	22.4		ug/L		112	77 - 121
1,2-Dichloropropane	20.0	21.3		ug/L		107	75 - 120
1,3-Dichlorobenzene	20.0	19.6		ug/L		98	80 - 122
1,4-Dichlorobenzene	20.0	19.2		ug/L		96	80 - 120
2-Butanone (MEK)	100	105		ug/L		105	62 - 133
2-Hexanone	100	93.5		ug/L		93	60 - 142
4-Methyl-2-pentanone (MIBK)	100	96.9		ug/L		97	60 - 137
Acetone	100	104		ug/L		104	54 - 145
Benzene	20.0	23.5		ug/L		118	80 - 121
Bromoform	20.0	21.6		ug/L		108	46 - 145
Bromomethane	20.0	17.0		ug/L		85	41 - 150
Carbon disulfide	20.0	22.5		ug/L		112	77 - 126
Carbon tetrachloride	20.0	23.1		ug/L		116	64 - 147
Chlorobenzene	20.0	20.3		ug/L		102	80 - 120
Dibromochloromethane	20.0	20.3		ug/L		101	69 - 133
Chloroethane	20.0	19.9		ug/L		99	72 - 120

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 490-513345/3
Matrix: Water
Analysis Batch: 513345

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroform	20.0	21.4		ug/L		107	73 - 129
Chloromethane	20.0	18.2		ug/L		91	12 - 150
cis-1,2-Dichloroethene	20.0	23.9		ug/L		120	76 - 125
Cyclohexane	20.0	21.5		ug/L		107	73 - 122
Bromodichloromethane	20.0	22.5		ug/L		112	75 - 129
Dichlorodifluoromethane	20.0	17.2		ug/L		86	37 - 127
Ethylbenzene	20.0	19.4		ug/L		97	80 - 130
1,2-Dibromoethane	20.0	19.6		ug/L		98	80 - 129
Isopropylbenzene	20.0	19.7		ug/L		98	80 - 141
Methyl acetate	40.0	43.4		ug/L		108	64 - 150
Methyl tert-butyl ether	20.0	21.0		ug/L		105	72 - 133
Methylcyclohexane	20.0	21.9		ug/L		109	71 - 129
Methylene Chloride	20.0	21.8		ug/L		109	79 - 123
Tetrachloroethene	20.0	19.9		ug/L		100	80 - 126
Toluene	20.0	19.1		ug/L		96	80 - 126
trans-1,2-Dichloroethene	20.0	20.5		ug/L		102	79 - 126
trans-1,3-Dichloropropene	20.0	20.0		ug/L		100	63 - 134
Trichloroethene	20.0	23.1		ug/L		115	80 - 123
Trichlorofluoromethane	20.0	22.0		ug/L		110	65 - 124
Vinyl chloride	20.0	20.4		ug/L		102	68 - 120
cis-1,3-Dichloropropene	20.0	20.4		ug/L		102	74 - 140
Styrene	20.0	20.5		ug/L		103	80 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 130*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*
Toluene-d8 (Surr)	*93*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*70 - 130*

Lab Sample ID: LCSD 490-513345/4
Matrix: Water
Analysis Batch: 513345

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	20.0	21.9		ug/L		109	78 - 135	0	15
1,1,2,2-Tetrachloroethane	20.0	20.1		ug/L		101	69 - 131	4	15
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	21.4		ug/L		107	77 - 129	2	16
1,1,2-Trichloroethane	20.0	20.1		ug/L		100	80 - 124	1	13
1,1-Dichloroethane	20.0	21.5		ug/L		108	78 - 125	1	17
1,1-Dichloroethene	20.0	22.0		ug/L		110	79 - 124	4	20
1,2,4-Trichlorobenzene	20.0	19.2		ug/L		96	63 - 133	2	15
1,2-Dibromo-3-Chloropropane	20.0	19.8		ug/L		99	54 - 125	5	19
1,2-Dichlorobenzene	20.0	19.4		ug/L		97	80 - 121	0	12
1,2-Dichloroethane	20.0	22.8		ug/L		114	77 - 121	2	13
1,2-Dichloropropane	20.0	21.5		ug/L		107	75 - 120	1	15
1,3-Dichlorobenzene	20.0	19.6		ug/L		98	80 - 122	0	13
1,4-Dichlorobenzene	20.0	19.5		ug/L		97	80 - 120	1	12

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 490-513345/4
Matrix: Water
Analysis Batch: 513345

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Butanone (MEK)			100	112		ug/L		112	62 - 133	6	19
2-Hexanone			100	92.2		ug/L		92	60 - 142	1	17
4-Methyl-2-pentanone (MIBK)			100	97.3		ug/L		97	60 - 137	0	21
Acetone			100	104		ug/L		104	54 - 145	1	23
Benzene			20.0	23.7		ug/L		119	80 - 121	1	12
Bromoform			20.0	21.5		ug/L		107	46 - 145	0	14
Bromomethane			20.0	16.8		ug/L		84	41 - 150	1	19
Carbon disulfide			20.0	22.2		ug/L		111	77 - 126	1	16
Carbon tetrachloride			20.0	22.0		ug/L		110	64 - 147	5	16
Chlorobenzene			20.0	20.2		ug/L		101	80 - 120	1	12
Dibromochloromethane			20.0	20.5		ug/L		103	69 - 133	1	13
Chloroethane			20.0	20.0		ug/L		100	72 - 120	1	15
Chloroform			20.0	21.3		ug/L		107	73 - 129	0	14
Chloromethane			20.0	17.8		ug/L		89	12 - 150	3	20
cis-1,2-Dichloroethene			20.0	23.5		ug/L		118	76 - 125	2	15
Cyclohexane			20.0	20.7		ug/L		104	73 - 122	4	16
Bromodichloromethane			20.0	22.5		ug/L		113	75 - 129	0	14
Dichlorodifluoromethane			20.0	16.1		ug/L		80	37 - 127	7	16
Ethylbenzene			20.0	19.2		ug/L		96	80 - 130	1	12
1,2-Dibromoethane			20.0	19.8		ug/L		99	80 - 129	1	13
Isopropylbenzene			20.0	19.6		ug/L		98	80 - 141	0	13
Methyl acetate			40.0	44.1		ug/L		110	64 - 150	2	18
Methyl tert-butyl ether			20.0	21.3		ug/L		106	72 - 133	2	16
Methylcyclohexane			20.0	22.0		ug/L		110	71 - 129	0	17
Methylene Chloride			20.0	23.3		ug/L		117	79 - 123	7	15
Tetrachloroethene			20.0	19.7		ug/L		98	80 - 126	1	17
Toluene			20.0	19.1		ug/L		96	80 - 126	0	13
trans-1,2-Dichloroethene			20.0	20.4		ug/L		102	79 - 126	0	15
trans-1,3-Dichloropropene			20.0	19.9		ug/L		100	63 - 134	0	13
Trichloroethene			20.0	22.8		ug/L		114	80 - 123	1	14
Trichlorofluoromethane			20.0	18.8		ug/L		94	65 - 124	16	22
Vinyl chloride			20.0	19.7		ug/L		98	68 - 120	3	15
cis-1,3-Dichloropropene			20.0	20.7		ug/L		103	74 - 140	1	15
Styrene			20.0	20.5		ug/L		103	80 - 127	0	12

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 130*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*
Toluene-d8 (Surr)	*92*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*70 - 130*

GC/MS VOA

Analysis Batch: 513064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-151420-1	TH-6-20180502	Total/NA	Water	8260C	
490-151420-2	DGC-9I-20180502	Total/NA	Water	8260C	
490-151420-3	TH-7-20180502	Total/NA	Water	8260C	
490-151420-4	FIELD BLANK-20180502	Total/NA	Water	8260C	
490-151420-5	DGC-17I-20180502	Total/NA	Water	8260C	
490-151420-6	DGC-16I-20180502	Total/NA	Water	8260C	
490-151420-7	TRIP BLANK	Total/NA	Water	8260C	
490-151420-8	DGC-7I-20180502	Total/NA	Water	8260C	
490-151420-26	Field Blank-2-20180503	Total/NA	Water	8260C	
490-151420-28	Trip Blank_2	Total/NA	Water	8260C	
490-151420-29	Trip Blank_3	Total/NA	Water	8260C	
MB 490-513064/6	Method Blank	Total/NA	Water	8260C	
LCS 490-513064/4	Lab Control Sample	Total/NA	Water	8260C	
490-151420-1 MS	TH-6-20180502	Total/NA	Water	8260C	
490-151420-1 MSD	TH-6-20180502	Total/NA	Water	8260C	

Analysis Batch: 513216

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-151420-9	DGC-1I-20180502	Total/NA	Water	8260C	
490-151420-10	CDM-2-20180502	Total/NA	Water	8260C	
490-151420-11	TH-11A-20180502	Total/NA	Water	8260C	
490-151420-12	DGC-12IA-20180502	Total/NA	Water	8260C	
490-151420-13	DGC-6I-20180502	Total/NA	Water	8260C	
490-151420-14	CDM-3-20180502	Total/NA	Water	8260C	
490-151420-15	ERT-EW5-20180502	Total/NA	Water	8260C	
490-151420-16	FD-01-20180502	Total/NA	Water	8260C	
490-151420-17	ERT-EW6-20180502	Total/NA	Water	8260C	
490-151420-18	ERT-EW7-20180502	Total/NA	Water	8260C	
490-151420-19	GMS-04-20180503	Total/NA	Water	8260C	
490-151420-20	DGC-14I-20180503	Total/NA	Water	8260C	
490-151420-21	DGC-18I-20180503	Total/NA	Water	8260C	
490-151420-22	ERT-6I-20180503	Total/NA	Water	8260C	
490-151420-23	ERT-15-20180503	Total/NA	Water	8260C	
490-151420-24	FD-02-20180503	Total/NA	Water	8260C	
490-151420-25	DGC-3I-20180503	Total/NA	Water	8260C	
490-151420-27	DGC-19I-20180503	Total/NA	Water	8260C	
MB 490-513216/6	Method Blank	Total/NA	Water	8260C	
LCS 490-513216/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 490-513216/4	Lab Control Sample Dup	Total/NA	Water	8260C	
490-151420-21 MS	DGC-18I-20180503	Total/NA	Water	8260C	
490-151420-21 MSD	DGC-18I-20180503	Total/NA	Water	8260C	

Analysis Batch: 513345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-151420-15	ERT-EW5-20180502	Total/NA	Water	8260C	
490-151420-16	FD-01-20180502	Total/NA	Water	8260C	
490-151420-22	ERT-6I-20180503	Total/NA	Water	8260C	
MB 490-513345/6	Method Blank	Total/NA	Water	8260C	
LCS 490-513345/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 490-513345/4	Lab Control Sample Dup	Total/NA	Water	8260C	

Lab Chronicle

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: TH-6-20180502
Lab Sample ID: 490-151420-1
Date Collected: 05/02/18 09:40
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 18:53	RP	TAL NSH

Client Sample ID: DGC-9I-20180502
Lab Sample ID: 490-151420-2
Date Collected: 05/02/18 14:15
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 19:18	RP	TAL NSH

Client Sample ID: TH-7-20180502
Lab Sample ID: 490-151420-3
Date Collected: 05/02/18 10:35
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 19:44	RP	TAL NSH

Client Sample ID: FIELD BLANK-20180502
Lab Sample ID: 490-151420-4
Date Collected: 05/02/18 14:20
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 16:44	RP	TAL NSH

Client Sample ID: DGC-17I-20180502
Lab Sample ID: 490-151420-5
Date Collected: 05/02/18 13:20
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 20:10	RP	TAL NSH

Client Sample ID: DGC-16I-20180502
Lab Sample ID: 490-151420-6
Date Collected: 05/02/18 12:30
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 20:35	RP	TAL NSH

Lab Chronicle

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: TRIP BLANK
Date Collected: 04/26/18 00:01
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 17:10	RP	TAL NSH

Client Sample ID: DGC-7I-20180502
Date Collected: 05/02/18 14:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 21:01	RP	TAL NSH

Client Sample ID: DGC-1I-20180502
Date Collected: 05/02/18 08:45
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 01:43	RP	TAL NSH

Client Sample ID: CDM-2-20180502
Date Collected: 05/02/18 10:50
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 02:09	RP	TAL NSH

Client Sample ID: TH-11A-20180502
Date Collected: 05/02/18 10:00
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 02:34	RP	TAL NSH

Client Sample ID: DGC-12IA-20180502
Date Collected: 05/02/18 08:35
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-12
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 03:00	RP	TAL NSH

Lab Chronicle

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-6I-20180502
Lab Sample ID: 490-151420-13
Date Collected: 05/02/18 13:00
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 03:26	RP	TAL NSH

Client Sample ID: CDM-3-20180502
Lab Sample ID: 490-151420-14
Date Collected: 05/02/18 11:30
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 03:51	RP	TAL NSH

Client Sample ID: ERT-EW5-20180502
Lab Sample ID: 490-151420-15
Date Collected: 05/02/18 15:05
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 04:17	RP	TAL NSH
Total/NA	Analysis	8260C		5	10 mL	10 mL	513345	05/08/18 14:43	RP	TAL NSH

Client Sample ID: FD-01-20180502
Lab Sample ID: 490-151420-16
Date Collected: 05/02/18 15:08
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 04:43	RP	TAL NSH
Total/NA	Analysis	8260C		5	10 mL	10 mL	513345	05/08/18 15:09	RP	TAL NSH

Client Sample ID: ERT-EW6-20180502
Lab Sample ID: 490-151420-17
Date Collected: 05/02/18 15:00
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 05:08	RP	TAL NSH

Client Sample ID: ERT-EW7-20180502
Lab Sample ID: 490-151420-18
Date Collected: 05/02/18 15:00
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 05:34	RP	TAL NSH

Lab Chronicle

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: GMS-04-20180503
Lab Sample ID: 490-151420-19
Date Collected: 05/03/18 08:10
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 06:00	RP	TAL NSH

Client Sample ID: DGC-14I-20180503
Lab Sample ID: 490-151420-20
Date Collected: 05/03/18 09:00
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 06:25	RP	TAL NSH

Client Sample ID: DGC-18I-20180503
Lab Sample ID: 490-151420-21
Date Collected: 05/03/18 09:45
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 06:51	RP	TAL NSH

Client Sample ID: ERT-6I-20180503
Lab Sample ID: 490-151420-22
Date Collected: 05/03/18 08:10
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 07:16	RP	TAL NSH
Total/NA	Analysis	8260C		20	10 mL	10 mL	513345	05/08/18 15:34	RP	TAL NSH

Client Sample ID: ERT-15-20180503
Lab Sample ID: 490-151420-23
Date Collected: 05/03/18 09:10
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 07:42	RP	TAL NSH

Client Sample ID: FD-02-20180503
Lab Sample ID: 490-151420-24
Date Collected: 05/03/18 09:13
Matrix: Water
Date Received: 05/07/18 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 08:08	RP	TAL NSH

Lab Chronicle

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Client Sample ID: DGC-3I-20180503
Date Collected: 05/03/18 10:10
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-25
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 08:33	RP	TAL NSH

Client Sample ID: Field Blank-2-20180503
Date Collected: 05/03/18 10:30
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-26
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 17:36	RP	TAL NSH

Client Sample ID: DGC-19I-20180503
Date Collected: 05/03/18 10:45
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-27
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513216	05/08/18 08:59	RP	TAL NSH

Client Sample ID: Trip Blank_2
Date Collected: 04/26/18 00:01
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-28
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 18:01	RP	TAL NSH

Client Sample ID: Trip Blank_3
Date Collected: 04/26/18 00:01
Date Received: 05/07/18 08:30

Lab Sample ID: 490-151420-29
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	10 mL	10 mL	513064	05/07/18 18:27	RP	TAL NSH

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Method Summary

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL NSH
5030C	Purge and Trap	SW846	TAL NSH

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Accreditation/Certification Summary

Client: CDM Smith, Inc.
Project/Site: Brewster Village Well Field

TestAmerica Job ID: 490-151420-1

Laboratory: TestAmerica Nashville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	A2LA		NA: NELAP & A2LA	12-31-19
A2LA	ISO/IEC 17025		0453.07	12-31-19
Alaska (UST)	State Program	10	UST-087	06-30-18
Arizona	State Program	9	AZ0473	05-05-19
Arkansas DEQ	State Program	6	88-0737	04-25-19
California	State Program	9	2938	10-31-18
Connecticut	State Program	1	PH-0220	12-31-19
Florida	NELAP	4	E87358	06-30-18
Georgia	State Program	4	E87358(FL)/453.07(A2LA)	06-30-18
Illinois	NELAP	5	200010	12-09-18
Iowa	State Program	7	131	04-01-18 *
Kansas	NELAP	7	E-10229	10-31-18
Kentucky (UST)	State Program	4	19	06-30-18
Kentucky (WW)	State Program	4	90038	12-31-18
Louisiana	NELAP	6	30613	06-30-18
Maine	State Program	1	TN00032	11-03-19
Maryland	State Program	3	316	03-31-19
Massachusetts	State Program	1	M-TN032	06-30-18
Minnesota	NELAP	5	047-999-345	12-31-18
Mississippi	State Program	4	N/A	06-30-18
Montana (UST)	State Program	8	NA	02-24-20
Nevada	State Program	9	TN00032	07-31-18
New Hampshire	NELAP	1	2963	10-09-18
New Jersey	NELAP	2	TN965	06-30-18
New York	NELAP	2	11342	03-31-19
North Carolina (WW/SW)	State Program	4	387	12-31-18
North Dakota	State Program	8	R-146	06-30-18
Ohio VAP	State Program	5	CL0033	07-06-19
Oklahoma	State Program	6	9412	08-31-18
Oregon	NELAP	10	TN200001	04-26-19
Pennsylvania	NELAP	3	68-00585	06-30-18
Rhode Island	State Program	1	LAO00268	12-30-18
South Carolina	State Program	4	84009 (001)	02-28-18 *
Tennessee	State Program	4	2008	02-23-20
Texas	NELAP	6	T104704077	08-31-18
USDA	Federal		P330-13-00306	12-01-19
Utah	NELAP	8	TN00032	07-31-18
Virginia	NELAP	3	460152	06-14-18
Washington	State Program	10	C789	07-19-18
West Virginia DEP	State Program	3	219	02-28-19
Wisconsin	State Program	5	998020430	08-31-18
Wyoming (UST)	A2LA	8	453.07	12-31-19

Laboratory: TestAmerica Buffalo

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

490-151420 Chain of Custody

Cooler Received/Opened On 5/7/2018@ 830

Time Samples Removed From Cooler_____ Time Samples Placed In Storage_____ (2 Hour Window)

1. Tracking # 8497 (last 4 digits, FedEx) Courier: FedEx
   IR Gun ID_31470366 _____ pH Strip Lot_____ Chlorine Strip Lot_____
2. Temperature of rep. sample or temp blank when opened: 5.5 *Degrees Celsius*
3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA
4. Were custody seals on outside of cooler? YES...NO...NA
   If yes, how many and where: 1 front
5. Were the seals intact, signed, and dated correctly? YES...NO...NA
6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (intial) EA

7. Were custody seals on containers: YES NO and Intact YES...NO...NA
   Were these signed and dated correctly? YES...NO...NA
8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None
9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None
10. Did all containers arrive in good condition (unbroken)? YES...NO...NA
11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA
12. Did all container labels and tags agree with custody papers? YES...NO...NA
13a. Were VOA vials received? YES...NO...NA
   b. Was there any observable headspace present in any VOA vial? YES...NO...NA

Larger than this.

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # NA

I certify that I unloaded the cooler and answered questions 7-14 (intial) EA

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA
   b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA
16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) EA

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA
18. Did you sign the custody papers in the appropriate place? YES...NO...NA
19. Were correct containers used for the analysis requested? YES...NO...NA
20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) EA

I certify that I attached a label with the unique LIMS number to each container (intial) EA

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...#_____

BIS = Broken in shipment

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

480501-Albany

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler:	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No: 480-112564-26123.1
Client Contact: Katelyn Reepmeyer	Phone:	E-Mail: becky.mason@testamericainc.com		Page: Page 1 of 3
Company: CDM Smith, Inc.				Job #:
Address: 11 British American Blvd Suite 200	Due Date Requested:	Analysis Requested		Preservation Codes:
City: Latham	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: NY, 12110				
Phone: 518-265-9758(Tel)	PO #: Purchase Order Requested			
Email: reepmeyerkm@cdmsmith.com	WO #:			Other:
Project Name: Brewster Village Well Field	Project #: 48017707			
Site:	SSOW#:			

Loc: 490
15142(

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - (MOD) TCL list OLM04.2	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
1 TH-6-20180502 (MS)MSD	5/2/18	940	G	Water		X	X	9	
2 DGC-9I-20180502	5/2/18	1415	G	Water			X	3	
3 TH-7-20180502	5/2/18	1035	G	Water			X	3	
4 FIELD BLANK-20180502	5/2/18	1420	G	Water			X	3	
5 DGC-17I-20180502	5/2/18	1320	G	Water			X	3	
6 DGC-16I-20180502	5/2/18	1230	G	Water			X	3	
7 TRIP BLANK	4/26/18			Water			X	3	
8 DGC-7I-20180502	5/2/18	1400	G	Water			X	3	
9 DGC-1I-20180502	5/2/18	845	G	Water			X	3	
10 CDM-2-20180502	5/2/18	1050	G	Water			X	3	
11 TH-11A-20180502	5/2/18	1000	G	Water			X	3	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:				
Relinquished by:	Date/Time: 5/3/18 1337	Company	Received by:	Date/Time: 5-3-18 1337	Company TA		
Relinquished by: TIM	Date/Time: 5-3-18 1800	Company TM Albany	Received by:	Date/Time: 5-4-18 0130	Company TAL		
Relinquished by:	Date/Time: 5/4/18 1620	Company TAL	Received by:	Date/Time: 5-7-18 830	Company TA-MAS		
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 5.5	1.5	#1		

Ver: 08/04/2016

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TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

480501-Alb

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler:	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No: 480-112564-26123.2
Client Contact: Katelyn Reepmeyer	Phone:	E-Mail: becky.mason@testamericainc.com		Page: Page 2 of 3
Company: CDM Smith, Inc.				Job #:
Address: 11 British American Blvd Suite 200	Due Date Requested:	Analysis Requested		Preservation Codes:
City: Latham	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: NY, 12110				Other:
Phone: 518-265-9758(Tel)	PO #: Purchase Order Requested			
Email: reepmeyerkm@cdmsmith.com	WO #:			
Project Name: Brewster Village Well Field	Project #: 48017707			
Site:	SSOW#:			

Loc: 490
15142(

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - (MOD) TCL list OLM04.2	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
12 DGC-12IA-20180502	5/2/18	835	G	Water			X	3	
13 DGC-6I-20180502	5/2/18	1300	G	Water			X	3	
14 CDM-3-20180502	5/2/18	1130	G	Water			X	3	
15 ERT-EW5-20180502	5/2/18	1505	G	Water			X	3	
16 FD-02-20180502	5/2/18	1508	G	Water			X	3	
17 ERT-EW6-20180502	5/2/18	1500	G	Water			X	3	
18 ERT-EW7-20180502	5/2/18	1500	G	Water			X	3	
19 GMS-04-20180503	5/3/18	810	G	Water			X	3	
20 DGC-14I-20180503	5/3/18	900	G	Water			X	3	
21 DGC-18I-20180503(MS/MSD)	5/3/18	945	G	Water			X	9	
22 ERT-6I-20180503	5/3/18	810	G	Water			X	3	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/3/18 1337			5-3-18 1337	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
		5-3-18 1800	TA Albany		5-4-18 0130	TAS
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
		5/4/18 1620	TAS		5-7-18 830	TA Buff

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 5.5 1.5 #1

Ver: 08/04/2016

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5/21/2018 (Rev. 1)

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler:	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No: 480-112564-26123.4
Client Contact: Katelyn Reepmeyer	Phone:	E-Mail: becky.mason@testamericainc.com		Page: Page 4 of 4
Company: CDM Smith, Inc.				Job #:
Address: 11 British American Blvd Suite 200	Due Date Requested:			
City: Latham	TAT Requested (days):			
State, Zip: NY, 12110				
Phone: 518-265-9758(Tel)	PO #: Purchase Order Requested			
Email: reepmeyerkm@cdmsmith.com	WO #:			
Project Name: Brewster Village Well Field	Project #: 48017707			
Site:	SSOW#:			

Analysis Requested

Loc: 490
15142(
#1
A

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - (MOD) TCL list OLM04.2	Total Number of containers	Special Instructions/Note:
Preservation Code:							A		
ERT-15-20180503 23	5/3/18	910	G	Water			X	3	
FD-02-20180503 24	5/3/18	915	G	Water			X	3	
DGC-3I-20180503 25	5/3/18	1010	G				X	3	
FieldBlank-2-20180503 26	5/3/18	1030	G				X	3	
DGC-19I-20180503 27	5/3/18	1045	G				X	3	
TRIP BLANK 28	4/26/18	-					X		
TRIP BLANK 29	4/26/18	-					X		

5-3-18

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Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/3/18 1337			5-3-18 1337	TAL
2	Relinquished by: Tim Knollmeyer	Date/Time: 5-3-18 1800	Company TA Albany	Received by:	5-4-18 0130	TAB
3	Relinquished by:	Date/Time: 5/4/18 1630	Company TAB	Received by:	Date/Time: 5-4-18 830	Company TAL NAS

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 5.5 1.5 #1

Ver: 08/04/2016

Client: Village of Brewster

Job Number: 420-131297-1

Client Sample ID: Well Field

Lab Sample ID: 420-131297-1
Client Matrix: Water

Date Sampled: 01/02/2018 1300
Date Received: 01/03/2018 1025

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 01/04/2018 1405
Date Prepared: N/A

Analysis Batch: 420-117591

Instrument ID: Agilent 7890A/5975C
Lab File ID: X010410.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL	RL
Bromobenzene	0.50	U	0.50	0.50
Bromochloromethane	0.50	U	0.50	0.50
Bromomethane	0.50	U	0.50	0.50
Chlorobenzene	0.50	U	0.50	0.50
Chloroethane	0.50	U	0.50	0.50
Chloromethane	0.50	U	0.50	0.50
2-Chlorotoluene	0.50	U	0.50	0.50
4-Chlorotoluene	0.50	U	0.50	0.50
Dibromomethane	0.50	U	0.50	0.50
1,2-Dichlorobenzene	0.50	U	0.50	0.50
1,3-Dichlorobenzene	0.50	U	0.50	0.50
1,4-Dichlorobenzene	0.50	U	0.50	0.50
Dichlorodifluoromethane	0.50	U	0.50	0.50
1,1-Dichloroethane	0.50	U	0.50	0.50
1,2-Dichloroethane	0.50	U	0.50	0.50
1,1-Dichloroethene	0.50	U	0.50	0.50
cis-1,2-Dichloroethene	0.92		0.50	0.50
trans-1,2-Dichloroethene	0.50	U	0.50	0.50
1,2-Dichloropropane	0.50	U	0.50	0.50
1,3-Dichloropropane	0.50	U	0.50	0.50
2,2-Dichloropropane	0.50	U	0.50	0.50
Bromodichloromethane	0.50	U	0.50	0.50
1,1-Dichloropropene	0.50	U	0.50	0.50
cis-1,3-Dichloropropene	0.50	U	0.50	0.50
trans-1,3-Dichloropropene	0.50	U	0.50	0.50
Bromoform	0.50	U	0.50	0.50
Methylene Chloride	0.50	U	0.50	0.50
1,1,1,2-Tetrachloroethane	0.50	U	0.50	0.50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50
Chloroform	0.50	U	0.50	0.50
Tetrachloroethene	1.4		0.50	0.50
Dibromochloromethane	0.50	U	0.50	0.50
1,1,1-Trichloroethane	0.50	U	0.50	0.50
1,1,2-Trichloroethane	0.50	U	0.50	0.50
Trichloroethene	0.53		0.50	0.50
Trichlorofluoromethane	0.50	U	0.50	0.50
1,2,3-Trichloropropane	0.50	U	0.50	0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	107	70 - 128
4-Bromofluorobenzene	84	71 - 120
Toluene-d8 (Surr)	106	79 - 121

Client: Village of Brewster

Job Number: 420-131297-1

Client Sample ID: Pump House

Lab Sample ID: 420-131297-2
Client Matrix: Water

Date Sampled: 01/02/2018 1305
Date Received: 01/03/2018 1025

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 01/04/2018 1437
Date Prepared: N/A

Analysis Batch: 420-117591

Instrument ID: Agilent 7890A/5975C
Lab File ID: X010411.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL	RL
Bromobenzene	0.50	U	0.50	0.50
Bromochloromethane	0.50	U	0.50	0.50
Bromomethane	0.50	U	0.50	0.50
Chlorobenzene	0.50	U	0.50	0.50
Chloroethane	0.50	U	0.50	0.50
Chloromethane	0.50	U	0.50	0.50
2-Chlorotoluene	0.50	U	0.50	0.50
4-Chlorotoluene	0.50	U	0.50	0.50
Dibromomethane	0.50	U	0.50	0.50
1,2-Dichlorobenzene	0.50	U	0.50	0.50
1,3-Dichlorobenzene	0.50	U	0.50	0.50
1,4-Dichlorobenzene	0.50	U	0.50	0.50
Dichlorodifluoromethane	0.50	U	0.50	0.50
1,1-Dichloroethane	0.50	U	0.50	0.50
1,2-Dichloroethane	0.50	U	0.50	0.50
1,1-Dichloroethene	0.50	U	0.50	0.50
cis-1,2-Dichloroethene	0.50	U	0.50	0.50
trans-1,2-Dichloroethene	0.50	U	0.50	0.50
1,2-Dichloropropane	0.50	U	0.50	0.50
1,3-Dichloropropane	0.50	U	0.50	0.50
2,2-Dichloropropane	0.50	U	0.50	0.50
1,1-Dichloropropene	0.50	U	0.50	0.50
Bromodichloromethane	5.0		0.50	0.50
cis-1,3-Dichloropropene	0.50	U	0.50	0.50
trans-1,3-Dichloropropene	0.50	U	0.50	0.50
Bromoform	0.50	U	0.50	0.50
Methylene Chloride	0.50	U	0.50	0.50
1,1,1,2-Tetrachloroethane	0.50	U	0.50	0.50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50
Chloroform	7.1		0.50	0.50
Tetrachloroethene	0.50	U	0.50	0.50
Dibromochloromethane	2.4		0.50	0.50
1,1,1-Trichloroethane	0.50	U	0.50	0.50
1,1,2-Trichloroethane	0.50	U	0.50	0.50
Trichloroethene	0.50	U	0.50	0.50
Trichlorofluoromethane	0.50	U	0.50	0.50
1,2,3-Trichloropropane	0.50	U	0.50	0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	107	70 - 128
4-Bromofluorobenzene	83	71 - 120
Toluene-d8 (Surr)	109	79 - 121

Client: Village of Brewster

Job Number: 420-134888-1

Client Sample ID: Well Field

Lab Sample ID: 420-134888-1
Client Matrix: Drinking Water

Date Sampled: 04/03/2018 1300
Date Received: 04/04/2018 1025

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 04/07/2018 0147
Date Prepared: N/A

Analysis Batch: 420-120088

Instrument ID: Agilent 7890A/5975C
Lab File ID: X040632.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL	RL
Bromobenzene	0.50	U	0.50	0.50
Bromochloromethane	0.50	U	0.50	0.50
Bromomethane	0.50	U	0.50	0.50
Chlorobenzene	0.50	U	0.50	0.50
Chloroethane	0.50	U	0.50	0.50
Chloromethane	0.50	U	0.50	0.50
2-Chlorotoluene	0.50	U	0.50	0.50
4-Chlorotoluene	0.50	U	0.50	0.50
Dibromomethane	0.50	U	0.50	0.50
1,2-Dichlorobenzene	0.50	U	0.50	0.50
1,3-Dichlorobenzene	0.50	U	0.50	0.50
1,4-Dichlorobenzene	0.50	U	0.50	0.50
Dichlorodifluoromethane	0.50	U	0.50	0.50
1,1-Dichloroethane	0.50	U	0.50	0.50
1,2-Dichloroethane	0.50	U	0.50	0.50
1,1-Dichloroethene	0.50	U	0.50	0.50
cis-1,2-Dichloroethene	1.9		0.50	0.50
trans-1,2-Dichloroethene	0.50	U	0.50	0.50
1,2-Dichloropropane	0.50	U	0.50	0.50
1,3-Dichloropropane	0.50	U	0.50	0.50
2,2-Dichloropropane	0.50	U	0.50	0.50
1,1-Dichloropropene	0.50	U	0.50	0.50
Bromodichloromethane	0.50	U	0.50	0.50
cis-1,3-Dichloropropene	0.50	U	0.50	0.50
trans-1,3-Dichloropropene	0.50	U	0.50	0.50
Bromoform	0.50	U	0.50	0.50
Methylene Chloride	0.50	U	0.50	0.50
1,1,1,2-Tetrachloroethane	0.50	U	0.50	0.50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50
Chloroform	0.54		0.50	0.50
Tetrachloroethene	1.2		0.50	0.50
Dibromochloromethane	0.50	U	0.50	0.50
1,1,1-Trichloroethane	0.50	U	0.50	0.50
1,1,2-Trichloroethane	0.50	U	0.50	0.50
Trichloroethene	0.57		0.50	0.50
Trichlorofluoromethane	0.50	U	0.50	0.50
1,2,3-Trichloropropane	0.50	U	0.50	0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	101	70 - 128
4-Bromofluorobenzene	93	71 - 120
Toluene-d8 (Surr)	97	79 - 121

Client: Village of Brewster

Job Number: 420-134888-1

Client Sample ID: Pump House

Lab Sample ID: 420-134888-2
Client Matrix: Drinking Water

Date Sampled: 04/03/2018 1305
Date Received: 04/04/2018 1025

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 04/07/2018 0219
Date Prepared: N/A

Analysis Batch: 420-120088

Instrument ID: Agilent 7890A/5975C
Lab File ID: X040633.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL	RL
Bromobenzene	0.50	U	0.50	0.50
Bromochloromethane	0.50	U	0.50	0.50
Bromomethane	0.50	U	0.50	0.50
Chlorobenzene	0.50	U	0.50	0.50
Chloroethane	0.50	U	0.50	0.50
Chloromethane	0.50	U	0.50	0.50
2-Chlorotoluene	0.50	U	0.50	0.50
4-Chlorotoluene	0.50	U	0.50	0.50
Dibromomethane	0.50	U	0.50	0.50
1,2-Dichlorobenzene	0.50	U	0.50	0.50
1,3-Dichlorobenzene	0.50	U	0.50	0.50
1,4-Dichlorobenzene	0.50	U	0.50	0.50
Dichlorodifluoromethane	0.50	U	0.50	0.50
1,1-Dichloroethane	0.50	U	0.50	0.50
1,2-Dichloroethane	0.50	U	0.50	0.50
1,1-Dichloroethene	0.50	U	0.50	0.50
cis-1,2-Dichloroethene	0.64		0.50	0.50
trans-1,2-Dichloroethene	0.50	U	0.50	0.50
1,2-Dichloropropane	0.50	U	0.50	0.50
1,3-Dichloropropane	0.50	U	0.50	0.50
2,2-Dichloropropane	0.50	U	0.50	0.50
1,1-Dichloropropene	0.50	U	0.50	0.50
Bromodichloromethane	5.9		0.50	0.50
cis-1,3-Dichloropropene	0.50	U	0.50	0.50
trans-1,3-Dichloropropene	0.50	U	0.50	0.50
Bromoform	0.50	U	0.50	0.50
Methylene Chloride	0.50	U	0.50	0.50
1,1,1,2-Tetrachloroethane	0.50	U	0.50	0.50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50
Chloroform	6.4		0.50	0.50
Tetrachloroethene	0.50	U	0.50	0.50
Dibromochloromethane	3.3		0.50	0.50
1,1,1-Trichloroethane	0.50	U	0.50	0.50
1,1,2-Trichloroethane	0.50	U	0.50	0.50
Trichloroethene	0.50	U	0.50	0.50
Trichlorofluoromethane	0.50	U	0.50	0.50
1,2,3-Trichloropropane	0.50	U	0.50	0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	99	70 - 128
4-Bromofluorobenzene	91	71 - 120
Toluene-d8 (Surr)	98	79 - 121

Client: Village of Brewster

Job Number: 420-139308-1
Sdg Number: Village

Client Sample ID: Well Field

Lab Sample ID: 420-139308-1
Client Matrix: Drinking Water

Date Sampled: 07/09/2018 1255
Date Received: 07/10/2018 1050

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 07/11/2018 1349
Date Prepared: N/A

Analysis Batch: 420-122775

Instrument ID: HP
Lab File ID: V071109.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL	RL
Bromobenzene	0.50	U	0.50	0.50
Bromochloromethane	0.50	U	0.50	0.50
Bromomethane	0.50	U	0.50	0.50
Chlorobenzene	0.50	U	0.50	0.50
Chloroethane	0.50	U	0.50	0.50
Chloromethane	0.50	U	0.50	0.50
2-Chlorotoluene	0.50	U	0.50	0.50
4-Chlorotoluene	0.50	U	0.50	0.50
Dibromomethane	0.50	U	0.50	0.50
1,2-Dichlorobenzene	0.50	U	0.50	0.50
1,3-Dichlorobenzene	0.50	U	0.50	0.50
1,4-Dichlorobenzene	0.50	U	0.50	0.50
Dichlorodifluoromethane	0.50	U	0.50	0.50
1,1-Dichloroethane	0.50	U	0.50	0.50
1,2-Dichloroethane	0.50	U	0.50	0.50
1,1-Dichloroethene	0.50	U	0.50	0.50
cis-1,2-Dichloroethene	2.9		0.50	0.50
trans-1,2-Dichloroethene	0.50	U	0.50	0.50
1,2-Dichloropropane	0.50	U	0.50	0.50
1,3-Dichloropropane	0.50	U	0.50	0.50
2,2-Dichloropropane	0.50	U	0.50	0.50
Bromodichloromethane	0.50	U	0.50	0.50
1,1-Dichloropropene	0.50	U	0.50	0.50
cis-1,3-Dichloropropene	0.50	U	0.50	0.50
trans-1,3-Dichloropropene	0.50	U	0.50	0.50
Bromoform	0.50	U	0.50	0.50
Methylene Chloride	0.50	U	0.50	0.50
1,1,1,2-Tetrachloroethane	0.50	U	0.50	0.50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50
Chloroform	0.50	U	0.50	0.50
Tetrachloroethene	1.6		0.50	0.50
Dibromochloromethane	0.50	U	0.50	0.50
1,1,1-Trichloroethane	0.50	U	0.50	0.50
1,1,2-Trichloroethane	0.50	U	0.50	0.50
Trichloroethene	0.72		0.50	0.50
Trichlorofluoromethane	0.50	U	0.50	0.50
1,2,3-Trichloropropane	0.50	U	0.50	0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	119	70 - 128
4-Bromofluorobenzene	103	71 - 120
Toluene-d8 (Surr)	99	79 - 121

Client: Village of Brewster

Job Number: 420-139308-1
Sdg Number: Village

Client Sample ID: Pump House

Lab Sample ID: 420-139308-2
Client Matrix: Drinking Water

Date Sampled: 07/09/2018 1300
Date Received: 07/10/2018 1050

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 07/11/2018 1424
Date Prepared: N/A

Analysis Batch: 420-122775

Instrument ID: HP
Lab File ID: V071110.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL	RL
Bromobenzene	0.50	U	0.50	0.50
Bromochloromethane	0.50	U	0.50	0.50
Bromomethane	0.50	U	0.50	0.50
Chlorobenzene	0.50	U	0.50	0.50
Chloroethane	0.50	U	0.50	0.50
Chloromethane	0.50	U	0.50	0.50
2-Chlorotoluene	0.50	U	0.50	0.50
4-Chlorotoluene	0.50	U	0.50	0.50
Dibromomethane	0.50	U	0.50	0.50
1,2-Dichlorobenzene	0.50	U	0.50	0.50
1,3-Dichlorobenzene	0.50	U	0.50	0.50
1,4-Dichlorobenzene	0.50	U	0.50	0.50
Dichlorodifluoromethane	0.50	U	0.50	0.50
1,1-Dichloroethane	0.50	U	0.50	0.50
1,2-Dichloroethane	0.50	U	0.50	0.50
1,1-Dichloroethene	0.50	U	0.50	0.50
cis-1,2-Dichloroethene	1.6		0.50	0.50
trans-1,2-Dichloroethene	0.50	U	0.50	0.50
1,2-Dichloropropane	0.50	U	0.50	0.50
1,3-Dichloropropane	0.50	U	0.50	0.50
2,2-Dichloropropane	0.50	U	0.50	0.50
1,1-Dichloropropene	0.50	U	0.50	0.50
Bromodichloromethane	9.9		0.50	0.50
cis-1,3-Dichloropropene	0.50	U	0.50	0.50
trans-1,3-Dichloropropene	0.50	U	0.50	0.50
Bromoform	0.50	U	0.50	0.50
Methylene Chloride	0.50	U	0.50	0.50
1,1,1,2-Tetrachloroethane	0.50	U	0.50	0.50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50
Chloroform	13		0.50	0.50
Tetrachloroethene	0.50	U	0.50	0.50
Dibromochloromethane	3.9		0.50	0.50
1,1,1-Trichloroethane	0.50	U	0.50	0.50
1,1,2-Trichloroethane	0.50	U	0.50	0.50
Trichloroethene	0.50	U	0.50	0.50
Trichlorofluoromethane	0.50	U	0.50	0.50
1,2,3-Trichloropropane	0.50	U	0.50	0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	117	70 - 128
4-Bromofluorobenzene	102	71 - 120
Toluene-d8 (Surr)	100	79 - 121

Client: Village of Brewster

Job Number: 420-143478-1

Client Sample ID: Well Field

Lab Sample ID: 420-143478-4
Client Matrix: Drinking Water

Date Sampled: 10/01/2018 1310
Date Received: 10/02/2018 1234

524.2 Purgeable Organic Compounds in Water by GC/MS

Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 10/02/2018 1539
Date Prepared: N/A

Analysis Batch: 420-125206

Instrument ID: HP
Lab File ID: V100212.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL	RL
Bromobenzene	0.50	U	0.50	0.50
Bromochloromethane	0.50	U	0.50	0.50
Bromomethane	0.50	U	0.50	0.50
Chlorobenzene	0.50	U	0.50	0.50
Chloroethane	0.50	U	0.50	0.50
Chloromethane	0.50	U	0.50	0.50
2-Chlorotoluene	0.50	U	0.50	0.50
4-Chlorotoluene	0.50	U	0.50	0.50
Dibromomethane	0.50	U	0.50	0.50
1,2-Dichlorobenzene	0.50	U	0.50	0.50
1,3-Dichlorobenzene	0.50	U	0.50	0.50
1,4-Dichlorobenzene	0.50	U	0.50	0.50
Dichlorodifluoromethane	0.50	U	0.50	0.50
1,1-Dichloroethane	0.50	U	0.50	0.50
1,2-Dichloroethane	0.50	U	0.50	0.50
1,1-Dichloroethene	0.50	U	0.50	0.50
cis-1,2-Dichloroethene	2.9		0.50	0.50
trans-1,2-Dichloroethene	0.50	U	0.50	0.50
1,2-Dichloropropane	0.50	U	0.50	0.50
1,3-Dichloropropane	0.50	U	0.50	0.50
2,2-Dichloropropane	0.50	U	0.50	0.50
Bromodichloromethane	0.50	U	0.50	0.50
1,1-Dichloropropene	0.50	U	0.50	0.50
cis-1,3-Dichloropropene	0.50	U	0.50	0.50
trans-1,3-Dichloropropene	0.50	U	0.50	0.50
Bromoform	0.50	U	0.50	0.50
Methylene Chloride	0.50	U	0.50	0.50
1,1,1,2-Tetrachloroethane	0.50	U	0.50	0.50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50
Chloroform	0.50	U	0.50	0.50
Tetrachloroethene	2.8		0.50	0.50
Dibromochloromethane	0.50	U	0.50	0.50
1,1,1-Trichloroethane	0.50	U	0.50	0.50
1,1,2-Trichloroethane	0.50	U	0.50	0.50
Trichloroethene	0.96		0.50	0.50
Trichlorofluoromethane	0.50	U	0.50	0.50
1,2,3-Trichloropropane	0.50	U	0.50	0.50

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	121	70 - 128
4-Bromofluorobenzene	98	71 - 120
Toluene-d8 (Surr)	84	79 - 121

Client: Village of Brewster

Job Number: 420-143478-1

Client Sample ID: Pump House

Lab Sample ID: 420-143478-5
Client Matrix: Drinking Water

Date Sampled: 10/01/2018 1315
Date Received: 10/02/2018 1234

524.2 Purgeable Organic Compounds in Water by GC/MS

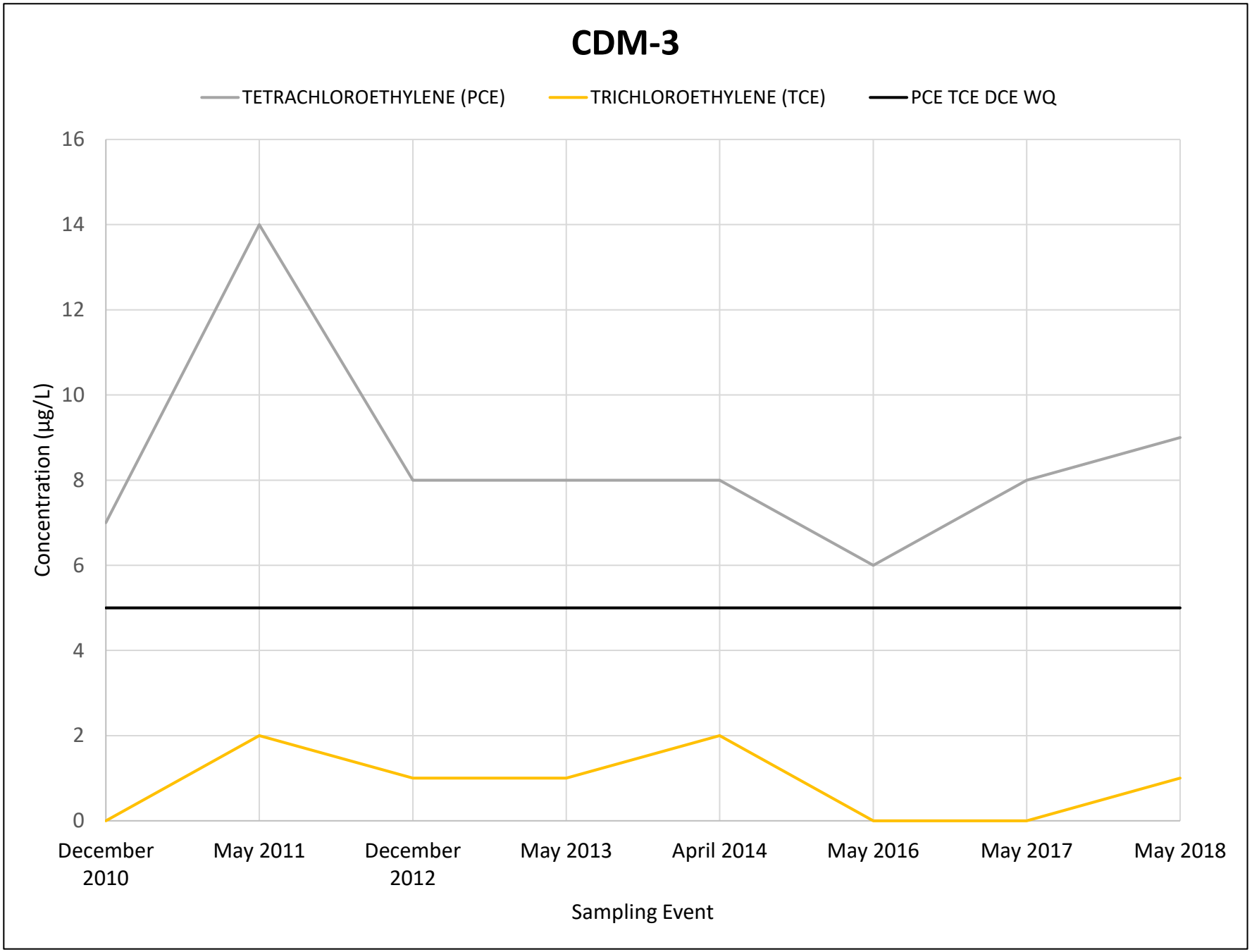
Method: 524.2
Preparation: N/A
Dilution: 1.0
Date Analyzed: 10/02/2018 1614
Date Prepared: N/A

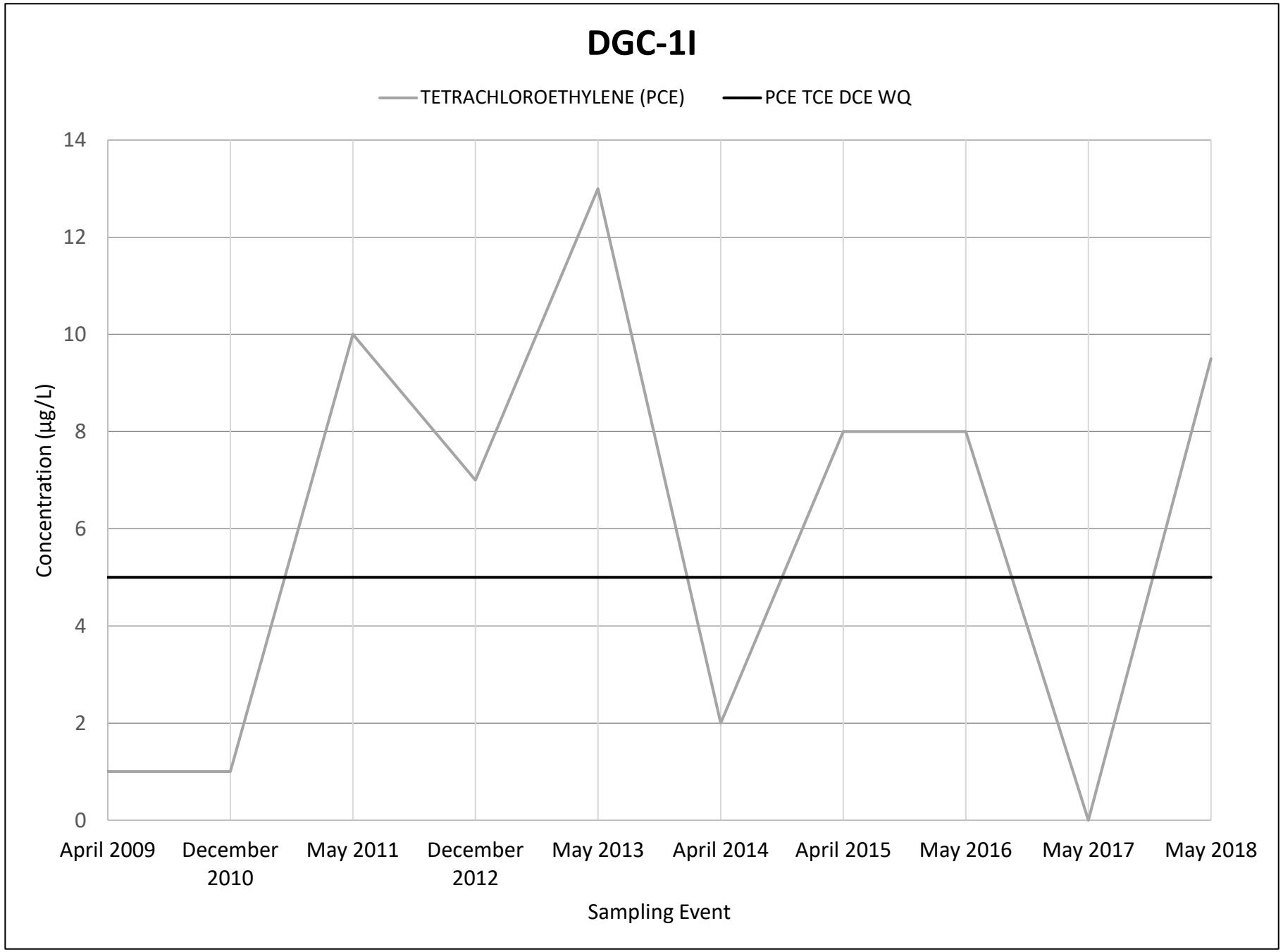
Analysis Batch: 420-125206

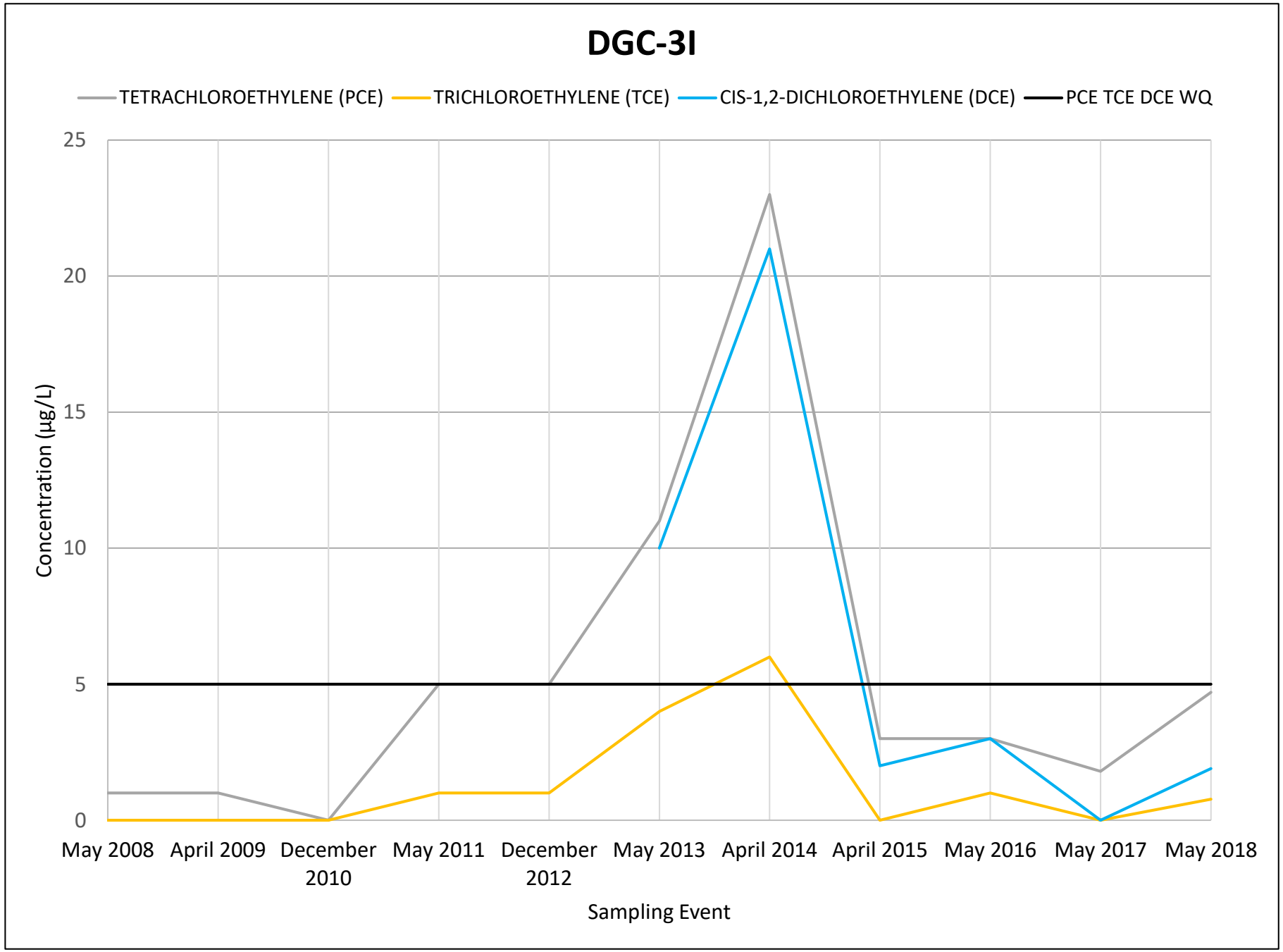
Instrument ID: HP
Lab File ID: V100213.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

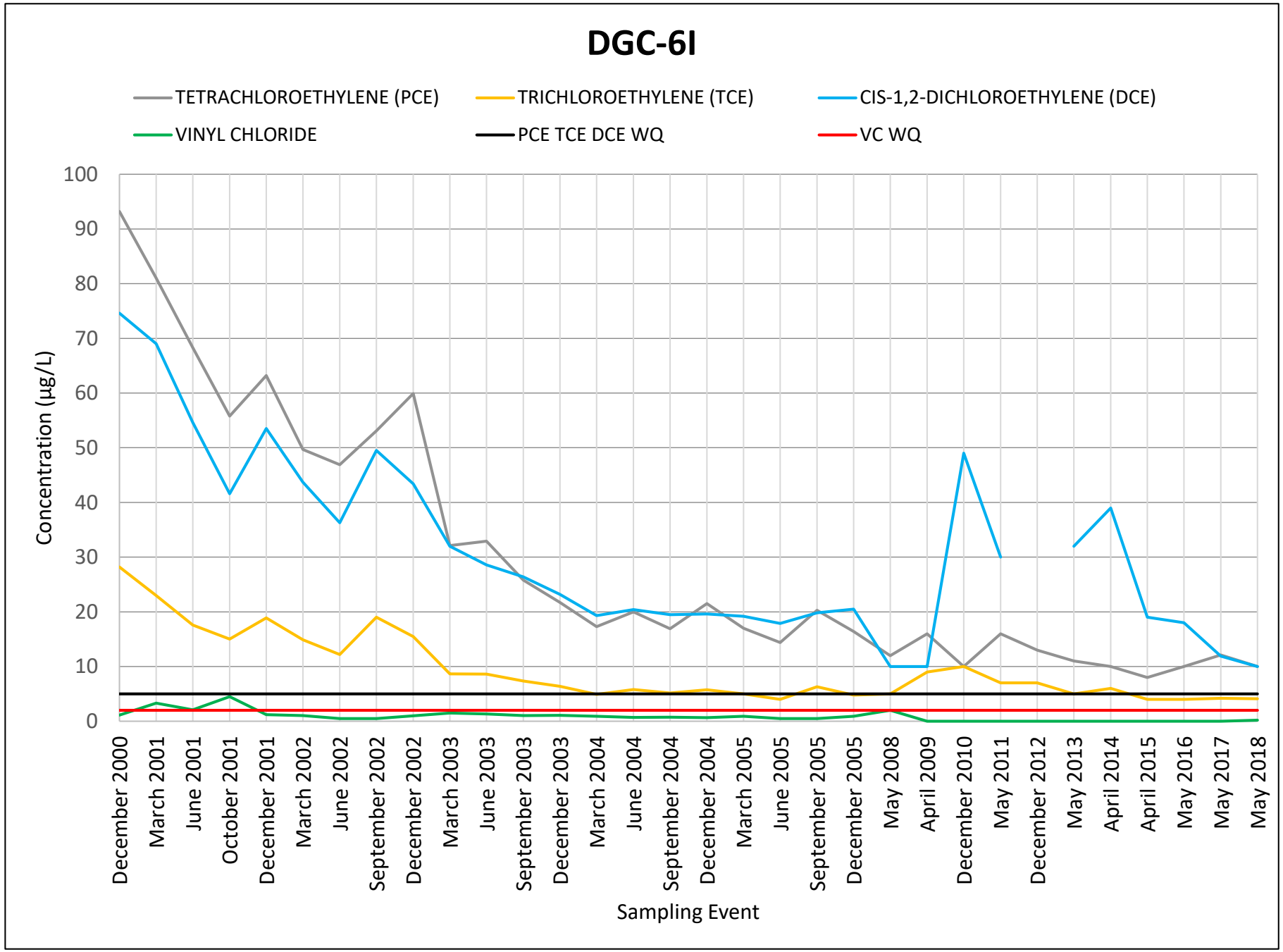
Analyte	Result (ug/L)	Qualifier	RL	RL
Bromobenzene	0.50	U	0.50	0.50
Bromochloromethane	0.50	U	0.50	0.50
Bromomethane	0.50	U	0.50	0.50
Chlorobenzene	0.50	U	0.50	0.50
Chloroethane	0.50	U	0.50	0.50
Chloromethane	0.50	U	0.50	0.50
2-Chlorotoluene	0.50	U	0.50	0.50
4-Chlorotoluene	0.50	U	0.50	0.50
Dibromomethane	0.50	U	0.50	0.50
1,2-Dichlorobenzene	0.50	U	0.50	0.50
1,3-Dichlorobenzene	0.50	U	0.50	0.50
1,4-Dichlorobenzene	0.50	U	0.50	0.50
Dichlorodifluoromethane	0.50	U	0.50	0.50
1,1-Dichloroethane	0.50	U	0.50	0.50
1,2-Dichloroethane	0.50	U	0.50	0.50
1,1-Dichloroethene	0.50	U	0.50	0.50
cis-1,2-Dichloroethene	1.6		0.50	0.50
trans-1,2-Dichloroethene	0.50	U	0.50	0.50
1,2-Dichloropropane	0.50	U	0.50	0.50
1,3-Dichloropropane	0.50	U	0.50	0.50
2,2-Dichloropropane	0.50	U	0.50	0.50
1,1-Dichloropropene	0.50	U	0.50	0.50
Bromodichloromethane	12		0.50	0.50
cis-1,3-Dichloropropene	0.50	U	0.50	0.50
trans-1,3-Dichloropropene	0.50	U	0.50	0.50
Bromoform	0.50	U	0.50	0.50
Methylene Chloride	0.50	U	0.50	0.50
1,1,1,2-Tetrachloroethane	0.50	U	0.50	0.50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50
Chloroform	17		0.50	0.50
Tetrachloroethene	0.52		0.50	0.50
Dibromochloromethane	4.8		0.50	0.50
1,1,1-Trichloroethane	0.50	U	0.50	0.50
1,1,2-Trichloroethane	0.50	U	0.50	0.50
Trichloroethene	0.50	U	0.50	0.50
Trichlorofluoromethane	0.50	U	0.50	0.50
1,2,3-Trichloropropane	0.50	U	0.50	0.50

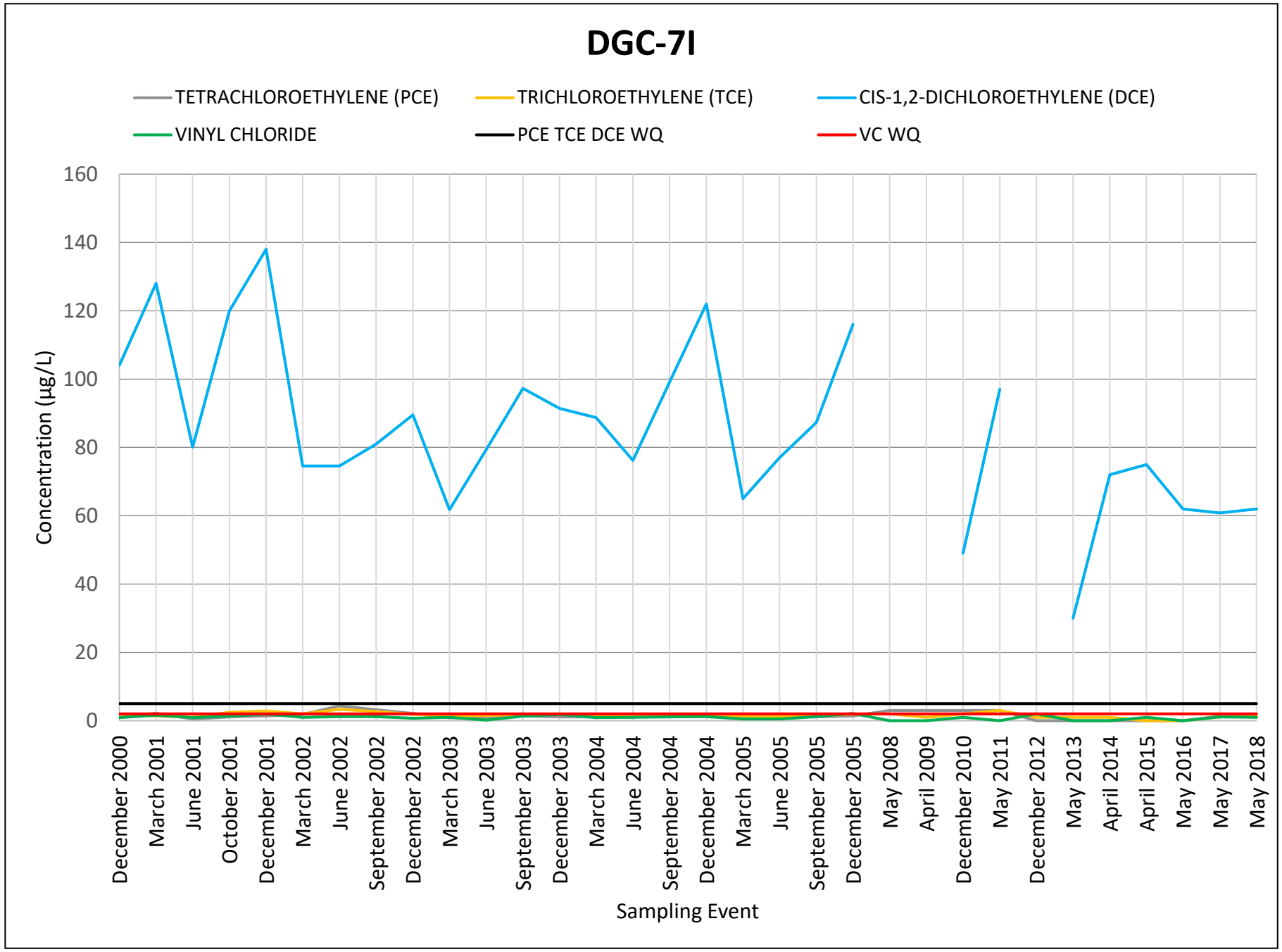
Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	120	70 - 128
4-Bromofluorobenzene	96	71 - 120
Toluene-d8 (Surr)	84	79 - 121

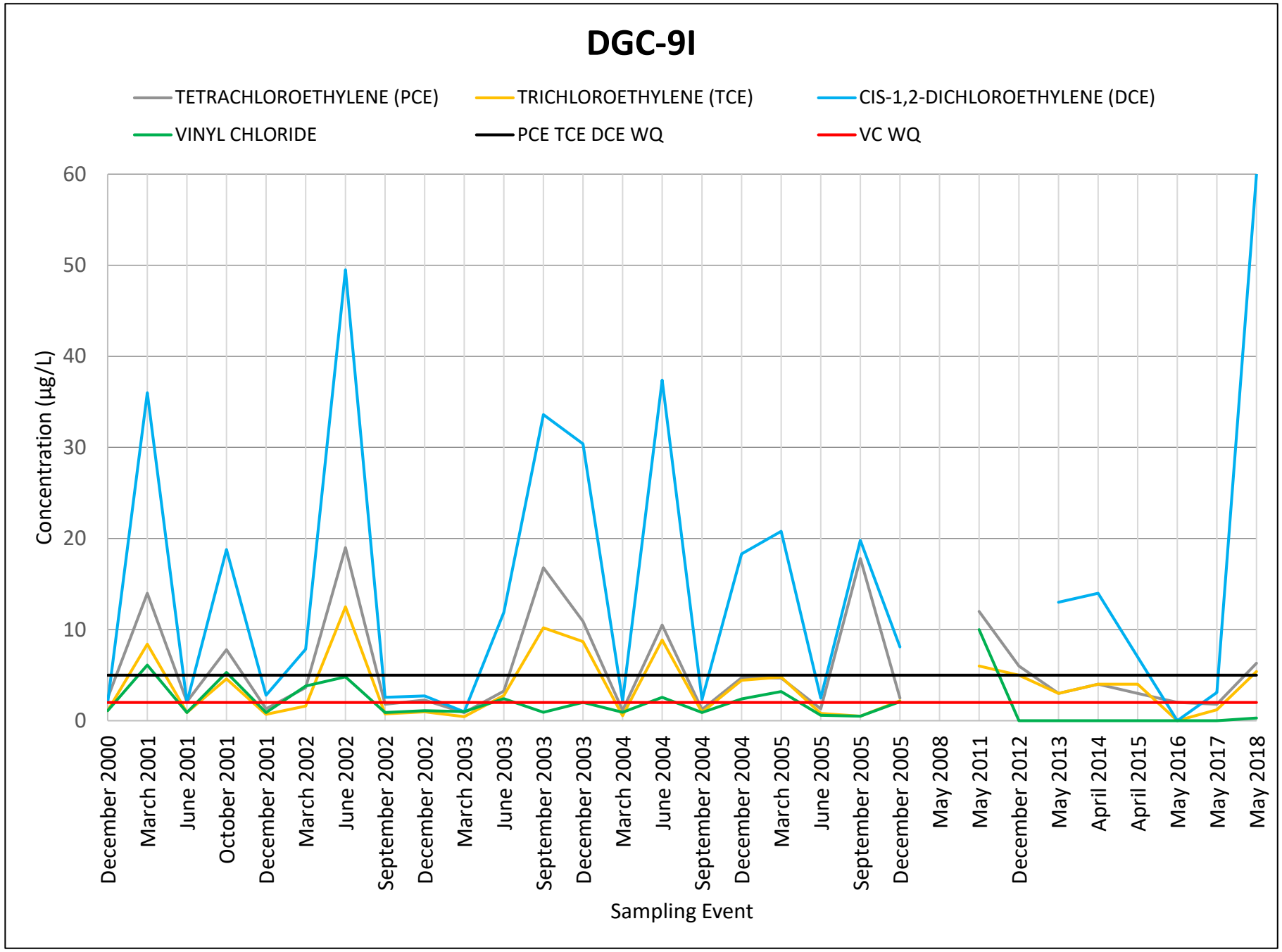

CDM-3
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
PCE TCE DCE WQ
Concentration (µg/L)
16
14
12
10
8
6
4
2
0
December 2010
May 2011
December 2012
May 2013
April 2014
May 2016
May 2017
May 2018
Sampling Event

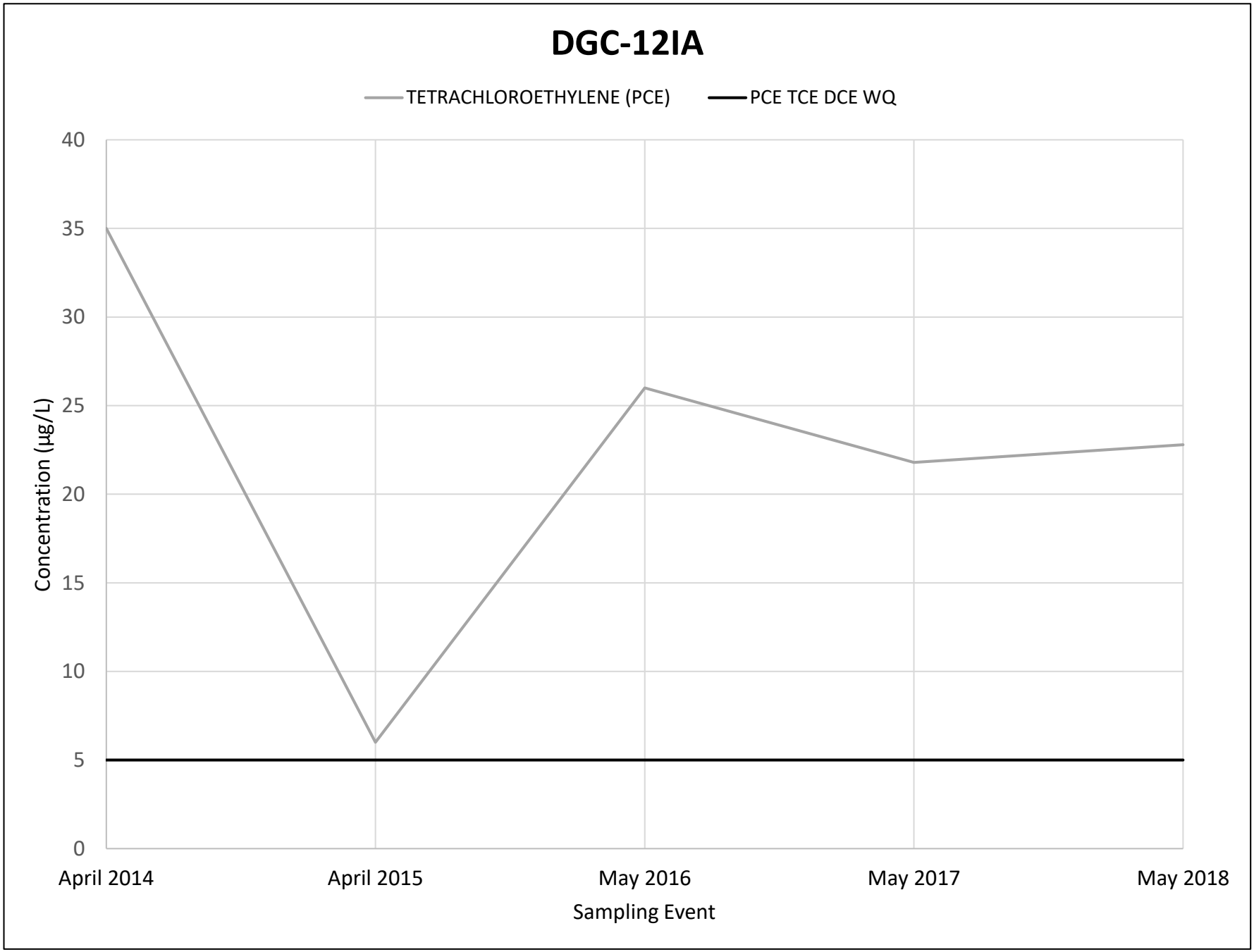

DGC-1I
TETRACHLOROETHYLENE (PCE)
PCE TCE DCE WQ
Concentration (µg/L)
14
12
10
8
6
4
2
0
April 2009
December 2010
May 2011
December 2012
May 2013
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

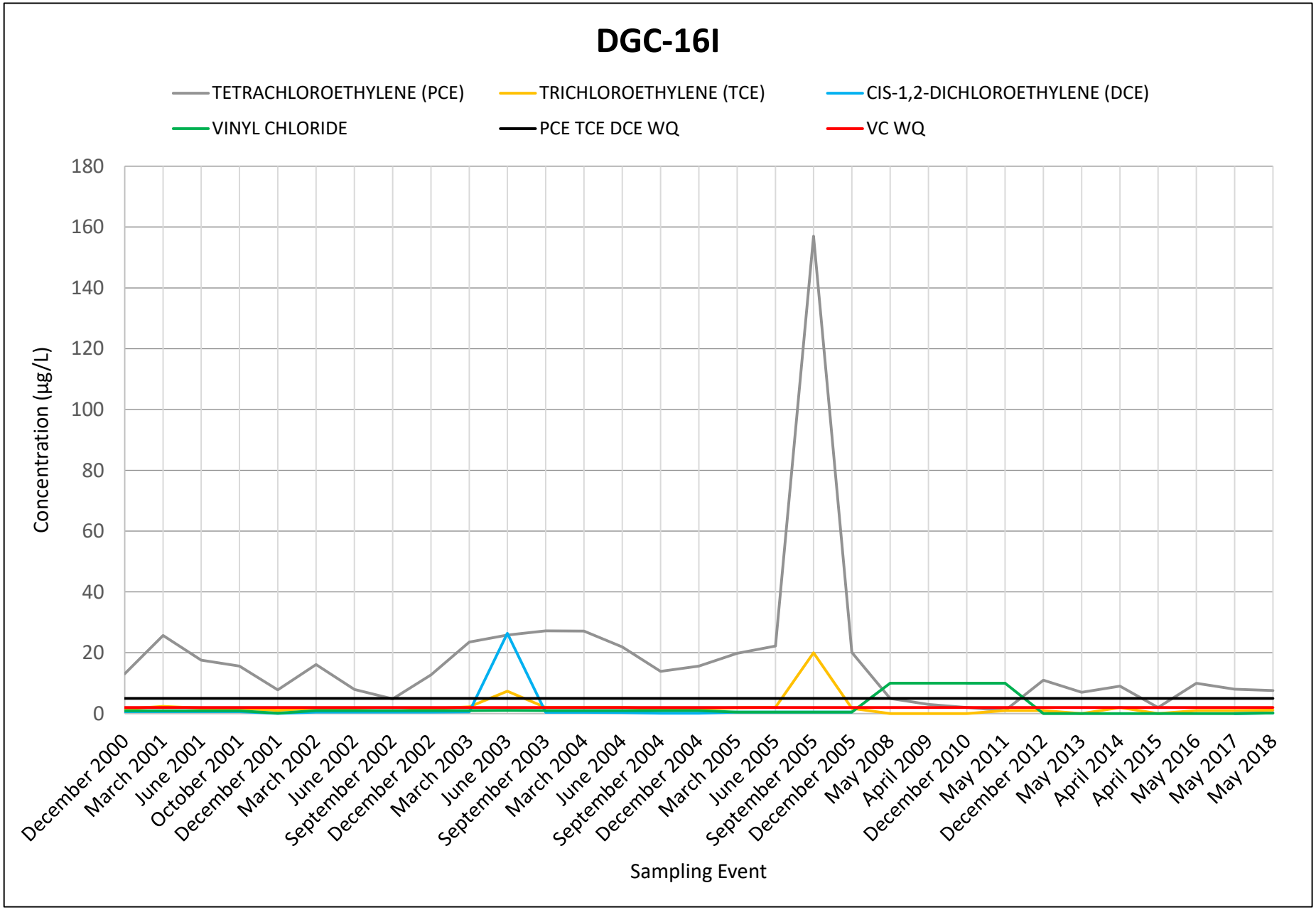

DGC-3I
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
PCE TCE DCE WQ
25
20
15
10
5
0
Concentration (µg/L)
May 2008
April 2009
December 2010
May 2011
December 2012
May 2013
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

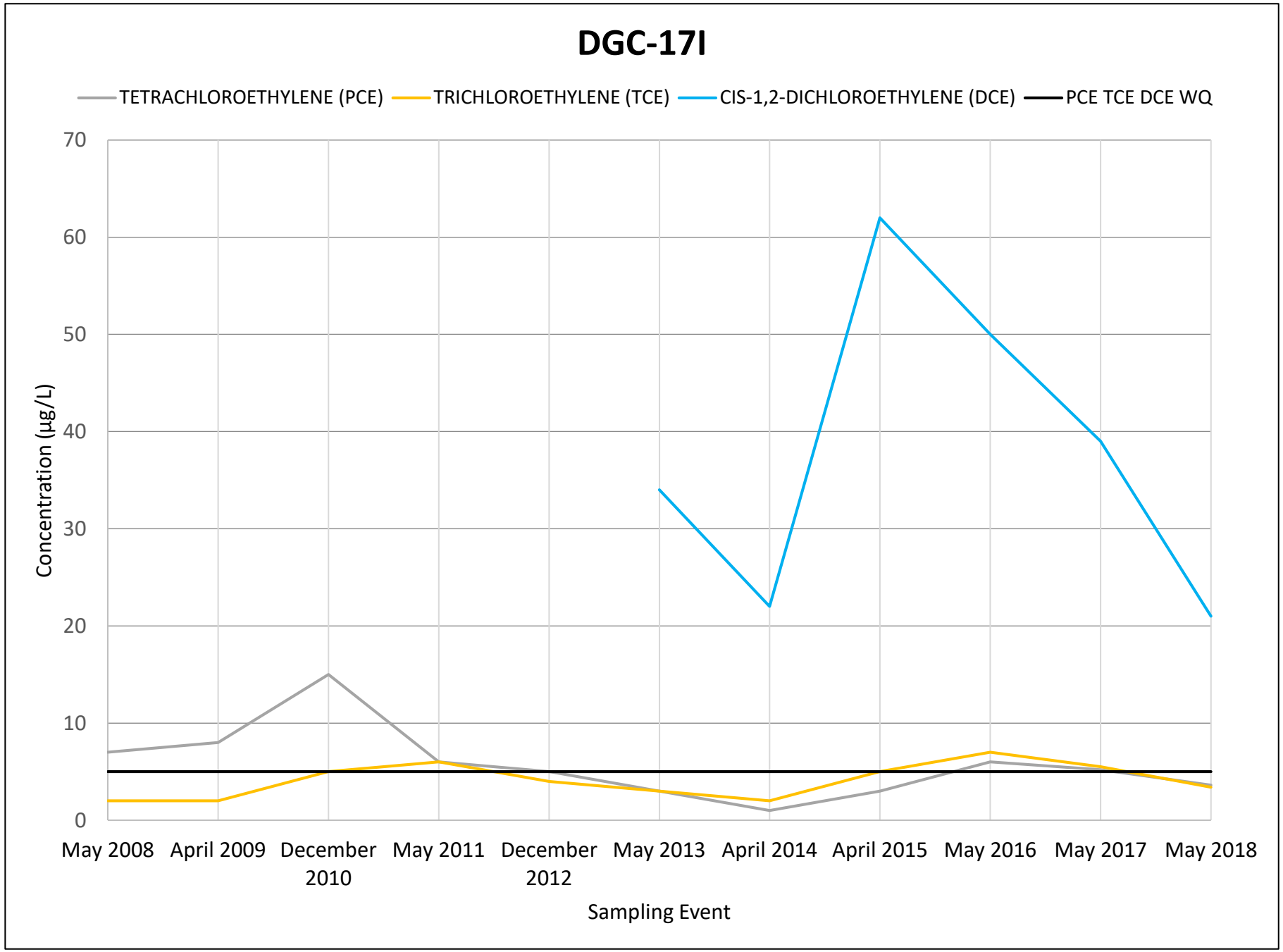

DGC-6I
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
VINYL CHLORIDE
PCE TCE DCE WQ
VC WQ
Concentration (µg/L)
100
90
80
70
60
50
40
30
20
10
0
December 2000
March 2001
June 2001
October 2001
December 2001
March 2002
June 2002
September 2002
December 2002
March 2003
June 2003
September 2003
December 2003
March 2004
June 2004
September 2004
December 2004
March 2005
June 2005
September 2005
December 2005
May 2008
April 2009
December 2010
May 2011
December 2012
May 2013
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

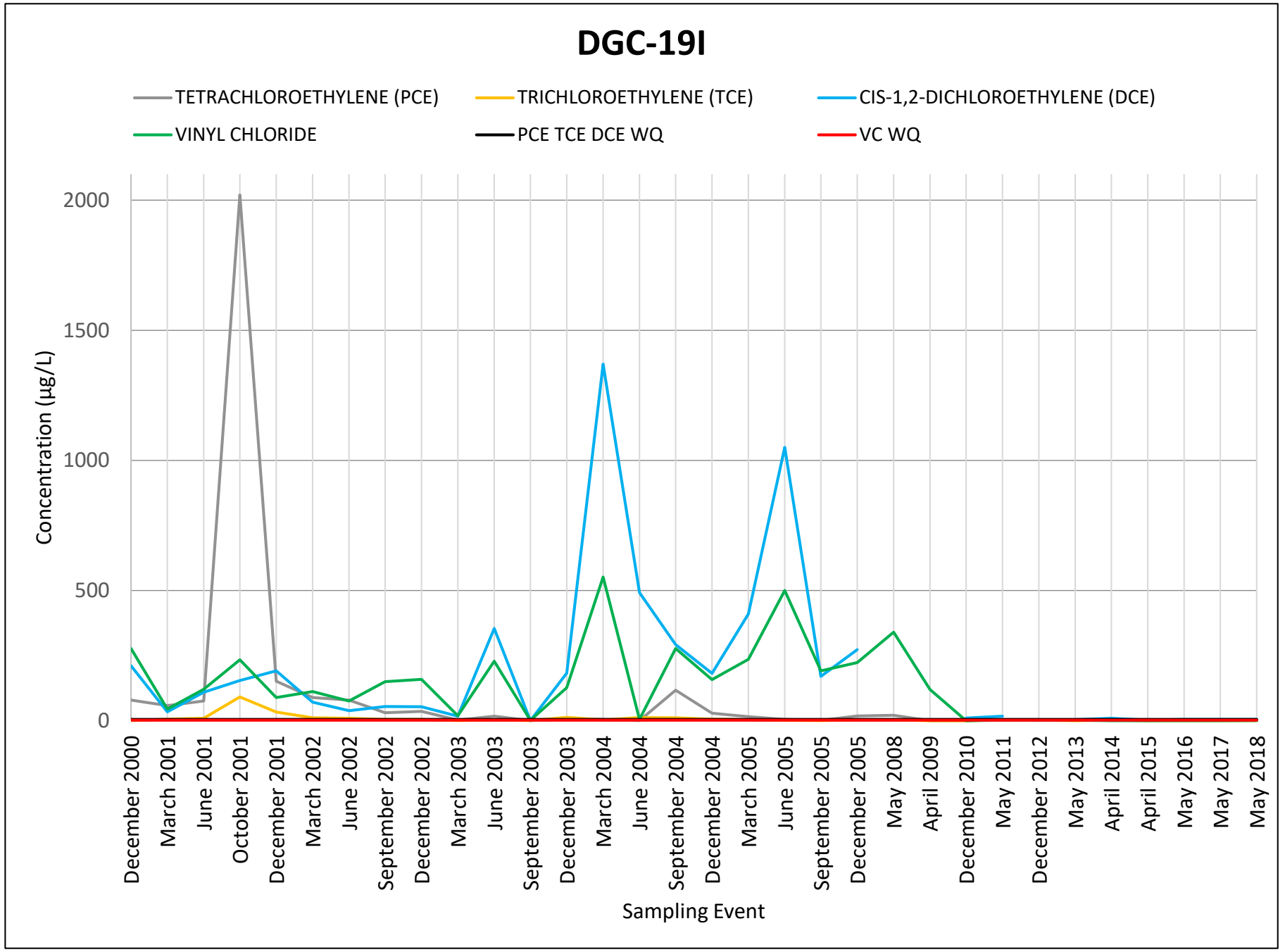

DGC-7I
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
VINYL CHLORIDE
PCE TCE DCE WQ
VC WQ
Concentration (µg/L)
160
140
120
100
80
60
40
20
0
December 2000
March 2001
June 2001
October 2001
December 2001
March 2002
June 2002
September 2002
December 2002
March 2003
June 2003
September 2003
December 2003
March 2004
June 2004
September 2004
December 2004
March 2005
June 2005
September 2005
December 2005
May 2008
April 2009
December 2010
May 2011
December 2012
May 2013
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

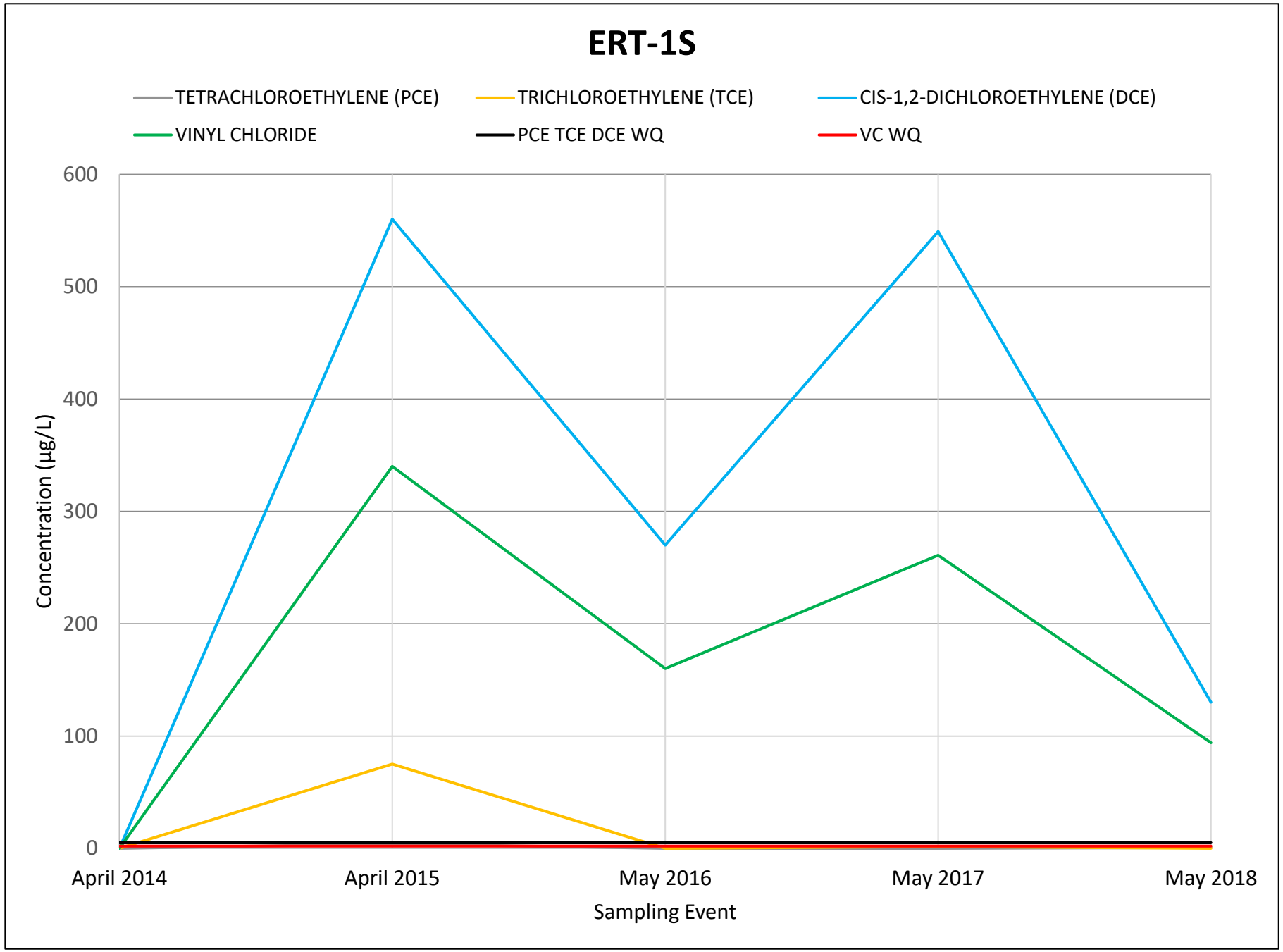

DGC-9I
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
VINYL CHLORIDE
PCE TCE DCE WQ
VC WQ
Concentration (µg/L)
60
50
40
30
20
10
0
December 2000
March 2001
June 2001
October 2001
December 2001
March 2002
June 2002
September 2002
December 2002
March 2003
June 2003
September 2003
December 2003
March 2004
June 2004
September 2004
December 2004
March 2005
June 2005
September 2005
December 2005
May 2008
May 2011
December 2012
May 2013
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

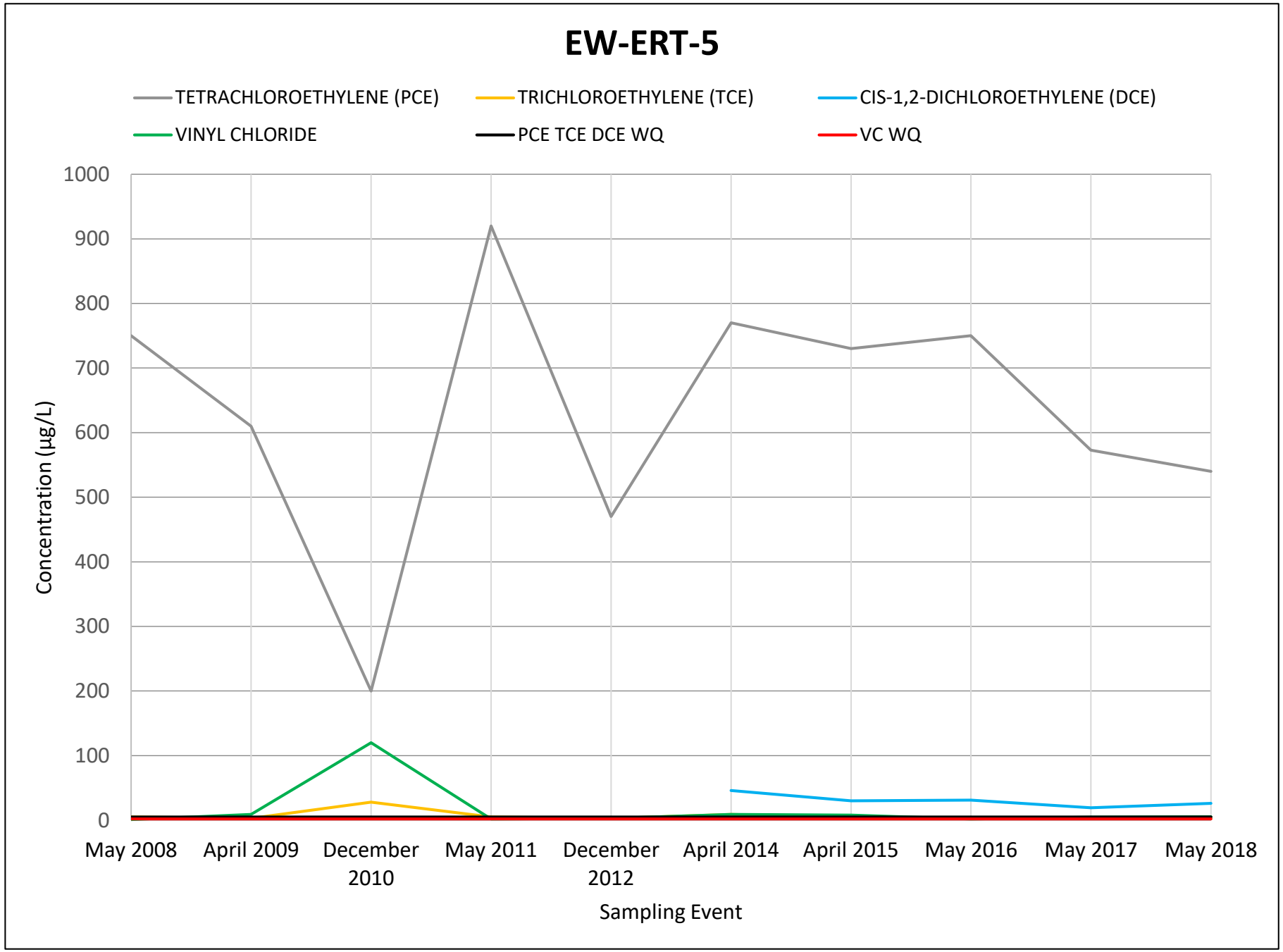

DGC-12IA
TETRACHLOROETHYLENE (PCE)
PCE TCE DCE WQ
40
35
30
25
20
15
10
5
0
Concentration (µg/L)
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

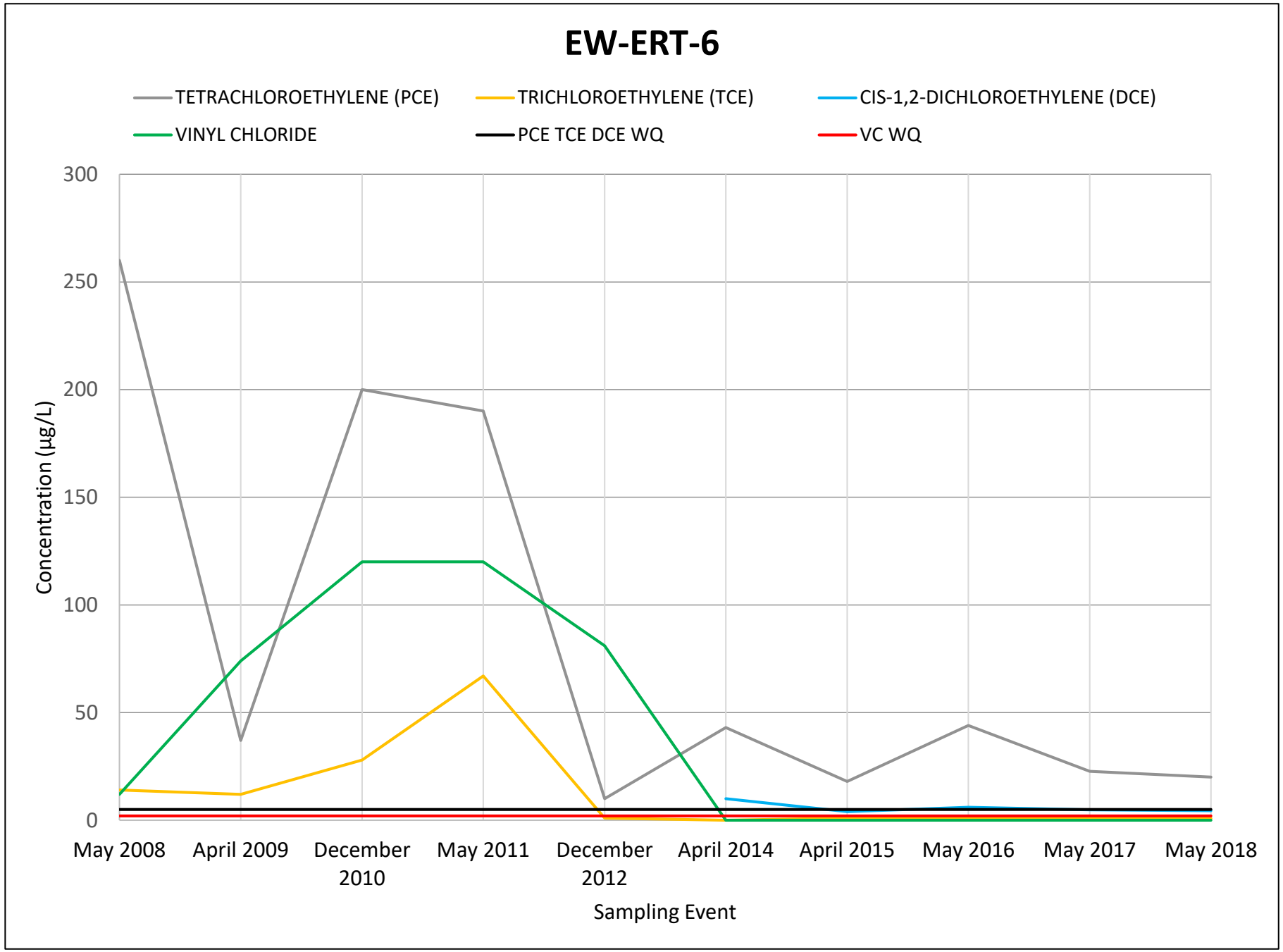

DGC-16I
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
VINYL CHLORIDE
PCE TCE DCE WQ
VC WQ
Concentration (µg/L)
180
160
140
120
100
80
60
40
20
0
December 2000
March 2001
June 2001
October 2001
December 2001
March 2002
June 2002
September 2002
December 2002
March 2003
June 2003
September 2003
March 2004
June 2004
September 2004
December 2004
March 2005
June 2005
September 2005
December 2005
May 2008
April 2009
December 2010
May 2011
December 2012
May 2013
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

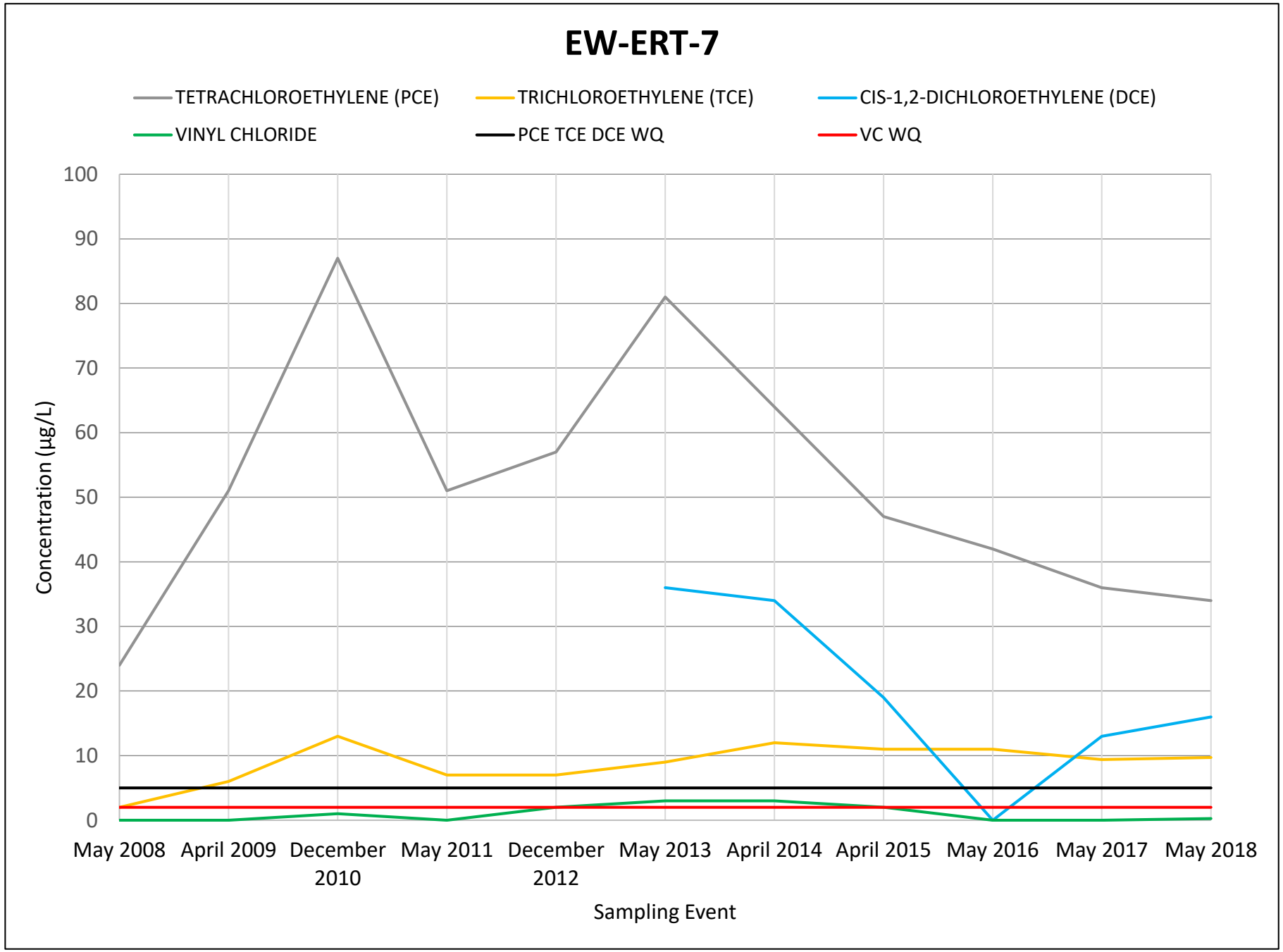

DGC-17I
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
PCE TCE DCE WQ
70
60
50
40
30
20
10
0
Concentration (µg/L)
May 2008
April 2009
December 2010
May 2011
December 2012
May 2013
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

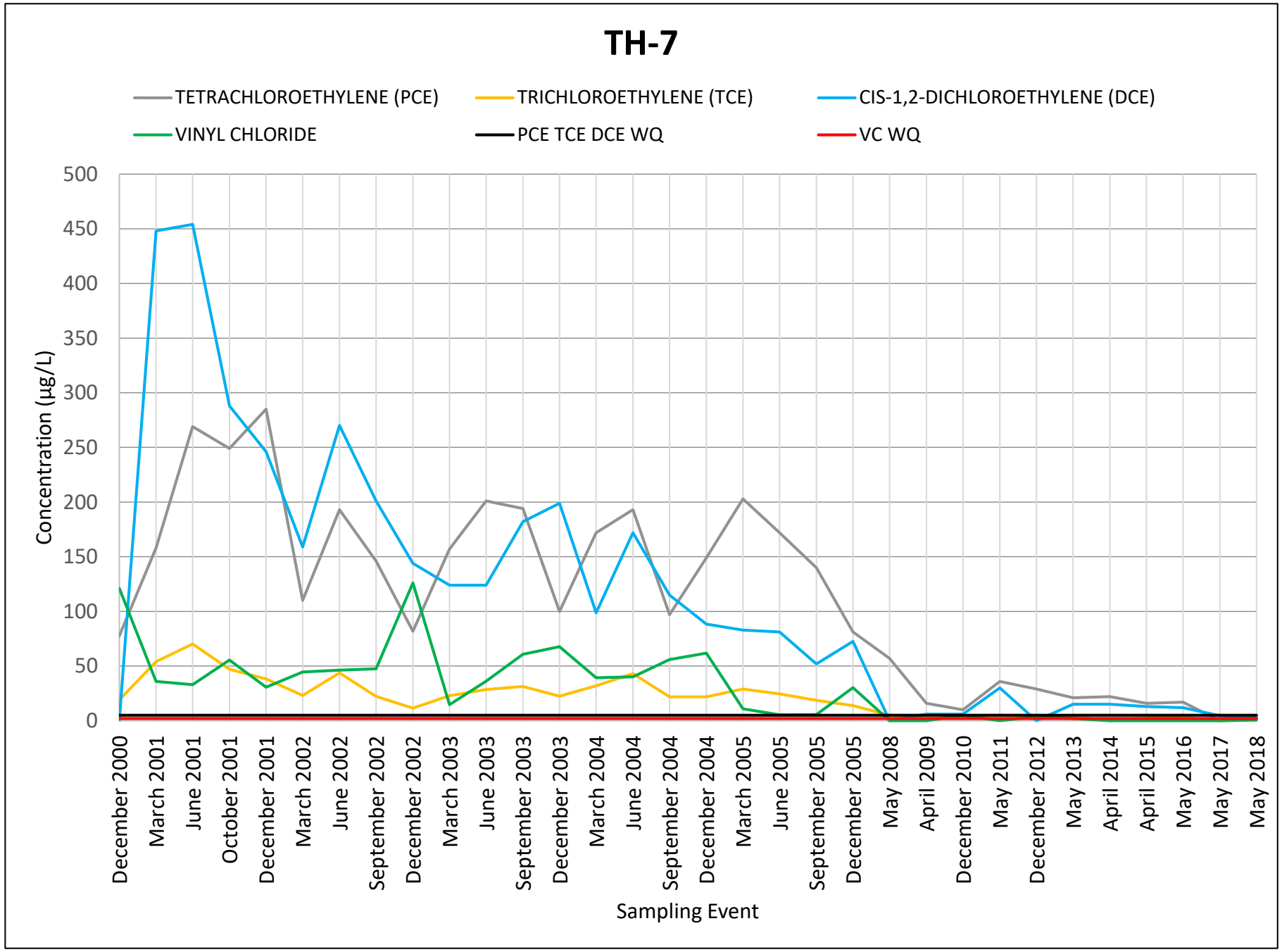

DGC-19I
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
VINYL CHLORIDE
PCE TCE DCE WQ
VC WQ
Concentration (µg/L)
2000
1500
1000
500
0
December 2000
March 2001
June 2001
October 2001
December 2001
March 2002
June 2002
September 2002
December 2002
March 2003
June 2003
September 2003
December 2003
March 2004
June 2004
September 2004
December 2004
March 2005
June 2005
September 2005
December 2005
May 2008
April 2009
December 2010
May 2011
December 2012
May 2013
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

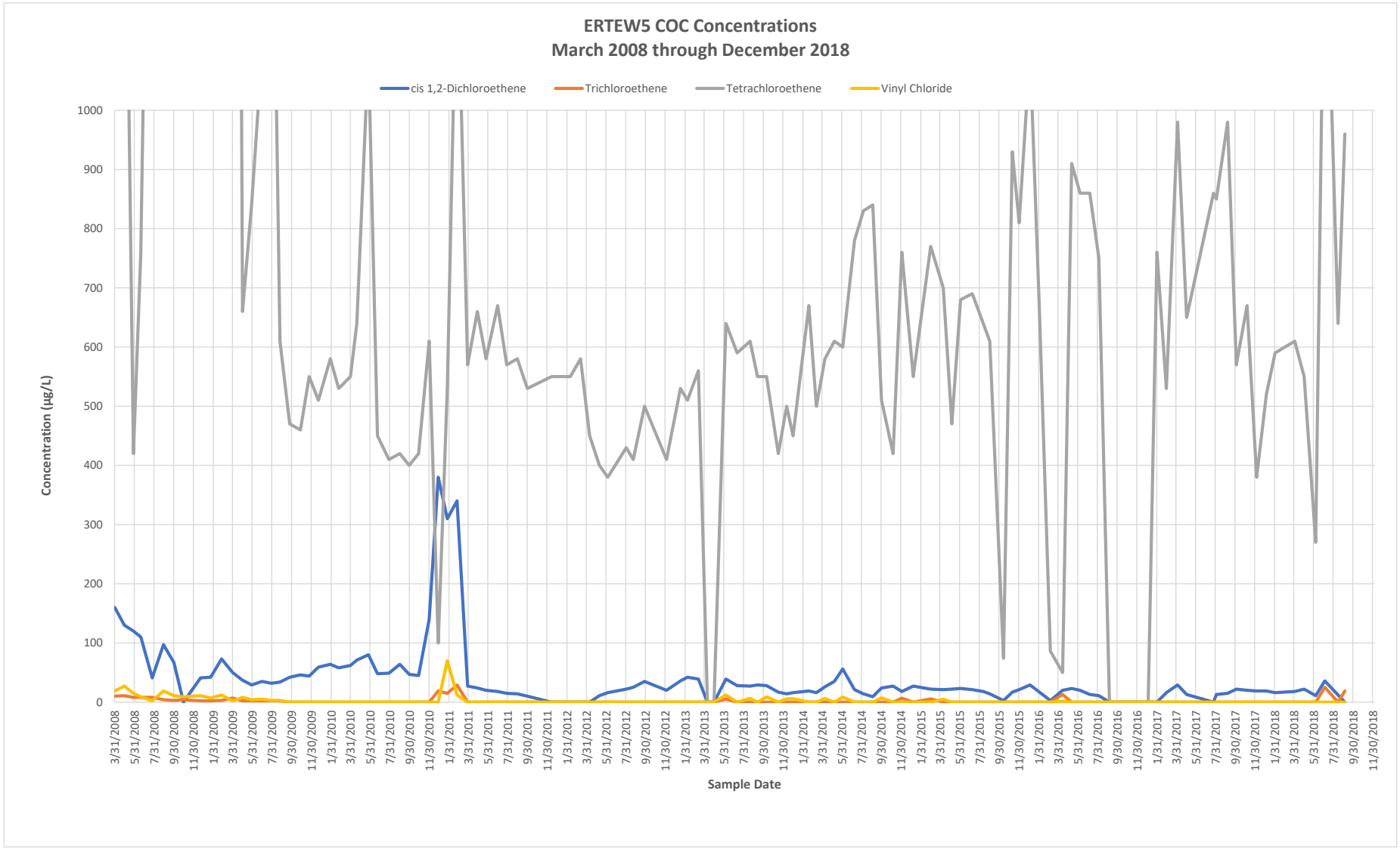

ERT-1S
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
VINYL CHLORIDE
PCE TCE DCE WQ
VC WQ
600
500
400
300
200
100
0
Concentration (µg/L)
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

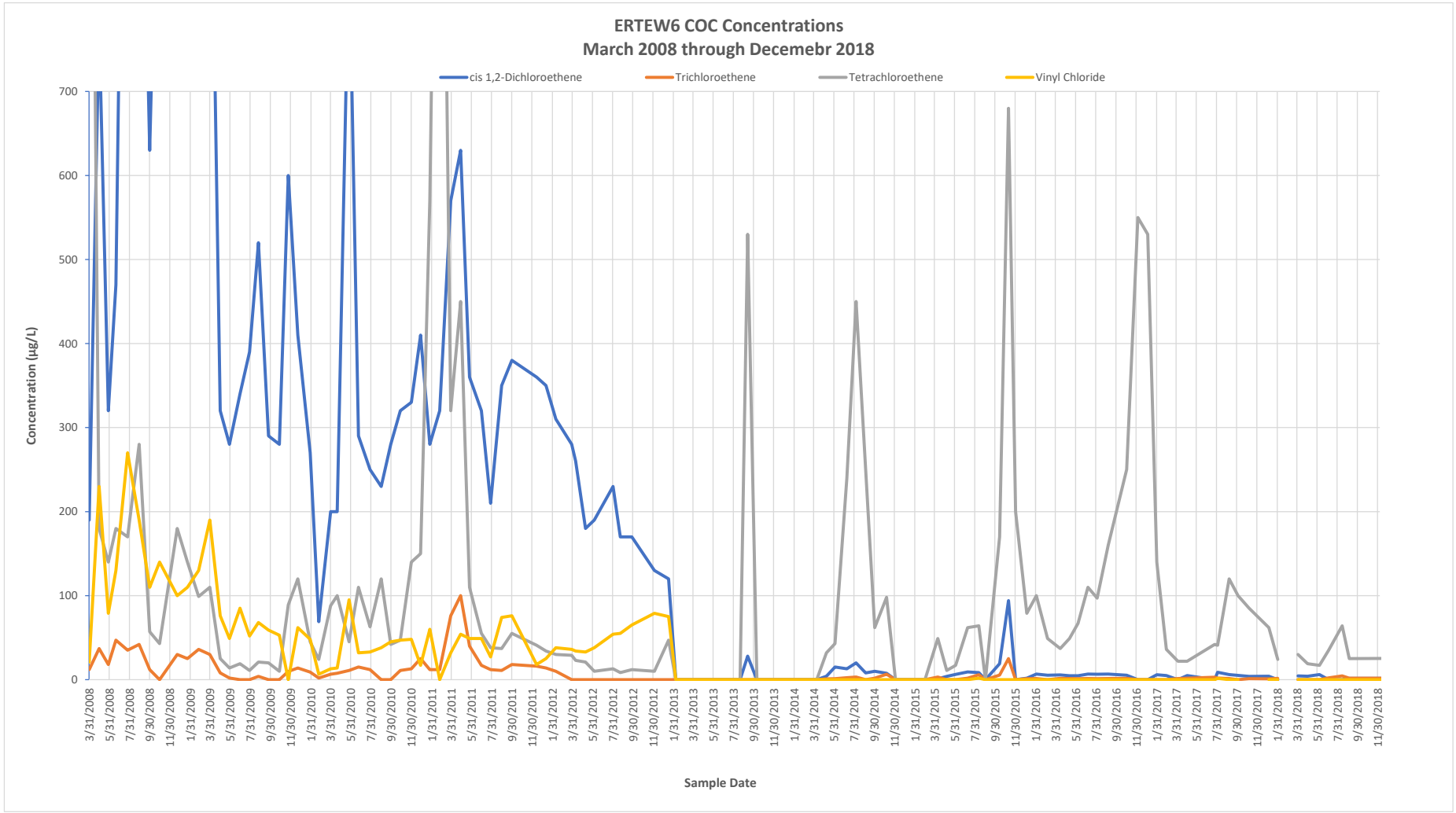

EW-ERT-5
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
VINYL CHLORIDE
PCE TCE DCE WQ
VC WQ
Concentration (µg/L)
1000
900
800
700
600
500
400
300
200
100
0
May 2008
April 2009
December 2010
May 2011
December 2012
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

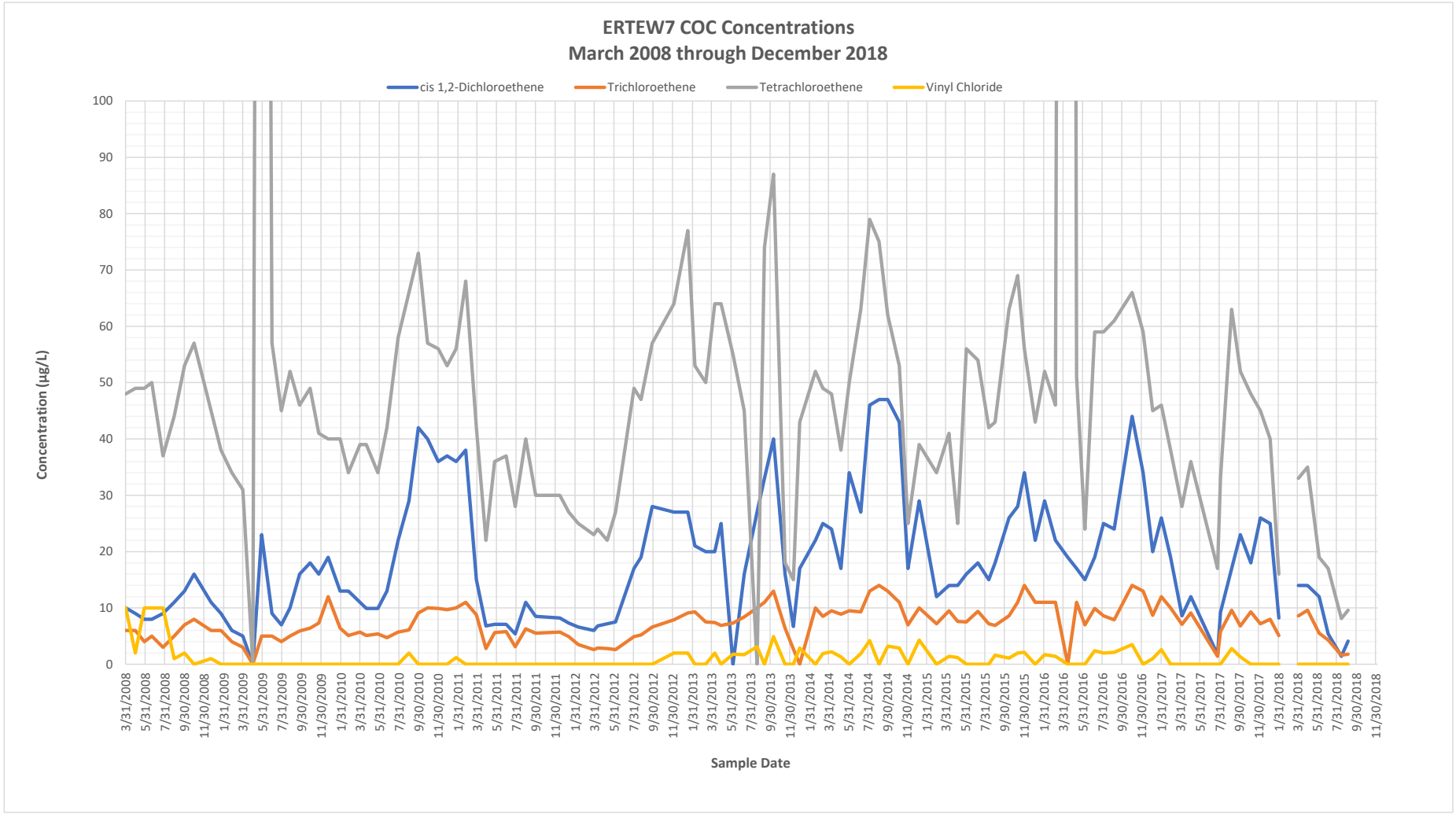

EW-ERT-6
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
VINYL CHLORIDE
PCE TCE DCE WQ
VC WQ
300
250
200
150
100
50
0
Concentration (µg/L)
May 2008
April 2009
December 2010
May 2011
December 2012
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

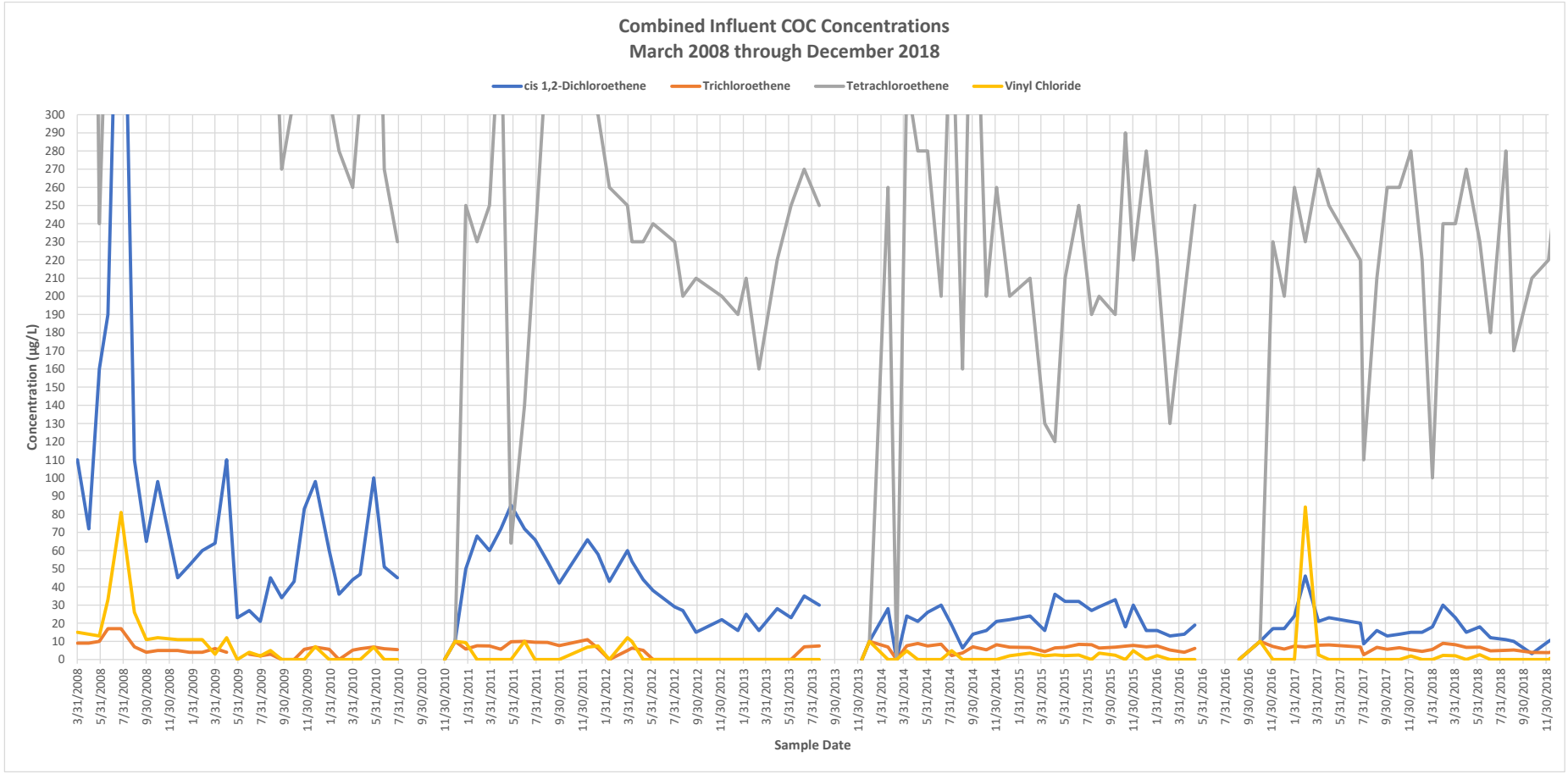

EW-ERT-7
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
VINYL CHLORIDE
PCE TCE DCE WQ
VC WQ
Concentration (µg/L)
100
90
80
70
60
50
40
30
20
10
0
May 2008
April 2009
December 2010
May 2011
December 2012
May 2013
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event

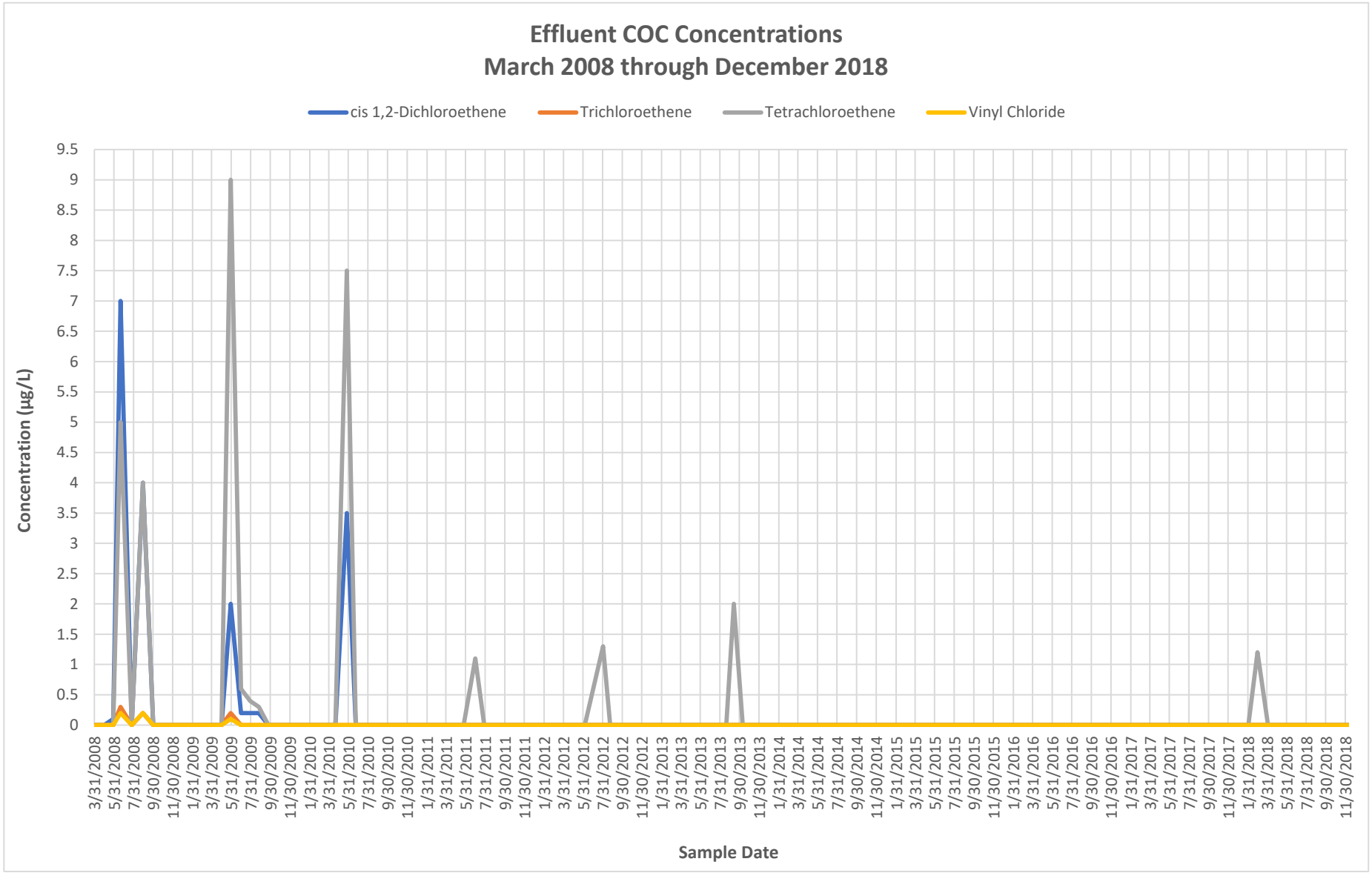

TH-7
TETRACHLOROETHYLENE (PCE)
TRICHLOROETHYLENE (TCE)
CIS-1,2-DICHLOROETHYLENE (DCE)
VINYL CHLORIDE
PCE TCE DCE WQ
VC WQ
Concentration (µg/L)
500
450
400
350
300
250
200
150
100
50
0
December 2000
March 2001
June 2001
October 2001
December 2001
March 2002
June 2002
September 2002
December 2002
March 2003
June 2003
September 2003
December 2003
March 2004
June 2004
September 2004
December 2004
March 2005
June 2005
September 2005
December 2005
May 2008
April 2009
December 2010
May 2011
December 2012
May 2013
April 2014
April 2015
May 2016
May 2017
May 2018
Sampling Event


ERTEW5 COC Concentrations
March 2008 through December 2018
cis 1,2-Dichloroethene
Trichloroethene
Tetrachloroethene
Vinyl Chloride
Concentration (µg/L)
0
100
200
300
400
500
600
700
800
900
1000
3/31/2008
5/31/2008
7/31/2008
9/30/2008
11/30/2008
1/31/2009
3/31/2009
5/31/2009
7/31/2009
9/30/2009
11/30/2009
1/31/2010
3/31/2010
5/31/2010
7/31/2010
9/30/2010
11/30/2010
1/31/2011
3/31/2011
5/31/2011
7/31/2011
9/30/2011
11/30/2011
1/31/2012
3/31/2012
5/31/2012
7/31/2012
9/30/2012
11/30/2012
1/31/2013
3/31/2013
5/31/2013
7/31/2013
9/30/2013
11/30/2013
1/31/2014
3/31/2014
5/31/2014
7/31/2014
9/30/2014
11/30/2014
1/31/2015
3/31/2015
5/31/2015
7/31/2015
9/30/2015
11/30/2015
1/31/2016
3/31/2016
5/31/2016
7/31/2016
9/30/2016
11/30/2016
1/31/2017
3/31/2017
5/31/2017
7/31/2017
9/30/2017
11/30/2017
1/31/2018
3/31/2018
5/31/2018
7/31/2018
9/30/2018
11/30/2018
Sample Date


ERTEW6 COC Concentrations
March 2008 through Decemebr 2018
cis 1,2-Dichloroethene
Trichloroethene
Tetrachloroethene
Vinyl Chloride
Concentration (µg/L)
Sample Date


ERTEW7 COC Concentrations
March 2008 through December 2018
cis 1,2-Dichloroethene
Trichloroethene
Tetrachloroethene
Vinyl Chloride
Concentration (µg/L)
Sample Date


Combined Influent COC Concentrations
March 2008 through December 2018
cis 1,2-Dichloroethene
Trichloroethene
Tetrachloroethene
Vinyl Chloride
Concentration (µg/L)
Sample Date


Effluent COC Concentrations
March 2008 through December 2018
cis 1,2-Dichloroethene
Trichloroethene
Tetrachloroethene
Vinyl Chloride
Concentration (µg/L)
Sample Date

BREWSTER Treatment System Operation/Inspection Checklist mo 1 yr 18 p.1/2

Action Required	Req'd Freq	Unit	Date of Inspection				
			1-5-18				
...npling Event:							
RW-5 Influent collected	M	(Y) / N					
RW-6 Influent collected	M	(Y) / N					
RW-7 Influent collected	M	(Y) / N					
Combined Influent collected	M	(Y) / N					
Effluent collected	M	(Y) N					
Duplicate? (indicate which)	M	Y / (N)	—				
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	16.6				
<d> Motor Load	M	%	44.4%				
<d> Output Voltage	M	V	203.1				
<d> DC Bus Voltage	M	V	287.3				
<d, d, d> Freq Setpoint	M	Hz	59.8				
<d> Output Frequency	M	Hz	59.8				
<d> Motor Speed	M	Rpm	3488				
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC	20				
Clean exterior inlet screen	M	Y / (N)	OK				
...ify HH Float Operation	M	Y / N	—				
...lean Air Stripper Trays	6M	Y / (N)	OK				
Clean Air Stripper Window	6M	Y / (N)	OK				
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)		Alter	
RW-5 pwheel (note:hi wear)	M	(Y) / N	11.34	63012690		11.36	
RW-6 pwheel (note:hi iron)	M	(Y) / N	10.93	20173746		10.58	
RW-7 paddlewheel	M	(Y) / N	10.07	76265956		13.52	
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / (N)	OK				
Replaced VFD Air Filters	M	Y / (N)	OK				
Swept floor	M	(Y) / N	OK				
Remv'd Garbage, new bag	As nec	Y / (N)					
Chk'd cleaning/maint supp's	M	(Y) N	OK				
Chk'd 1st Aid, eye wash	M	(Y) / N	OK				
Prior to Leaving Site:							
Grounds Maintenance	Always	(Y) / N	Shovel				
Log Off ProCtrl (pw:012)	Always	Y / N					
Plug in telephone line	Always	Y / N					
...k/Reset Heat/Cool t-stats	Always	Y / N					

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 11-5-18 GB + LG

System Running on Arrival, Put ~~Ins~~ Foam board in Exhaust Fan hole, Take System Reading, Collect Samples, Clean Flow Meters, Restart System, Monitor, Secure Site

Date _____

Date _____

Date _____

Date _____

Adirondack Environmental Services Inc.
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#:

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY		
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Carl Barrett	
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:	
Client Fax No:			

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
	Effluent	1-5-18	10:30	A/P	H2O		X	2	E-601
	Combined Influent	1-5-18	10:35	A/P	H2O		X	2	E-601
	Well 5	1-5-18	10:40	A/P	H2O		X	2	E-601
	Well 6	1-5-18	10:45	A/P	H2O		X	2	E-601
	Well 7	1-5-18	10:50	A/P	H2O		X	2	E-601
	Trip Blank			A/P	H2O		X	1	E-601
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					

Shipment Arrived Via:
FedEx UPS Client AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
samPling@aztechtech.com
ATalbot@aztechtech.com
JSabanos@aztechtech.com
BiaumJP@cdmsmith.com
RiellyAE@cdmsmith.com ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Carl Barrett	1-5-18	1405			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory by:	Date	Time
				1/5/18	2:00 PM

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient Chilled ~~Chilling Process begun~~	(Y) N	(Y) N
Notes: 4°C	Notes:	Notes:

BREWSTER Treatment System Operation/Inspection Checklist mo 1 yr 15 p.1/2

Action Required	Req'd Freq	Unit	Date of Inspection 1/3/18 2/1/15				
Sampling Event:							
RW-5 Influent collected	M	(Y) / N					
RW-6 Influent collected	M	(Y) / N					
RW-7 Influent collected	M	(Y) / N					
Combined Influent collected	M	(Y) / N					
Effluent collected	M	(Y) / N					
Duplicate? (indicate which)	M	Y / (N)					
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	15.9				
<d> Motor Load	M	%	45.1				
<d> Output Voltage	M	V	244.7				
<d> DC Bus Voltage	M	V	289.6				
<d, d, d> Freq Setpoint	M	Hz	59.9				
<d> Output Frequency	M	Hz	59.9				
<d> Motor Speed	M	Rpm	3494				
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC	16				
Clean exterior inlet screen	M	Y / N	✓				
Verify HH Float Operation	M	Y / N	✓				
Clean Air Stripper Trays	6M	(Y) / N	✓				
Clean Air Stripper Window	6M	Y / N	✓				
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	(Y) / N	~~6.8~~ off	63059813			
RW-6 pwheel (note:hi iron)	M	(Y) / N	10.4	20259526			
RW-7 paddlewheel	M	(Y) / N	13.8	76398343			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y (N)					
Replaced VFD Air Filters	M	Y / (N)					
Swept floor	M	(Y) / N					
Remv'd Garbage, new bag	As nec	Y (N)					
Chk'd cleaning/maint supp's	M	(Y) / N					
Chk'd 1st Aid, eye wash	M	(Y) / N					
Prior to Leaving Site:							
Grounds Maintenance	Always	(Y) / N					
Log Off ProCtrl (pw:012)	Always	(Y) / N					
Plug in telephone line	Always	(Y) / N					
Chk/Reset Heat/Cool t-stats	Always	(Y) / N					

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 1/31/18 - 2/1/18 Deep clean air stripper doors, trays, walls, and sump w/ pressure washer. Replace gaskets on air stripper doors. Replace broken door anchor point w/ carraige bolt and rubber gaskets so door seals properly now. Assess issues w/ RW-5 transducer for next visit. Restart system and collect readings. Collect system samples after system has run for a while on restart.

Date _____

Date _____

Date _____

Date _____

Adirondack Environmental Services Inc.
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#:

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY	
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Chris Powell
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
	Effluent	2/18	215	A/P	H2O		X	2	E-601
	Combined Influent	2/18	217	A/P	H2O		X	2	E-601
	Well 5	2/18	220	A/P	H2O		X	2	E-601
	Well 6	2/18	225	A/P	H2O		X	2	E-601
	Well 7	2/18	230	A/P	H2O		X	2	E-601
	Trip Blank			A/P	H2O		X	1	E-601
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					

Shipment Arrived Via:
FedEx UPS Client AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
sampling@aztechtech.com
ATalbot@aztechtech.com
JSabanos@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	2/18	5:15			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory by:	Date	Time
				2/19/18	11:45 AM

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient Chilled ~~Chilling Process begun~~	Y N	Y N
Notes: IPC	Notes:	Notes:

BREWSTER Treatment System Operation/Inspection Checklist mo _____ yr _____

Action Required	Req'd Freq	Unit	Date of Inspection				
			2/13/18				
..npling Event:							
RW-5 Influent collected	M	Y / N	N				
RW-6 Influent collected	M	Y / N	N				
RW-7 Influent collected	M	Y / N	N				
Combined Influent collected	M	Y / N	N				
Effluent collected	M	Y / N	N				
Duplicate? (indicate which)	M	Y / N	N				
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	16.0				
<d> Motor Load	M	%	48.2				
<d> Output Voltage	M	V	204.2				
<d> DC Bus Voltage	M	V	288.6				
<d, d, d> Freq Setpoint	M	Hz	59.9				
<d> Output Frequency	M	Hz	59.9				
<d> Motor Speed	M	Rpm	3491				
<d,d> return to OutputAmps	M	-	—				
Air Stripper Needs:							
Magnehelic Reading	M	IWC	16				
Clean exterior inlet screen	M	Y / N	N				
ify HH Float Operation	M	Y / N	N				
ean Air Stripper Trays	6M	Y / N	N				
Clean Air Stripper Window	6M	Y / N	N				
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	Y / N	10.6	63060302			
RW-6 pwheel (note:hi iron)	M	Y / N	10.3	20435162			
RW-7 paddlewheel	M	Y / N	13.9	76625047			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N	N				
Replaced VFD Air Filters	M	Y / N	N				
Swept floor	M	Y / N	N				
Remv'd Garbage, new bag	As nec	Y / N	N				
Chk'd cleaning/maint supp's	M	Y / N	N				
Chk'd 1st Aid, eye wash	M	Y / N	N				
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N	N				
Log Off ProCtrl (pw:012)	Always	Y / N	Y				
Plug in telephone line	Always	Y / N	N/A				
k/Reset Heat/Cool t-stats	Always	Y / N	N/A				

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 13 FEB 2018

TROUBLESHOOT CONDUIT INTEGRITY/SIGNAL CIRCUITRY ISSUES
MODIFY CONTROL PROGRAM, ACTIVATE WELL PUMP RW-5

Date _____

Date _____

Date _____

Date _____

BREWSTER Treatment System Operation/Inspection Checklist mo _____ yr _____

Action Required	Req'd Freq	Unit	Date of Inspection				
			3/12				
...ling Event:							
RW-5 Influent collected	M	Y / N	Y				
RW-6 Influent collected	M	Y / N	Y				
RW-7 Influent collected	M	Y / N	Y				
Combined Influent collected	M	Y / N	Y				
Effluent collected	M	Y / N	Y				
Duplicate? (indicate which)	M	Y / N	N				
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	4.5				
<d> Motor Load	M	%	34.8				
<d> Output Voltage	M	V	157.4				
<d> DC Bus Voltage	M	V	294				
<d, d, d> Freq Setpoint	M	Hz	50.4				
<d> Output Frequency	M	Hz	50.4				
<d> Motor Speed	M	Rpm	2940				
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC	14				
Clean exterior inlet screen	M	Y / N	Y				
...HH Float Operation	M	Y / N	Y				
...lean Air Stripper Trays	6M	Y / N	N				
Clean Air Stripper Window	6M	Y / N	N				
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	(Y) / N	10.56	63195867			
RW-6 pwheel (note:hi iron)	M	(Y) / N	10.8	26439379			
RW-7 paddlewheel	M	(Y) / N	1303	76859355			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N	N				
Replaced VFD Air Filters	M	Y / N	N				
Swept floor	M	Y / N	Y				
Remv'd Garbage, new bag	As nec	Y / N	N				
Chk'd cleaning/maint supp's	M	Y / N	Y				
Chk'd 1st Aid, eye wash	M	Y / N	Y				
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N	Y				
Log Off ProCtrl (pw:012)	Always	Y / N	Y				
Plug in telephone line	Always	Y / N	—				
...Reset Heat/Cool t-stats	Always	Y / N	Y				

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 3/1/18

TROUBLESHOOT RW6, FOUND BAD BREAKER IN PANEL. CHANGE BREAKER. LET SYSTEM RUN FOR ABOUT AN HOUR AND SAMPLE. CLEAN ROAD SIDE IN FRONT OF SYSTEM. CLEAN INITIAL FILTERS. LOWER OUTPUT FREQ. OF VFD TO 50.9 HZ DUE TO TOO MUCH AIR IN THRO. STRIPPER.

Date

Date

Date

Date

Adirondack Environmental Services Inc
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#:

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells
Client Phone No: 402-9813	PO #: 3400012
Client Fax No:	Samplers Name: CARL ALONICH
	Samplers Signature:

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
	Effluent	3/1/18	1120	A P	H2O		X	2	E-601
	Combined Influent		1125	A P	H2O		X	2	E-601
	Well 5		1130	A P	H2O		X	2	E-601
	Well 6		1135	A P	H2O		X	2	E-601
	Well 7		1140	A P	H2O		X	2	E-601
	Trip Blank			A P	H2O		X	1	E-601
				A P					
				A P					
				A P					
				A P					
				A P					
				A P					

Shipment Arrived Via:
FedEx UPS Client AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
Sampling@aztechtech.com
ATalbot@aztechtech.com
JSabanos@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	3/1/18	2:30			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory by:	Date	Time
				3/1/18	2:33 PM

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient ~~Chilled~~	(Y) N	(Y) N
~~Chilling Process begun~~		
Notes: 3°C	Notes:	Notes:

BREWSTER Treatment System Operation/Inspection Checklist mo 4/3 yr 15 p.1/2

Action Required	Req'd Freq	Unit	Date of Inspection				
ling Event:							
RW-5 Influent collected	M	Y / N	Y				
RW-6 Influent collected	M	Y / N	Y				
RW-7 Influent collected	M	Y / N	Y				
Combined Influent collected	M	Y / N	Y				
Effluent collected	M	Y / N	Y				
Duplicate? (indicate which)	M	Y / N	N				
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	12.1				
<d> Motor Load	M	%	36.6				
<d> Output Voltage	M	V	157.9				
<d> DC Bus Voltage	M	V	292.7				
<d, d, d> Freq Setpoint	M	Hz	50.5				
<d> Output Frequency	M	Hz	50.5				
<d> Motor Speed	M	Rpm	2949				
<d,d> return to OutputAmps	M	-	✓				
Air Stripper Needs:							
Magnehelic Reading	M	IWC	15				
Clean exterior inlet screen	M	(Y) / N	Y				
HH Float Operation	M	Y / N					
Clean Air Stripper Trays	6M	Y / N	N				
Clean Air Stripper Window	6M	Y / N	N				
Flo Element Maintenance:		Y					
(Rmv, clean, lube o-rings)		Y	GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	(Y) / N	10.61	632225 71			
RW-6 pwheel (note:hi iron)	M	(Y) / N	10.38	20868887			
RW-7 paddlewheel	M	(Y) / N	11.38	773388 60			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N	N				
Replaced VFD Air Filters	M	Y / N	N				
Swept floor	M	Y / N	Y				
Remv'd Garbage, new bag	As nec	Y / N	N				
Chk'd cleaning/maint supp's	M	Y / N	Y				
Chk'd 1st Aid, eye wash	M	Y / N	Y				
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N	Y				
Log Off ProCtrl (pw:012)	Always	Y / N	Y				
Plug in telephone line	Always	Y / N	Y				
Reset Heat/Cool t-stats	Always	Y / N	Y				

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 11 3 18

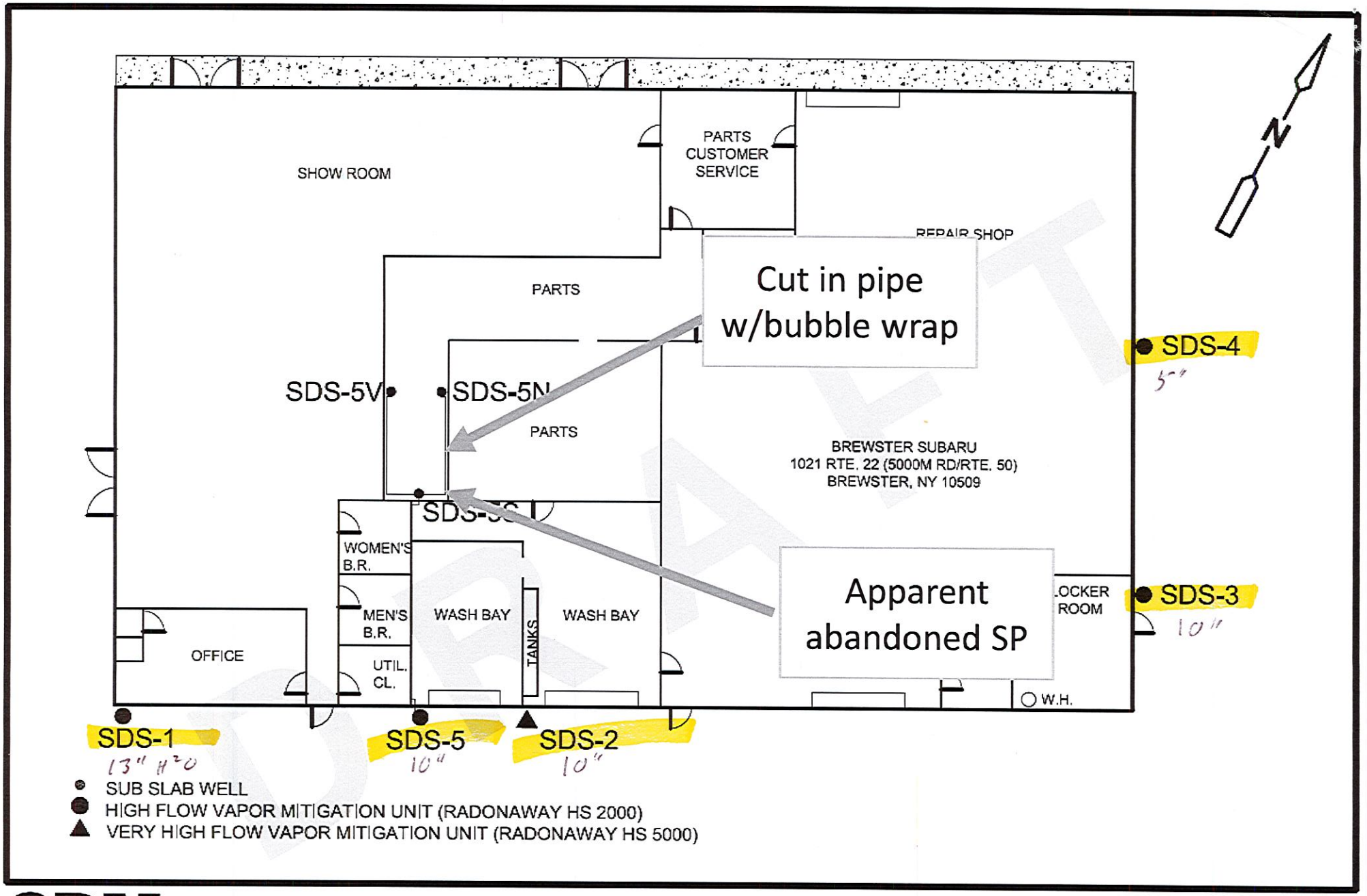
PULLED AND CLEANED ALL PADDLE WHEELS, TOOK SAMPLES. CLEAN GUNK AROUND SITE. CHECK SSDS FANS AT DEALERSHIP. ALL FANS RUNNING GOOD

Date _____

Date _____

Date _____

Date _____



CDM Smith

Camp Dresser McKee & Smith

Figure No. 1
Sub-Slab Depressurization System Location Map
NYSDEC Brewster Village Well Field

Adirondack Environmental Services Inc
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

CHAIN OF CUSTODY RECORD

AES Work Order#:

EXPERIENCE IS THE SOLUTION

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY	
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Carl Hoffman
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
	Effluent	4/3/18	1100	A/P	H2O		X	2	E-601
	Combined Influent		1030	A/P	H2O		X	2	E-601
	Well 5		1010	A/P	H2O		X	2	E-601
	Well 6		1015	A/P	H2O		X	2	E-601
	Well 7		1020	A/P	H2O		X	2	E-601
	Trip Blank			A/P	H2O		X	1	E-601
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					

Shipment Arrived Via:
FedEx UPS (Client) AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
Sampling@aztechtech.com
ATalbot@aztechtech.com
JSabanos@aztechtech.com
BlaumJP@cdmsmith.com
RiellyAE@cdmsmith.com ReepmeyerKM@cdmsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4/3/18				
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory by:	Date	Time
				4/3/18	1615

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient (Chilled) Chilling Process begun	(Y) N	(Y) N
Notes: 4C	Notes:	Notes:

BREWSTER Treatment System Operation/Inspection Checklist mo 5/2 yr 18

Action Required	Req'd Freq	Unit	Date of Inspection				
ling Event:							
RW-5 Influent collected	M	(Y) / N					
RW-6 Influent collected	M	(Y) / N					
RW-7 Influent collected	M	(Y) / N					
Combined Influent collected	M	(Y) / N					
Effluent collected	M	(Y) / N					
Duplicate? (indicate which)	M	Y / (N)					
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	11.1				
<d> Motor Load	M	%	33				
<d> Output Voltage	M	V	155.8				
<d> DC Bus Voltage	M	V	295.9				
<d, d, d> Freq Setpoint	M	Hz	550.1				
<d> Output Frequency	M	Hz	50.1				
<d> Motor Speed	M	Rpm	2922				
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC	15				
Clean exterior inlet screen	M	Y / (N)					
HH Float Operation	M	Y / (N)					
Clean Air Stripper Trays	6M	Y / (N)					
Clean Air Stripper Window	6M	Y / (N)					
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	Y / N	10.50	63661627			
RW-6 pwheel (note:hi iron)	M	Y / N	10.50	21299282			
RW-7 paddlewheel	M	Y / N	11.22	78276781			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	(Y) / N					
Replaced VFD Air Filters	M	Y / (N)					
Swept floor	M	Y / (N)					
Remv'd Garbage, new bag	As nec	Y / (N)					
Chk'd cleaning/maint supp's	M	Y / (N)					
Chk'd 1st Aid, eye wash	M	(Y) / N					
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N					
Log Off ProCtrl (pw:012)	Always	(Y) / N					
Plug in telephone line	Always	Y / N					
Reset Heat/Cool t-stats	Always	(Y) / N					

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 5/2/18

Repair screen on intake for air stripper
Collect samples
turn off heat

Date _____

Date _____

Date _____

Date _____

BREWSTER Treatment System Operation/Inspection Checklist mo 6 yr 18 p.1/2

Action Required	Req'd Freq	Unit	Date of Inspection				
			6/7/18				
ling Event:							
RW-5 Influent collected	M	(Y) / N	Y				
RW-6 Influent collected	M	(Y) / N	Y				
RW-7 Influent collected	M	(Y) / N	Y				
Combined Influent collected	M	(Y) / N	Y				
Effluent collected	M	(Y) / N	Y				
Duplicate? (indicate which)	M	Y / (N)	N				
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	11.3				
<d> Motor Load	M	%	34.2				
<d> Output Voltage	M	V	155.8				
<d> DC Bus Voltage	M	V	294.8				
<d, d, d> Freq Setpoint	M	Hz	50.1				
<d> Output Frequency	M	Hz	50.1				
<d> Motor Speed	M	Rpm	2922				
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC	1.5				
Clean exterior inlet screen	M	Y / (N)	N				
HH Float Operation	M	Y / (N)	N				
Clean Air Stripper Trays	6M	Y / (N)	N				
Clean Air Stripper Window	6M	Y / (N)	N				
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	(Y) / N	9.96	63862331			
RW-6 pwheel (note:hi iron)	M	(Y) / N	10.56	21674045			
RW-7 paddlewheel	M	(Y) / N	10.77	78211466			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N	N				
Replaced VFD Air Filters	M	Y / N	N				
Swept floor	M	Y / N	Y				
Remv'd Garbage, new bag	As nec	Y / N	N				
Chk'd cleaning/maint supp's	M	Y / N	Y				
Chk'd 1st Aid, eye wash	M	Y / N	Y				
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N	Y				
Log Off ProCtrl (pw:012)	Always	Y / N	Y				
Plug in telephone line	Always	Y / N	Y				
Reset Heat/Cool t-stats	Always	Y / N	Y				

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

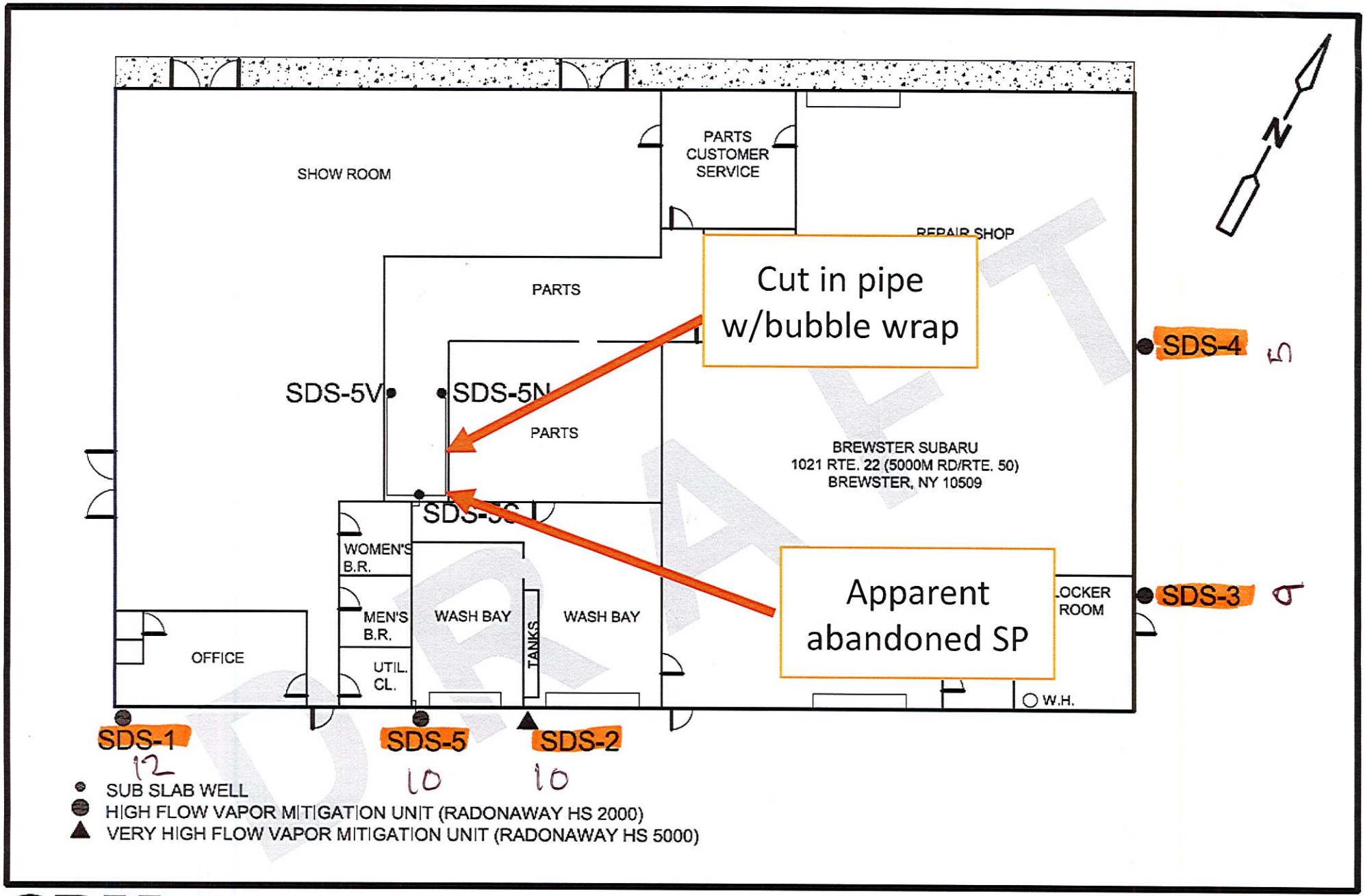
Date 6/21/18 – system running on arrival
- collect system readings
- collect samples
- clean paddle wheels
- remove pro-control and modem, bring back to shop

Date _____

Date _____

Date _____

Date _____



CDM Smith

Camp Dresser McKee & Smith

Figure No. 1
Sub-Slab Depressurization System Location Map
NYSDEC Brewster Village Well Field

Adirondack Environmental Services Inc
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#:

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY		
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Michael Doyle	
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature:	
Client Fax No:			

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
	Effluent	6/7/18	10:40	A P	H2O		X	2	E-601
	Combined Influent	6/7/18	10:45	A P	H2O		X	2	E-601
	Well 5	6/7/18	10:50	A P	H2O		X	2	E-601
	Well 6	6/7/18	10:55	A P	H2O		X	2	E-601
	Well 7	6/7/18	11:00	A P	H2O		X	2	E-601
	Trip Blank			A P	H2O		X	1	E-601
				A P					
				A P					
				A P					
				A P					
				A P					
				A P					

Shipment Arrived Via:
FedEx UPS Client AES Other: _____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
Sampling@aztechtech.com
ATalbot@aztechtech.com

BlaumJP@cdm.smith.com
RiellyAE@cdmsmith.com
ReepmeyerKM@cdmsmith.com

	Date	Time		Date	Time
Relinquished by: (Signature)	6/7/18	2:54	Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received for Laboratory by:		

Sample Temperature
Ambient Chilled
Chilling Process begun
Notes: 1-2

Properly Preserved
Y N
Notes:

Received Within Holding Times
Y N
Notes:

BREWSTER Treatment System Operation/Inspection Checklist mo 6/14/18 yr _____

Action Required	Req'd Freq	Unit	Date of Inspection				
...ling Event:							
RW-5 Influent collected	M	Y / N	N				
RW-6 Influent collected	M	Y / N	N				
RW-7 Influent collected	M	Y / N	N				
Combined Influent collected	M	Y / N	N				
Effluent collected	M	Y / N	N				
Duplicate? (indicate which)	M	Y / N	N				
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	13.1				
<d> Motor Load	M	%	36.0				
<d> Output Voltage	M	V	62.1				
<d> DC Bus Voltage	M	V	292.6				
<d, d, d> Freq Setpoint	M	Hz	51.3				
<d> Output Frequency	M	Hz	51.3				
<d> Motor Speed	M	Rpm	2992				
<d,d> return to OutputAmps	M	-	✓				
Air Stripper Needs:							
Magnehelic Reading	M	IWC	14.5				
Clean exterior inlet screen	M	Y / N	N				
...HH Float Operation	M	Y / N	N				
...lean Air Stripper Trays	6M	Y / N	N				
Clean Air Stripper Window	6M	Y / N	N				
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	(Y) / N	10.27	63862617			
RW-6 pwheel (note:hi iron)	M	(Y) / N	11.56	21674375			
RW-7 paddlewheel	M	(Y) / N	12.66	78211794			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N	N				
Replaced VFD Air Filters	M	Y / N	N				
Swept floor	M	Y / N	N				
Remv'd Garbage, new bag	As nec	Y / N	N				
Chk'd cleaning/maint supp's	M	Y / N	N				
Chk'd 1st Aid, eye wash	M	Y / N	N				
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N	N				
Log Off ProCtrl (pw:012)	Always	Y / N	Y				
Plug in telephone line	Always	Y / N	N/A				
...eset Heat/Cool t-stats	Always	Y / N	N				

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 6/14/18 Mobilize to site. System down on arrival due to ProControl maintenance. Reinstall ProControl w/ new 4G Verizon modem. Test operation. Clean flow meters. Restart system and monitor performance. System running on departure.

* Issues observed w/ W-5 and W-7 breakers- appear worn and operating inconsistently. Recommend that they are replaced.

Date _____

Date _____

Date _____

Date _____

Treatment System Operation/Inspection Checklist mo Jul yr 2018 p.1/2

ed	Req'd Freq	Unit	Date of Inspection				
			7/5/18				
Event:							
RW-5 Influent collected	M	Y / N	Y				
RW-6 Influent collected	M	Y / N	Y				
RW-7 Influent collected	M	Y / N	Y				
Combined Influent collected	M	Y / N	Y				
Effluent collected	M	Y / N	Y				
Duplicate? (indicate which)	M	Y / N	N				
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	15.3				
<d> Motor Load	M	%	15.7				
<d> Output Voltage	M	V	205.4				
<d> DC Bus Voltage	M	V	290.9				
<d, d, d> Freq Setpoint	M	Hz	60.0				
<d> Output Frequency	M	Hz	60.0				
<d> Motor Speed	M	Rpm	3500				
<d,d> return to OutputAmps	M	-	—				
Air Stripper Needs:							
Magnehelic Reading	M	IWC	15.5				
Clean exterior inlet screen	M	Y / N	Y				
HH Float Operation	M	Y / N	N				
Clean Air Stripper Trays	6M	Y / N	N				
Clean Air Stripper Window	6M	Y / N	N				
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	(Y) / N	9.30	63,920,609			
RW-6 pwheel (note:hi iron)	M	(Y) / N	10.73	21,735,877			
RW-7 paddlewheel	M	(Y) / N	10.17	78,281,155			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N	N				
Replaced VFD Air Filters	M	Y / N	N				
Swept floor	M	Y / N	Y				
Remv'd Garbage, new bag	As nec	Y / N	N				
Chk'd cleaning/maint supp's	M	Y / N	Y				
Chk'd 1st Aid, eye wash	M	Y / N	Y				
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N	Y				
Log Off ProCtrl (pw:012)	Always	Y / N	Y				
Plug in telephone line	Always	Y / N	N/A				
Reset Heat/Cool t-stats	Always	Y / N	N				

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 7/5/18 System down on arrival w/ power issues. Resolve power issue. Clean flow meters. Restart system. Air stripper leaking at a significant rate. Troubleshoot leaks but cannot resolve issue. Let system run while on site and collect samples. System down on departure to prevent flooding until air stripper maintenance and cleaning can be completed.

Date _____

Date _____

Date _____

Date _____

BREWSTER Treatment System Operation/Inspection Checklist mo 8 1/15 yr 18

Action Required	Req'd Freq	Unit	Date of Inspection				
			8/15				
ling Event:							
RW-5 Influent collected	M	(Y) / N					
RW-6 Influent collected	M	(Y) / N					
RW-7 Influent collected	M	(Y) / N					
Combined Influent collected	M	(Y) / N					
Effluent collected	M	(Y) / N					
Duplicate? (indicate which)	M	Y / (N)					
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A					
<d> Motor Load	M	%	17.5				
<d> Output Voltage	M	V	204.1				
<d> DC Bus Voltage	M	V	285.7				
<d, d, d> Freq Setpoint	M	Hz	60.0				
<d> Output Frequency	M	Hz	60.0				
<d> Motor Speed	M	Rpm	3500				
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC	15				
Clean exterior inlet screen	M	Y / (N)					
HH Float Operation	M	Y / (N)					
Clean Air Stripper Trays	6M	Y / (N)					
Clean Air Stripper Window	6M	(Y) / N					
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	Y / (N)	9.55	63521394			
RW-6 pwheel (note:hi iron)	M	Y / (N)	11.60	21726779			
RW-7 paddlewheel	M	(Y) / N	5.26	78281592			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / (N)					
Replaced VFD Air Filters	M	Y / (N)					
Swept floor	M	(Y) / N					
Remv'd Garbage, new bag	As nec	Y / (N)					
Chk'd cleaning/maint supp's	M	Y / N					
Chk'd 1st Aid, eye wash	M	Y / N					
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N					
Log Off ProCtrl (pw:012)	Always	Y / N					
Plug in telephone line	Always	Y / N					
Reset Heat/Cool t-stats	Always	Y / N					

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 3/15 Replace ~~Brok~~ Breaker for RW-5 & RW-7
Remove Doors on air Stripper clean gaskets Replace metal
Tie Downs Start Systh & Sample Bring Samples to the lab

Date _____

Date _____

Date _____

Date _____

BREWSTER Treatment System Operation/Inspection Checklist mo _____ yr _____

Action Required	Req'd Freq	Unit	Date of Inspection				
			9/8/18				
ling Event:							
RW-5 Influent collected	M	(Y) / N					
RW-6 Influent collected	M	(Y) / N					
RW-7 Influent collected	M	(Y) / N					
Combined Influent collected	M	(Y) / N					
Effluent collected	M	(Y) / N					
Duplicate? (indicate which)	M	Y (N)					
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	16.1				
<d> Motor Load	M	%	48%				
<d> Output Voltage	M	V	202.7				
<d> DC Bus Voltage	M	V	286.6				
<d, d, d> Freq Setpoint	M	Hz	60 Hz				
<d> Output Frequency	M	Hz	60				
<d> Motor Speed	M	Rpm	3500				
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC	15				
Clean exterior inlet screen	M	Y / (N)					
HH Float Operation	M	Y / (N)					
Clean Air Stripper Trays	6M	Y / (N)					
Clean Air Stripper Window	6M	Y / (N)					
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	Y / N	10.26	64051843			
RW-6 pwheel (note:hi iron)	M	Y / N	11.73	21872454			
RW-7 paddlewheel	M	Y / N	8.02	78356305			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / (N)					
Replaced VFD Air Filters	M	Y / (N)					
Swept floor	M	(Y) / N					
Remv'd Garbage, new bag	As nec	Y / (N)					
Chk'd cleaning/maint supp's	M	Y / N					
Chk'd 1st Aid, eye wash	M	(Y) / N	1 Bottle				
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N					
Log Off ProCtrl (pw:012)	Always	Y / N					
Plug in telephone line	Always	Y / N					
Reset Heat/Cool t-stats	Always	Y / N					

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 9/8/K System Down on arrival Reset Battery Back up To The Pro control. VFD Tripped on overload. Thermal Blower motor & Re Started OK now- Sampled System (SSDS FANS #1 - 5"
2 - 10"
3 - 10"
4 - 10"
5 - 12")

Date _____

Date _____

Date _____

Date _____

Adirondack Environmental Services Inc.®
314 North Pearl Street
Albany, New York 12207
518-434-4546 ♦ Fax: 518-434-0891

EXPERIENCE IS THE SOLUTION

CHAIN OF CUSTODY RECORD

AES Work Order#:

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: NYS DEC Region 3	Address: 625 Broadway Albany NY	
Send Report to: Carl Hoffman	Project Name (Location): Brewster Village Wells	Samplers Name: Kris Aadahl
Client Phone No: 402-9813	PO #: 3400012	Samplers Signature: Kris Aadahl
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
	Effluent	9/5/18	1005	A/P	H2O		X	2	E-601
	Combined Influent	9/5/18	1036	A/P	H2O		X	2	E-601
	Well 5	9/5/18	1028	A/P	H2O		X	2	E-601
	Well 6	9/5/18	1031	A/P	H2O		X	2	E-601
	Well 7	9/5/18	1033	A/P	H2O		X	2	E-601
	Trip Blank			A/P	H2O		X	1	E-601
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					
				A/P					

Shipment Arrived Via:
FedEx UPS Client AES Other:_____

Turnaround Time Requested:
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 -Day ☐ 5 Day

Special Instructions/Remarks:
Send Report to:
sampling@aztechtech.com
ATalbot@aztechtech.com
BlaumJP@cdrsmith.com
RiellyAE@cdrsmith.com ReepmeyerKM@cdrsmith.com

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Kris Aadahl	9/5/18	1700			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory by:	Date	Time
			Kaitlin Nagucka	9/5/18	2040pm

Sample Temperature	Properly Preserved	Received Within Holding Times
Ambient Chilled	Y N	Y N
~~Chilling Process begun~~		
Notes:	Notes:	Notes:

BREWSTER Treatment System Operation/Inspection Checklist mo _____ yr _____

Action Required	Req'd Freq	Unit	Date of Inspection				
			10/23/18				
ing Event:							
RW-5 Influent collected	M	Y / N	Y				
RW-6 Influent collected	M	Y / N	Y				
RW-7 Influent collected	M	Y / N	Y				
Combined Influent collected	M	Y / N	Y				
Effluent collected	M	Y / N	Y				
Duplicate? (indicate which)	M	Y / N	N				
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	16.8				
<d> Motor Load	M	%	49.3%				
<d> Output Voltage	M	V	208.0				
<d> DC Bus Voltage	M	V	297.5				
<d, d, d> Freq Setpoint	M	Hz	60.0				
<d> Output Frequency	M	Hz	60.0				
<d> Motor Speed	M	Rpm	3500				
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC	16.5				
Clean exterior inlet screen	M	Y / N	Y				
HH Float Operation	M	Y / N	N				
Clean Air Stripper Trays	6M	Y / N	N				
Clean Air Stripper Window	6M	Y / N	N				
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	(Y) / N	10.53	64060913			
RW-6 pwheel (note:hi iron)	M	(Y) / N	11.54	22608363			
RW-7 paddlewheel	M	(Y) / N	6.37	78826203			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N	N				
Replaced VFD Air Filters	M	Y / N	N				
Swept floor	M	Y / N	Y				
Remv'd Garbage, new bag	As nec	Y / N	N				
Chk'd cleaning/maint supp's	M	Y / N	Y				
Chk'd 1st Aid, eye wash	M	Y / N	Y				
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N	Y				
Log Off ProCtrl (pw:012)	Always	Y / N	Y				
Plug in telephone line	Always	Y / N	N/A				
Reset Heat/Cool t-stats	Always	Y / N	Y				

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 10/23/18

System running on arrival, collect system samples. Perform routine system maintenance, clean flow meters, cycle power to ProControl to re-establish cellular network connection. All SSDS fans @ Subaru Dealership operational, RW-5 not reporting flow on arrival. After cleaning flow meters, RW-5 reporting ≈ 10.5 gpm. System operational on departure.

SDS 1: 13" H_2O SDS 2: 9" H_2O SDS 3: 10" H_2O SDS 4: 5" H_2O SDS 5: 10" H_2O

Date _____

Date _____

Date _____

Date _____

BREWSTER Treatment System Operation/Inspection Checklist mo _____ yr _____ p.1/2

Action Required	Req'd Freq	Unit	Date of Inspection				
			11/9/16				
Sampling Event:							
RW-5 Influent collected	M	Y / N	Y				
RW-6 Influent collected	M	Y / N	Y				
RW-7 Influent collected	M	Y / N	Y				
Combined Influent collected	M	Y / N	Y				
Effluent collected	M	Y / N	Y				
Duplicate? (indicate which)	M	Y / N	N				
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	17.0				
<d> Motor Load	M	%	51.5%				
<d> Output Voltage	M	V	205.9				
<d> DC Bus Voltage	M	V	291.4				
<d, d, d> Freq Setpoint	M	Hz	60.0				
<d> Output Frequency	M	Hz	60.0				
<d> Motor Speed	M	Rpm	3500				
<d,d> return to OutputAmps	M	-	V				
Air Stripper Needs:							
Magnehelic Reading	M	IWC	17.37				
Clean exterior inlet screen	M	Y / N	Y				
Verify HH Float Operation	M	Y / N	N				
Clean Air Stripper Trays	6M	Y / N	N				
Clean Air Stripper Window	6M	Y / N	N				
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	Y / N	8.70	64,294,396			
RW-6 pwheel (note:hi iron)	M	Y / N	11.56	23,860,773			
RW-7 paddlewheel	M	Y / N	9.90	79,009,152			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N	N				
Replaced VFD Air Filters	M	Y / N	N				
Swept floor	M	Y / N	Y				
Remv'd Garbage, new bag	As nec	Y / N	Y				
Chk'd cleaning/maint supp's	M	Y / N	Y				
Chk'd 1st Aid, eye wash	M	Y / N	Y				
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N	N				
Log Off ProCtrl (pw:012)	Always	Y / N	Y				
Plug in telephone line	Always	Y / N	N/A				
Chk/Reset Heat/Cool t-stats	Always	Y / N	Y				

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 11/9/18 System down on arrival due to power failure on 11/8/18. Clean flow meters and grease blower motor. Turn heat up. Sweep floor. Restart system and let flow prior to collecting samples. Check SSDS fans. All running but SSD2 sounds labored. Remove garbage. System running on departure.

SD1: 14" SD2: 10" SD3: 10" SD4: 5" SD5: 10"

Date _____

Date _____

Date _____

Date _____

BREWSTER Treatment System Operation/Inspection Checklist mo _____ yr _____

Action Required	Req'd Freq	Unit	Date of Inspection				
			12/6/18				
Sampling Event:							
RW-5 Influent collected	M	(Y) / N					
RW-6 Influent collected	M	(Y) / N					
RW-7 Influent collected	M	(Y) / N					
Combined Influent collected	M	(Y) / N					
Effluent collected	M	(Y) / N					
Duplicate? (indicate which)	M	Y / (N)					
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	18.2				
<d> Motor Load	M	%	54.5				
<d> Output Voltage	M	V	202.5				
<d> DC Bus Voltage	M	V	285.4				
<d, d, d> Freq Setpoint	M	Hz	60				
<d> Output Frequency	M	Hz	60				
<d> Motor Speed	M	Rpm	3500				
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC	13				
Clean exterior inlet screen	M	Y / (N)					
Verify HH Float Operation	M	(Y) / N	NOT WORKING				
Clean Air Stripper Trays	6M	Y / (N)					
Clean Air Stripper Window	6M	Y / (N)					
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	(Y) / N	2.0	64523021			
RW-6 pwheel (note:hi iron)	M	(Y) / N	11.14	23297264			
RW-7 paddlewheel	M	(Y) / N	10.20	79387062			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / (N)					
Replaced VFD Air Filters	M	Y / (N)					
Swept floor	M	Y / N					
Remv'd Garbage, new bag	As nec	Y / (N)					
Chk'd cleaning/maint supp's	M	(Y) / N					
Chk'd 1st Aid, eye wash	M	(Y) / N					
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / (N)					
Log Off ProCtrl (pw:012)	Always	(Y) / N					
Plug in telephone line	Always	~~Y~~ / N					
Chk/Reset Heat/Cool t-stats	Always	(Y) / N					

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 12/6/18 System running on arrival. Clean flow meters. sample system. Check SSDS. System running on departure.

SSDS1: 14" SSDS2: 10" SSDS3: 10" SSDS4: 12" SSDS5: 13"

Date _____

Date _____

Date _____

Date _____

BREWSTER Treatment System Operation/Inspection Checklist mo _____ yr _____

Action Required	Req'd Freq	Unit	Date of Inspection				
			123118				
Sampling Event:							
RW-5 Influent collected	M	Y / N	Y				
RW-6 Influent collected	M	Y / N	Y				
RW-7 Influent collected	M	Y / N	Y				
Combined Influent collected	M	Y / N	Y				
Effluent collected	M	Y / N	Y				
Duplicate? (indicate which)	M	Y / N	N				
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A	17.2				
<d> Motor Load	M	%	52.1				
<d> Output Voltage	M	V	204.6				
<d> DC Bus Voltage	M	V	289.6				
<d, d, d> Freq Setpoint	M	Hz	60.0				
<d> Output Frequency	M	Hz	60.0				
<d> Motor Speed	M	Rpm	3500				
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC					
Clean exterior inlet screen	M	Y / N	Y				
Verify HH Float Operation	M	Y / N	Y				
Clean Air Stripper Trays	6M	Y / N	N				
Clean Air Stripper Window	6M	Y / N	N				
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	Y / N	2.17	645 99675			
RW-6 pwheel (note:hi iron)	M	Y / N	10.6	236 95822			
RW-7 paddlewheel	M	Y / N	10.3	79750845			
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N	N				
Replaced VFD Air Filters	M	Y / N	Y				
Swept floor	M	Y / N	Y				
Remv'd Garbage, new bag	As nec	Y / N	N				
Chk'd cleaning/maint supp's	M	Y / N	Y				
Chk'd 1st Aid, eye wash	M	Y / N	Y				
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N	Y				
Log Off ProCtrl (pw:012)	Always	Y / N	Y				
Plug in telephone line	Always	Y / N	Y				
Chk/Reset Heat/Cool t-stats	Always	Y / N	Y				

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date 12/31/19 System running on arrival. Sample system. Clean flow meters, check SSDS. System running on departure.

SSDS1: 14" SSDS2: 10" SSDS3: 10" SSDS4: 11" SSDS5: 12"

Date _____

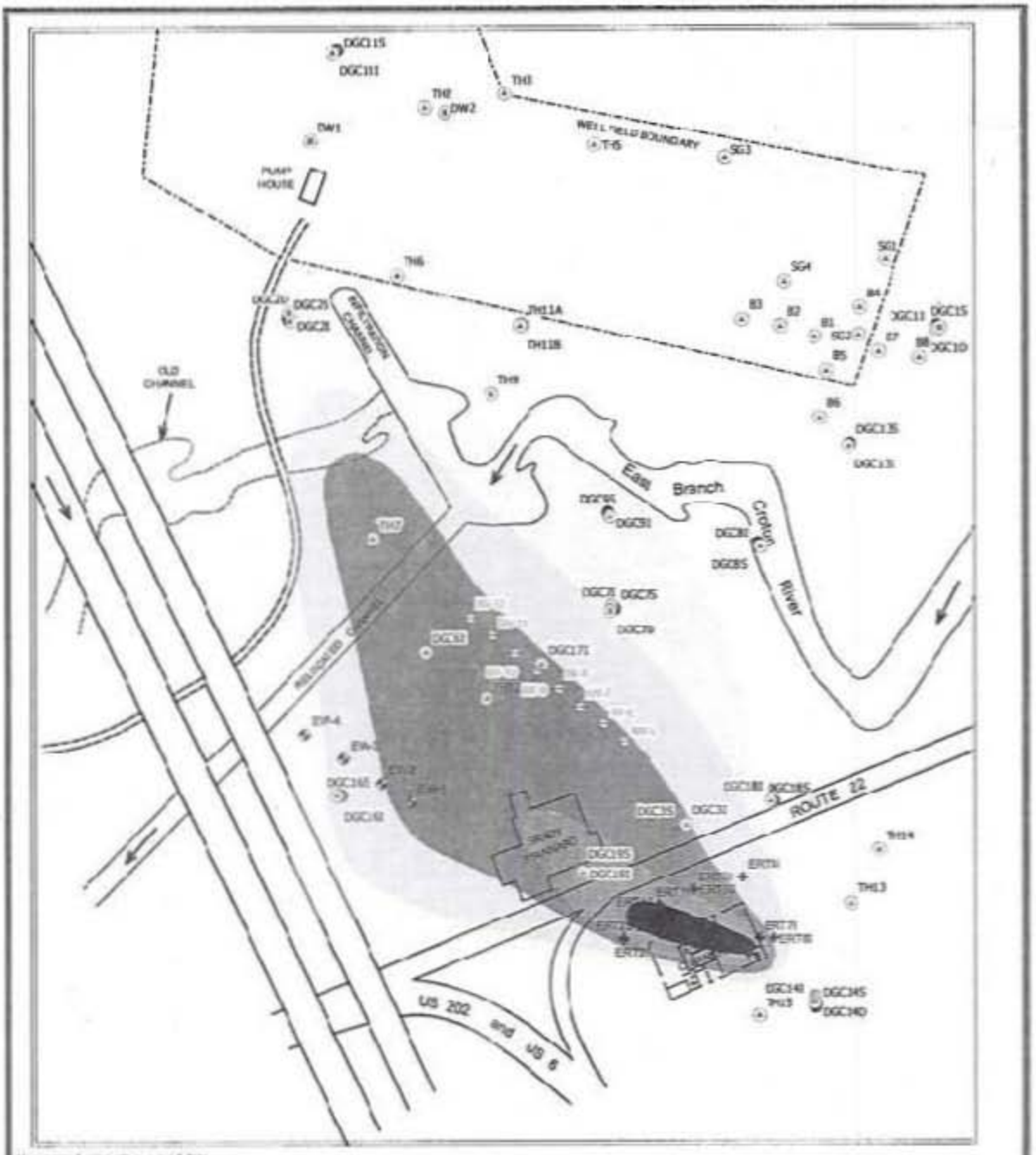
Date _____

Date _____

Date _____

Historical Tetrachloroethylene (PCE) Isoconcentration Plots

September 2006 through May 2018



Map created using site surveyed data.

Map Creation Date: September 2006
Coordinate system: New York State Plane Feet
FIPS: 3101
Datum: NAD83
Units: Feet

Feet
210 0 210 420

Legend

Brewster Wells
- Shallow
- Intermediate
- Deep
- Extraction
- Injection
- Prepacked Monitor Wells

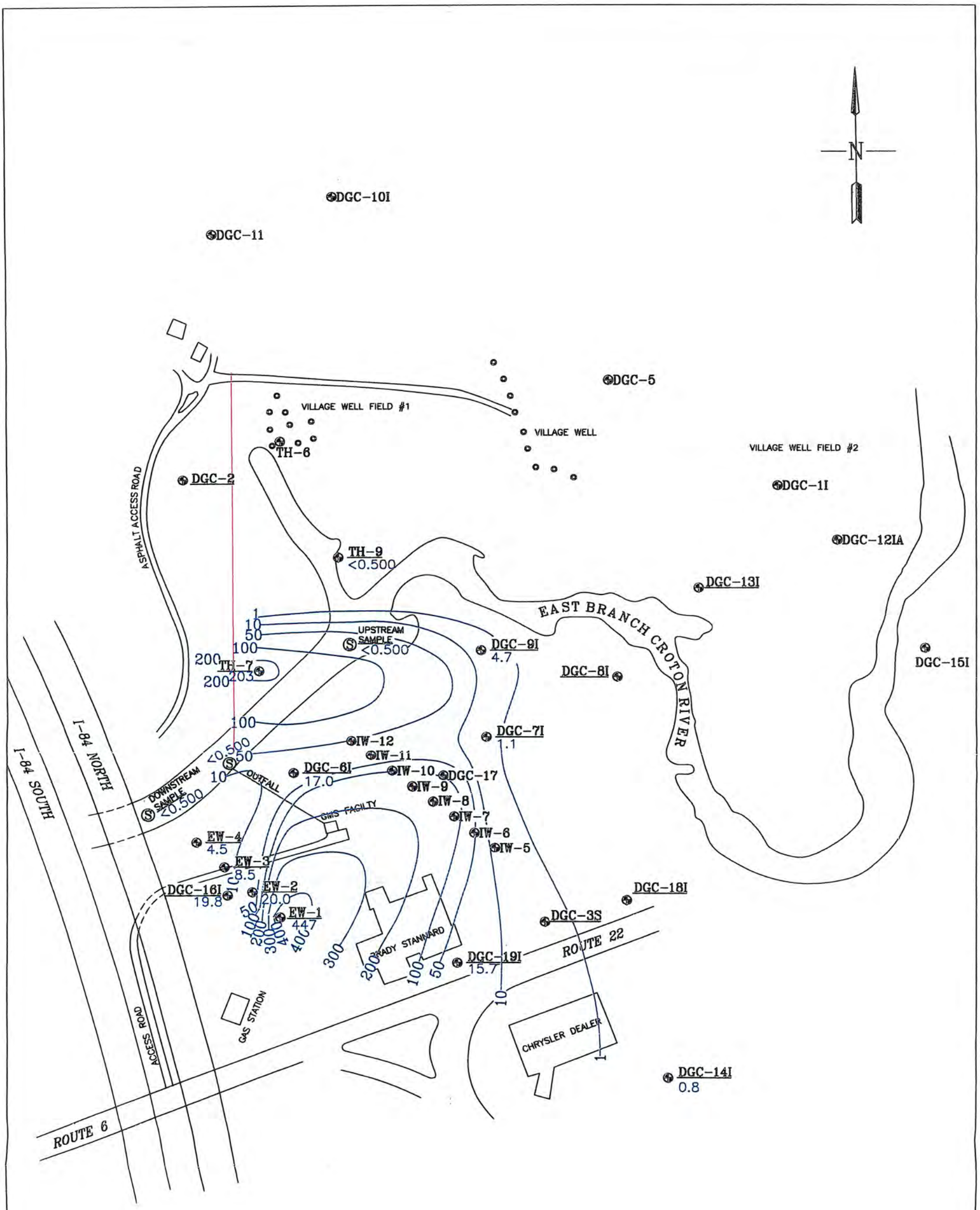
Schematic Concentrations (µg/L)
- >1
- 10
- 100
- 1000
- 10000



Data: g:\arcnewprojects\reac4\00-170
MXD file: g:\arcinfoprojects\reac4\EAC0070_brewster\170_CVOC_Plume

U.S. EPA Environmental Response Team
Response Engineering and Analytical Contract
EP-C-04-032
W.A.# 0-170

Figure 3
Schematic Total CVOC Plume.
Data Combined from June 2005 and September 2006 Sampling
Brewster Well Field Site
Brewster, NY
September 2006



LEGEND

DGC-7I / 1.1 — MONITORING WELL LOCATION; TETRACHLOROETHENE CONCENTRATION (µg/L)

10 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'

SCALE IN FEET

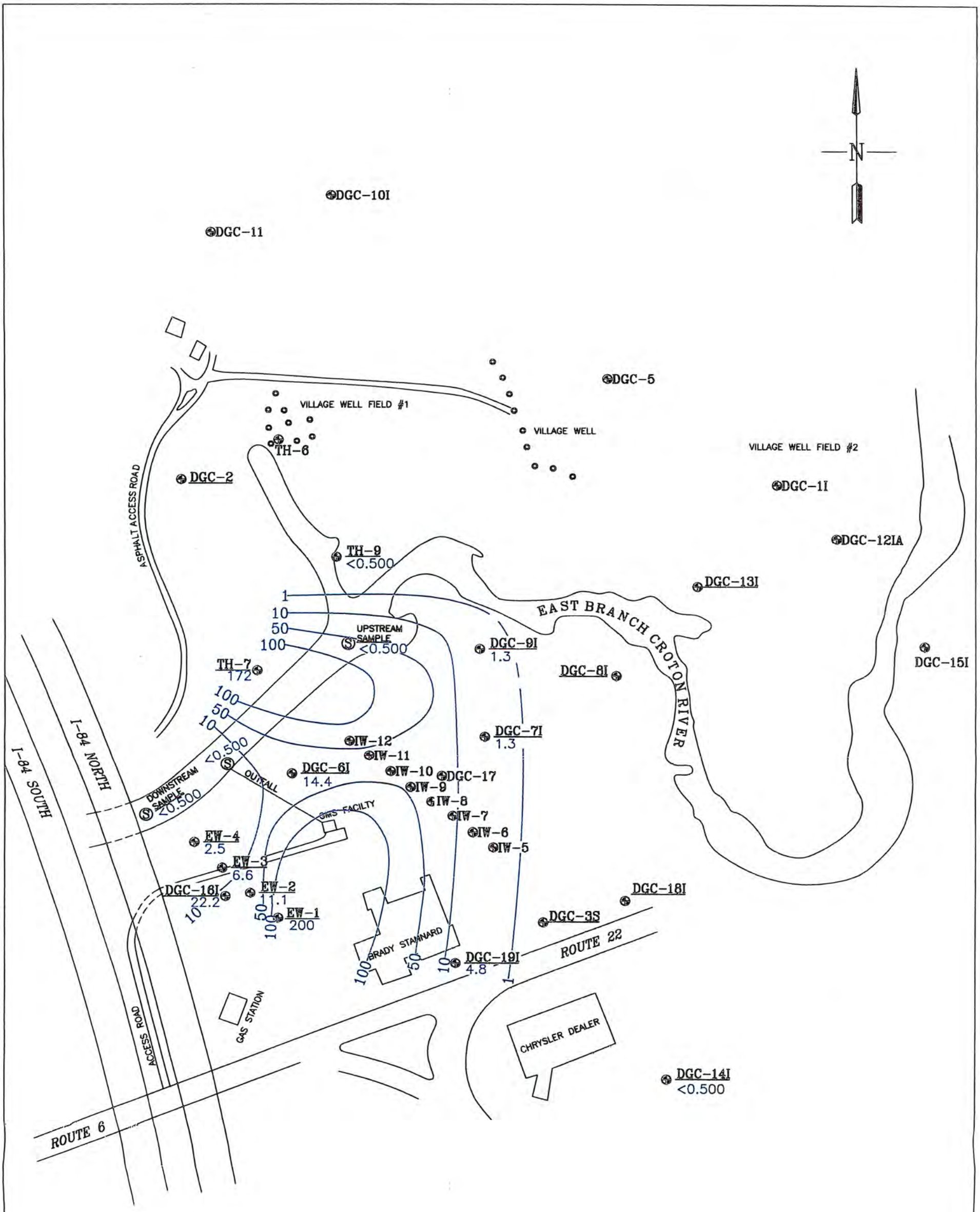
SEVENSON

BREWSTER WELL FIELD

TETRACHLOROETHENE ISOCONCENTRATION CONTOUR MAP (MARCH 2005)

drawn DAK	checked	approved	figure no.
date 05/02/05	date	date	5
job no. 01-1408-04-1548-000	file no. 1548-005.dwg		

Science Applications International Corporation
An Employee-Owned Company



LEGEND

DGC-7I 1.3	MONITORING WELL LOCATION TETRACHLOROETHENE CONCENTRATION (µg/L)
10	ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'

SCALE IN FEET

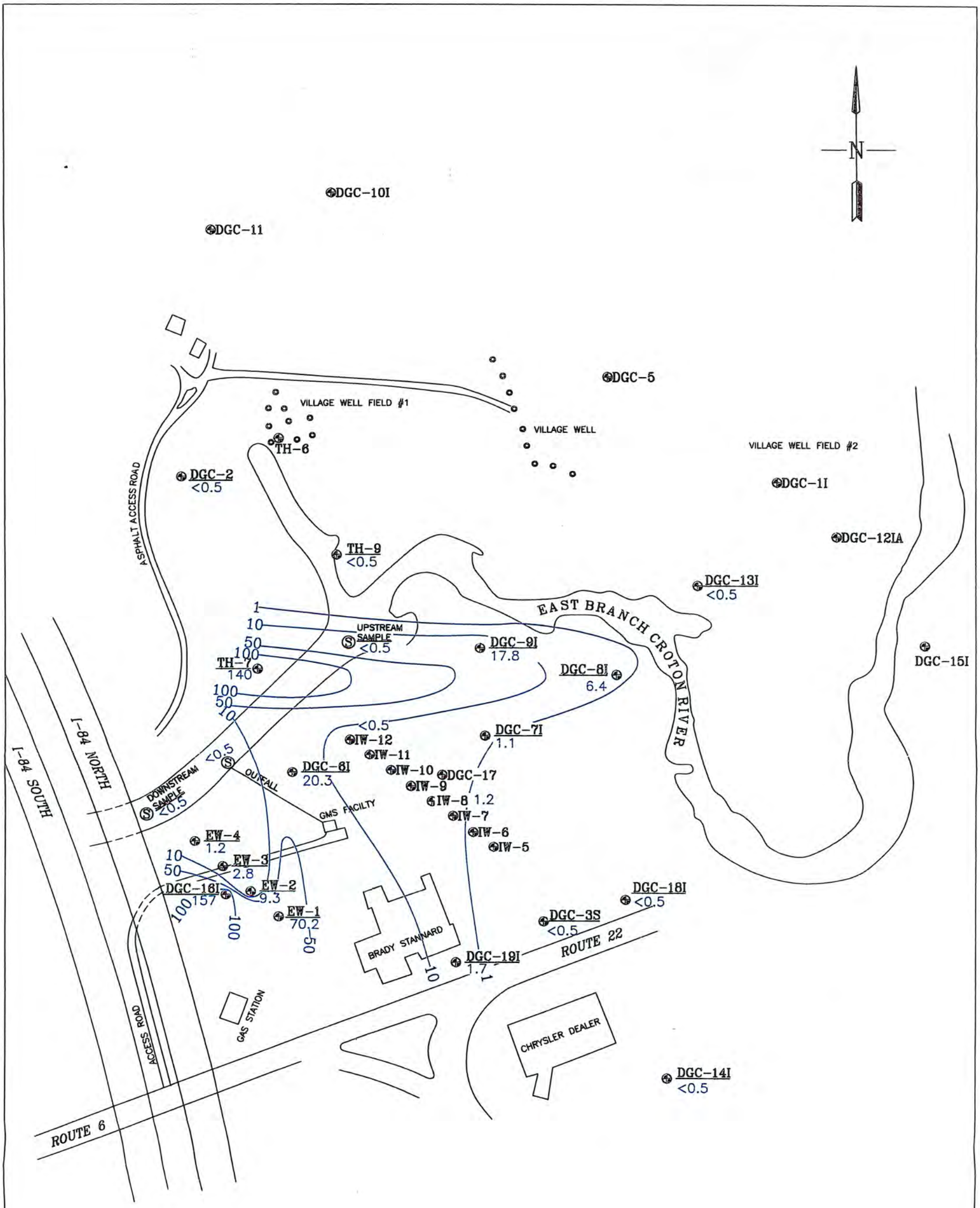
SEVENSON

BREWSTER WELL FIELD

TETRACHLOROETHENE ISOCONCENTRATION CONTOUR MAP (JUNE 2005)

drawn DAK	checked MJR	approved RCC	figure no. 5
date 07/26/05	date 07/25/05	date 07/25/05	
job no. 01-1633-04-2388-200		file no. 1548-005.dwg	

Science Applications International Corporation
From Science to Solutions™



LEGEND

DGC-7I 1.1	MONITORING WELL LOCATION TETRACHLOROETHENE CONCENTRATION (µg/L)
10	ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'

SCALE IN FEET

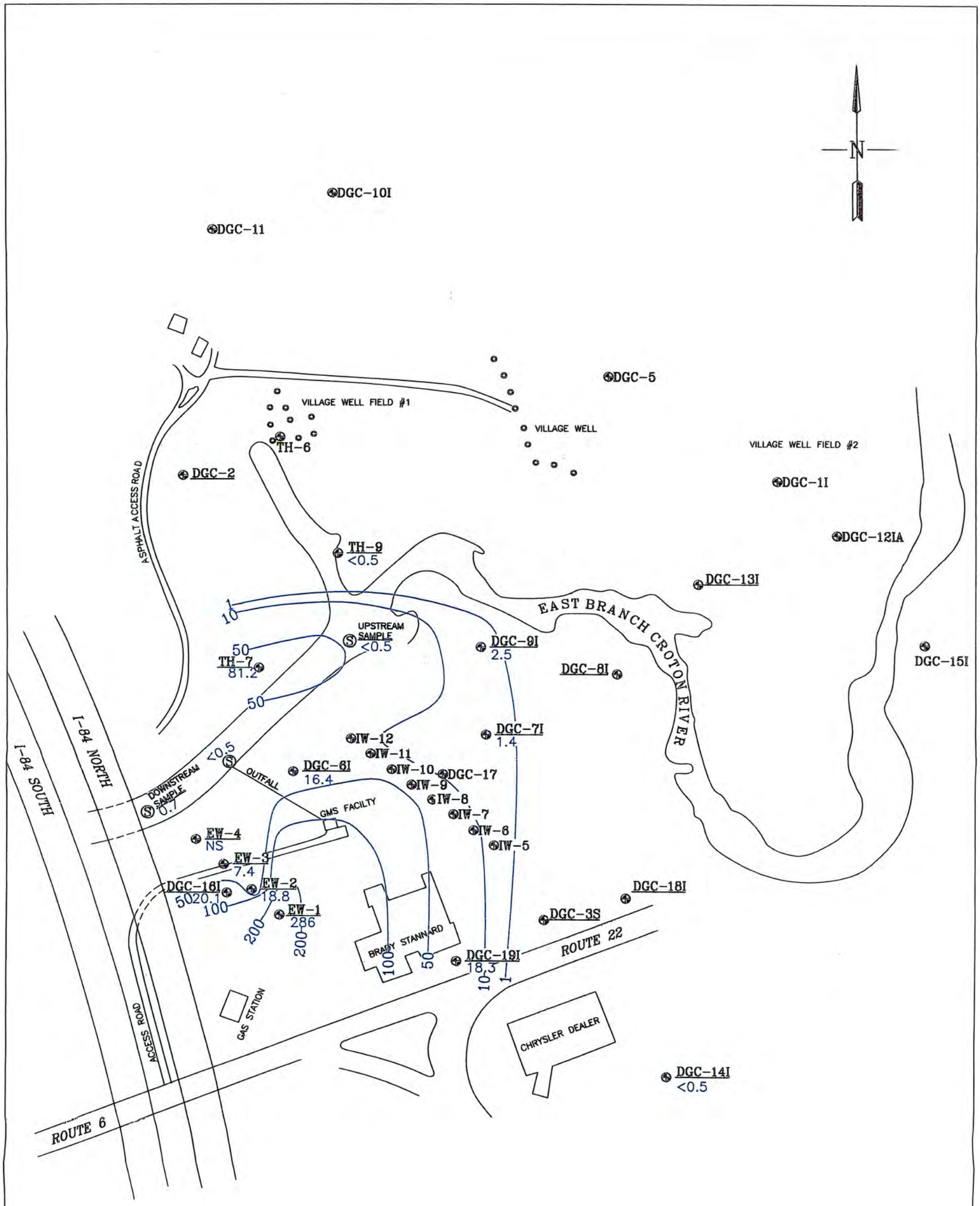
SEVENSON

BREWSTER WELL FIELD

TETRACHLOROETHENE ISOCONCENTRATION CONTOUR MAP (SEPTEMBER 2005)

drawn DAK	checked MJR	approved RCC	figure no. 5
date 11/16/05	date 11/16/05	date 11/16/05	
job no. 01-1633-04-2388-200		file no. 1548-005.dwg	

SAIC Science Applications International Corporation
From Science to Solutions™



LEGEND

DGC-7I / 1.4 — MONITORING WELL LOCATION; TETRACHLOROETHENE CONCENTRATION (µg/L)

10 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'

SCALE IN FEET

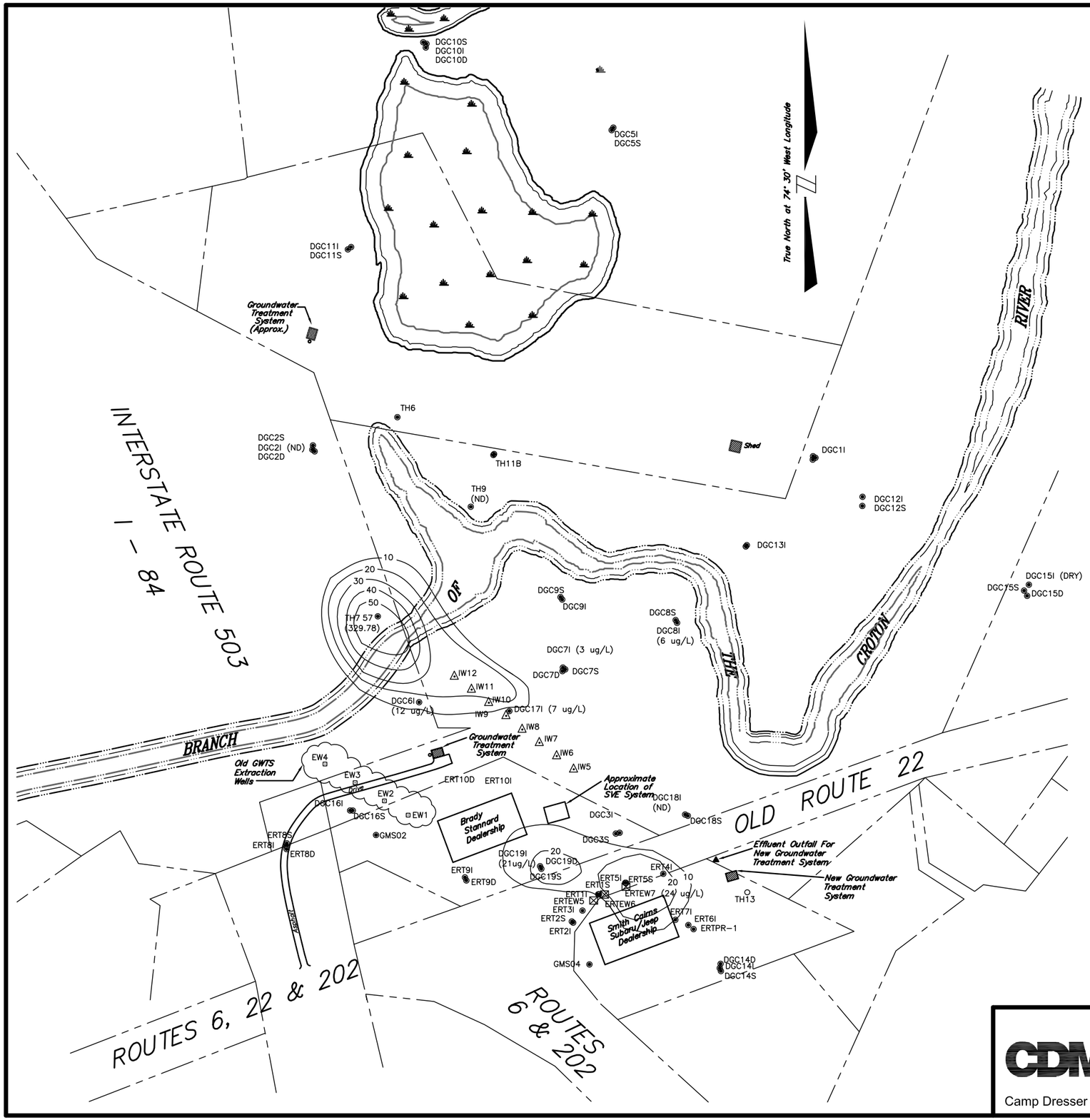
SEVENSON

BREWSTER WELL FIELD

TETRACHLOROETHENE ISOCONCENTRATION CONTOUR MAP (DECEMBER 2005)

drawn	checked	approved	figure no.
DAK	MJR	RCC	5
date 01/19/06	date 01/19/06	date 01/19/06	
job no. 01-1633-04-2388-200		file no. 1548-005.dwg	

Science Applications International Corporation
From Science to Solutions℠



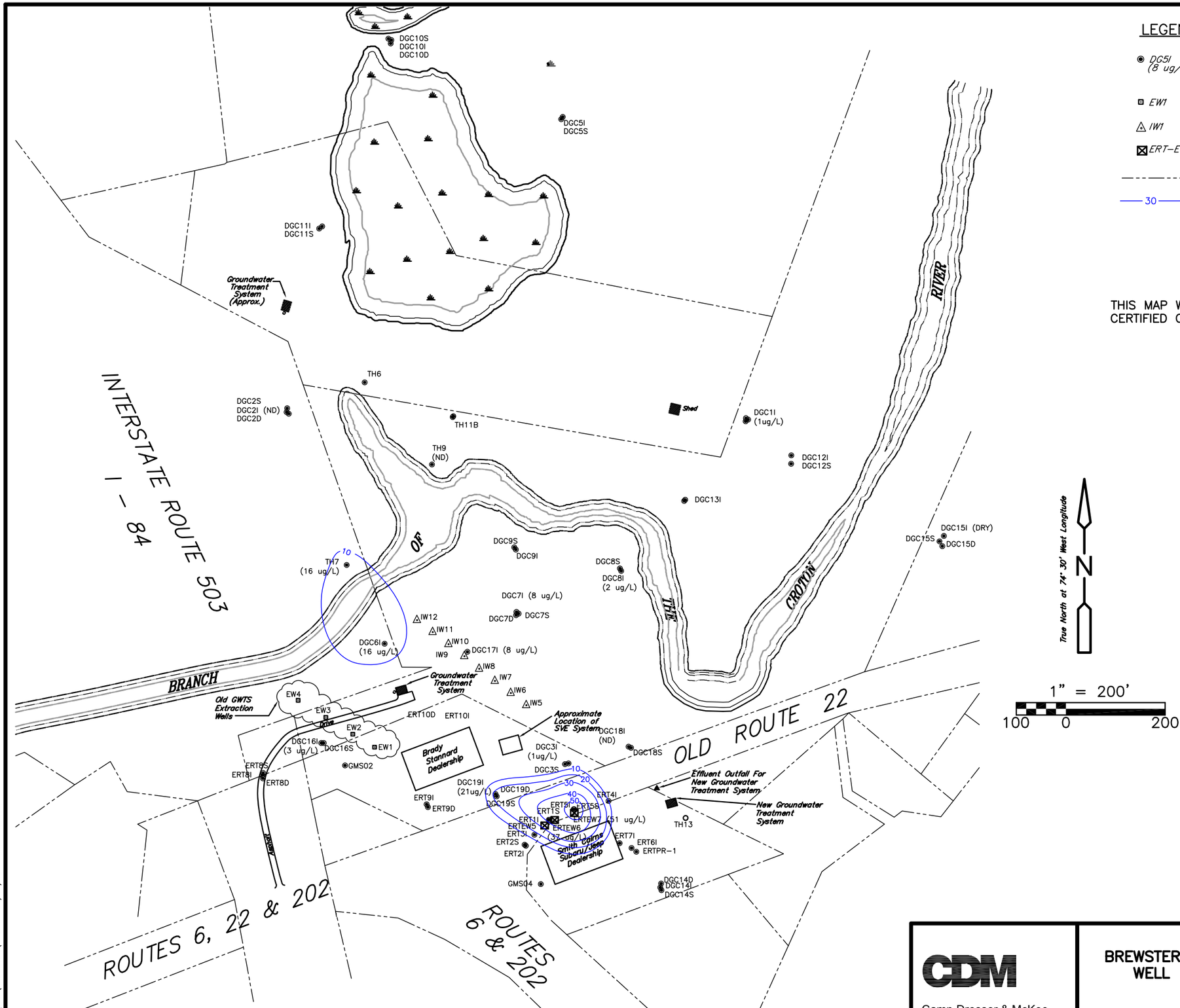
LEGEND

DG5I (330.49)	Monitoring Well with Designation (Groundwater Elevation, FT BGS)
EW1	Old GWTS Extraction Well with Designation
IW1	Old GWTS Injection Well with Designation
ERT–EW5	New GWTS Extraction Well with Designation
——— - - ———	Approximate Property Line
—— 30 ——	Isoconcentration Line

This map was prepared for the exclusive use of and is certified only to:
SEVENSON ENVIRONMENTAL SERVICES, INC.

1" = 200'
100 0 200

CDM Camp Dresser & McKee	**BREWSTER VILLAGE WELL FIELD**	TETRACHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS	FIGURE NO.
		MAY 2008	5



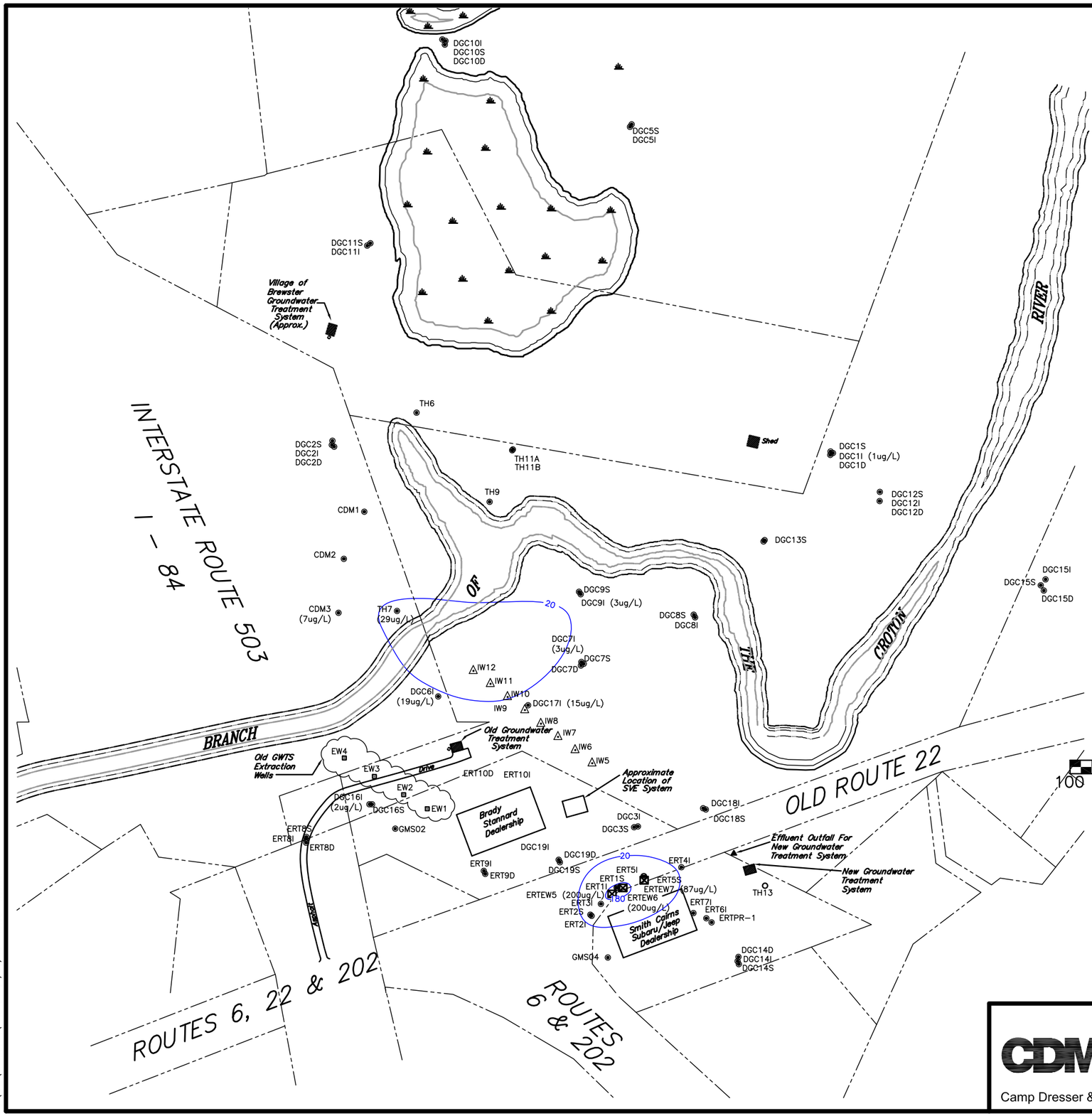
LEGEND

- DG5I (8 ug/L) — MONITORING WELL WITH DESIGNATION (ISOCONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-EW5 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 30 — ISOCONCENTRATION CONTOUR LINE

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

C:\CAD\BREWSTER\ FIG 5 01/19/10 18:03 Koskiar

CDM Camp Dresser & McKee	BREWSTER VILLAGE WELL FIELD	TETRACHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS APRIL 2009	FIGURE NO. 5



LEGEND

- DGC6I (19 ug/L) — MONITORING WELL WITH DESIGNATION (TETRACHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-EW5 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 20 ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected 12/27/11-12/29/11			
	Tetrachloroethene	1,2-Dichloroethene (total)	Vinyl chloride
Well	(µg/L)	(µg/L)	(µg/L)
DGC-1I	1	ND	ND
DGC-2I	ND	ND	ND
DGC3I	ND	ND	ND
DGC6I	19	27	ND
DGC7I	3	77	1
DGC8I	ND	ND	ND
DGC9I	3	ND	ND
DGC11I	ND	ND	ND
DGC13I	ND	ND	ND
DGC14I	ND	ND	ND
DGC16I	2	ND	ND
DGC17I	15	15	ND
DGC18I	ND	ND	ND
DGC19I	ND	ND	ND
CDM1	ND	ND	ND
CDM2	ND	ND	ND
CDM3	7	ND	ND
ERT-2I	ND	ND	ND
ERT-7I	ND	ND	ND
ERT-8I	ND	ND	ND
ERT-9I	ND	ND	ND
ERT-EW5	200	430	100
ERT-EW6	200	400	100
ERT-EW7	87	42	1
GMS-02	ND	ND	ND
TH-11B	ND	ND	ND
TH-6	ND	ND	ND
TH-7	29	22	5

C:\CAD\BREWSTER\ FIG 5 01/19/10 18:03 Koskiar

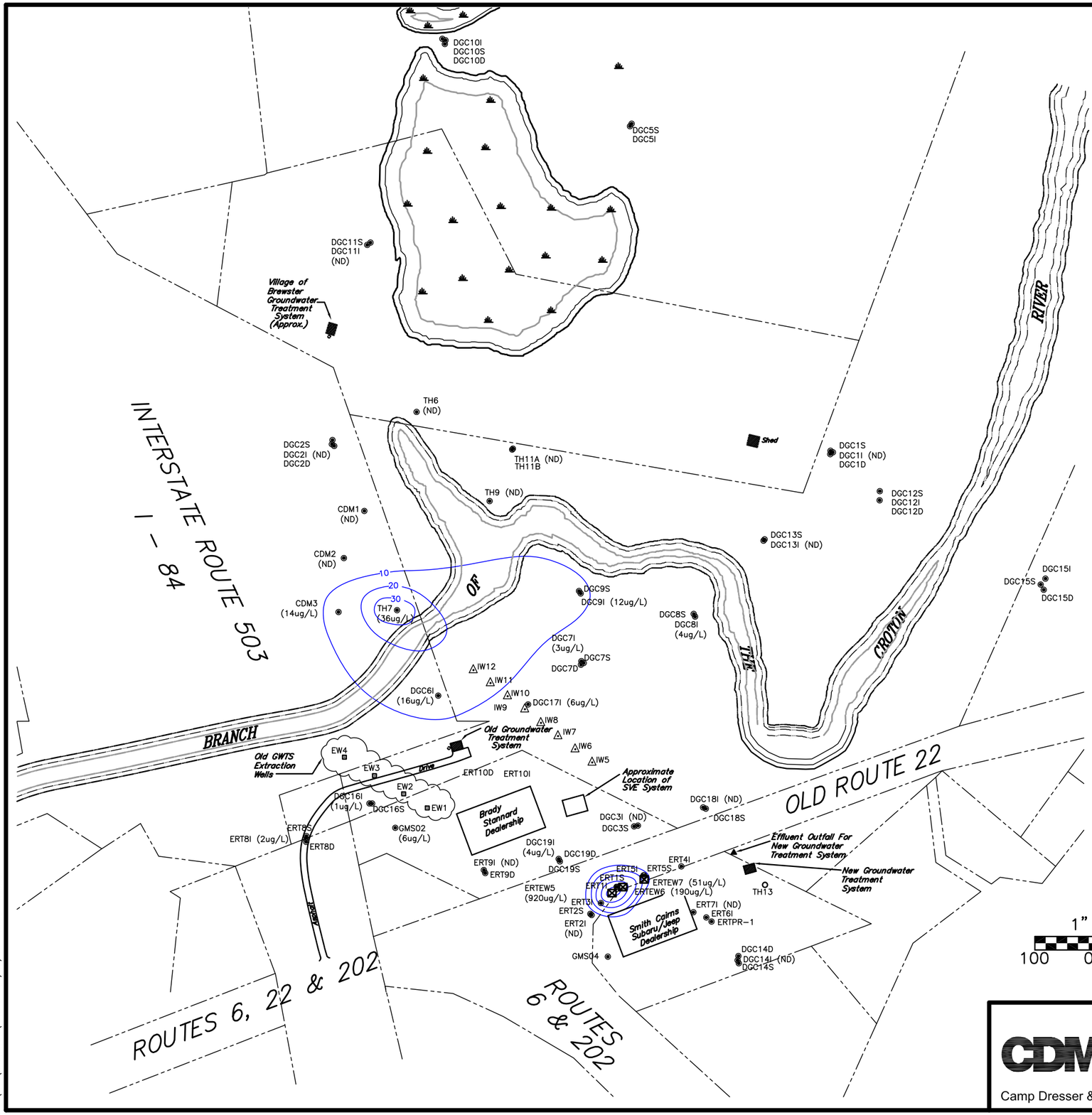
CDM
Camp Dresser & McKee

BREWSTER VILLAGE WELL FIELD

TETRACHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS

DECEMBER 2010

FIGURE NO. 5



LEGEND

- DGC6I (16 ug/L) — MONITORING WELL WITH DESIGNATION (TETRACHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-EW5 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 20 ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected 5/18/2011-5/21/2011			
	Tetrachloroethene	1,2-Dichloroethene (total)	Vinyl chloride
Well	(µg/L)	(µg/L)	(µg/L)
DGC-1I	ND	ND	ND
DGC-2I	ND	ND	ND
DGC3I	ND	ND	ND
DGC6I	16	30	ND
DGC7I	3	97	ND
DGC8I	4	3	ND
DGC9I	12	27	ND
DGC11I	ND	ND	ND
DGC13I	ND	ND	ND
DGC14I	ND	ND	ND
DGC16I	1	ND	ND
DGC17I	6	46	ND
DGC18I	ND	ND	ND
DGC19I	4	17	2
CDM1	ND	ND	ND
CDM2	ND	ND	ND
CDM3	14	ND	ND
ERT-2I	ND	ND	ND
ERT-7I	ND	ND	ND
ERT-8I	2	ND	ND
ERT-9I	ND	ND	ND
ERT-EW5	920	42	200
ERT-EW6	190	430	90
ERT-EW7	51	11	ND
GMS-02	6	ND	ND
TH-11B	ND	ND	ND
TH-6	ND	ND	ND
TH-7	36	30	ND
TH-9	ND	ND	ND

C:\CAD\BREWSTER\ FIG 5 01/19/10 18:03 Koskiar

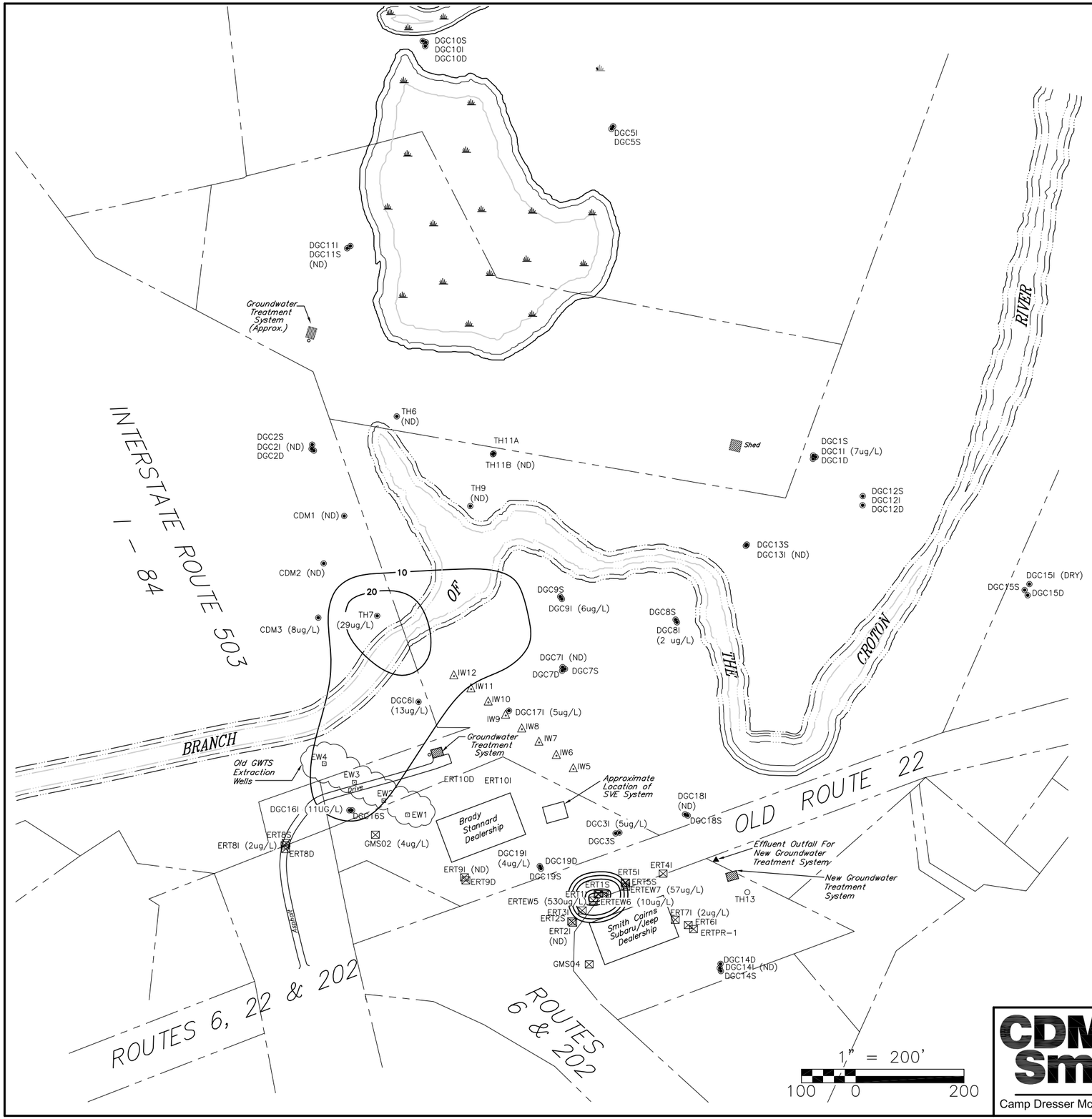
Camp Dresser & McKee

BREWSTER VILLAGE WELL FIELD

TETRACHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS

MAY 2011

FIGURE NO. 5



LEGEND

- DGC8I (2 ug/L) — MONITORING WELL WITH DESIGNATION (TETRACHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-1 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 10ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected November 2012			
	Tetrachloroethene	1,2-Dichloroethene (total)	Vinyl chloride
Well	(µg/L)	(µg/L)	(µg/L)
DGC-1I	7	ND	ND
DGC-2I	ND	ND	ND
DGC3I	5	3	ND
DGC6I	13	45	ND
DGC7I	ND	77	2
DGC8I	2	2	ND
DGC9I	6	38	ND
DGC11I	ND	ND	ND
DGC13I	ND	ND	ND
DGC14I	ND	ND	ND
DGC16I	11	ND	ND
DGC17I	5	55	ND
DGC18I	ND	ND	ND
DGC19I	4	7	1
CDM1	ND	ND	ND
CDM2	ND	ND	ND
CDM3	8	ND	ND
ERT-2I	ND	ND	ND
ERT-7I	2	1	ND
ERT-8I	2	ND	ND
ERT-9I	ND	ND	ND
ERT-EW5	530	34	3
ERT-EW6	10	150	81
ERT-EW7	57	24	2
GMS-02	4	ND	ND
TH-11B	ND	ND	ND
TH-6	ND	ND	ND
TH-7	29	25	4
TH-9	ND	ND	ND

Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

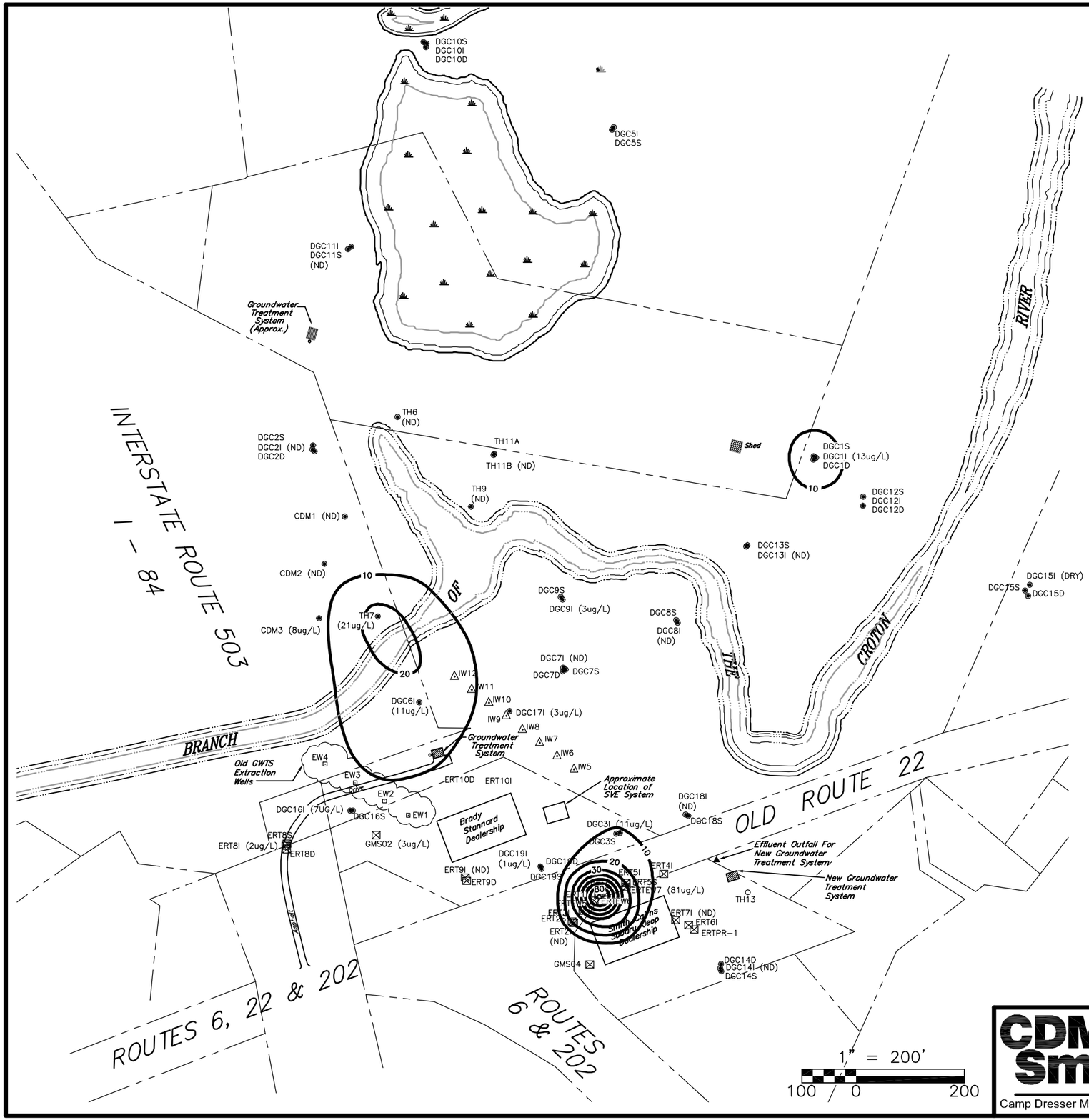
TETRACHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS

NOVEMBER 2012

FIGURE NO. 5

C:\cdmxm\koskiar\d0772244\ FIG-5 04/11/13 05:41 Koskiar

0897-61712



LEGEND

- DGC8I (2 ug/L) — MONITORING WELL WITH DESIGNATION (TETRACHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-1 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 10ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected April 2013	
	Tetrachloroethene
Well	(µg/L)
DGC-1I	13
DGC-2I	ND
DGC3I	11
DGC6I	11
DGC7I	ND
DGC8I	ND
DGC9I	3
DGC11I	ND
DGC13I	ND
DGC14I	ND
DGC16I	7
DGC17I	3
DGC18I	ND
DGC19I	1
CDM1	ND
CDM2	ND
CDM3	8
ERT-2I	ND
ERT-7I	ND
ERT-8I	2
ERT-9I	ND
ERT-EW5	NS
ERT-EW6	NS
ERT-EW7	81
GMS-02	3
TH-11B	ND
TH-6	ND
TH-7	21
TH-9	ND

CDM Smith
Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

TETRACHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS

APRIL 2013

FIGURE NO. 5

0897–94720

LEGEND

- DGC1I (2 ug/L) — MONITORING WELL WITH DESIGNATION (TETRACHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION (ABANDONED)
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-1 — GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE, CONTOUR INTERVAL 10ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected April 2014	
	Tetrachloroethene
Well	(µg/L)
DGC-1I	2
DGC-2I	ND
DGC3I	23
DGC6I	10
DGC7I	ND
DGC8I	ND
DGC9I	4
DGC11I	ND
DGC12I	35
DGC13I	ND
DGC16I	9
DGC17I	1
DGC18I	ND
DGC19I	3
CDM3	8
ERT-2I	ND
ERT-4I	ND
ERT-7I	ND
ERT-8I	3
ERT-9I	ND
ERT-EW5	770
ERT-EW6	43
ERT-EW7	64
GMS-02	4
TH-7	22
TH-9	ND

True North at 74° 30' West Longitude

1" = 200'

100 / 0 200

Camp Dresser McKee and Smith

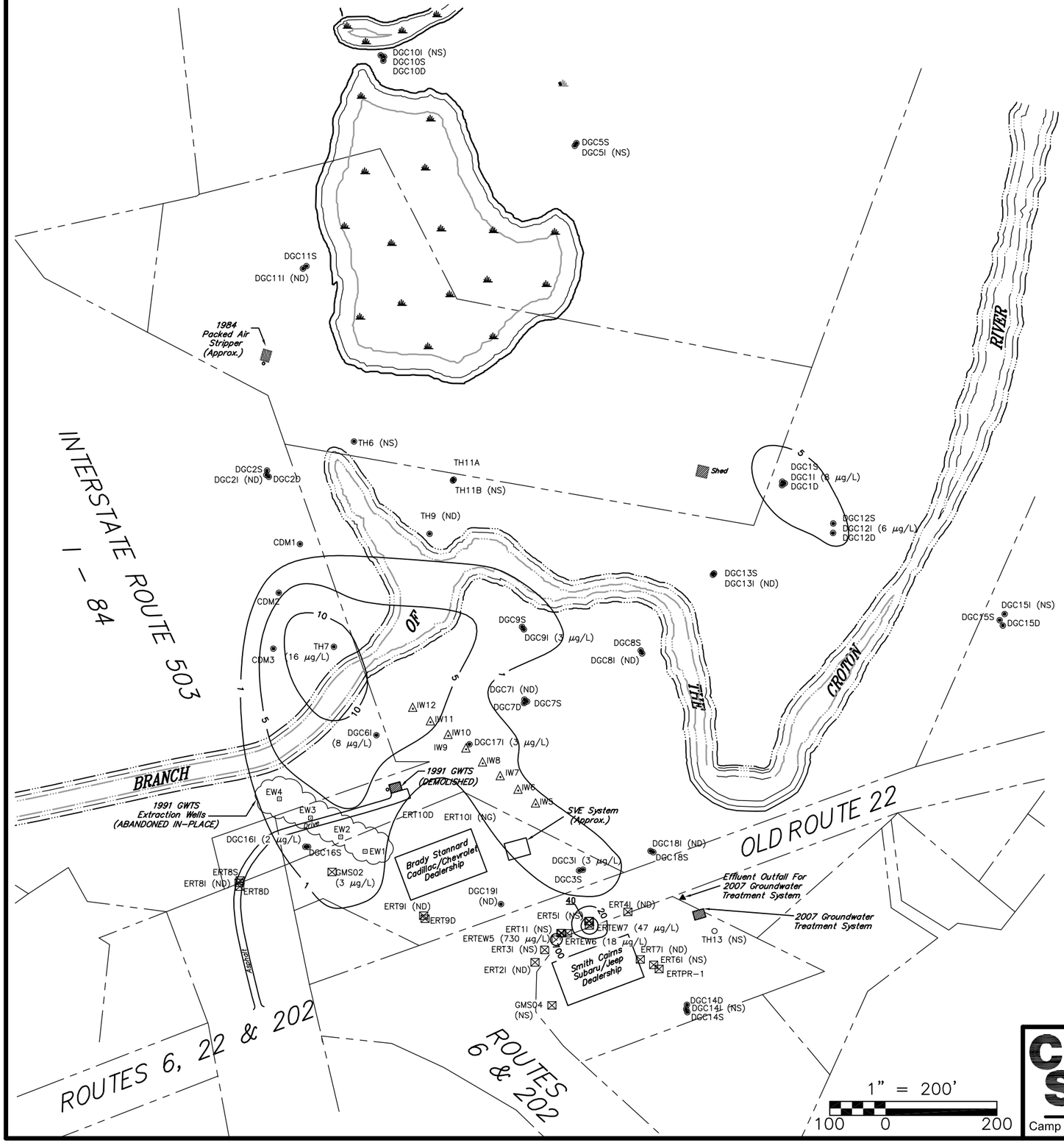
BREWSTER VILLAGE WELL FIELD

TETRACHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS

APRIL 2014

FIGURE NO. 4

0897-94720



LEGEND

- DGC8S (45µg/L) — MONITORING WELL (CONCENTRATION)
- EW1 — 1991 EXTRACTION WELL
- IW1 — 1991 INJECTION WELL
- ERT-1 — 2007 GWTS EXTRACTION WELL
- APPROX. PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE (10 µg/L INTERVAL)

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Well	DCE (µg/l)	PCE (µg/l)	TCE (µg/l)	VC (µg/l)
DGC10I	NS	NS	NS	NS
DGC11I	ND	ND	ND	ND
DGC12I	ND	6	ND	ND
DGC13I	ND	ND	ND	ND
DGC14I	NS	NS	NS	NS
DGC15I	NS	NS	NS	NS
DGC16I	ND	2	ND	ND
DGC17I	62	3	5	ND
DGC18I	ND	ND	ND	ND
DGC19I	2	ND	ND	ND
DGC1I	ND	8	ND	ND
DGC2I	ND	ND	ND	ND
DGC3I	2	3	ND	ND
DGC5I	NS	NS	NS	NS
DGC6I	19	8	4	ND
DGC7I	75	ND	ND	1
DGC8I	ND	ND	ND	ND
DGC9I	7	3	4	ND
ERT1I	NS	NS	NS	NS
ERT2I	ND	ND	ND	ND
ERT3I	NS	NS	NS	NS
ERT4I	ND	ND	ND	ND
ERT5I	NS	NS	NS	NS
ERT6I	NS	NS	NS	NS
ERT7I	ND	ND	ND	ND
ERT8I	ND	ND	ND	ND
ERT9I	ND	ND	ND	ND
ERTEW5	30	730	4	7
ERTEW6	4	18	1	ND
ERTEW7	19	47	11	2
GMS02	ND	3	ND	ND
GMS04	NS	NS	NS	NS
TH11B	NS	NS	NS	NS
TH13	NS	NS	NS	NS
TH6	NS	NS	NS	NS
TH7	13	16	3	ND
TH9	ND	ND	ND	ND

True North at 74° 30' West Longitude

N

NOTES:
ND NOT DETECTED
NS NOT SAMPLED
DCE CIS-1,2-DICHLOROETHYLENE
VC VINYL CHLORIDE
PCE TETRACHLOROETHYLENE
TCE TRICHLOROETHYLENE

CDM Smith
Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

GROUNDWATER PCE CONCENTRATIONS FOR INTERMEDIATE WELLS

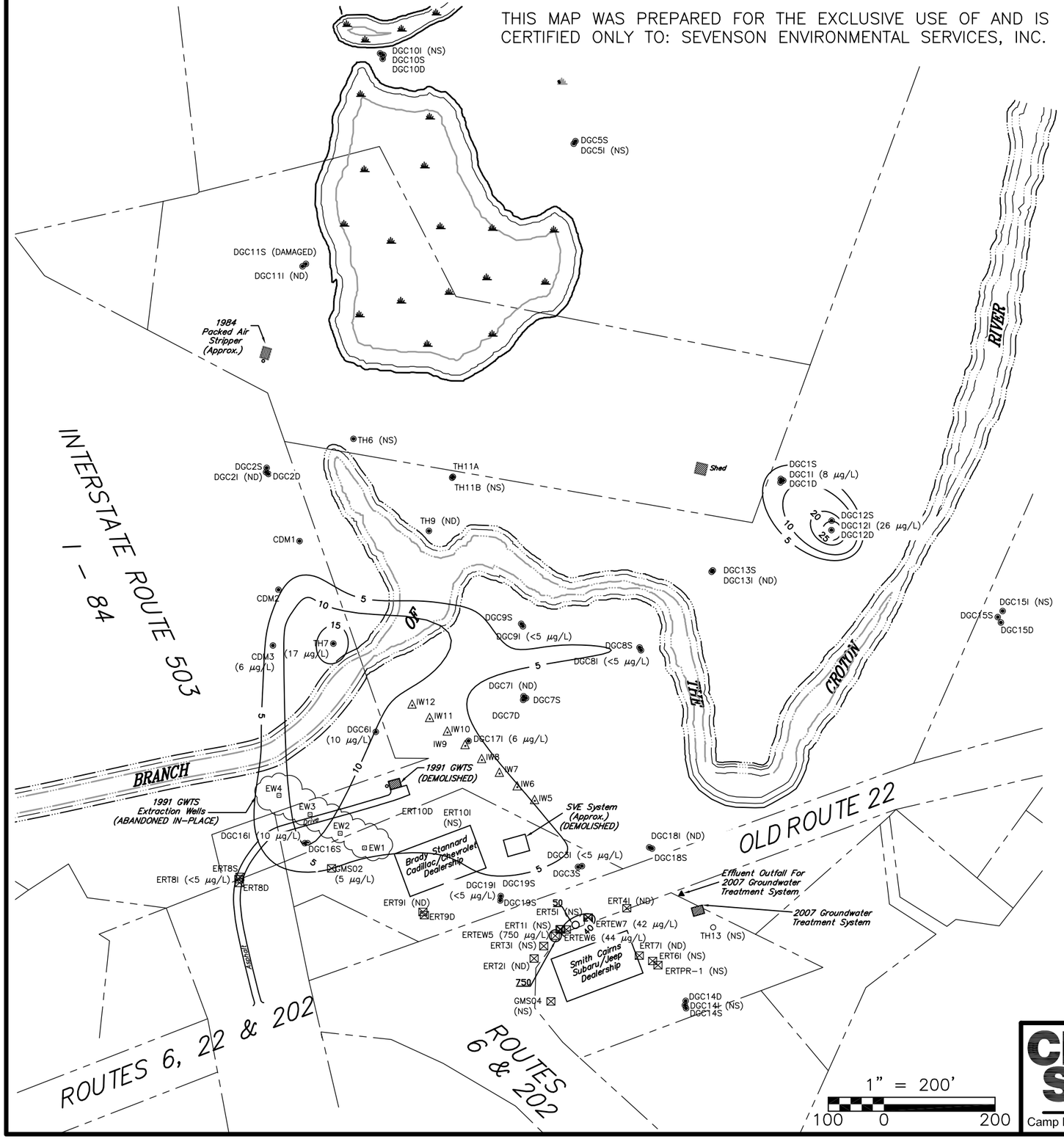
APRIL 2015

FIGURE NO. 6

0897-94720

C:\cdmxm\koskiar\d0772244\ FIG-4 04/11/13 05:40 Koskiar

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LEGEND

- DGC8S (45µg/L) — MONITORING WELL (CONCENTRATION)
- EW1 — 1991 EXTRACTION WELL
- IW1 — 1991 INJECTION WELL
- ERT-1 — 2007 GWTS EXTRACTION WELL
- APPROX. PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE

WELL	DATE/TIME SAMPLED	GROUNDWATER ELEVATION (FT AMSL)	PCE	TCE	DCE	VC
CDM-1	5/9/2016	330.29	ND	ND	ND	ND
CDM-3	5/9/2016	330.39	6	ND	ND	ND
DGC1I	5/9/2016	331.17	8	ND	ND	ND
DGC2I	5/9/2016	330.93	ND	ND	ND	ND
DGC3I	5/10/2016	330.70	<5	<5	<5	ND
DGC6I	5/10/2016	330.49	10	<5	18	ND
DGC7I	5/10/2016	331.31	ND	ND	62	ND
DGC8I	5/11/2016	331.21	ND	<5	ND	ND
DGC9I	5/11/2016	331.11	ND	<5	ND	ND
DGC11I	5/9/2016	330.76	ND	ND	ND	ND
DGC12IA	5/9/2016	330.42	26	ND	ND	ND
DGC13I	5/9/2016	330.49	ND	ND	ND	ND
DGC16I	5/10/2016	331.43	10	<5	ND	ND
DGC17I	5/10/2016	331.35	6	7	50	ND
DGC18I	5/10/2016	331.58	ND	ND	ND	ND
DGC19I	5/10/2016	331.40	<5	ND	5	ND
ERT2I	5/11/2016	331.60	ND	ND	ND	ND
ERT4I	5/10/2016	331.87	ND	ND	ND	ND
ERT7I	5/11/2016	331.89	ND	ND	ND	ND
ERT8I	5/10/2016	331.30	<5	ND	ND	ND
ERT9I	5/10/2016	331.46	ND	ND	ND	ND
ERTEW5	5/11/2016	NG	750	<5	32	2
ERTEW6	5/11/2016	NG	44	<5	6	ND
ERTEW7	5/11/2016	NG	42	11	21	ND
GMS02	5/10/2016	331.45	5	ND	ND	ND
TH7	5/9/2016	330.55	17	<5	12	ND
TH9	5/9/2016	330.39	ND	ND	ND	ND

NOTES:
ND NOT DETECTED
NG NOT GAUGED
NS NOT SAMPLED
DCE CIS-1,2-DICHLOROETHYLENE

PCE TETRACHLOROETHYLENE
TCE TRICHLOROETHYLENE
VC VINYL CHLORIDE

CDM Smith
Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

GROUNDWATER PCE CONCENTRATIONS FOR INTERMEDIATE WELLS

MAY 2016

FIGURE NO. 6

0897-94720

Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM1	5/9/2017	331.84	ND	ND	ND	ND
CDM3	5/9/2017	331.95	7.5	ND	ND	ND
DGC1I	5/9/2017	331.67	ND	ND	ND	ND
DGC3I	5/9/2017	332.59	1.8	ND	ND	ND
DGC6I	5/10/2017	332.45	12.1	4.2	11.9	ND
DGC7I	5/10/2017	332.63	1.3	1.1	60.8	1.1
DGC8I	5/10/2017	332.64	1.2	ND	ND	ND
DGC9I	5/10/2017	332.60	1.8	1.2	3.1	ND
DGC12IA	5/9/2017	331.71	21.8	ND	ND	ND
DGC13I	5/9/2017	331.78	ND	ND	ND	ND
DGC16I	5/10/2017	332.48	7.9	1.0	ND	ND
DGC17I	5/10/2017	NG	5.2	5.5	39.0	ND
DGC19I	5/9/2017	332.20	3.0	ND	5.3	ND
ERT7I	5/9/2017	333.14	ND	ND	ND	ND
ERT8I	5/10/2017	332.35	2.0	ND	ND	ND
ERTEW5	5/10/2017	NG	573	2.4	19.3	4.7
ERTEW6	5/10/2017	NG	22.7	1.3	4.8	ND
ERTEW7	5/10/2017	NG	36.0	9.4	13.0	ND
GMS02	5/9/2017	332.51	ND	ND	ND	ND
TH7	5/9/2017	331.57	ND	ND	4.5	ND

Legend
Contour (ug/L)
- 1
- 5
- 10
- 20
- 40
- 500
- Monitoring Well (Concentration)
- 2007 GWTS Extraction Well
- 1991 Extraction Well
- 1991 Injection Well

N

Notes:
1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater PCE Concentrations for Intermediate Wells - May 2017

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 6

CDM Smith

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Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM2	5/1/2018	331.18	0.38 J	0.28 J	ND	ND
CDM3	5/1/2018	331.38	9	1.1	0.26 J	ND
DGC1I	5/1/2018	331.11	9.5	0.58 J	ND	ND
DGC3I	5/1/2018	331.69	4.7	0.77 J	1.9	ND
DGC6I	5/1/2018	331.97	10	4.1	10	ND
DGC7I	5/1/2018	332	1.1	1.3	62	1
DGC9I	5/1/2018	332.02	6.3	5.4	60	0.3 J
DGC12IA	5/1/2018	331.16	23	ND	ND	ND
DGC14I	5/1/2018	332.52	ND	ND	ND	ND
DGC16I	5/1/2018	332	7.6	1.1	ND	ND
DGC17I	5/1/2018	332	3.6	3.4	21	ND
DGC18I	5/1/2018	332.28	ND	ND	ND	ND
DGC19I	5/1/2018	332.25	1.9	0.63 J	5	0.82 J
ERT6I	5/1/2018	332.45	2300	550	1800	99
ERTEW5	5/1/2018	NG	540	2.5	26	5.6
ERTEW6	5/1/2018	NG	20	0.86 J	4.4	ND
ERTEW7	5/1/2018	NG	34	9.7	16	0.26 J
TH6	5/1/2018	331.40	ND	ND	ND	ND
TH7	5/1/2018	331.05	4.1	1.2	2.9	0.59 J



N

Notes:

1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater PCE Concentrations for Intermediate Wells - May 2018

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 6

CDM Smith

Historical Trichloroethylene (TCE) Isoconcentation Plots

May 2005 through May 2018

N

DGC-10I

DGC-11

DGC-5

VILLAGE WELL FIELD #1

VILLAGE WELL

VILLAGE WELL FIELD #2

TH-6

DGC-2I

DGC-1I

DGC-12IA

TH-9
<0.500

DGC-13I

EAST BRANCH CROTON RIVER

DGC-15I

ASPHALT ACCESS ROAD

UPSTREAM SAMPLE
<0.500

DGC-9I
4.8

TH-7
29.0

DGC-8I

DGC-7I
1.4

IW-12

IW-11

DGC-6I
5.0

IW-10

DGC-17

IW-9

IW-8

IW-7

IW-6

IW-5

OUTFALL

GMS FACILTY

DOWNSTREAM SAMPLE
<0.500

I-84 NORTH

I-84 SOUTH

EW-4
0.7

EW-3
1.5

EW-2
4.1

EW-1
10.7

DGC-16I
1.91

DGC-18I

DGC-3S

BRADY STANNARD

DGC-19I
4.0

ROUTE 22

GAS STATION

CHRYSLER DEALER

DGC-14I
<0.500

ACCESS ROAD

ROUTE 6

LEGEND

DGC-7I
1.4 — MONITORING WELL LOCATION
TRICHLOROETHENE CONCENTRATION (µg/L)

5 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'
SCALE IN FEET

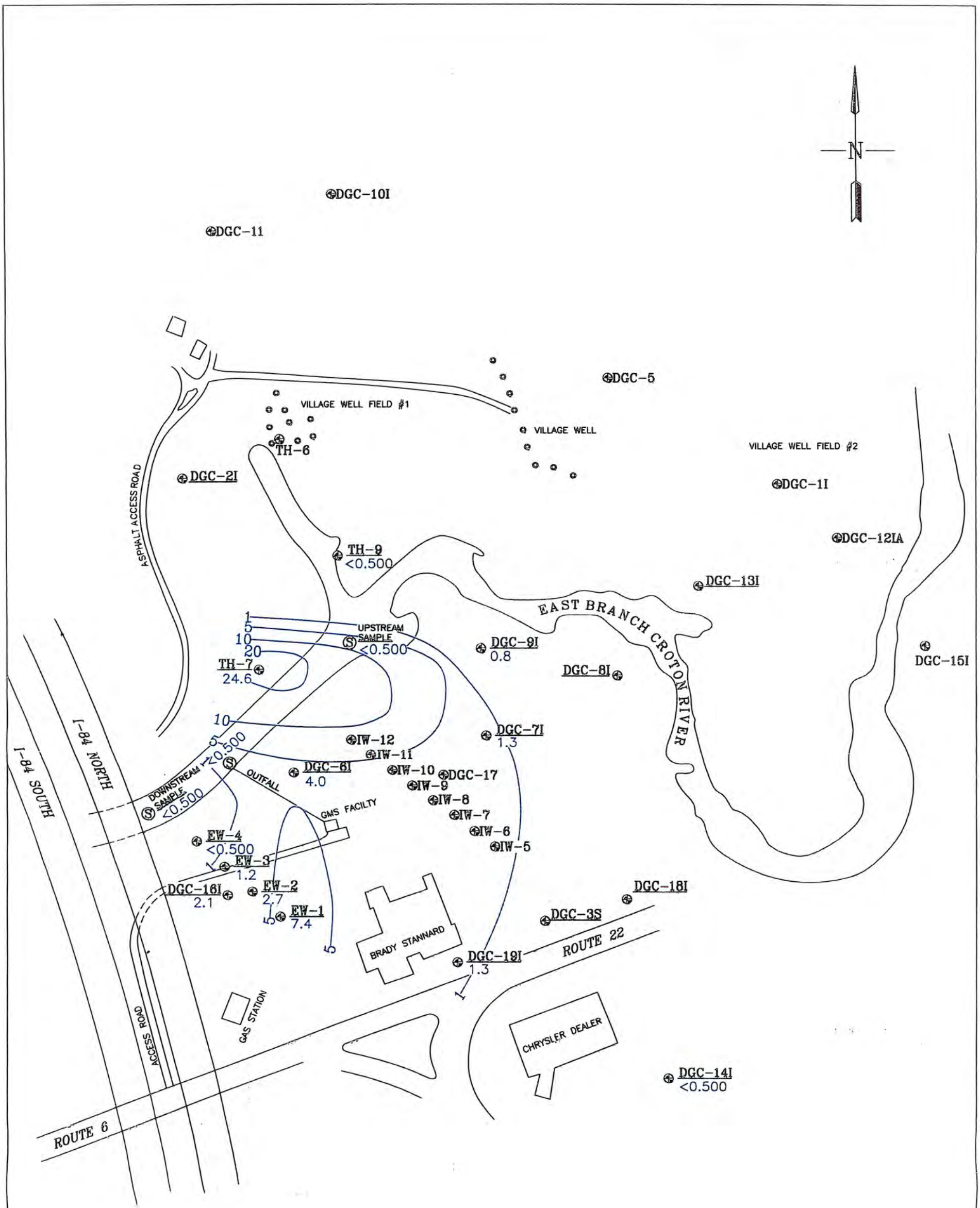
SEVENSON

BREWSTER WELL FIELD

TRICHLOROETHENE ISOCONCENTRATION CONTOUR MAP (MARCH 2005)

drawn DAK	checked	approved	figure no. 6
date 05/02/05	date	date	
job no. 01-1408-04-1548-000		file no. 1548-006.dwg	

Science Applications International Corporation
An Employee-Owned Company



LEGEND

DGC-7I / 1.3 — MONITORING WELL LOCATION
TRICHLOROETHENE CONCENTRATION (µg/L)

5 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'
SCALE IN FEET

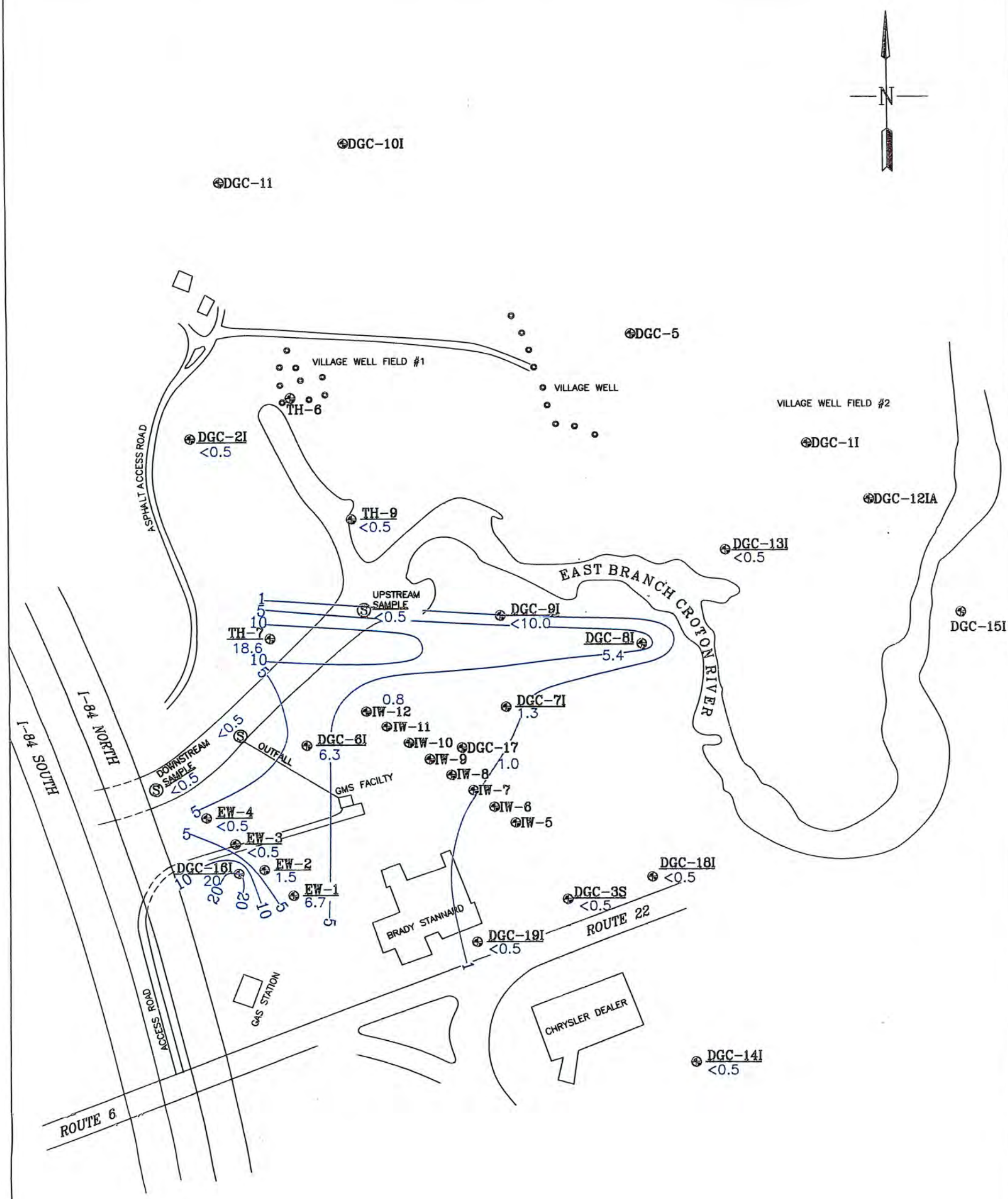
SEVENSON

BREWSTER WELL FIELD

TRICHLOROETHENE ISOCONCENTRATION CONTOUR MAP (JUNE 2005)

drawn	checked	approved	figure no.
DAK	MJR	RCC	6
date 07/26/05	date 07/25/05	date 07/25/06	
job no. 01-1633-04-2388-200		file no. 1548-006.dwg	

Science Applications International Corporation
From Science to Solutions™



LEGEND

DGC-7I / 1.3 — MONITORING WELL LOCATION / TRICHLOROETHENE CONCENTRATION (µg/L)

5 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'

SCALE IN FEET

SEVENSON

BREWSTER WELL FIELD

TRICHLOROETHENE ISOCONCENTRATION CONTOUR MAP (SEPTEMBER 2005)

drawn DAK	checked MJR	approved RCC	figure no.
date 11/17/05	date 11/17/05	date 11/17/05	6
job no. 01-1633-04-2388-200		file no. 1548-006.dwg	

Science Applications International Corporation
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N

DGC-10I

DGC-11

DGC-5

VILLAGE WELL FIELD #1

VILLAGE WELL

TH-6

DGC-2I

VILLAGE WELL FIELD #2

DGC-1I

DGC-12IA

ASPHALT ACCESS ROAD

TH-9
<0.5

DGC-13I

EAST BRANCH CROTON RIVER

DGC-15I

1
5
10
UPSTREAM SAMPLE
<0.5

DGC-9I
2.2

TH-7
13.8

DGC-8I

10

DGC-7I
1.9

IW-12

IW-11

I-84 NORTH

I-84 SOUTH

<0.5
5

DGC-6I
4.8

IW-10

DGC-17

IW-9

IW-8

IW-7

IW-6

IW-5

OUTFALL

GMS FACILTY

DOWNSTREAM SAMPLE
<0.5

EW-4
NM

EW-3
1.4

DGC-16I
1.7

5

EW-2
5.5

10

EW-1
13.0

10

DGC-16I

DGC-3S

BRADY STANNARD

DGC-19I
3.3

ROUTE 22

GAS STATION

ACCESS ROAD

CHRYSLER DEALER

DGC-14I
<0.5

ROUTE 6

LEGEND

DGC-7I
1.9
MONITORING WELL LOCATION
TRICHLOROETHENE CONCENTRATION (µg/L)

5
ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'
SCALE IN FEET

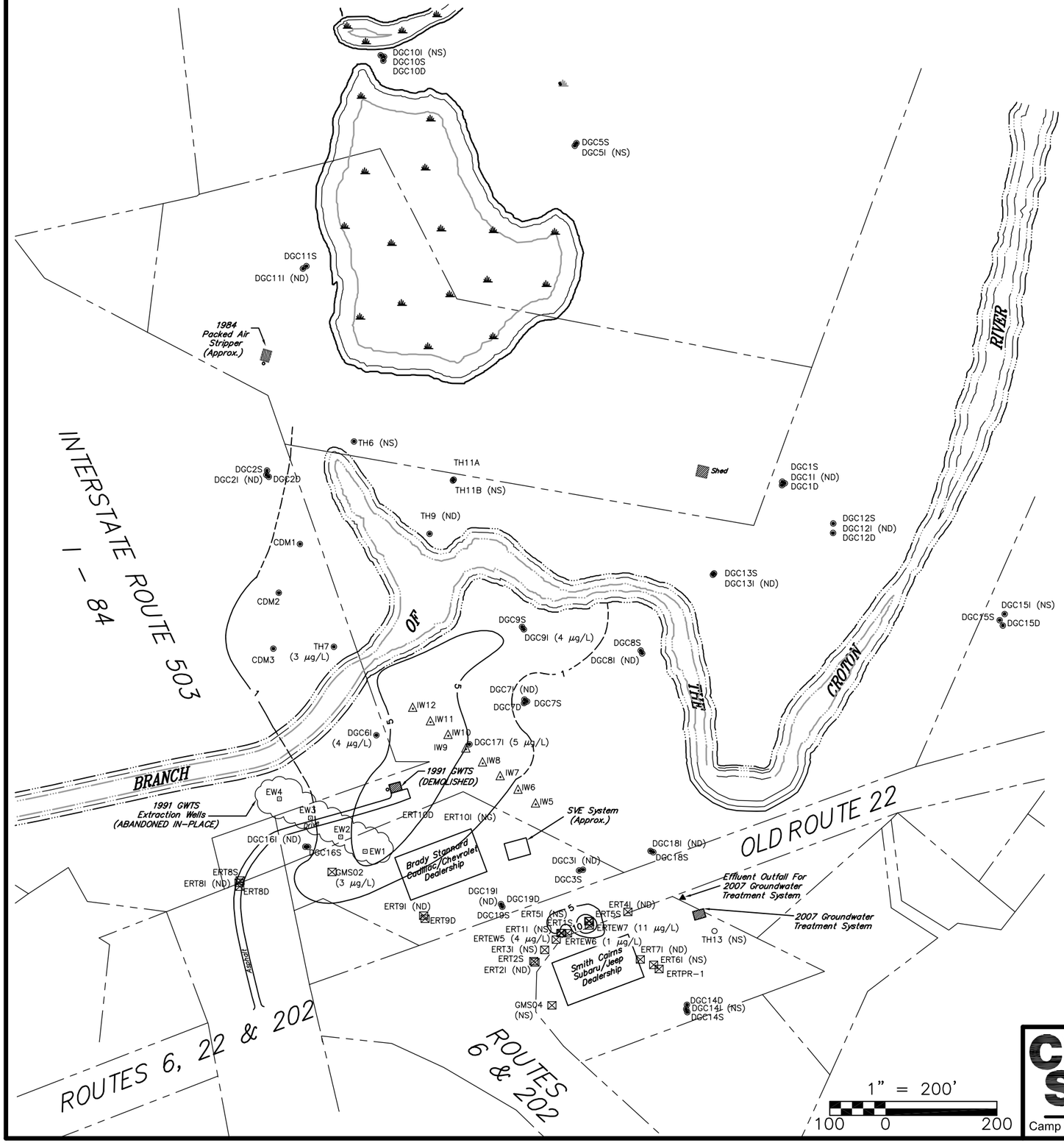
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BREWSTER WELL FIELD

TRICHLOROETHENE ISOCONCENTRATION CONTOUR MAP (DECEMBER 2005)

drawn *DAK*	checked *MJR*	approved *RCC*	figure no. 6
date *01/19/06*	date *01/19/06*	date *01/19/06*	
job no. *01-1633-04-2388-200*		file no. *1548-006.dwg*	

SAIC Science Applications International Corporation
From Science to Solutions™



LEGEND

- DGC8S (45µg/L) — MONITORING WELL (CONCENTRATION)
- EW1 — 1991 EXTRACTION WELL
- IW1 — 1991 INJECTION WELL
- ERT-1 — 2007 GWTS EXTRACTION WELL
- APPROX. PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE (10 µg/L INTERVAL)

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

True North at 74° 30' West Longitude

N

Well	DCE (µg/l)	PCE (µg/l)	TCE (µg/l)	VC (µg/l)
DGC10I	NS	NS	NS	NS
DGC11I	ND	ND	ND	ND
DGC12I	ND	6	ND	ND
DGC13I	ND	ND	ND	ND
DGC14I	NS	NS	NS	NS
DGC15I	NS	NS	NS	NS
DGC16I	ND	2	ND	ND
DGC17I	62	3	5	ND
DGC18I	ND	ND	ND	ND
DGC19I	2	ND	ND	ND
DGC1I	ND	8	ND	ND
DGC2I	ND	ND	ND	ND
DGC3I	2	3	ND	ND
DGC5I	NS	NS	NS	NS
DGC6I	19	8	4	ND
DGC7I	75	ND	ND	1
DGC8I	ND	ND	ND	ND
DGC9I	7	3	4	ND
ERT1I	NS	NS	NS	NS
ERT2I	ND	ND	ND	ND
ERT3I	NS	NS	NS	NS
ERT4I	ND	ND	ND	ND
ERT5I	NS	NS	NS	NS
ERT6I	NS	NS	NS	NS
ERT7I	ND	ND	ND	ND
ERT8I	ND	ND	ND	ND
ERT9I	ND	ND	ND	ND
ERTEW5	30	730	4	7
ERTEW6	4	18	1	ND
ERTEW7	19	47	11	2
GMS02	ND	3	ND	ND
GMS04	NS	NS	NS	NS
TH11B	NS	NS	NS	NS
TH13	NS	NS	NS	NS
TH6	NS	NS	NS	NS
TH7	13	16	3	ND
TH9	ND	ND	ND	ND

NOTES:
ND NOT DETECTED
NS NOT SAMPLED
DCE CIS-1,2-DICHLOROETHYLENE
VC VINYL CHLORIDE
PCE TETRACHLOROETHYLENE
TCE TRICHLOROETHYLENE

CDM Smith
Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

GROUNDWATER TCE CONCENTRATIONS FOR INTERMEDIATE WELLS

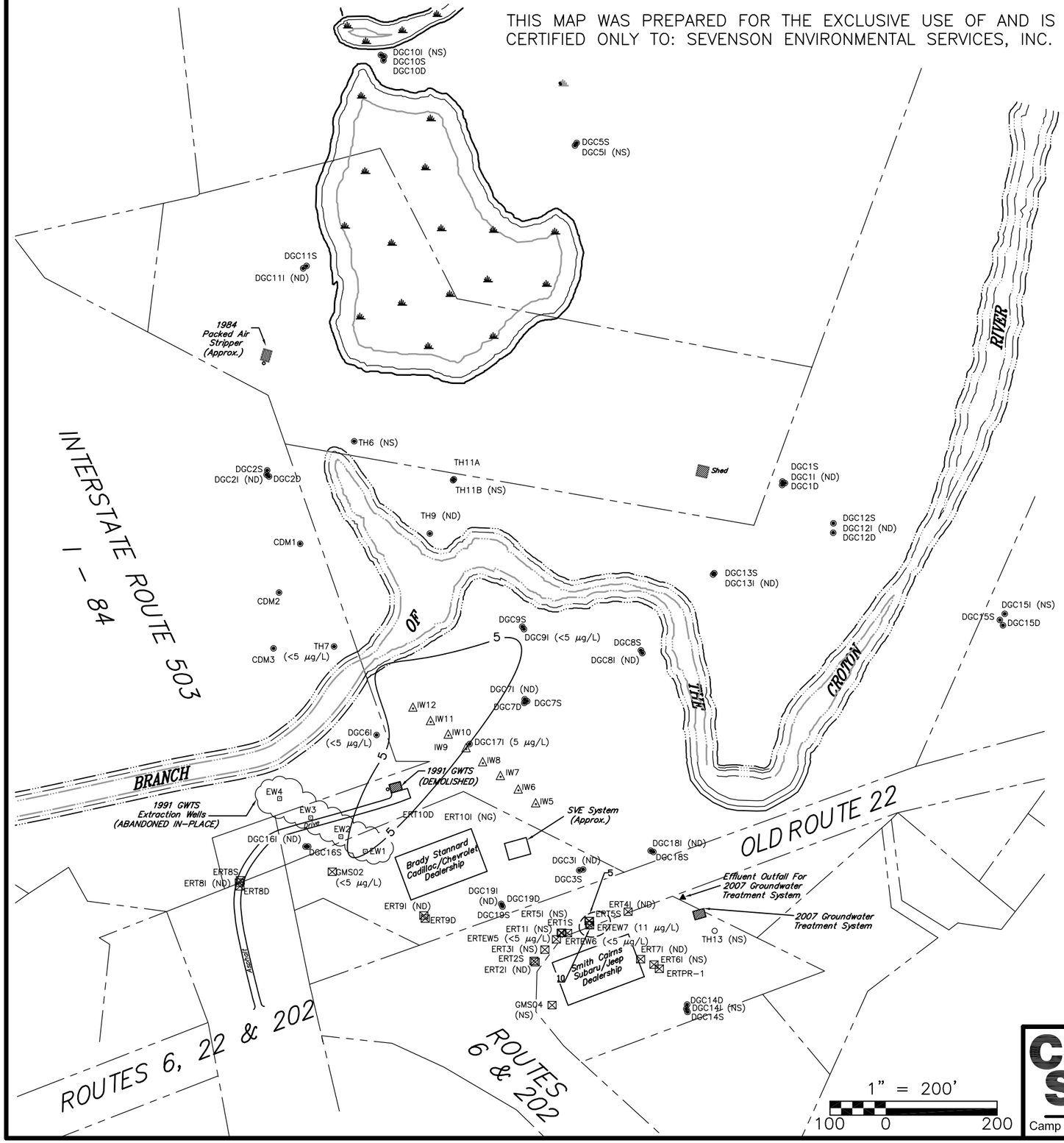
APRIL 2015

FIGURE NO. 7

0897-94720

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THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.



LEGEND

- DGC8S (45µg/L) — MONITORING WELL (CONCENTRATION)
- EW1 — 1991 EXTRACTION WELL
- IW1 — 1991 INJECTION WELL
- ERT-1 — 2007 GWTS EXTRACTION WELL
- APPROX. PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE

WELL	DATE/TIME SAMPLED	GROUNDWATER ELEVATION (FT AMSL)	PCE	TCE	DCE	VC
CDM-1	5/9/2016	330.29	ND	ND	ND	ND
CDM-3	5/9/2016	330.39	6	ND	ND	ND
DGC1I	5/9/2016	331.17	8	ND	ND	ND
DGC2I	5/9/2016	330.93	ND	ND	ND	ND
DGC3I	5/10/2016	330.70	<5	<5	<5	ND
DGC6I	5/10/2016	330.49	10	<5	18	ND
DGC7I	5/10/2016	331.31	ND	ND	62	ND
DGC8I	5/11/2016	331.21	ND	<5	ND	ND
DGC9I	5/11/2016	331.11	ND	<5	ND	ND
DGC11I	5/9/2016	330.76	ND	ND	ND	ND
DGC12IA	5/9/2016	330.42	26	ND	ND	ND
DGC13I	5/9/2016	330.49	ND	ND	ND	ND
DGC16I	5/10/2016	331.43	10	<5	ND	ND
DGC17I	5/10/2016	331.35	6	7	50	ND
DGC18I	5/10/2016	331.58	ND	ND	ND	ND
DGC19I	5/10/2016	331.40	<5	ND	5	ND
ERT2I	5/11/2016	331.60	ND	ND	ND	ND
ERT4I	5/10/2016	331.87	ND	ND	ND	ND
ERT7I	5/11/2016	331.89	ND	ND	ND	ND
ERT8I	5/10/2016	331.30	<5	ND	ND	ND
ERT9I	5/10/2016	331.46	ND	ND	ND	ND
ERTEW5	5/11/2016	NG	750	<5	32	2
ERTEW6	5/11/2016	NG	44	<5	6	ND
ERTEW7	5/11/2016	NG	42	11	21	ND
GMS02	5/10/2016	331.45	5	ND	ND	ND
TH7	5/9/2016	330.55	17	<5	12	ND
TH9	5/9/2016	330.39	ND	ND	ND	ND

NOTES:
ND NOT DETECTED
NG NOT GAUGED
NS NOT SAMPLED
DCE CIS-1,2-DICHLOROETHYLENE

PCE TETRACHLOROETHYLENE
TCE TRICHLOROETHYLENE
VC VINYL CHLORIDE

Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

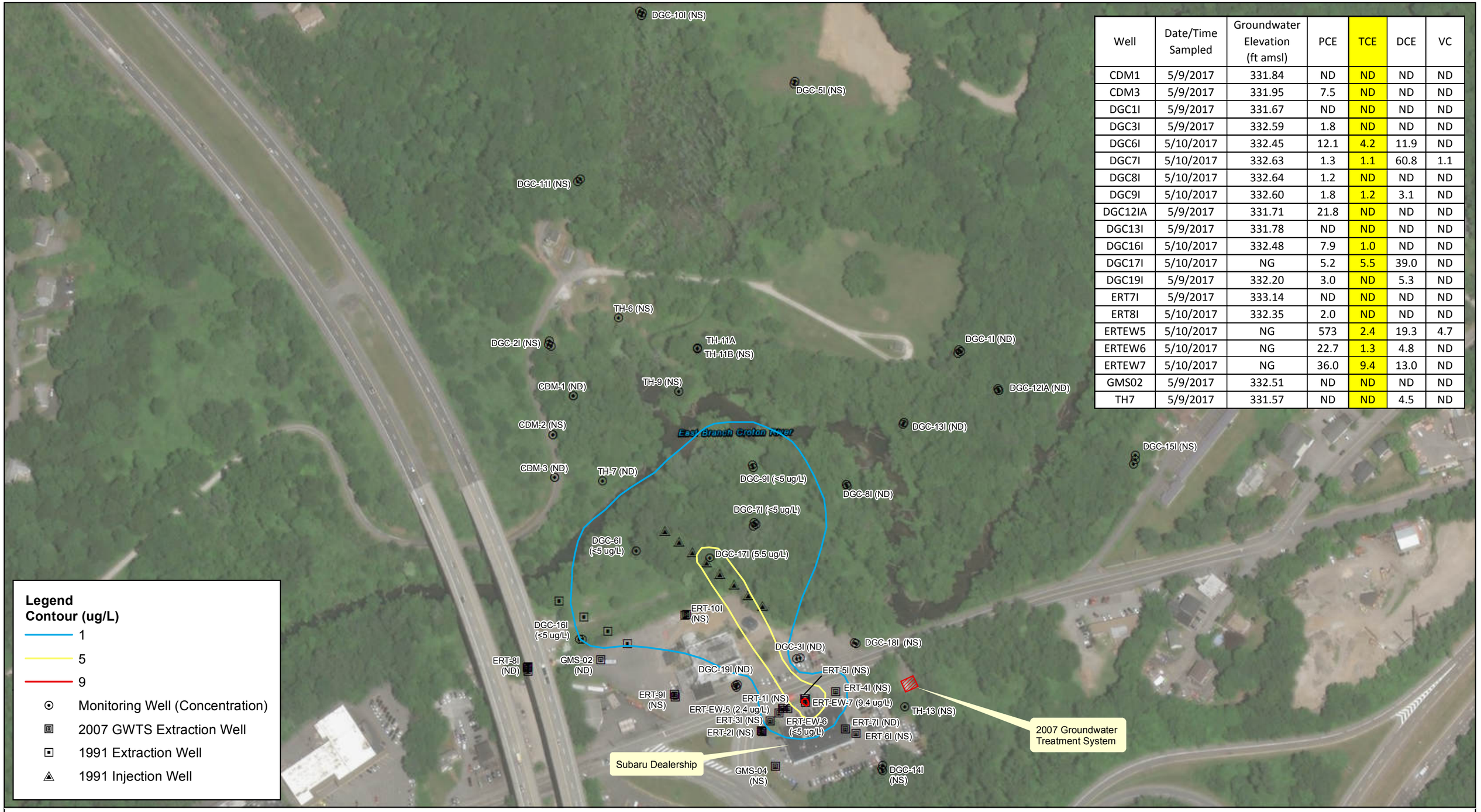
GROUNDWATER TCE CONCENTRATIONS FOR INTERMEDIATE WELLS

MAY 2016

FIGURE NO. 7

0897-94720

Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM1	5/9/2017	331.84	ND	ND	ND	ND
CDM3	5/9/2017	331.95	7.5	ND	ND	ND
DGC1I	5/9/2017	331.67	ND	ND	ND	ND
DGC3I	5/9/2017	332.59	1.8	ND	ND	ND
DGC6I	5/10/2017	332.45	12.1	4.2	11.9	ND
DGC7I	5/10/2017	332.63	1.3	1.1	60.8	1.1
DGC8I	5/10/2017	332.64	1.2	ND	ND	ND
DGC9I	5/10/2017	332.60	1.8	1.2	3.1	ND
DGC12IA	5/9/2017	331.71	21.8	ND	ND	ND
DGC13I	5/9/2017	331.78	ND	ND	ND	ND
DGC16I	5/10/2017	332.48	7.9	1.0	ND	ND
DGC17I	5/10/2017	NG	5.2	5.5	39.0	ND
DGC19I	5/9/2017	332.20	3.0	ND	5.3	ND
ERT7I	5/9/2017	333.14	ND	ND	ND	ND
ERT8I	5/10/2017	332.35	2.0	ND	ND	ND
ERTEW5	5/10/2017	NG	573	2.4	19.3	4.7
ERTEW6	5/10/2017	NG	22.7	1.3	4.8	ND
ERTEW7	5/10/2017	NG	36.0	9.4	13.0	ND
GMS02	5/9/2017	332.51	ND	ND	ND	ND
TH7	5/9/2017	331.57	ND	ND	4.5	ND



N

Notes:

1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater TCE Concentrations for Intermediate Wells - May 2017

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 7

CDM Smith

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Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM2	5/1/2018	331.18	0.38 J	0.28 J	ND	ND
CDM3	5/1/2018	331.38	9	1.1	0.26 J	ND
DGC1I	5/1/2018	331.11	9.5	0.58 J	ND	ND
DGC3I	5/1/2018	331.69	4.7	0.77 J	1.9	ND
DGC6I	5/1/2018	331.97	10	4.1	10	ND
DGC7I	5/1/2018	332	1.1	1.3	62	1
DGC9I	5/1/2018	332.02	6.3	5.4	60	0.3 J
DGC12IA	5/1/2018	331.16	23	ND	ND	ND
DGC14I	5/1/2018	332.52	ND	ND	ND	ND
DGC16I	5/1/2018	332	7.6	1.1	ND	ND
DGC17I	5/1/2018	332	3.6	3.4	21	ND
DGC18I	5/1/2018	332.28	ND	ND	ND	ND
DGC19I	5/1/2018	332.25	1.9	0.63 J	5	0.82 J
ERT6I	5/1/2018	332.45	2300	550	1800	99
ERTEW5	5/1/2018	NG	540	2.5	26	5.6
ERTEW6	5/1/2018	NG	20	0.86 J	4.4	ND
ERTEW7	5/1/2018	NG	34	9.7	16	0.26 J
TH6	5/1/2018	331.40	ND	ND	ND	ND
TH7	5/1/2018	331.05	4.1	1.2	2.9	0.59 J

DGC-10I (NS)
DGC-5I (NS)
DGC-11I (NS)
TH-6 (ND)
DGC-2I (NS)
TH-11B (NS)
DGC-1I (0.58 J)
DGC-12IA (ND)
CDM-1 (NS)
TH-9 (NS)
CDM-2 (0.28 J)
East Branch Croton River
DGC-13I (NS)
DGC-15I (NS)
DGC-9I (5.4)
CDM-3 (1.1)
TH-7 (1.2)
DGC-8I (NS)
DGC-7I (1.3)
DGC-6I (4.1)
DGC-17I (3.4)
ERT-10I (NS)
DGC-16I (1.1)
GMS-02 (NS)
DGC-3I (0.77 J)
DGC-18I (ND)
ERT-8I (NS)
DGC-19I (0.63 J)
ERT-5I (NS)
ERT-4I (NS)
ERT-9I (NS)
ERT-1I (NS)
TH-13 (NS)
ERT-EW-5 (2.5)
ERT-EW-7 (9.7)
ERT-EW-6
ERT-2I (NS)
ERT (0.86 J) (NS)
ERT-6I (550)
ERT-7I (NS)
Subaru Dealership
GMS-04 (NS)
DGC-14I (ND)
2007 Groundwater Treatment System

Legend
Contours (ug/L)
- 1
- 5
- 100
- 500
- Monitoring Well (Concentration)
- 2007 GWTS Extraction Well
- 1991 Extraction Well
- 1991 Injection Well

N

Notes:
1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater TCE Concentrations for Intermediate Wells - May 2018

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 7

CDM Smith

Historical cis-1,2-Dichloroethelyene (DCE) Isoconcentration Plots

May 2005 Through May 2018

N

DGC-10I

DGC-11

DGC-5

VILLAGE WELL FIELD #1

VILLAGE WELL

TH-6

VILLAGE WELL FIELD #2

DGC-2I

DGC-1I

ASPHALT ACCESS ROAD

DGC-12IA

TH-9
<0.500

DGC-13I

EAST BRANCH CROTON RIVER

1
10
50

UPSTREAM SAMPLE
<0.500

TH-7
82.8

DGC-9I
20.8

DGC-15I

DGC-8I

50
10

DGC-7I
65.0

IW-12
IW-11
IW-10
IW-9
IW-8
IW-7
IW-6
IW-5

<0.500

DGC-6I
19.2

DGC-17

OUTFALL

DOWNSTREAM SAMPLE
<0.500

GMS FACILTY

I-84 NORTH

I-84 SOUTH

EW-4
1.3

EW-3
2.7

EW-2
31.0

EW-1
123

DGC-16I
<0.5

10
50
100
200

DGC-18I

DGC-3S

BRADY STANNARD

DGC-19I
410

300
400
400
300
200
100
50
10
1

ROUTE 22

GAS STATION

CHRYSLER DEALER

ACCESS ROAD

DGC-14I
<0.500

ROUTE 6

LEGEND

DGC-7I / 65.0 — MONITORING WELL LOCATION
CIS-1,2-DCE CONCENTRATION (µg/L)

10 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'
SCALE IN FEET

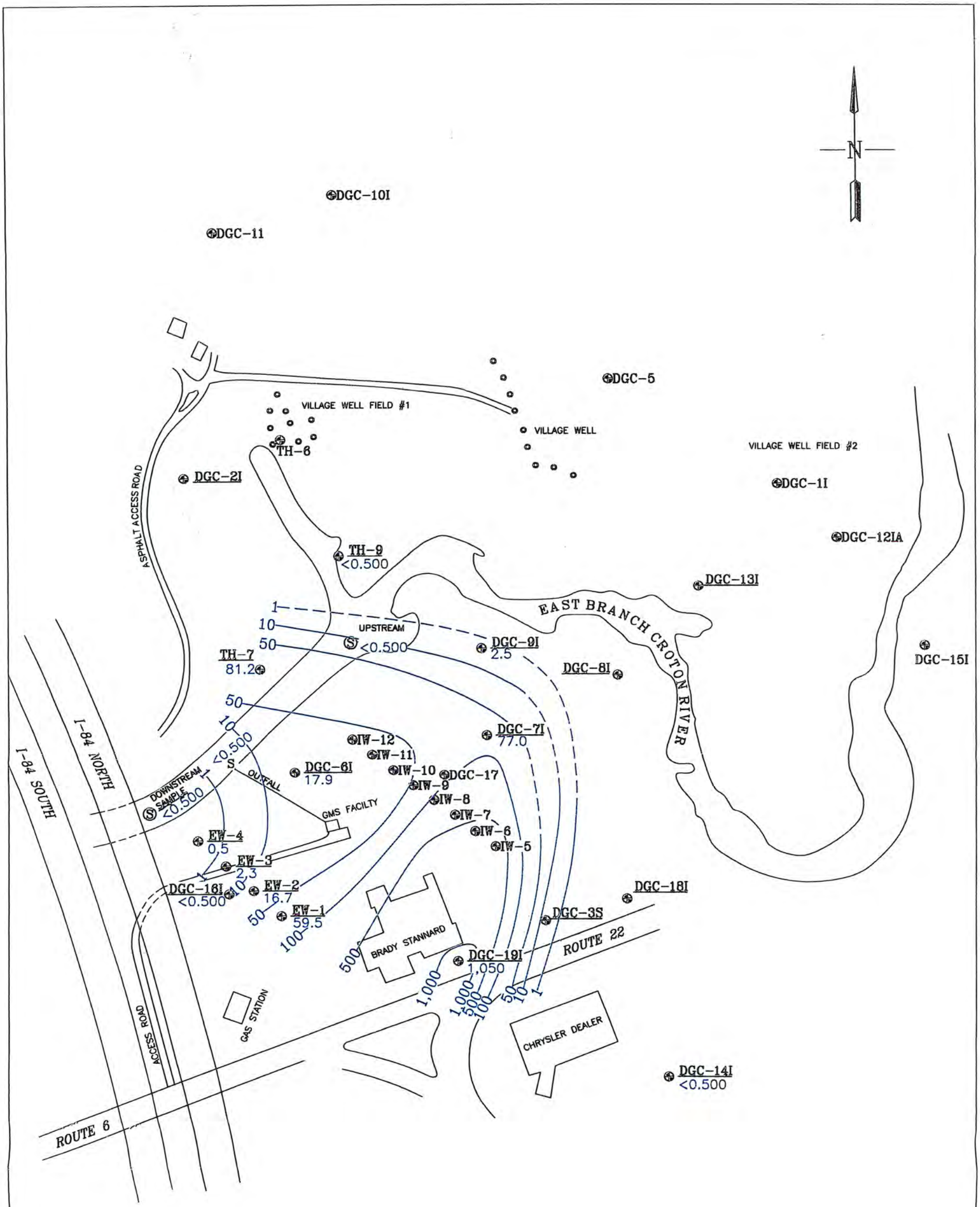
SEVENSON

BREWSTER WELL FIELD

CIS-1,2-DICHLOROETHENE ISOCONCENTRATION CONTOUR MAP (MARCH 2005)

drawn DAK	checked	approved	figure no.
date 05/02/06	date	date	7
job no. 01-1408-04-1548-000		file no. 1548-007.dwg	

Science Applications International Corporation
An Employee-Owned Company



LEGEND

DGC-7I 77.0 — MONITORING WELL LOCATION; CIS-1,2-DCE CONCENTRATION (µg/L)

10 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'

SCALE IN FEET

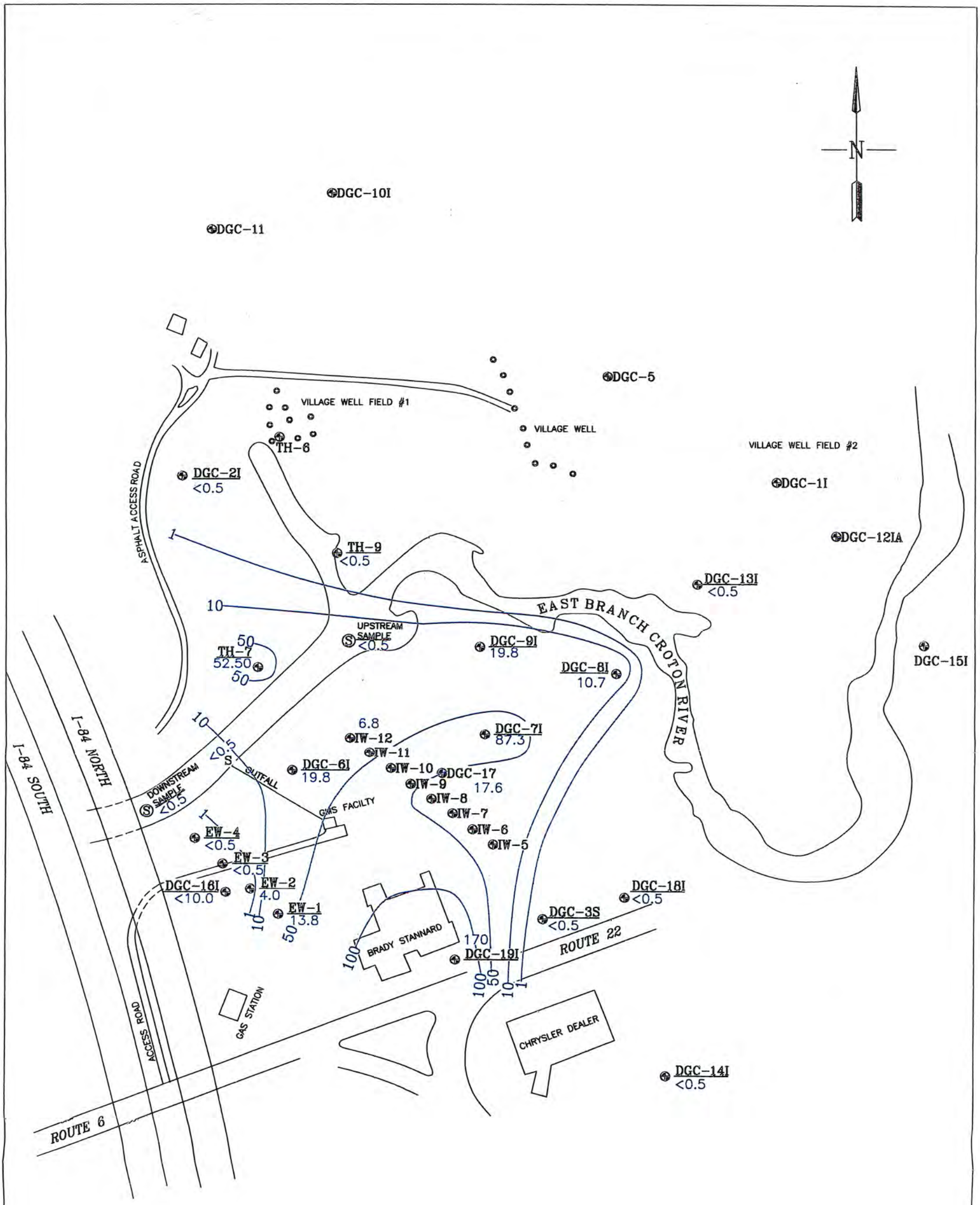
SEVENSON

BREWSTER WELL FIELD

CIS-1,2-DICHLOROETHENE ISOCONCENTRATION CONTOUR MAP (JUNE 2005)

drawn DAK	checked MJR	approved RCC	figure no.
date 07/28/05	date 07/25/05	date 07/25/05	7
job no. 01-1633-04-2388-200		file no. 1548-007.dwg	

Science Applications International Corporation
From Science to Solutions™



LEGEND

DGC-7I / 77.0 — MONITORING WELL LOCATION; CIS-1,2-DCE CONCENTRATION (µg/L)

10 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'

SCALE IN FEET

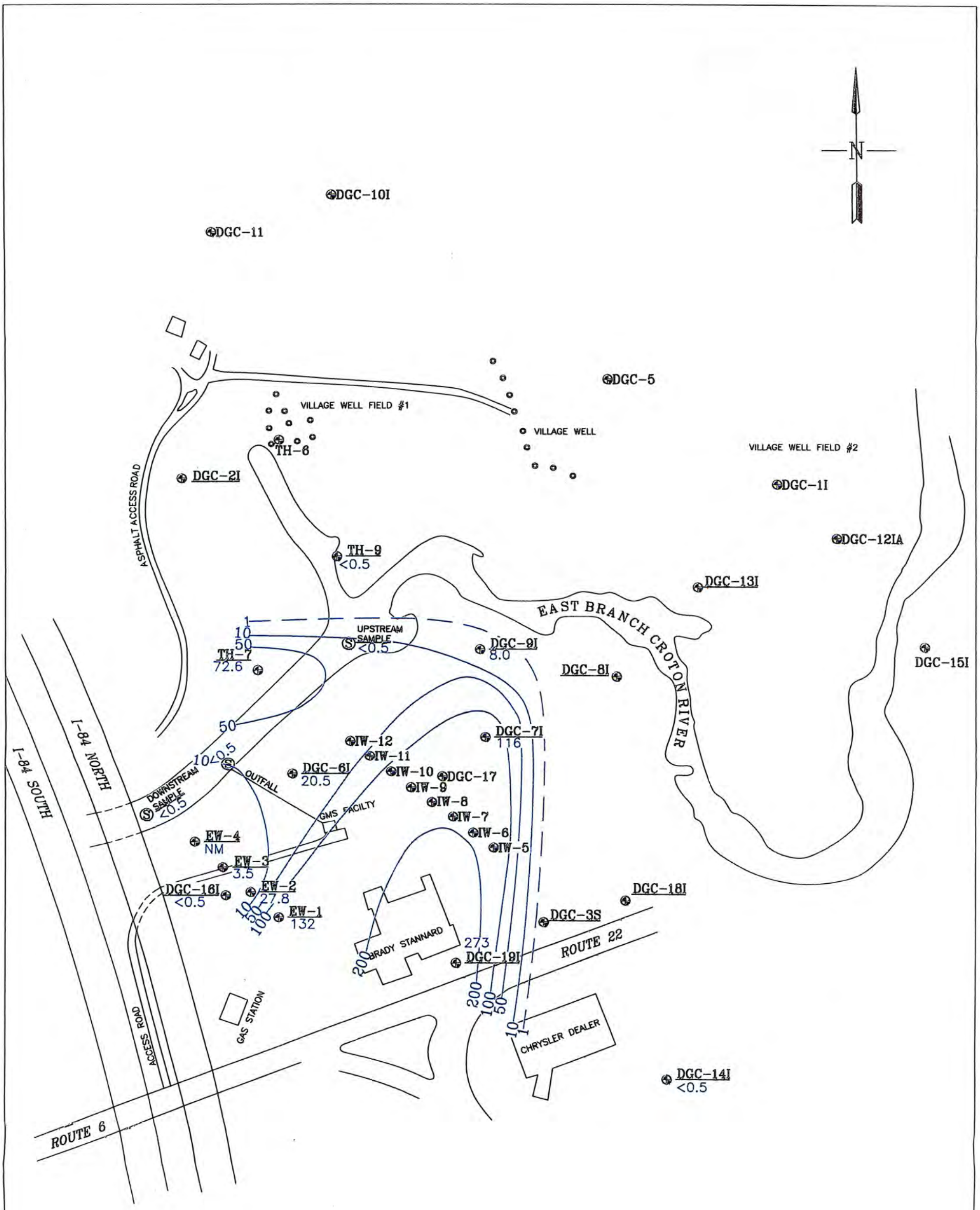
SEVENSON

BREWSTER WELL FIELD

CIS-1,2-DICHLOROETHENE ISOCONCENTRATION CONTOUR MAP (SEPTEMBER 2005)

drawn DAK	checked MJR	approved RCC	figure no. 7
date 11/17/05	date 11/17/05	date 11/17/05	
job no. 01-1633-04-2388-200		file no. 1548-007.dwg	

Science Applications International Corporation
From Science to Solutions™



LEGEND

DGC-7I / 116 — MONITORING WELL LOCATION
CIS-1,2-DCE CONCENTRATION (µg/L)

10 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'
SCALE IN FEET

SEVENSON

BREWSTER WELL FIELD

CIS-1,2-DICHLOROETHENE ISOCONCENTRATION CONTOUR MAP (DECEMBER 2005)

drawn DAK	checked MJR	approved RCC	figure no.
date 01/19/06	date 01/19/06	date 01/19/06	7
job no. 01-1633-04-2388-200	file no. 1548-007.dwg		

Science Applications International Corporation
From Science to Solutions℠

LEGEND

DG5I (330.49)	Monitoring Well with Designation (Groundwater Elevation, FT BGS)
EW1	Old GWTS Extraction Well with Designation
IW1	Old GWTS Injection Well with Designation
ERT–EW5	New GWTS Extraction Well with Designation
———	Approximate Property Line
—— 30 ——	Isoconcentration Line

This map was prepared for the exclusive use of and is certified only to:
SEVENSON ENVIRONMENTAL SERVICES, INC.

1" = 200'
100 0 200

CDM Camp Dresser & McKee	BREWSTER VILLAGE WELL FIELD	1,2–DICHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS	FIGURE NO.
		MAY 2008	6

LEGEND

- DG5I (8 ug/L) — MONITORING WELL WITH DESIGNATION (ISOCONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-EW5 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 30 — ISOCONCENTRATION CONTOUR LINE

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

DGC10S
DGC10D
DGC10I
DGC5I
DGC11I
Groundwater Treatment System (Approx.)
TH6
DGC2S
DGC2I
DGC2D
TH11B
TH9
Shed
DGC1D
DGC1I
DGC1S
DGC12I
DGC12S
DGC13I
INTERSTATE ROUTE 503
I – 84
OFF
RIVER
CROTON
DGC15I
DGC15S
DGC15D
DGC9S
DGC9I
DGC8S
DGC8I (1 ug/L)
TH7 (6 ug/L)
DGC7I (49 ug/L)
DGC7D
DGC7S
DGC6I (49 ug/L)
IW12
IW11
IW10
IW9
DGC17I (7 ug/L)
IW8
IW7
IW6
IW5
Groundwater Treatment System
Old GWTS Extraction Wells
EW4
EW3
EW2
EW1
Drive
ERT10D
ERT10I
Approximate Location of SVE System
DGC18I
DGC18S
DGC16I (ND)
DGC16S
GMS02
Brady Stannard Dealership
DGC3I
DGC3S
ERT8S
ERT8I
ERT8D
DGC19I (39ug/L)
DGC19D
DGC19S
ERT9I
ERT9D
ERT4I
ERT5S
ERTEW7 (13 ug/L)
ERTEW6 (310 ug/L)
ERTEW5 (45 ug/L)
ERT3I
ERT2S
ERT2I
TH13
Effluent Outfall For New Groundwater Treatment System
New Groundwater Treatment System
Smith Cairns Subaru/Jeep Dealership
ERT7I
ERT6I
ERTPR-1
GMS04
DGC14D
DGC14I
DGC14S
OLD ROUTE 22
ROUTES 6, 22 & 202
ROUTES 6 & 202
Jersey
BRANCH
THE
10
20
30
40
300

True North at 74° 30' West Longitude

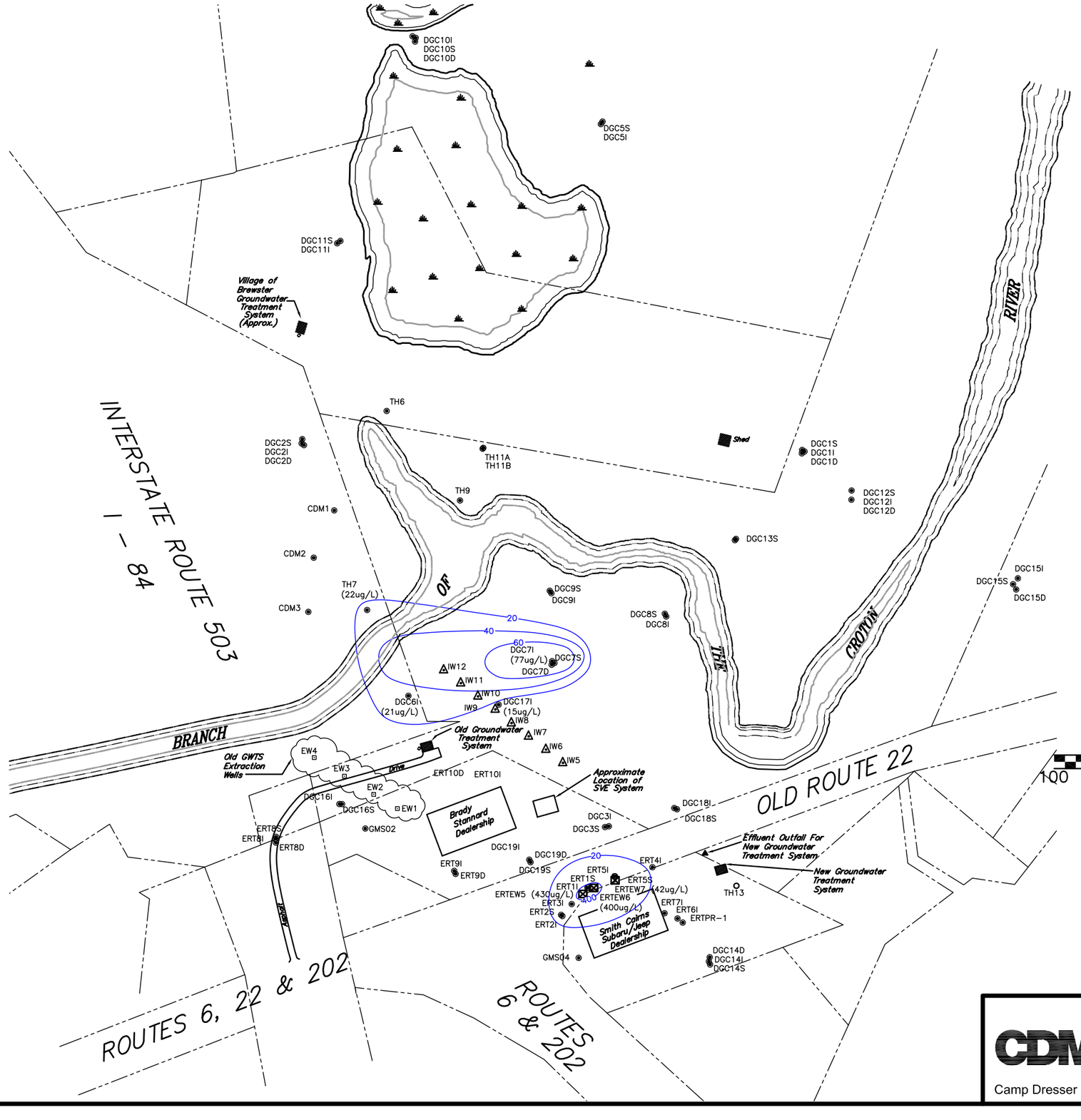
N

1" = 200'

100 0 200

C:\CAD\BREWSTER\ FIG 6 01/22/10 08:16 Koskiar

CDM Camp Dresser & McKee	BREWSTER VILLAGE WELL FIELD	1,2–DICHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS	FIGURE NO.
		APRIL 2009	6



LEGEND

- DG5I (8 ug/L) — MONITORING WELL WITH DESIGNATION (1,2–DICHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT–EW5 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 20 ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected 12/27/11-12/29/11			
	Tetrachloroethene	1,2-Dichloroethene (total)	Vinyl chloride
Well	(µg/L)	(µg/L)	(µg/L)
DGC-1I	1	ND	ND
DGC-2I	ND	ND	ND
DGC3I	ND	ND	ND
DGC6I	19	27	ND
DGC7I	3	77	1
DGC8I	ND	ND	ND
DGC9I	3	ND	ND
DGC11I	ND	ND	ND
DGC13I	ND	ND	ND
DGC14I	ND	ND	ND
DGC16I	2	ND	ND
DGC17I	15	15	ND
DGC18I	ND	ND	ND
DGC19I	ND	ND	ND
CDM1	ND	ND	ND
CDM2	ND	ND	ND
CDM3	7	ND	ND
ERT-2I	ND	ND	ND
ERT-7I	ND	ND	ND
ERT-8I	ND	ND	ND
ERT-9I	ND	ND	ND
ERT-EW5	200	430	100
ERT-EW6	200	400	100
ERT-EW7	87	42	1
GMS-02	ND	ND	ND
TH-11B	ND	ND	ND
TH-6	ND	ND	ND
TH-7	29	22	5

CDM
Camp Dresser & McKee

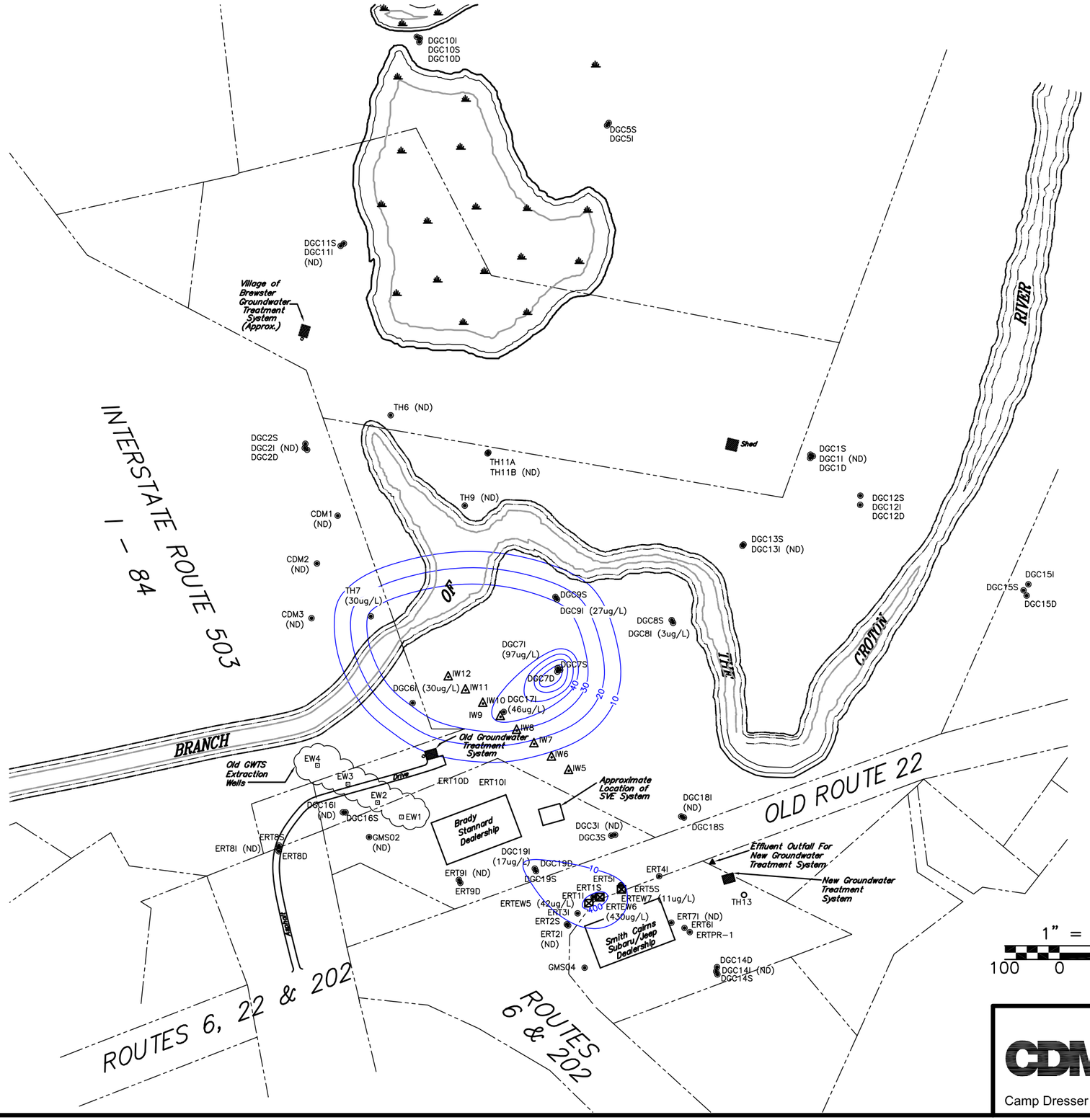
BREWSTER VILLAGE WELL FIELD

1,2–DICHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS

DECEMBER 2010

FIGURE NO. 6

C:\CAD\BREWSTER\ FIG 6 01/22/10 08:16 Koskiar



LEGEND

- DGC6I (30 ug/L) — MONITORING WELL WITH DESIGNATION (1,2–DICHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT–EW5 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 20 ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected 5/18/2011-5/21/2011			
	Tetrachloroethene	1,2-Dichloroethene (total)	Vinyl chloride
Well	(µg/L)	(µg/L)	(µg/L)
DGC-1I	ND	ND	ND
DGC-2I	ND	ND	ND
DGC3I	ND	ND	ND
DGC6I	16	30	ND
DGC7I	3	97	ND
DGC8I	4	3	ND
DGC9I	12	27	ND
DGC11I	ND	ND	ND
DGC13I	ND	ND	ND
DGC14I	ND	ND	ND
DGC16I	1	ND	ND
DGC17I	6	46	ND
DGC18I	ND	ND	ND
DGC19I	4	17	2
CDM1	ND	ND	ND
CDM2	ND	ND	ND
CDM3	14	ND	ND
ERT-2I	ND	ND	ND
ERT-7I	ND	ND	ND
ERT-8I	2	ND	ND
ERT-9I	ND	ND	ND
ERT-EW5	920	42	200
ERT-EW6	190	430	90
ERT-EW7	51	11	ND
GMS-02	6	ND	ND
TH-11B	ND	ND	ND
TH-6	ND	ND	ND
TH-7	36	30	ND
TH-9	ND	ND	ND

Camp Dresser & McKee

BREWSTER VILLAGE WELL FIELD

1,2–DICHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS

MAY 2011

FIGURE NO. 6

C:\CAD\BREWSTER\ FIG 6 01/22/10 08:16 Koskiar

C:\cdmxm\koskiar\d0772244\ FIG-6 04/11/13 05:42 Koskiar

LEGEND

- DGC6I (45ug/L) — MONITORING WELL WITH DESIGNATION (TETRACHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-1 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 10ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected November 2012			
	Tetrachloroethene	1,2-Dichloroethene (total)	Vinyl chloride
Well	(µg/L)	(µg/L)	(µg/L)
DGC-1I	7	ND	ND
DGC-2I	ND	ND	ND
DGC3I	5	3	ND
DGC6I	13	45	ND
DGC7I	ND	77	2
DGC8I	2	2	ND
DGC9I	6	38	ND
DGC11I	ND	ND	ND
DGC13I	ND	ND	ND
DGC14I	ND	ND	ND
DGC16I	11	ND	ND
DGC17I	5	55	ND
DGC18I	ND	ND	ND
DGC19I	4	7	1
CDM1	ND	ND	ND
CDM2	ND	ND	ND
CDM3	8	ND	ND
ERT-2I	ND	ND	ND
ERT-7I	2	1	ND
ERT-8I	2	ND	ND
ERT-9I	ND	ND	ND
ERT-EW5	530	34	3
ERT-EW6	10	150	81
ERT-EW7	57	24	2
GMS-02	4	ND	ND
TH-11B	ND	ND	ND
TH-6	ND	ND	ND
TH-7	29	25	4
TH-9	ND	ND	ND

True North at 74° 30' West Longitude

N

1" = 200'

100 0 200

CDM Smith
Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

1,2-DICHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS

NOVEMBER 2012

FIGURE NO. 6

0897-61712

LEGEND

- DGC6I (32ug/L) — MONITORING WELL WITH DESIGNATION (1,2–DICHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT–1 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 10ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected April 2013	
	1,2-Dichloroethene (total)
Well	(µg/L)
DGC-1I	ND
DGC-2I	ND
DGC3I	10
DGC6I	32
DGC7I	30
DGC8I	ND
DGC9I	13
DGC11I	ND
DGC13I	ND
DGC14I	ND
DGC16I	ND
DGC17I	34
DGC18I	ND
DGC19I	4
CDM1	ND
CDM2	ND
CDM3	ND
ERT-2I	ND
ERT-7I	ND
ERT-8I	ND
ERT-9I	ND
ERT-EW5	NS
ERT-EW6	NS
ERT-EW7	36
GMS-02	ND
TH-11B	ND
TH-6	ND
TH-7	15
TH-9	ND

True North at 74° 30' West Longitude

1" = 200'
100 0 200

CDM Smith
Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

1,2–DICHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS

APRIL 2013

FIGURE NO. 6

0897–94720

LEGEND

- DGC6I (39ug/L) — MONITORING WELL WITH DESIGNATION (1,2–DICHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION (ABANDONED)
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT–1 — GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE, CONTOUR INTERVAL 10ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected April 2014	
	1,2-Dichloroethene (total)
Well	(µg/L)
DGC-1I	ND
DGC-2I	ND
DGC3I	21
DGC6I	39
DGC7I	72
DGC8I	ND
DGC9I	14
DGC11I	ND
DGC12I	ND
DGC13I	ND
DGC16I	ND
DGC17I	22
DGC18I	ND
DGC19I	9
CDM3	ND
ERT-2I	ND
ERT-4I	ND
ERT-7I	ND
ERT-8I	ND
ERT-9I	ND
ERT-EW5	46
ERT-EW6	10
ERT-EW7	34
GMS-02	ND
TH-7	15
TH-9	ND

True North at 74° 30' West Longitude

1" = 200'
100 0 200

Camp Dresser McKee and Smith

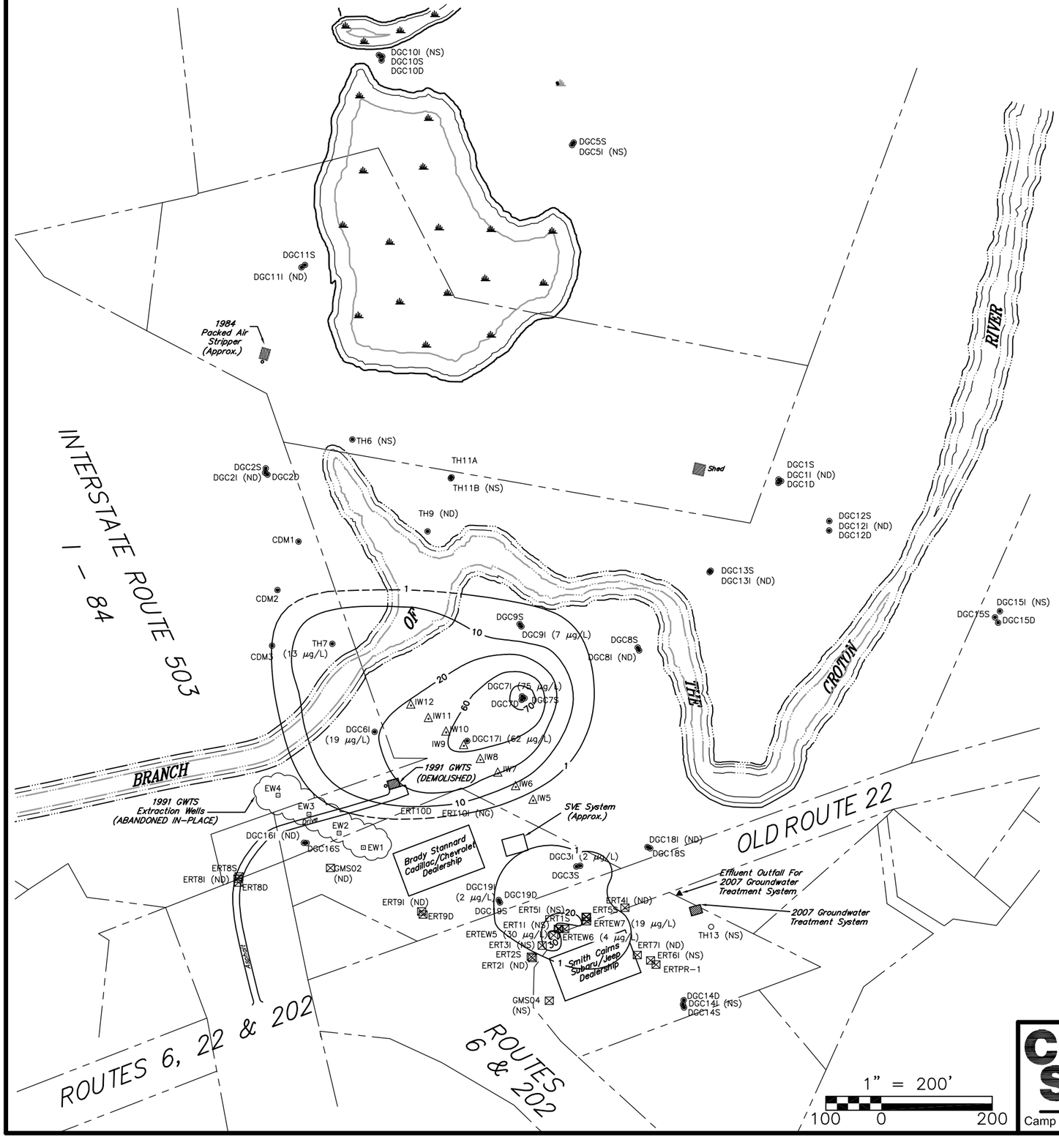
BREWSTER VILLAGE WELL FIELD

1,2–DICHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS

APRIL 2014

FIGURE NO. 5

0897–94720



LEGEND

- DGC8S (45µg/L) — MONITORING WELL (CONCENTRATION)
- EW1 — 1991 EXTRACTION WELL
- IW1 — 1991 INJECTION WELL
- ERT-1 — 2007 GWTS EXTRACTION WELL
- APPROX. PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE (10 µg/L INTERVAL)

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

True North at 74° 30' West Longitude

N

Well	DCE (µg/l)	PCE (µg/l)	TCE (µg/l)	VC (µg/l)
DGC10I	NS	NS	NS	NS
DGC11I	ND	ND	ND	ND
DGC12I	ND	6	ND	ND
DGC13I	ND	ND	ND	ND
DGC14I	NS	NS	NS	NS
DGC15I	NS	NS	NS	NS
DGC16I	ND	2	ND	ND
DGC17I	62	3	5	ND
DGC18I	ND	ND	ND	ND
DGC19I	2	ND	ND	ND
DGC1I	ND	8	ND	ND
DGC2I	ND	ND	ND	ND
DGC3I	2	3	ND	ND
DGC5I	NS	NS	NS	NS
DGC6I	19	8	4	ND
DGC7I	75	ND	ND	1
DGC8I	ND	ND	ND	ND
DGC9I	7	3	4	ND
ERT1I	NS	NS	NS	NS
ERT2I	ND	ND	ND	ND
ERT3I	NS	NS	NS	NS
ERT4I	ND	ND	ND	ND
ERT5I	NS	NS	NS	NS
ERT6I	NS	NS	NS	NS
ERT7I	ND	ND	ND	ND
ERT8I	ND	ND	ND	ND
ERT9I	ND	ND	ND	ND
ERTEW5	30	730	4	7
ERTEW6	4	18	1	ND
ERTEW7	19	47	11	2
GMS02	ND	3	ND	ND
GMS04	NS	NS	NS	NS
TH11B	NS	NS	NS	NS
TH13	NS	NS	NS	NS
TH6	NS	NS	NS	NS
TH7	13	16	3	ND
TH9	ND	ND	ND	ND

NOTES:
ND NOT DETECTED
NS NOT SAMPLED
DCE CIS-1,2-DICHLOROETHYLENE
VC VINYL CHLORIDE
PCE TETRACHLOROETHYLENE
TCE TRICHLOROETHYLENE

CDM Smith
Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

GROUNDWATER DCE CONCENTRATIONS FOR INTERMEDIATE WELLS

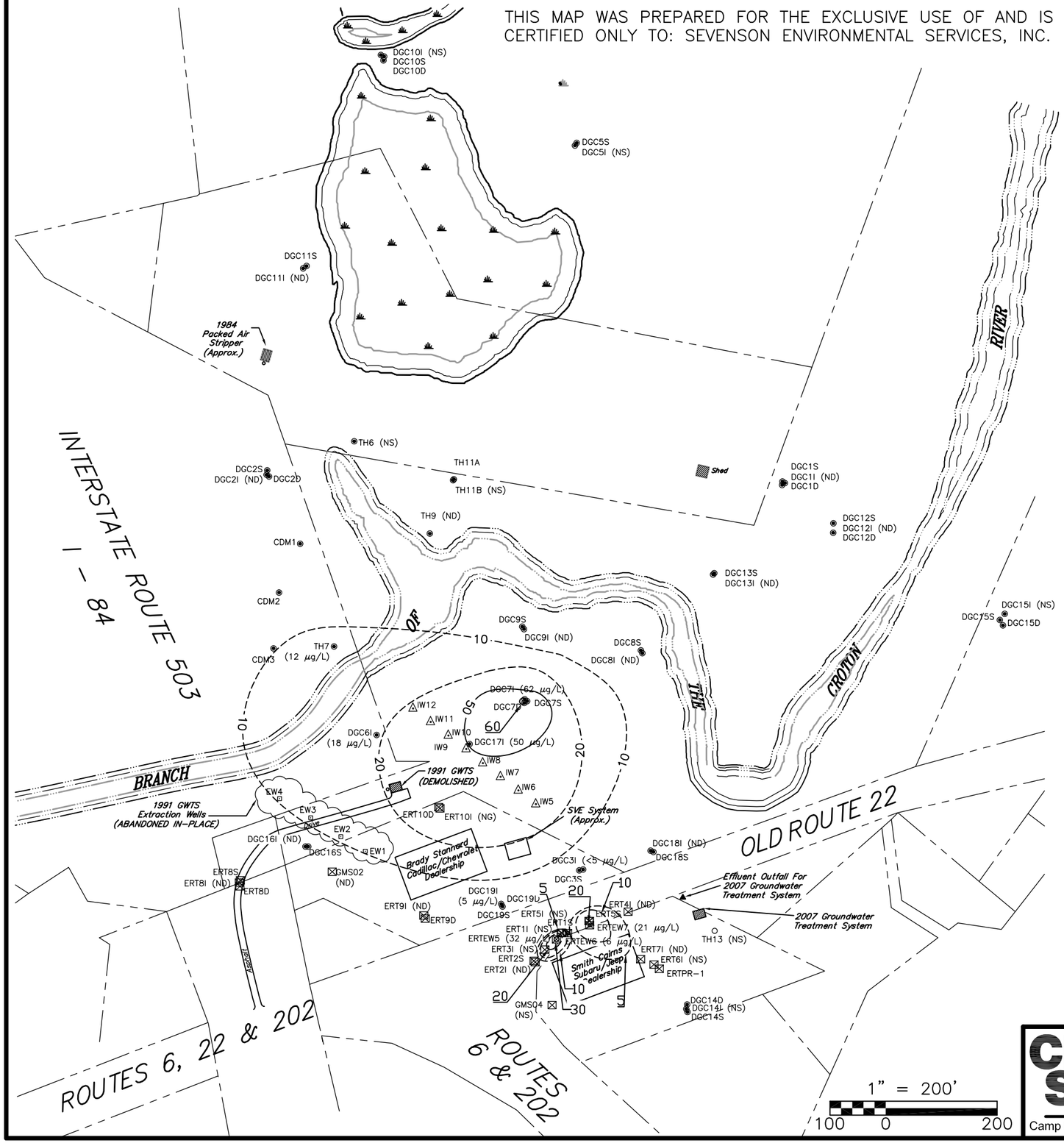
APRIL 2015

FIGURE NO. 8

0897-94720

C:\cdmxm\koskiar\d0772244\ FIG-4 04/11/13 05:40 Koskiar

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.



LEGEND

- DGC8S (45µg/L) — MONITORING WELL (CONCENTRATION)
- EW1 — 1991 EXTRACTION WELL
- IW1 — 1991 INJECTION WELL
- ERT-1 — 2007 GWTS EXTRACTION WELL
- APPROX. PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE

WELL	DATE/TIME SAMPLED	GROUNDWATER ELEVATION (FT AMSL)	PCE	TCE	DCE	VC
CDM-1	5/9/2016	330.29	ND	ND	ND	ND
CDM-3	5/9/2016	330.39	6	ND	ND	ND
DGC1I	5/9/2016	331.17	8	ND	ND	ND
DGC2I	5/9/2016	330.93	ND	ND	ND	ND
DGC3I	5/10/2016	330.70	<5	<5	<5	ND
DGC6I	5/10/2016	330.49	10	<5	18	ND
DGC7I	5/10/2016	331.31	ND	ND	62	ND
DGC8I	5/11/2016	331.21	ND	<5	ND	ND
DGC9I	5/11/2016	331.11	ND	<5	ND	ND
DGC11I	5/9/2016	330.76	ND	ND	ND	ND
DGC12IA	5/9/2016	330.42	26	ND	ND	ND
DGC13I	5/9/2016	330.49	ND	ND	ND	ND
DGC16I	5/10/2016	331.43	10	<5	ND	ND
DGC17I	5/10/2016	331.35	6	7	50	ND
DGC18I	5/10/2016	331.58	ND	ND	ND	ND
DGC19I	5/10/2016	331.40	<5	ND	5	ND
ERT2I	5/11/2016	331.60	ND	ND	ND	ND
ERT4I	5/10/2016	331.87	ND	ND	ND	ND
ERT7I	5/11/2016	331.89	ND	ND	ND	ND
ERT8I	5/10/2016	331.30	<5	ND	ND	ND
ERT9I	5/10/2016	331.46	ND	ND	ND	ND
ERTEW5	5/11/2016	NG	750	<5	32	2
ERTEW6	5/11/2016	NG	44	<5	6	ND
ERTEW7	5/11/2016	NG	42	11	21	ND
GMS02	5/10/2016	331.45	5	ND	ND	ND
TH7	5/9/2016	330.55	17	<5	12	ND
TH9	5/9/2016	330.39	ND	ND	ND	ND

NOTES:
ND NOT DETECTED
NG NOT GAUGED
NS NOT SAMPLED
DCE CIS-1,2-DICHLOROETHYLENE

PCE TETRACHLOROETHYLENE
TCE TRICHLOROETHYLENE
VC VINYL CHLORIDE

Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

GROUNDWATER DCE CONCENTRATIONS FOR INTERMEDIATE WELLS

MAY 2016

FIGURE NO. 8

0897-94720

Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM1	5/9/2017	331.84	ND	ND	ND	ND
CDM3	5/9/2017	331.95	7.5	ND	ND	ND
DGC1I	5/9/2017	331.67	ND	ND	ND	ND
DGC3I	5/9/2017	332.59	1.8	ND	ND	ND
DGC6I	5/10/2017	332.45	12.1	4.2	11.9	ND
DGC7I	5/10/2017	332.63	1.3	1.1	60.8	1.1
DGC8I	5/10/2017	332.64	1.2	ND	ND	ND
DGC9I	5/10/2017	332.60	1.8	1.2	3.1	ND
DGC12IA	5/9/2017	331.71	21.8	ND	ND	ND
DGC13I	5/9/2017	331.78	ND	ND	ND	ND
DGC16I	5/10/2017	332.48	7.9	1.0	ND	ND
DGC17I	5/10/2017	NG	5.2	5.5	39.0	ND
DGC19I	5/9/2017	332.20	3.0	ND	5.3	ND
ERT7I	5/9/2017	333.14	ND	ND	ND	ND
ERT8I	5/10/2017	332.35	2.0	ND	ND	ND
ERTEW5	5/10/2017	NG	573	2.4	19.3	4.7
ERTEW6	5/10/2017	NG	22.7	1.3	4.8	ND
ERTEW7	5/10/2017	NG	36.0	9.4	13.0	ND
GMS02	5/9/2017	332.51	ND	ND	ND	ND
TH7	5/9/2017	331.57	ND	ND	4.5	ND

DGC-10I (NS)
DGC-5I (NS)
DGC-11I (NS)
TH-6 (NS)
DGC-2I (NS)
TH-11A
TH-11B (NS)
DGC-1I (ND)
CDM-1 (ND)
TH-9 (NS)
DGC-12IA (ND)
CDM-2 (NS)
East Branch Croton River
DGC-13I (ND)
DGC-15I (NS)
CDM-3 (ND)
TH-7 (<5 ug/L)
DGC-9I (<5 ug/L)
DGC-8I (ND)
DGC-7I (60.8 ug/L)
DGC-6I (11.9 ug/L)
DGC-17I (39 ug/L)
ERT-10I (NS)
DGC-16I (ND)
DGC-3I (ND)
DGC-18I (NS)
ERT-8I (ND)
GMS-02 (ND)
DGC-19I (5.3 ug/L)
ERT-5I (NS)
ERT-4I (NS)
ERT-9I (NS)
ERT-1I (NS)
ERT-EW-7 (13 ug/L)
TH-13 (NS)
ERT-EW-5 (19.3 ug/L)
ERT-3I (NS)
ERT-EW-6 (<5 ug/L)
ERT-7I (ND)
ERT-2I (NS)
ERT-6I (NS)
2007 Groundwater Treatment System
Subaru Dealership
GMS-04 (NS)
DGC-14I (NS)

Legend
Contour (ug/L)
- 1
- 10
- 20
- 40
- 60
- Monitoring Well (Concentration)
- 2007 GWTS Extraction Well
- 1991 Extraction Well
- 1991 Injection Well

N

Notes:
1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater DCE Concentrations for Intermediate Wells - May 2017

1 inch = 200 feet

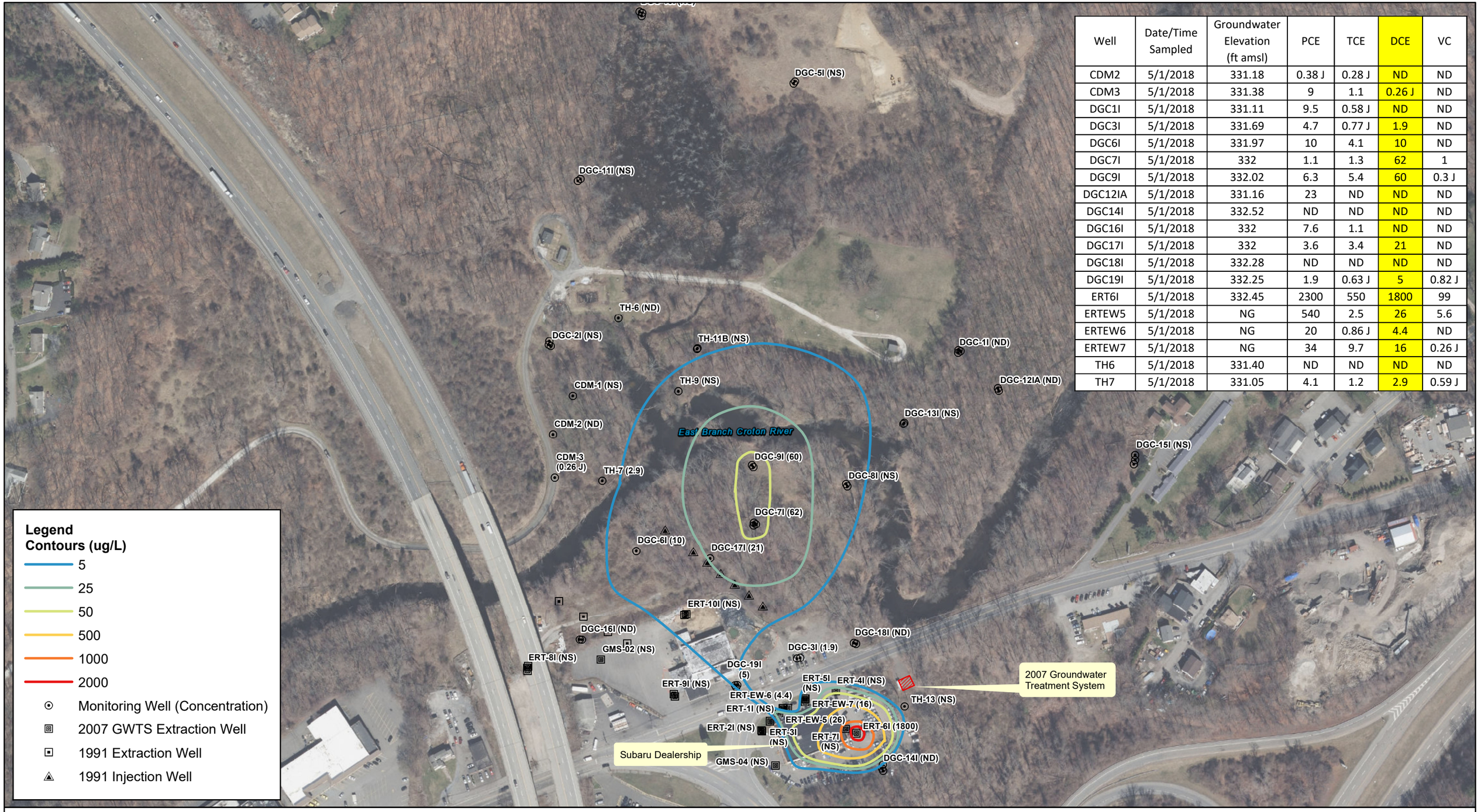
0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 8

CDM Smith

estradal C:\Users\estradal\Desktop\Brewster\GIS\MXD\Fig8_DCE_InterGW_Contour_2017.mxd 3/5/2018

Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM2	5/1/2018	331.18	0.38 J	0.28 J	ND	ND
CDM3	5/1/2018	331.38	9	1.1	0.26 J	ND
DGC1I	5/1/2018	331.11	9.5	0.58 J	ND	ND
DGC3I	5/1/2018	331.69	4.7	0.77 J	1.9	ND
DGC6I	5/1/2018	331.97	10	4.1	10	ND
DGC7I	5/1/2018	332	1.1	1.3	62	1
DGC9I	5/1/2018	332.02	6.3	5.4	60	0.3 J
DGC12IA	5/1/2018	331.16	23	ND	ND	ND
DGC14I	5/1/2018	332.52	ND	ND	ND	ND
DGC16I	5/1/2018	332	7.6	1.1	ND	ND
DGC17I	5/1/2018	332	3.6	3.4	21	ND
DGC18I	5/1/2018	332.28	ND	ND	ND	ND
DGC19I	5/1/2018	332.25	1.9	0.63 J	5	0.82 J
ERT6I	5/1/2018	332.45	2300	550	1800	99
ERTEW5	5/1/2018	NG	540	2.5	26	5.6
ERTEW6	5/1/2018	NG	20	0.86 J	4.4	ND
ERTEW7	5/1/2018	NG	34	9.7	16	0.26 J
TH6	5/1/2018	331.40	ND	ND	ND	ND
TH7	5/1/2018	331.05	4.1	1.2	2.9	0.59 J



N

Notes:

1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater DCE Concentrations for Intermediate Wells - May 2018

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 8

CDM Smith

HARROLDAM \\ALBSVR2\Alb2_Projects\NYSDEC D007621\WA#8 - Brewster Village Well Field\Brewster 2018 PRR\Shapefiles\NEW\Fig8_DCE_InterGW_Contour_2018.mxd 2/14/2019

Historical Vinyl Chloride (VC) Isoconcentration Plots

May 2005 Through May 2018

N

DGC-10I

DGC-11

DGC-5

VILLAGE WELL FIELD #1

VILLAGE WELL

VILLAGE WELL FIELD #2

TH-6

DGC-2I

DGC-1I

DGC-12IA

TH-9
<0.5

DGC-13I

ASPHALT ACCESS ROAD

EAST BRANCH CROTON RIVER

UPSTREAM SAMPLE
<0.5

DGC-9I
3.2

DGC-15I

TH-7
10.8

DGC-8I

DGC-7I
<0.5

IW-12

IW-11

DGC-6I
0.9

IW-10

DGC-17

IW-9

IW-8

IW-7

IW-6

IW-5

<0.5

OUTFALL

DOWNSTREAM SAMPLE
<0.5

GMS FACILTY

I-84 NORTH

I-84 SOUTH

EW-4
<0.5

EW-3
<0.5

EW-2
2.0

DGC-16I
<0.5

EW-1
2.7

DGC-18I

DGC-3I

BRADY STANNARD

DGC-19I
236

ROUTE 22

GAS STATION

ACCESS ROAD

CHRYSLER DEALER

DGC-14I
<0.5

ROUTE 6

LEGEND

DGC-7I
<0.5 — MONITORING WELL LOCATION
VINYL CHLORIDE CONCENTRATION (µg/L)

10 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'
SCALE IN FEET

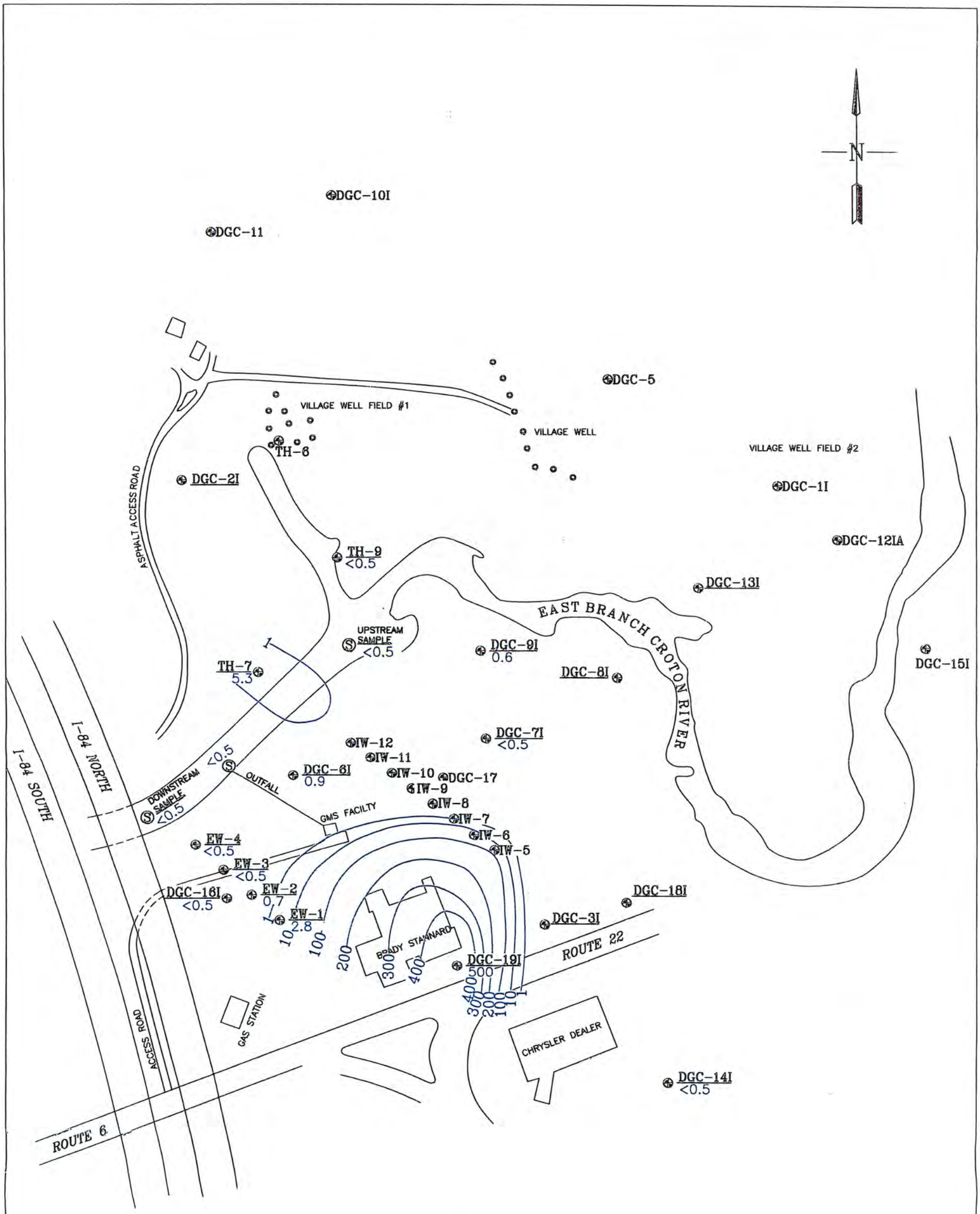
SEVENSON

BREWSTER WELL FIELD

VINYL CHLORIDE ISOCONCENTRATION CONTOUR MAP (MARCH 2005)

drawn DAK	checked	approved	figure no.
date 05/02/06	date	date	8
job no. 01-1408-04-1548-000		file no. 1548-008.dwg	

Science Applications International Corporation
An Employee-Owned Company



LEGEND

DGC-7I <0.5 — MONITORING WELL LOCATION
VINYL CHLORIDE CONCENTRATION (µg/L)

10 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'
SCALE IN FEET

SEVENSON

BREWSTER WELL FIELD

VINYL CHLORIDE ISOCONCENTRATION CONTOUR MAP (JUNE 2005)

drawn DAK	checked MJR	approved RCC	figure no. 8
date 07/28/05	date 07/25/05	date 07/25/05	
job no. 01-1633-04-2388-200		file no. 1548-008.dwg	

Science Applications International Corporation
From Science to Solutions™

N

DGC-10I

DGC-11

DGC-5

VILLAGE WELL FIELD #1

VILLAGE WELL

TH-6

DGC-2I
<0.5

ASPHALT ACCESS ROAD

VILLAGE WELL FIELD #2

DGC-1I

DGC-12IA

TH-9
<0.5

DGC-13I
<0.5

EAST BRANCH CROTON RIVER

UPSTREAM SAMPLE
<0.5

DGC-9I
<10.0

DGC-15I

TH-7
5.6

DGC-8I
<0.5

1

DGC-7I
1.2

2.2
IW-12

IW-11

DGC-6I
0.9

IW-10

DGC-17

IW-9

IW-8

IW-7

IW-6

IW-5

<0.5

DOWNSTREAM SAMPLE
<0.5

OUTFALL

GMS FACILTY

I-84 NORTH

I-84 SOUTH

EW-4
<0.5

EW-3
<0.5

EW-2
<0.5

EW-1
0.9

DGC-16I
<10.0

DGC-18I
<0.5

DGC-3I
<1.0

100

50

10

1

BRADY STANNARD

192

DGC-19I

ROUTE 22

GAS STATION

ACCESS ROAD

CHRYSLER DEALER

DGC-14I
<0.5

ROUTE 6

LEGEND

DGC-7I
1.2 — MONITORING WELL LOCATION
VINYL CHLORIDE CONCENTRATION (µg/L)

1 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'
SCALE IN FEET

SEVENSON

BREWSTER WELL FIELD

VINYL CHLORIDE ISOCONCENTRATION CONTOUR MAP (SEPTEMBER 2005)

drawn DAK	checked MJR	approved RCC	figure no. 8
date 11/22/05	data 11/22/05	date 11/22/05	
job no. 01-1633-04-2388-200		file no. 1548-008.dwg	

SAIC Science Applications International Corporation
From Science to Solutions™

N

DGC-10I

DGC-11

DGC-5

VILLAGE WELL FIELD #1

VILLAGE WELL

TH-6

DGC-2I

VILLAGE WELL FIELD #2

DGC-1I

ASPHALT ACCESS ROAD

DGC-12IA

TH-9
<0.5

DGC-13I

EAST BRANCH CROTON RIVER

DGC-15I

UPSTREAM SAMPLE
<0.5

DGC-9I
2.2

DGC-8I

TH-7
28.3

DGC-7I
2.1

IW-12

IW-11

IW-10

DGC-17

IW-9

IW-8

IW-7

IW-6

IW-5

DGC-6I
0.9

OUTFALL

GMS FACILTY

DOWNSTREAM SAMPLE
<0.5

I-84 NORTH

I-84 SOUTH

EW-4
NM

EW-3
0.6

EW-2
4.1

EW-1
9.5

DGC-16I
<0.5

DGC-18I

DGC-3I

ROUTE 22

BRADY STANNARD

DGC-19I

GAS STATION

CHRYSLER DEALER

ACCESS ROAD

ROUTE 6

DGC-14I
<0.5

LEGEND

DGC-7I
2.1 — MONITORING WELL LOCATION
VINYL CHLORIDE CONCENTRATION (µg/L)

10 — ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

NOTES:

1. UNEVEN CONTOUR INTERVALS WERE USED TO MORE ACCURATELY DEPICT THE CONTAMINANT PLUME.
2. ORIGINAL DRAWING PROVIDED BY SEVENSON ENVIRONMENTAL SERVICES, INC.

150' 0 150'
SCALE IN FEET

SEVENSON

BREWSTER WELL FIELD

VINYL CHLORIDE ISOCONCENTRATION CONTOUR MAP (DECEMBER 2005)

drawn DAK	checked MJR	approved RCC	figure no. 8
date 01/19/06	date 01/19/06	date 01/19/06	
job no. 01-1633-04-2388-200		file no. 1548-008.dwg	

SAIC Science Applications International Corporation
From Science to Solutions™

LEGEND

- DG5S (330.49) — Monitoring Well with Designation (Groundwater Elevation, FT BGS)
- EW1 — Old GWTS Extraction Well with Designation
- IW1 — Old GWTS Injection Well with Designation
- ERT-EW5 — New GWTS Extraction Well with Designation
- Approximate Property Line
- 2 — Isoconcentration Line

This map was prepared for the exclusive use of and is certified only to:

SEVENSON ENVIRONMENTAL SERVICES, INC.

DGC10I
DGC10S
DGC10D
DGC5S
DGC5I
DGC11S
DGC11I
Groundwater Treatment System (Approx.)
True North at 74° 30' West Longitude
HUDSON RIVER
TH6
DGC2S
DGC2I
DGC2D
TH11A
Shed
DGC1S
DGC1I
DGC1D
TH9 (2UG/L)
2
DGC12S
DGC12I
DGC12D
DGC13S
INTERSTATE ROUTE 503
I – 84
DGC15I
DGC15S
DGC15D
DGC9S
DGC9I
TH7
DGC8S
DGC8I
DGC7I
DGC7S
DGC7D
IW12
IW11
IW10
IW9
DGC17I
IW8
IW7
IW6
IW5
DGC6I (2ug/L)
2
Groundwater Treatment System
Old GWTS Extraction Wells
EW4
EW3
EW2
EW1
Drive
ERT10D
ERT10I
Approximate Location of SVE System
DGC16I
DGC16S
GMS02
Brady Stannard Dealership
340
DGC18I
DGC18S
DGC3I
DGC3S
ERT8S
ERT8I
ERT8D
DGC19I (340ug/L)
DGC19D
DGC19S
ERT9I
ERT9D
Effluent Outfall For New Groundwater Treatment System
New Groundwater Treatment System
ERT4I
ERT5I
ERT1S
ERT5S
ERT1I
ERTEW7 (1ug/L)
ERTEW5
ERTEW6
TH13
ERT3I
ERT7I
ERT2S
ERT6I
ERT2I
ERTPR-1
Smith Cairns Subaru/Jeep Dealership
GMS04
DGC14D
DGC14I
DGC14S
OLD ROUTE 22
ROUTES 6, 22 & 202
ROUTES 6 & 202
EAST BRANCH
CROTON
CLAVERACK
1" = 200'
100 0 200

CDM Camp Dresser & McKee	BREWSTER VILLAGE WELL FIELD	VINYL CHLORIDE ISOCONCENTRATION INTERMEDIATE WELLS	FIGURE NO.
		MAY 2008	7

LEGEND

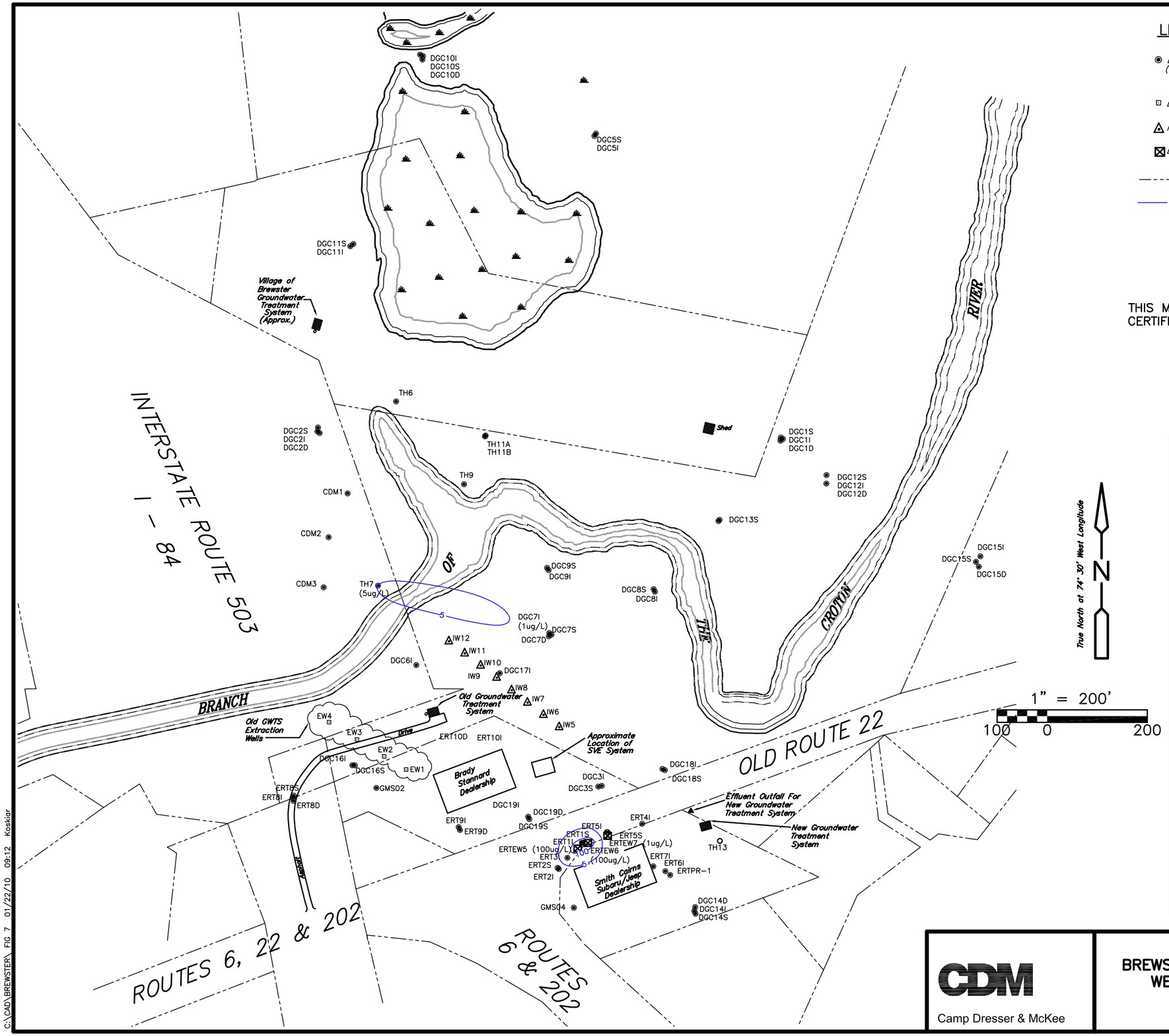
- DG5I (8 ug/L) — MONITORING WELL WITH DESIGNATION (ISOCONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-EW5 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 2 — ISOCONCENTRATION CONTOUR LINE

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

DGC10I
DGC10S
DGC10D
DGC5S
DGC5I
DGC11S
DGC11I
Groundwater Treatment System (Approx.)
TH6
DGC2S
DGC2I
DGC2D
TH11A
Shed
DGC1S
DGC1I
DGC1D
TH9 (2UG/L)
DGC12S
DGC12I
DGC12D
DGC13S
DGC15I
DGC15S
DGC15D
RIVER
INTERSTATE ROUTE 503
I – 84
DGC9S
DGC9I
TH7
DGC8S
DGC8I
DGC7I
DGC7S
DGC7D
IW12
IW11
IW10
IW9
DGC17I
IW8
IW7
IW6
IW5
DGC6I (2ug/L)
Groundwater Treatment System
Old GWTS Extraction Wells
EW4
EW3
EW2
EW1
ERT10D
ERT10I
Approximate Location of SVE System
DGC16I
DGC16S
GMS02
Brady Stannard Dealership
DGC18I
DGC18S
DGC3I
DGC3S
ERT8S
ERT8I
ERT8D
DGC19I (120ug/L)
DGC19D
DGC19S
10
100
ERT9I
ERT9D
ERT5I
ERT5S
ERT4I
ERT1S
ERT1I
ERTEW7 (1ug/L)
ERTEW5 (9 ug/L)
ERTEW6 (74 ug/L)
TH13
Effluent Outfall For New Groundwater Treatment System
New Groundwater Treatment System
ERT3I
ERT2S
ERT2I
Smith Cairns Subaru/Jeep Dealership
ERT7I
ERT6I
ERTPR-1
GMS04
DGC14D
DGC14I
DGC14S
EAST BRANCH OF THE CROTON
OLD ROUTE 22
ROUTES 6, 22 & 202
ROUTES 6 & 202
Ladentown Road
True North at 74° 30' West Longitude
N
1" = 200'
100 0 200

C:\CAD\BREWSTER\ FIG 7 01/22/10 09:12 Koskiar

CDM Camp Dresser & McKee	BREWSTER VILLAGE WELL FIELD	VINYL CHLORIDE ISOCONCENTRATION INTERMEDIATE WELLS	FIGURE NO.
		APRIL 2009	7



LEGEND

- DG5I (8 ug/L) — MONITORING WELL WITH DESIGNATION (ISOCONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-EW5 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 5 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 5 ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected 12/27/11-12/29/11			
	Tetrachloroethene	1,2-Dichloroethene (total)	Vinyl chloride
Well	(µg/L)	(µg/L)	(µg/L)
DGC-1I	1	ND	ND
DGC-2I	ND	ND	ND
DGC3I	ND	ND	ND
DGC6I	19	27	ND
DGC7I	3	77	1
DGC8I	ND	ND	ND
DGC9I	3	ND	ND
DGC11I	ND	ND	ND
DGC13I	ND	ND	ND
DGC14I	ND	ND	ND
DGC16I	2	ND	ND
DGC17I	15	15	ND
DGC18I	ND	ND	ND
DGC19I	ND	ND	ND
CDM1	ND	ND	ND
CDM2	ND	ND	ND
CDM3	7	ND	ND
ERT-2I	ND	ND	ND
ERT-7I	ND	ND	ND
ERT-8I	ND	ND	ND
ERT-9I	ND	ND	ND
ERT-EW5	200	430	100
ERT-EW6	200	400	100
ERT-EW7	87	42	1
GMS-02	ND	ND	ND
TH-11B	ND	ND	ND
TH-6	ND	ND	ND
TH-7	29	22	5

CDM
Camp Dresser & McKee

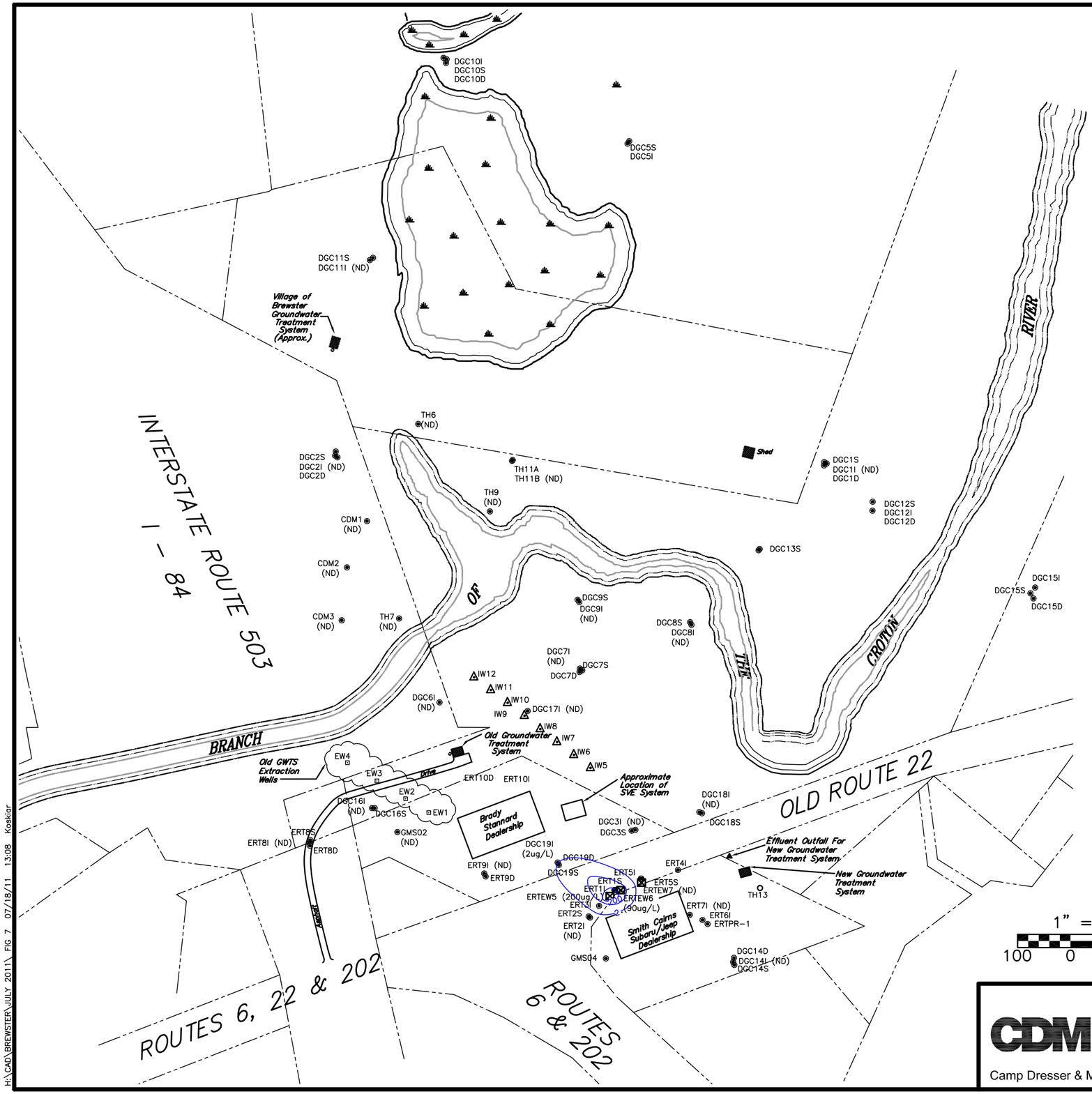
BREWSTER VILLAGE WELL FIELD

VINYL CHLORIDE ISOCONCENTRATION INTERMEDIATE WELLS

DECEMBER 2010

FIGURE NO. 7

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LEGEND

- DGC19I (2 ug/L) — MONITORING WELL WITH DESIGNATION (ISOCONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-EW5 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 2 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 5 ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected 5/18/2011-5/21/2011			
	Tetrachloroethene	1,2-Dichloroethene (total)	Vinyl chloride
Well	(µg/L)	(µg/L)	(µg/L)
DGC-1I	ND	ND	ND
DGC-2I	ND	ND	ND
DGC3I	ND	ND	ND
DGC6I	16	30	ND
DGC7I	3	97	ND
DGC8I	4	3	ND
DGC9I	12	27	ND
DGC11I	ND	ND	ND
DGC13I	ND	ND	ND
DGC14I	ND	ND	ND
DGC16I	1	ND	ND
DGC17I	6	46	ND
DGC18I	ND	ND	ND
DGC19I	4	17	2
CDM1	ND	ND	ND
CDM2	ND	ND	ND
CDM3	14	ND	ND
ERT-2I	ND	ND	ND
ERT-7I	ND	ND	ND
ERT-8I	2	ND	ND
ERT-9I	ND	ND	ND
ERT-EW5	920	42	200
ERT-EW6	190	430	90
ERT-EW7	51	11	ND
GMS-02	6	ND	ND
TH-11B	ND	ND	ND
TH-6	ND	ND	ND
TH-7	36	30	ND
TH-9	ND	ND	ND

H:\CAD\BREWSTER\JULY 2011\ FIG 7 07/18/11 13:08 Koskiar

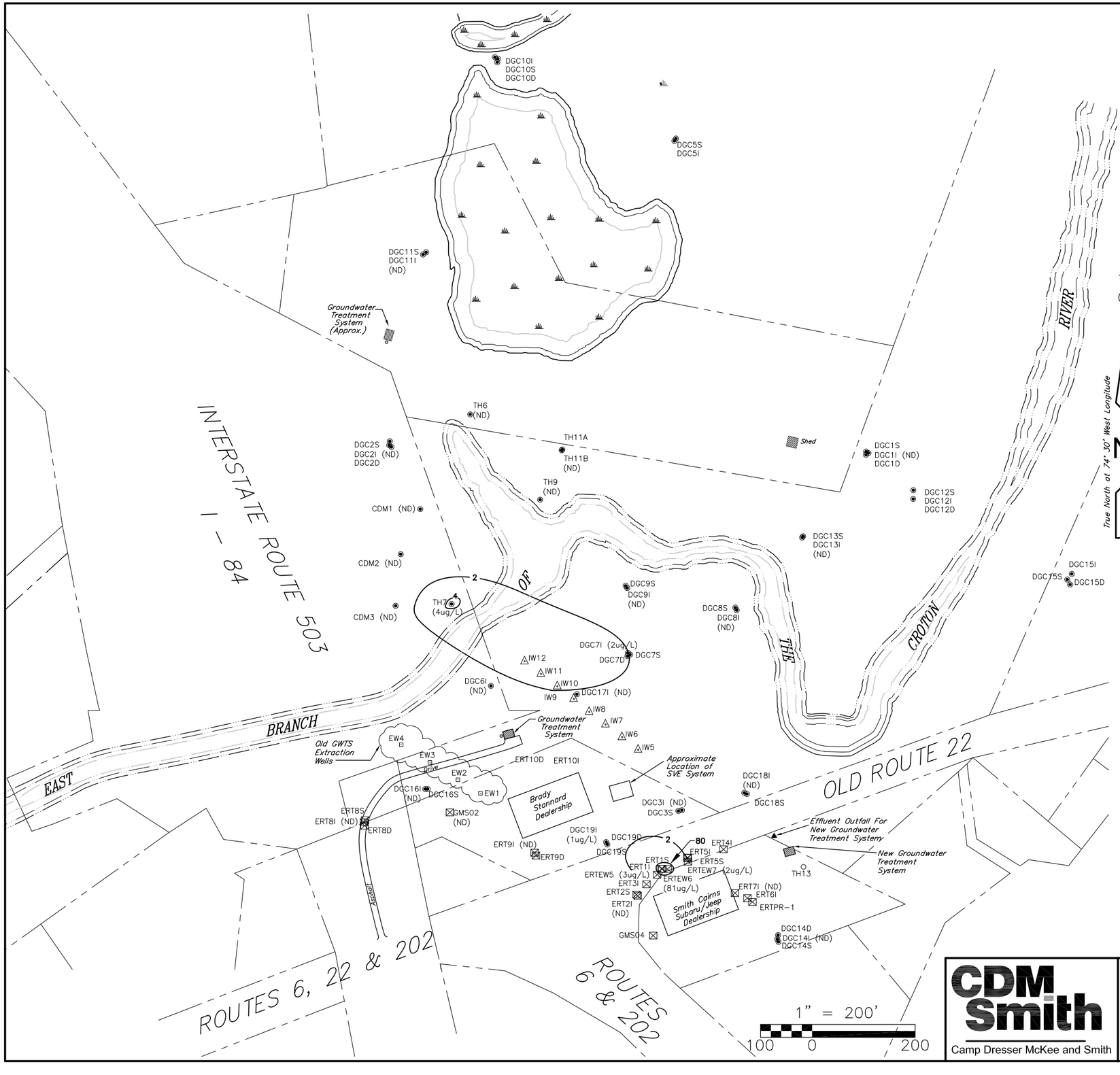
Camp Dresser & McKee

BREWSTER VILLAGE WELL FIELD

VINYL CHLORIDE ISOCONCENTRATION INTERMEDIATE WELLS

MAY 2011

FIGURE NO. 7



LEGEND

- TH7 (4ug/L) — MONITORING WELL WITH DESIGNATION (TETRACHLOROETHENE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-1 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 2ug/L

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True North at 74° 30' West Longitude

N

Groundwater Samples Collected November 2012			
	Tetrachloroethene	1,2-Dichloroethene (total)	Vinyl chloride
Well	(µg/L)	(µg/L)	(µg/L)
DGC-1I	7	ND	ND
DGC-2I	ND	ND	ND
DGC3I	5	3	ND
DGC6I	13	45	ND
DGC7I	ND	77	2
DGC8I	2	2	ND
DGC9I	6	38	ND
DGC11I	ND	ND	ND
DGC13I	ND	ND	ND
DGC14I	ND	ND	ND
DGC16I	11	ND	ND
DGC17I	5	55	ND
DGC18I	ND	ND	ND
DGC19I	4	7	1
CDM1	ND	ND	ND
CDM2	ND	ND	ND
CDM3	8	ND	ND
ERT-2I	ND	ND	ND
ERT-7I	2	1	ND
ERT-8I	2	ND	ND
ERT-9I	ND	ND	ND
ERT-EW5	530	34	3
ERT-EW6	10	150	81
ERT-EW7	57	24	2
GMS-02	4	ND	ND
TH-11B	ND	ND	ND
TH-6	ND	ND	ND
TH-7	29	25	4
TH-9	ND	ND	ND

CDM Smith
Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

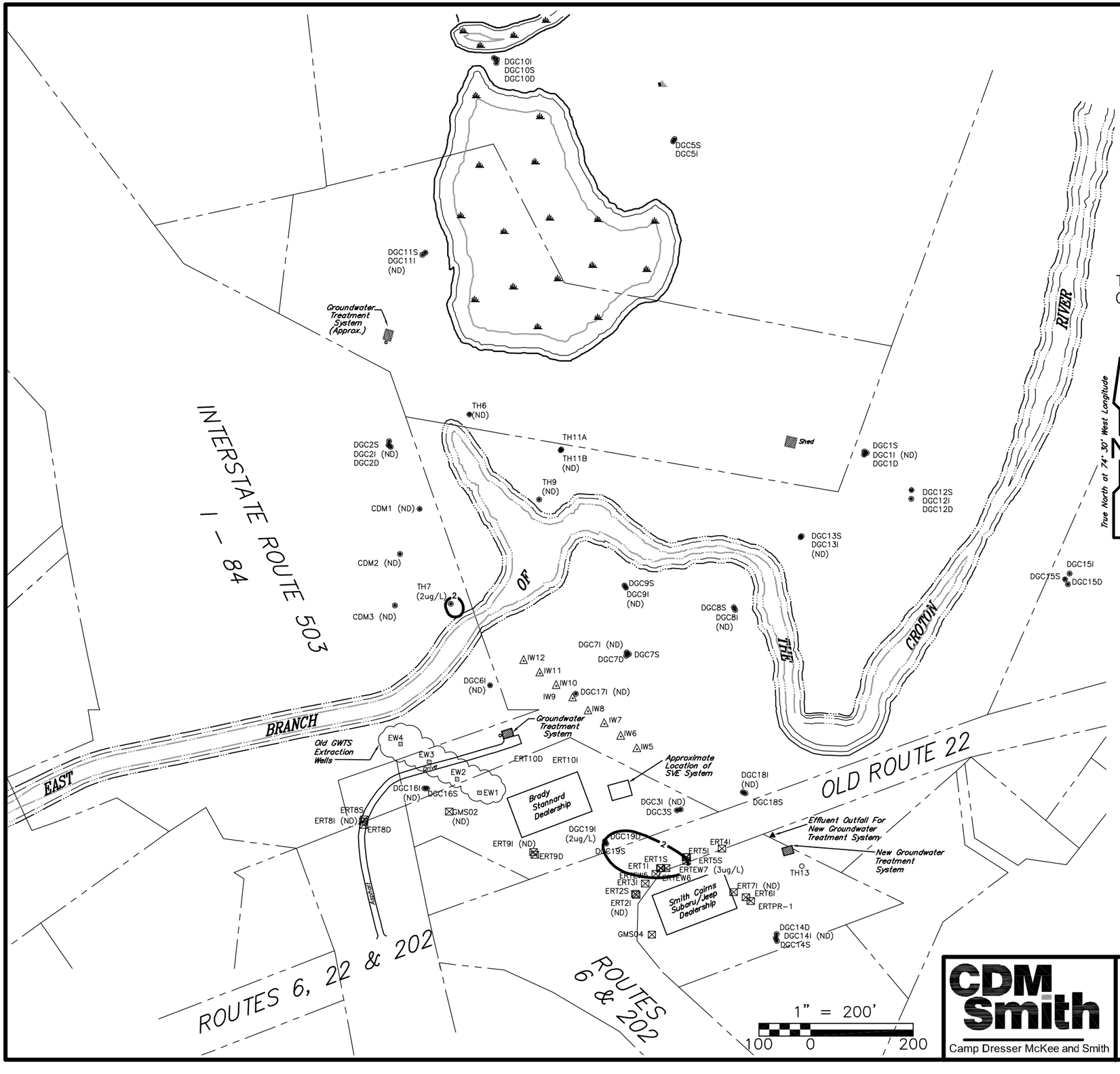
VINYL CHLORIDE ISOCONCENTRATION INTERMEDIATE WELLS

NOVEMBER 2012

FIGURE NO. 7

0897-61712

C:\cdmxm\koskiar\d0772244\ FIG-7 04/11/13 05:37 Koskiar



LEGEND

- TH7 (2ug/L) — MONITORING WELL WITH DESIGNATION (VINYL CHLORIDE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-1 — NEW GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 2ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected April 2013	
	Vinyl chloride
Well	(µg/L)
DGC-1I	ND
DGC-2I	ND
DGC3I	ND
DGC6I	ND
DGC7I	ND
DGC8I	ND
DGC9I	ND
DGC11I	ND
DGC13I	ND
DGC14I	ND
DGC16I	ND
DGC17I	ND
DGC18I	ND
DGC19I	2
CDM1	ND
CDM2	ND
CDM3	ND
ERT-2I	ND
ERT-7I	ND
ERT-8I	ND
ERT-9I	ND
ERT-EW5	NS
ERT-EW6	NS
ERT-EW7	3
GMS-02	ND
TH-11B	ND
TH-6	ND
TH-7	2
TH-9	ND

CDM Smith
Camp Dresser McKee and Smith

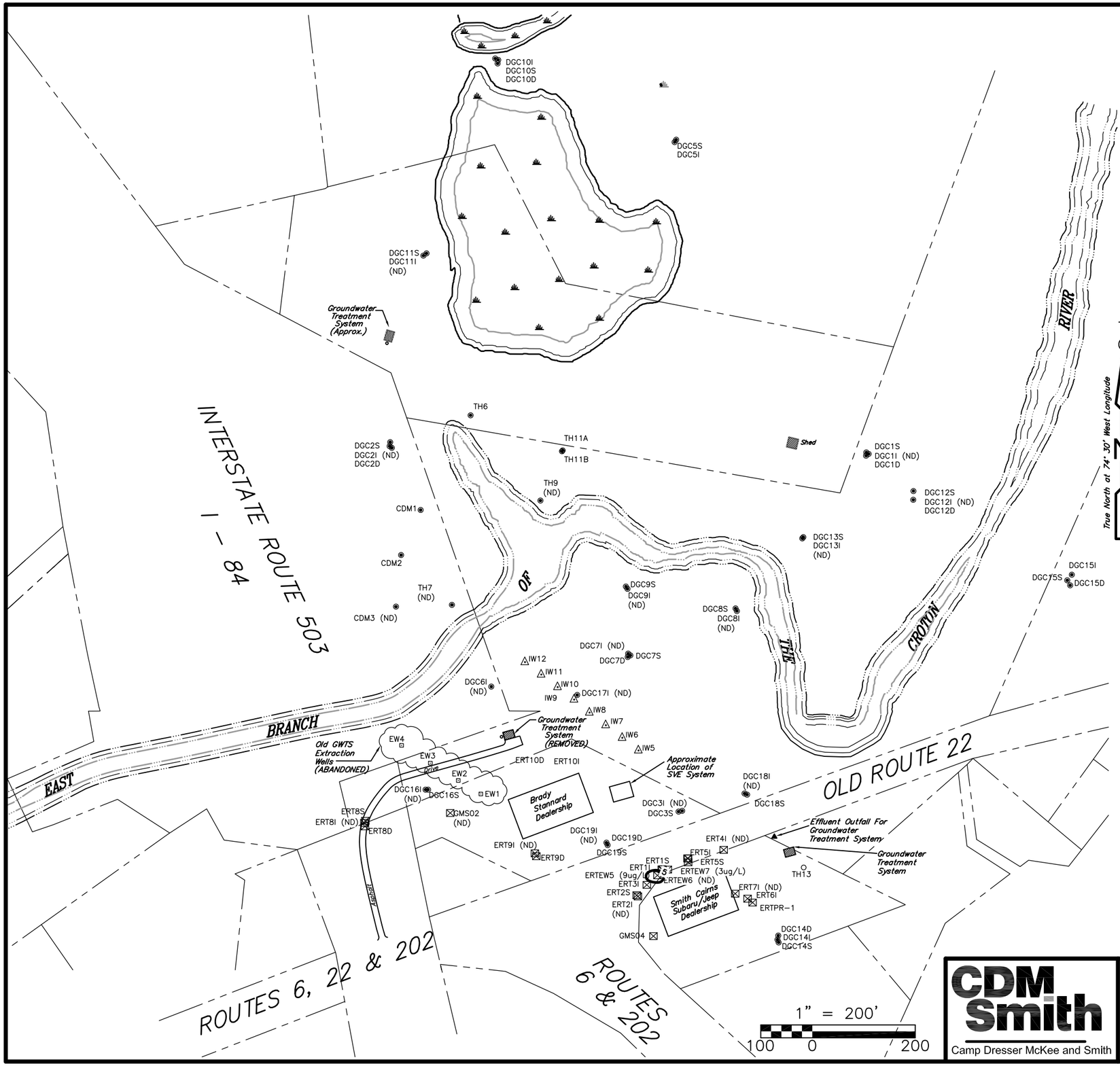
BREWSTER VILLAGE WELL FIELD

VINYL CHLORIDE ISOCONCENTRATION INTERMEDIATE WELLS

APRIL 2013

FIGURE NO. 7

0897-94720



LEGEND

- ERTEW7 (3ug/L) — MONITORING WELL WITH DESIGNATION (VINYL CHLORIDE CONCENTRATION, ug/L)
- EW1 — OLD GWTS EXTRACTION WELL WITH DESIGNATION (ABANDONED)
- IW1 — OLD GWTS INJECTION WELL WITH DESIGNATION
- ERT-1 — GWTS EXTRACTION WELL WITH DESIGNATION
- APPROXIMATE PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE CONTOUR INTERVAL 2ug/L

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Groundwater Samples Collected April 2014	
	Vinyl chloride
Well	(µg/L)
DGC-1I	ND
DGC-2I	ND
DGC3I	ND
DGC6I	ND
DGC7I	ND
DGC8I	ND
DGC9I	ND
DGC11I	ND
DGC12I	ND
DGC13I	ND
DGC16I	ND
DGC17I	ND
DGC18I	ND
DGC19I	ND
CDM3	ND
ERT-2I	ND
ERT-4I	ND
ERT-7I	ND
ERT-8I	ND
ERT-9I	ND
ERT-EW5	9
ERT-EW6	ND
ERT-EW7	3
GMS-02	ND
TH-7	ND
TH-9	ND

CDM Smith
Camp Dresser McKee and Smith

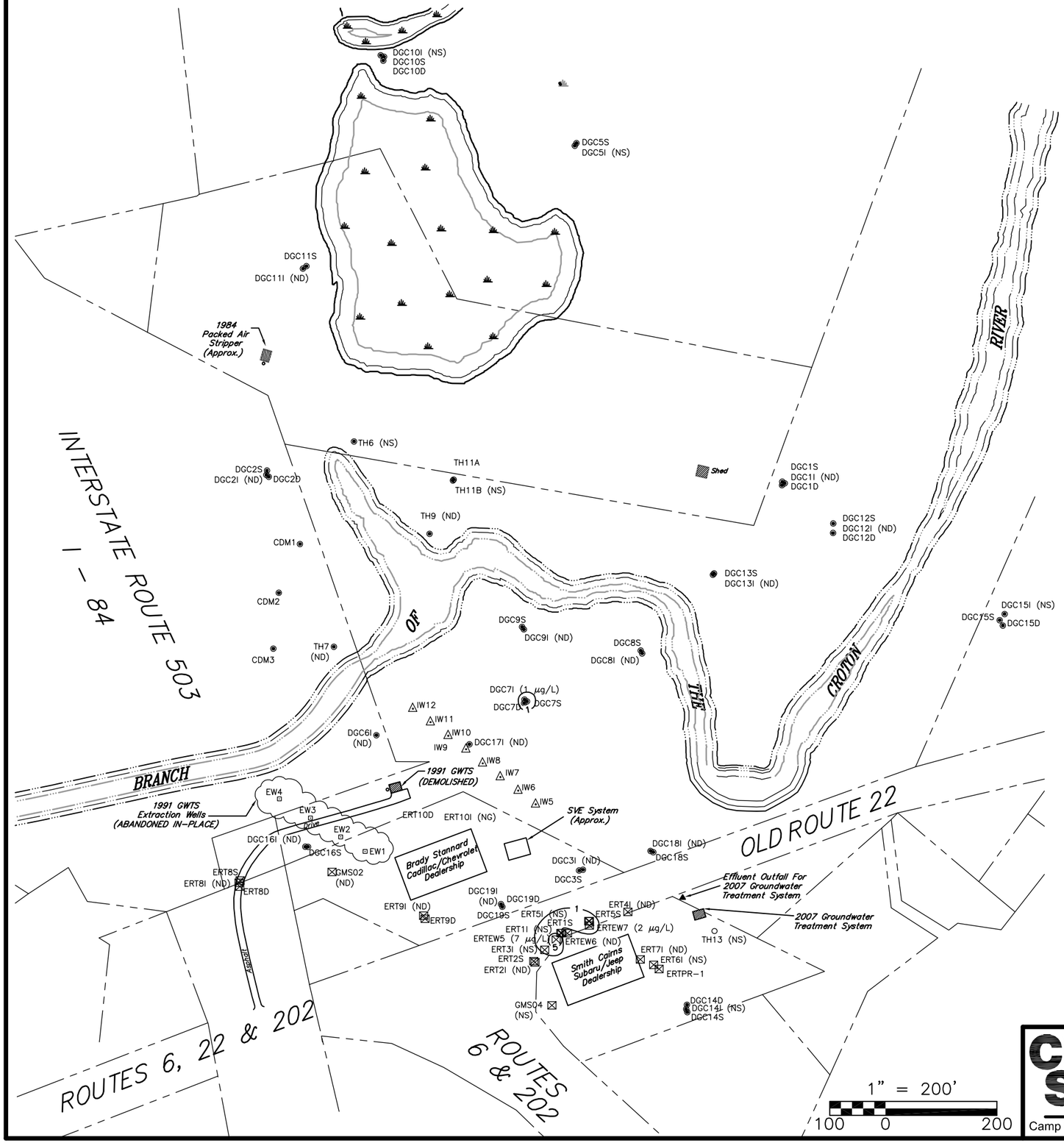
BREWSTER VILLAGE WELL FIELD

VINYL CHLORIDE ISOCONCENTRATION INTERMEDIATE WELLS

APRIL 2014

FIGURE NO. 6

0897-94720



LEGEND

- DGC8S (45µg/L) — MONITORING WELL (CONCENTRATION)
- EW1 — 1991 EXTRACTION WELL
- IW1 — 1991 INJECTION WELL
- ERT-1 — 2007 GWTS EXTRACTION WELL
- APPROX. PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE (10 µg/L INTERVAL)

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

Well	DCE (µg/l)	PCE (µg/l)	TCE (µg/l)	VC (µg/l)
DGC10I	NS	NS	NS	NS
DGC11I	ND	ND	ND	ND
DGC12I	ND	6	ND	ND
DGC13I	ND	ND	ND	ND
DGC14I	NS	NS	NS	NS
DGC15I	NS	NS	NS	NS
DGC16I	ND	2	ND	ND
DGC17I	62	3	5	ND
DGC18I	ND	ND	ND	ND
DGC19I	2	ND	ND	ND
DGC1I	ND	8	ND	ND
DGC2I	ND	ND	ND	ND
DGC3I	2	3	ND	ND
DGC5I	NS	NS	NS	NS
DGC6I	19	8	4	ND
DGC7I	75	ND	ND	1
DGC8I	ND	ND	ND	ND
DGC9I	7	3	4	ND
ERT1I	NS	NS	NS	NS
ERT2I	ND	ND	ND	ND
ERT3I	NS	NS	NS	NS
ERT4I	ND	ND	ND	ND
ERT5I	NS	NS	NS	NS
ERT6I	NS	NS	NS	NS
ERT7I	ND	ND	ND	ND
ERT8I	ND	ND	ND	ND
ERT9I	ND	ND	ND	ND
ERTEW5	30	730	4	7
ERTEW6	4	18	1	ND
ERTEW7	19	47	11	2
GMS02	ND	3	ND	ND
GMS04	NS	NS	NS	NS
TH11B	NS	NS	NS	NS
TH13	NS	NS	NS	NS
TH6	NS	NS	NS	NS
TH7	13	16	3	ND
TH9	ND	ND	ND	ND

NOTES:
ND NOT DETECTED
NS NOT SAMPLED
DCE CIS-1,2-DICHLOROETHYLENE
VC VINYL CHLORIDE
PCE TETRACHLOROETHYLENE
TCE TRICHLOROETHYLENE

CDM Smith
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BREWSTER VILLAGE WELL FIELD

GROUNDWATER VC CONCENTRATIONS FOR INTERMEDIATE WELLS

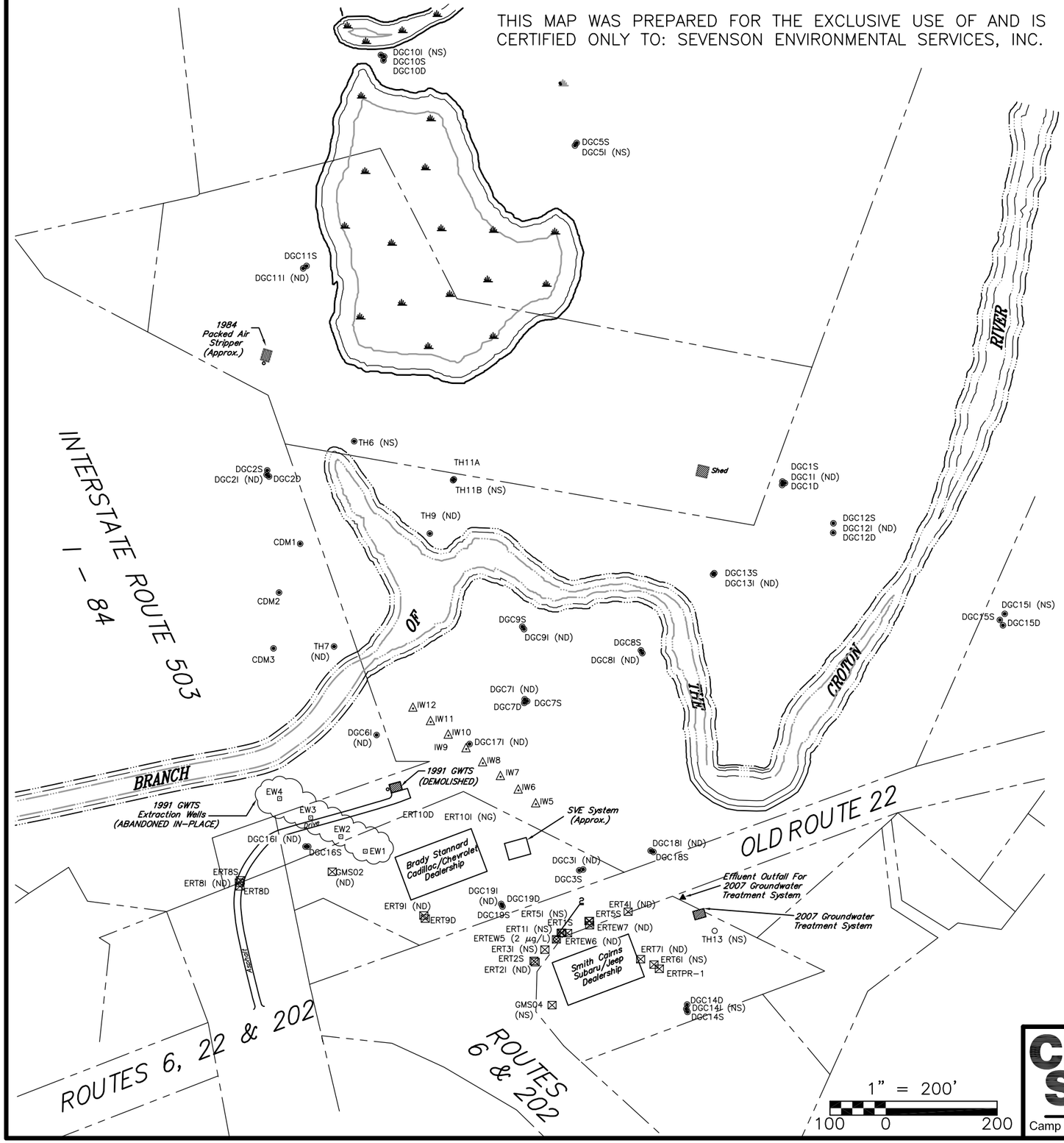
APRIL 2015

FIGURE NO. 9

0897-94720

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THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.



LEGEND

- DGC8S (45µg/L) — MONITORING WELL (CONCENTRATION)
- EW1 — 1991 EXTRACTION WELL
- IW1 — 1991 INJECTION WELL
- ERT-1 — 2007 GWTS EXTRACTION WELL
- APPROX. PROPERTY LINE
- 20 — ISOCONCENTRATION CONTOUR LINE

WELL	DATE/TIME SAMPLED	GROUNDWATER ELEVATION (FT AMSL)	PCE	TCE	DCE	VC
CDM-1	5/9/2016	330.29	ND	ND	ND	ND
CDM-3	5/9/2016	330.39	6	ND	ND	ND
DGC1I	5/9/2016	331.17	8	ND	ND	ND
DGC2I	5/9/2016	330.93	ND	ND	ND	ND
DGC3I	5/10/2016	330.70	<5	<5	<5	ND
DGC6I	5/10/2016	330.49	10	<5	18	ND
DGC7I	5/10/2016	331.31	ND	ND	62	ND
DGC8I	5/11/2016	331.21	ND	<5	ND	ND
DGC9I	5/11/2016	331.11	ND	<5	ND	ND
DGC11I	5/9/2016	330.76	ND	ND	ND	ND
DGC12IA	5/9/2016	330.42	26	ND	ND	ND
DGC13I	5/9/2016	330.49	ND	ND	ND	ND
DGC16I	5/10/2016	331.43	10	<5	ND	ND
DGC17I	5/10/2016	331.35	6	7	50	ND
DGC18I	5/10/2016	331.58	ND	ND	ND	ND
DGC19I	5/10/2016	331.40	<5	ND	5	ND
ERT2I	5/11/2016	331.60	ND	ND	ND	ND
ERT4I	5/10/2016	331.87	ND	ND	ND	ND
ERT7I	5/11/2016	331.89	ND	ND	ND	ND
ERT8I	5/10/2016	331.30	<5	ND	ND	ND
ERT9I	5/10/2016	331.46	ND	ND	ND	ND
ERTEW5	5/11/2016	NG	750	<5	32	2
ERTEW6	5/11/2016	NG	44	<5	6	ND
ERTEW7	5/11/2016	NG	42	11	21	ND
GMS02	5/10/2016	331.45	5	ND	ND	ND
TH7	5/9/2016	330.55	17	<5	12	ND
TH9	5/9/2016	330.39	ND	ND	ND	ND

NOTES:
ND NOT DETECTED
NG NOT GAUGED
NS NOT SAMPLED
DCE CIS-1,2-DICHLOROETHYLENE

PCE TETRACHLOROETHYLENE
TCE TRICHLOROETHYLENE
VC VINYL CHLORIDE

Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

GROUNDWATER VC CONCENTRATIONS FOR INTERMEDIATE WELLS

MAY 2016

FIGURE NO. 9

0897-94720

Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM1	5/9/2017	331.84	ND	ND	ND	ND
CDM3	5/9/2017	331.95	7.5	ND	ND	ND
DGC1I	5/9/2017	331.67	ND	ND	ND	ND
DGC3I	5/9/2017	332.59	1.8	ND	ND	ND
DGC6I	5/10/2017	332.45	12.1	4.2	11.9	ND
DGC7I	5/10/2017	332.63	1.3	1.1	60.8	1.1
DGC8I	5/10/2017	332.64	1.2	ND	ND	ND
DGC9I	5/10/2017	332.60	1.8	1.2	3.1	ND
DGC12IA	5/9/2017	331.71	21.8	ND	ND	ND
DGC13I	5/9/2017	331.78	ND	ND	ND	ND
DGC16I	5/10/2017	332.48	7.9	1.0	ND	ND
DGC17I	5/10/2017	NG	5.2	5.5	39.0	ND
DGC19I	5/9/2017	332.20	3.0	ND	5.3	ND
ERT7I	5/9/2017	333.14	ND	ND	ND	ND
ERT8I	5/10/2017	332.35	2.0	ND	ND	ND
ERTEW5	5/10/2017	NG	573	2.4	19.3	4.7
ERTEW6	5/10/2017	NG	22.7	1.3	4.8	ND
ERTEW7	5/10/2017	NG	36.0	9.4	13.0	ND
GMS02	5/9/2017	332.51	ND	ND	ND	ND
TH7	5/9/2017	331.57	ND	ND	4.5	ND

DGC-10I (NS)
DGC-5I (NS)
DGC-11I (NS)
TH-6 (NS)
DGC-2I (NS)
TH-11A
TH-11B (NS)
DGC-1I (ND)
CDM-1 (NS)
TH-9 (NS)
DGC-12IA (ND)
CDM-2 (ND)
East Branch Croton River
DGC-13I (ND)
DGC-15I (NS)
CDM-3 (ND)
TH-7 (ND)
DGC-9I (ND)
DGC-8I (ND)
DGC-7I (<2 ug/L)
DGC-6I (ND)
DGC-17I (ND)
ERT-10I (NS)
DGC-16I (ND)
DGC-3I (ND)
DGC-18I (NS)
ERT-8I (ND)
GMS-02 (ND)
DGC-19I (ND)
ERT-1I (NS)
ERT-5I (NS)
ERT-4I (NS)
ERT-9I (NS)
ERT-EW-5 (4.7 ug/L)
ERT-EW-7 (ND)
TH-13 (NS)
ERT-3I (NS)
ERT-EW-6 (ND)
ERT-7I (ND)
ERT-6I (NS)
ERT-2I (NS)
2007 Groundwater Treatment System
Subaru Dealership
GMS-04 (NS)
DGC-14I (NS)

Legend
Contour (ug/L)
- 1
- 4
- Monitoring Well (Concentration)
- 2007 GWTS Extraction Well
- 1991 Extraction Well
- 1991 Injection Well

N

Notes:
1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater VC Concentrations for Intermediate Wells - May 2017

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 9

CDM Smith

estradal C:\Users\estradal\Desktop\Brewster\GIS\MXD\Fig9_VC_InterGW_Contour_2017.mxd 3/5/2018

Well	Date/Time Sampled	Groundwater Elevation (ft amsl)	PCE	TCE	DCE	VC
CDM2	5/1/2018	331.18	0.38 J	0.28 J	ND	ND
CDM3	5/1/2018	331.38	9	1.1	0.26 J	ND
DGC1I	5/1/2018	331.11	9.5	0.58 J	ND	ND
DGC3I	5/1/2018	331.69	4.7	0.77 J	1.9	ND
DGC6I	5/1/2018	331.97	10	4.1	10	ND
DGC7I	5/1/2018	332	1.1	1.3	62	1
DGC9I	5/1/2018	332.02	6.3	5.4	60	0.3 J
DGC12IA	5/1/2018	331.16	23	ND	ND	ND
DGC14I	5/1/2018	332.52	ND	ND	ND	ND
DGC16I	5/1/2018	332	7.6	1.1	ND	ND
DGC17I	5/1/2018	332	3.6	3.4	21	ND
DGC18I	5/1/2018	332.28	ND	ND	ND	ND
DGC19I	5/1/2018	332.25	1.9	0.63 J	5	0.82 J
ERT6I	5/1/2018	332.45	2300	550	1800	99
ERTEW5	5/1/2018	NG	540	2.5	26	5.6
ERTEW6	5/1/2018	NG	20	0.86 J	4.4	ND
ERTEW7	5/1/2018	NG	34	9.7	16	0.26 J
TH6	5/1/2018	331.40	ND	ND	ND	ND
TH7	5/1/2018	331.05	4.1	1.2	2.9	0.59 J



N

Notes:
1. All concentration contours are provided in micrograms per liter (ug/L).
2. GWTS - Groundwater Treatment System
3. NG - Not Gauged
4. NS - Not Sampled
5. ND - Not Detected
6. PCE - tetrachloroethene
7. TCE - trichloroethene
8. DCE - cis-1,2-dichloroethene
9. VC - vinyl chloride

Groundwater VC Concentrations for Intermediate Wells - May 2018

1 inch = 200 feet

0 200 400 Feet

Brewster Village Well Field
Brewster, NY
Figure 9

CDM Smith

2017 SITE MANAGEMENT PLAN

Brewster Village Well Field
Site No. 3-40-012

Village of Brewster
Putnam County, New York

Prepared for:
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7017

Prepared by:
Camp Dresser McKee & Smith
11 British American Boulevard
Suite 200
Latham, NY 12110

March 2017

CDM Smith

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Appendix G Operation and Maintenance Plan for Groundwater Treatment System PLC
Appendix H Engineering and Institutional Controls Plan

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Section 1
Introduction and Description of Remedial Program

1.1 Introduction

This document is required as an element of the remedial program at the Brewster Well Field site, hereinafter referred to as the "Site", under the New York State Inactive Hazardous Waste Disposal Site Remedial Program administered by the New York State Department of Environmental Conservation (NYSDEC), site number 3-40-012. The Site is being remediated in accordance with the United States Environmental Protection Agency (EPA) Superfund Record of Decision (ROD), EPA ID number NYD980652275, dated September 1986 (Appendix A) and the Explanation of Significant Differences (ESD) dated October 2009 (Appendix B).

1.1.1 General

The Village of Brewster entered into a cooperative agreement with the EPA to install a full-scale air stripper on the Brewster Well Field, which currently provides safe drinking water to the Village. A cooperative agreement between the EPA and the NYSDEC requires that the air stripper at the Village Well Field and an on-site groundwater treatment system (GWTS) continue to run in order to restore groundwater quality at the Site. An on-site dry well thought to be a source area was also excavated by the EPA. A map showing the Site location and boundaries of the Site is provided in Figure 1.

After completing the remedial work described in the EPA Superfund ROD (Appendix A), some contamination was left in the subsurface at the Site, which is hereafter referred to as "remaining contamination". This Site Management Plan (SMP) has been prepared to manage the remaining contamination at the Site until the Environmental Easement is extinguished in accordance with New York Environmental Conservation Law (ECL) Article 71, Title 36 Environmental Easements. Remedial action work is ongoing at this time with the operation of a GWTS to treat contaminated groundwater beneath the Site and an air stripper to treat drinking water at the village well field. All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Camp Dresser McKee & Smith (CDM Smith), on behalf of the NYSDEC for the Site, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010 and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the Site.

1.1.2 Purpose

The Site contains contamination left after completion of the remedial action. ECs have been incorporated into the site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Putnam County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site. The ICs place restrictions on site

use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the Site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the Site after completion of the remedial action, including: (1) implementation and management of all ECs and ICs; (2) media monitoring; (3) operation and maintenance (O&M) of all treatment systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports (PRR); and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three plans: (1) an EC/IC Plan for implementation and management of EC/ICs, which includes a reporting plan for the submittal of data, information, recommendations, and certifications to the NYSDEC; (2) a Monitoring Plan for implementation of site monitoring; and (3) an O&M Plan for implementation of remedial collection, containment, treatment, and recovery systems including an O&M Manual for the GWTS. As of January 2016, no formal O&M plan exists for the mechanical components of the groundwater treatment system.

This plan also includes a description of the PRRs for the submittal of data, information, recommendations, and certifications to the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of Environmental Conservation Law and the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC).
- Failure to comply with this SMP is also a violation of, 6NYCRR Part 375 and the EPA Superfund ROD dated September 1986 (Appendix A) and ESD issued October 2009 (Appendix B) for EPA ID number NYD980652275, also identified as NYSDEC Site #3-40-012, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 Site Background

1.2.1 Site Location and Description

The Site is located three-quarters of a mile west of the Village of Brewster in the Town of Southeast, Putnam County, New York. The land to the north of the study area, containing the community of Brewster Hill, is largely residential with some wooded areas and agricultural land.

Most of the land south of the study area is occupied by commercial or light industrial facilities and to the west is the residential community of the Village of Brewster. To the east is commercial and industrial land and the East Branch Reservoir (Figure 1).

1.2.2 Site History

The Brewster Well Field, which supplies water to approximately 2,200 people, was found to be contaminated with halogenated volatile organic compounds (VOCs) that included tetrachloroethylene (PCE), trichloroethylene (TCE) and cis-1,2 dichloroethylene (DCE). The initial contamination discovery was made in 1978. Alben Dry Cleaners was determined to be the source of the contamination, which is now the location of Brewster Subaru. The Site was placed on the National Priorities List in December 1982. Under a cooperative agreement with the EPA Office of Research and Development a packed air stripper was installed in 1984 at the Village's well field to provide treatment of their water supply.

After completing a Remedial Investigation/Focused Feasibility Study (RI/FFS), the OU-1 ROD was signed in 1986 (Appendix A). The selected remedy included:

- Continued operation (by the Village of Brewster) of the existing air stripping system at the well field north of the East Branch Croton River to provide the Village a water supply that exceeds applicable or relevant and appropriate standards (ARARs).
- Design and construction of a GWTS in 1991 to contain the groundwater contaminant plume, restore groundwater quality through the extraction, treatment and re-injection of the treated water, and to restore groundwater quality south of the East Branch Croton River.

The ROD identified ARARs for the Site to include EPA's Maximum Contaminant Levels (MCLs), and New York State's groundwater quality standards established pursuant to the Clean Water Act as follows:

- EPA Safe Drinking Water Act limit of 5 µg/L TCE.
- New York State Groundwater Standard of 10 µg/L TCE.

The ROD also called for an RI/FFS to identify and address the source(s) of the groundwater contamination. A supplemental RI/FFS was completed in July 1988. Based upon the results of soil and groundwater sampling activities, a significant source of contamination was identified as a dry well adjacent to Alben Dry Cleaners. In September 1988 a second operable unit (OU-2) ROD was issued by the EPA. This "source control" ROD called for the excavation and off-site disposal of the dry well, its contents, and surrounding contaminated soils. This OU-1 remedial action was completed by Foster Wheeler Environmental in September 1991.

During the Five-Year Review conducted in 2007, it was determined that a plume exists under the Subaru Dealership (former location of the Alben Dry Cleaners) that is not being fully captured by the current GWTS. As a result, a new treatment system with three extraction wells and a stacked tray air stripper was installed at Brewster Subaru in 2007 by Aztech Technologies Inc. (Aztech).

It should also be noted that there was a historical spill of petroleum on the Brady-Stannard Cadillac/Chevrolet property due to a collapsed underground storage tank. An old soil vapor extraction (SVE) system is still located on the Site, as indicated on Figure 2, but it is not operational. This spill is unrelated to the current remediation efforts, but there may be residual petroleum contamination associated with the spill.

1.2.3 Geologic Conditions

The subsurface hydrogeology consists of unconsolidated sediments overlying bedrock. No contamination was found in the bedrock wells. All recovery wells are located in the unconsolidated overburden. Groundwater flows towards the river from the north and south. Under natural conditions (i.e. no well field) groundwater would discharge to the River from both the north and the south. However, due to the historic pumping at the Village Well Field north of the River, the groundwater flows beneath the river from the south, thus drawing contamination from the Site towards the well field.

The river flows to the southwest and contributes to the Croton Falls Reservoir approximately 3.5 miles downstream. The River is also impounded approximately 3,000 feet upstream to form the East Branch Croton Reservoir.

1.3 Summary of Remedial Investigation Findings

An RI/FFS was performed to characterize the nature and extent of contamination at the Site. The results of the RI are described in detail in the following reports:

- 1985 – RI/FFS Report
- 1986 – EPA Superfund ROD

Generally, the RI determined that the main category of contamination that exceeds Remedial Program Soil Cleanup Objectives (SCOs) was volatile halogenated organic compounds (VHOs). Specifically, the primary contaminants of concern are PCE, TCE, and DCE. At the time of the RI, the highest levels of contamination encountered on-site were in groundwater sampled from cluster DGC-6, in the intermediate well screened at a depth of 29.7 to 32.2 feet below ground surface (bgs). Other elevated levels of VHOs were also encountered in the well field and in areas south of the East Branch Croton River. The highest levels were theorized to occur in a relatively narrow band south of the river, with lower concentrations extending to the north. Furthermore, it was surmised that contaminants were discharged to the area southeast of DGC-6 and had moved as a slug to their position at the time of the RI under the influence of natural and well field-induced groundwater flow.

Results of groundwater sample analyses from intermediate wells at monitoring well clusters DGC-1 (screened 35.7 to 40.7 feet bgs) and DGC-12 (screened 35 to 40 feet bgs) indicated low levels of VHOs. The presence of these contaminants was not fully explained by hydrogeologic conditions and pumping. Since the concentrations were low, it was concluded that the observed contamination may have simply indicated dispersion of the plume. In regard to the contamination indicated in the vicinity of SG-3/SG-4 and SG-1/SG-2, it was thought to be probable that contamination initially drawn to well field No. 1 was drawn directly to the east at the 25-40

foot bgs depth by subsequent pumping in well field No. 2, SG-3/SG-4 and SG-1/SG-2. Apparently through continual pumping by well SG-1/SG-2 and SG-3/SG-4, contamination had also been moving from the DGC-6 area directly northeast toward these pumping wells, but at significantly increased depths. The concentration and depth of contamination observed in the intermediate well at DGC-8 was given as evidence for this trend.

Samples from deep bedrock monitoring wells showed no contamination at and in the vicinity of the well field. Based on RI findings, groundwater flow was expected to be from the bedrock to the overlying unconsolidated aquifer under non-pumping conditions. Under pumping conditions from wells in bedrock (i.e. DW-2), hydraulic head was reduced locally and flow from the unconsolidated contaminated aquifer was possibly induced into the bedrock. This accounted for contamination detected in DW-2, which is in close proximity to well field No. 1.

Based on hydrogeologic findings (groundwater modeling) and analytical data for groundwater samples in the vicinity of the Site, highly contaminated groundwater south of the river was determined to be in hydraulic connection with waters being withdrawn from the well field for village use. Contaminant levels in the village wells have never shown total VHOs as high as 5,000 µg/L, as was discovered in monitoring well DGC-6. Groundwater modeling showed that this is due to infiltration from the river and the infiltration channel near well field No. 1, diluting contamination in waters withdrawn in the production wells. Dispersion caused by pumping from widely scattered well locations and co-mingling with uncontaminated water from other areas of the aquifer was also thought to dilute groundwater withdrawn from the well field. Based on trends, it was believed that the well field had reached a steady state condition, whereby contaminant levels were not expected to increase at the well field in the future.

1.4 Summary of Remedial Actions

The Site continues to be remediated in accordance with the EPA Superfund ROD dated 1986 (Appendix A). The following is a summary of the remedial actions that have been performed or currently ongoing at the Site:

1. Continued operation of the existing GWTS at the well field;

2. Construction and operation of a GWTS behind the Brady-Stannard Chevrolet dealership. Construction was completed in 1991 and system was operated until 2007 when it was replaced by the new GWTS located adjacent to Brewster Subaru, which is currently operating;

3. Excavation of the on-site drywell at the former Alben Dry Cleaners that was identified as the source of groundwater contamination in 1991;

4. Following soil gas sampling beneath the former Alben Dry Cleaners building (now Brewster Subaru) in May 2006, which showed elevated VOC concentrations, a subslab mitigation system was installed in January 2007. The subslab system was enhanced with a higher capacity blower after subsequent soil vapor sampling in January 2009 showed residual contamination;

5. Development and implementation of a SMP for long term management of remaining contamination, as required by the Environmental Easement, which includes plans for: (1) ICs and ECs, (2) monitoring, (3) O&M and (4) reporting;

6. Execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the Site.

Remedial construction activities were completed at the Site in December 2007 and site management is ongoing.

1.4.1 Removal of Contaminated Materials from the Site

The source control remedial design (RD) was initiated by Ebasco in October 1988. The plans and specifications related to the removal of the dry well were completed in August 1990. Ebasco awarded a remedial action contract to GSX Services, Inc. to implement the RD in April 1991. In August 1991, the drywell was excavated and confirmation sampling at the excavation limits was performed. Eight truckloads (approximately 20 tons each) of contaminated sediments and soils were removed. The excavation, which was accomplished using sheet piles, was completed down to 15 feet bgs. Final confirmation samples showed that the target cleanup goal of 4 mg/kg for PCE in the unsaturated zone was accomplished. Therefore, the remediation of the source of contamination has reduced contamination of the soils in the unsaturated zone to acceptable health-based levels.

1.4.2 On-Site Treatment Systems

Under a cooperative agreement with the EPA Office of Research and Development, a packed air stripper was installed in 1984 at the Village's well field to provide treatment of their water supply. This air stripper is still in operation.

To improve the capture of the contaminated groundwater, a new GWTS, two new extraction wells, and one combination monitoring and extraction well were installed in the source area at Brewster Subaru. This replaced the GWTS installed in 1991 at the Brady-Stannard dealership. Also, since the air stripper on the village well field was found to be nearing the end of its useful life, it was replaced with a new system adjacent to the original. The modified GWTTs became operational in Fall 2007.

1.4.3 Remaining Contamination

Final confirmation samples showed that the target cleanup goal of 4 mg/kg for PCE in the unsaturated zone was accomplished. Therefore, the remediation of the source of contamination has reduced contamination of the soils in the unsaturated zone to acceptable health-based levels. Residual soil contamination in the saturated zone is being addressed as part of the contamination plume by the GWTS. The Town Planning Board has been informed about the need to limit exposure to potentially residually contaminated soil in the saturated zone, should they be disturbed, such as in connection with new building construction.

Section 2

Engineering and Institutional Controls Plan

The EC/IC has been modified for January 2016 and is attached to this SMP as Appendix H.

Section 3
Monitoring Plan

3.1 Introduction

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site. Monitoring of other ECs is described in Section 4, Operation, Monitoring and Maintenance Plan. This Monitoring Plan may only be revised with the approval of the NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of appropriate media (e.g., groundwater);
- Assessing compliance with NYSDEC AWQS;
- Assessing compliance with State Pollution Discharge Elimination System (SPDES) discharge criteria;
- Assessing achievement of the remedial performance criteria;
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Annual groundwater and monthly GWTS monitoring will be conducted for the first five years to evaluate performance of the remedy and overall reduction in contamination on-site. The

frequency thereafter will be determined by the NYSDEC. Trends in contaminant levels in groundwater in the affected area will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs for environmental media are outlined in detail in Section 3.2. Table 3-1 summarizes the monitoring program for the Site.

Table 3-1 Schedule of Monitoring/Inspection Program

Task	Frequency*	Analysis
GWTS extraction wells, influent, and effluent sampling	Monthly	EPA Method E601
Groundwater Monitoring Well Sampling	Annually	EPA Method 8260 + MTBE
Groundwater Level Monitoring	Annually	Field instrument for water level

*The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

3.2 Groundwater Monitoring Program

Sampling of GWTS recovery wells, influent, and effluent will be performed on a monthly basis. Sampling and gauging of groundwater monitoring wells will be performed on an annual basis to assess the performance of the remedy. The sampling frequency may be modified with the approval of the NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC.

3.2.1 Groundwater Treatment System Monitoring

On a monthly basis Aztech makes a visit to the Site to sample the GWTS influent and effluent, inspect the system, and perform any necessary system maintenance. During these monthly site visits, Aztech collects a sample of groundwater entering the GWTS from each of the three (3) influent wells, as well as a combined influent and an effluent sample. System samples are tested for VOCs by EPA Method E-601. Aztech keeps a log of activities and maintenance performed on-site.

3.2.2 Site-Wide Groundwater Monitoring

A network of 83 monitoring wells has been installed to monitor both up-gradient and down-gradient groundwater conditions at the Site. Figure 2 shows the locations of the monitoring wells and Appendix C gives the depths and diameters of the wells. All available well construction logs are included in Appendix D.

The monitoring wells were installed during multiple investigations both south and north of the Croton River to three different depth intervals, including shallow (2-17 feet bgs), intermediate (13-40 feet bgs), and deep (41-105 feet bgs). The monitoring wells vary from two to six inches in diameter. Some wells are constructed with PVC screens and risers and some with stainless steel. VOC concentrations above the NYSDEC AWQS are still being detected in on-site monitoring wells. Figures 3 through 7 from the 2008 Groundwater Report are included to show the baseline post-remedial groundwater elevation and quality conditions at the Site.

A subset of about 35 wells are sampled annually. Groundwater samples are tested for VOCs by EPA Method 8260 +MTBE. Deliverables for the groundwater monitoring program are specified below.

3.2.2.1 Sampling Protocol

All monitoring well sampling activities will be recorded in a field book and a groundwater-sampling log presented in Appendix E. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

Groundwater samples will be collected using low flow sample techniques to purge groundwater until water quality parameters stabilize. Samples will be analyzed for VOCs by EPA Method 8260 plus MTBE. For QA/QC purposes, one blind duplicate sample per 20 samples will also be collected during the sample event and a trip blank will be provided by the laboratory for each cooler. Field blanks will also be collected by running lab-provided deionized water through the polyethylene and silicone tubing.

The groundwater samples will be submitted to Pace Analytical (formerly H2M Labs, Inc.), an ELAP certified laboratory in Melville, New York, for analysis. A NYSDEC ASP Category B data deliverable will be provided for these analyses. All samples collected will be validated in accordance with NYSDEC Data Usability Summary Report (DUSR) guidance, by a party that is independent of the laboratory that performed the analyses and CDM Smith. A usability analysis will be conducted by a qualified third-party data validator.

The analytical results will be compared to AWQS (NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1) and the NYS Drinking Water Standard (NYS DWS).

3.2.2.2 Monitoring Well Repairs, Replacement and Decommissioning

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable. Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.3 Site-Wide Inspection

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed (Appendix F). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;

- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the O&M Plan; and
- Confirm that site records are up to date.

3.4 Monitoring Quality Assurance/Quality Control

All sampling and analyses will be performed in accordance with the requirements of CDM Smith's Generic QAPP and Corporate Health and Safety Plan, which have been provided to the NYSDEC under separate cover. Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC ASP requirements.
  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Preparation of a DUSR, which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and Checks;
- QA Performance and System Audits;

- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

3.5 Monitoring Reporting Requirements

Forms and any other information generated during regular monitoring events and inspections will be kept on file with CDM Smith and Aztech, the NYSDEC contractor responsible for the GWTS monitoring. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be; (1) subject to approval by the NYSDEC; and (2) submitted at the time of the PRR, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to the NYSDEC on a periodic basis in the PRR. The report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., groundwater);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by the NYSDEC. A summary of the monitoring program deliverables are summarized in Table 3-2 below.

Table 3-2 Schedule of Monitoring/Inspection Reports

Task	Reporting Frequency*
Inspect GWTS and sampling influent and effluent. Complete site inspection form.	Monthly
Groundwater gauging and sampling a subset of on-site monitoring wells. Submit PRR.	Annually
Site Inspection	Annually

*The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

Section 4
Operation and Maintenance Plan

A complete copy of the GWTS PLC O&M Plan is included in Appendix C. This O&M Plan is not to be used as a stand-alone document, but as a component document of this SMP.

An O&M Plan for the GWTS mechanical components and the groundwater monitoring wells has not been developed. This future O&M plan shall describe the measures necessary to operate and maintain the mechanical components of the remedy selected for the Site. This O&M Plan shall:

- Include the steps necessary to allow individuals unfamiliar with the site to operate and maintain the GWTS;
- Include an operation and maintenance contingency plan; and
- Be updated periodically to reflect changes in site conditions or the manner in which the groundwater treatment system is operated and maintained.

Section 5

Inspections, Reporting and Certifications

5.1 Site Inspections

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3, Monitoring Plan and Section 4, O&M Plan of this SMP. At a minimum, a site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the Treatment System Operation/Inspection Form (Appendix F), which includes a general site inspection. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the PRR.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- O&M activities are being conducted properly; and, based on the above items,
- The site remedy continues to be protective of public health and the environment and is performing as designed in the ROD.

5.2 Periodic Review Report

A PRR will be submitted to the NYSDEC annually. In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site. The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also be incorporated into the PRR. The report will include the following:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site;

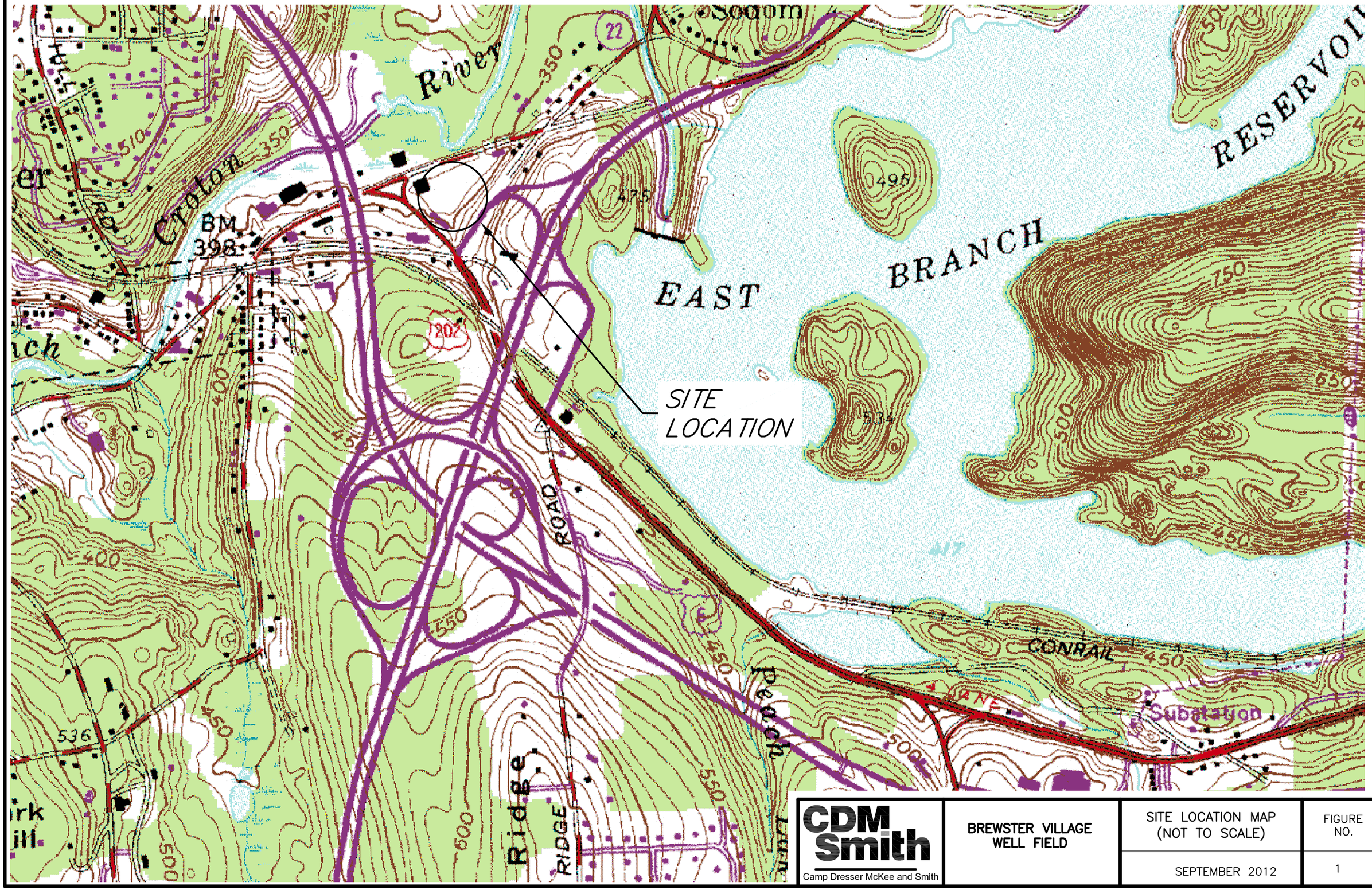
- Results of the required annual site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the Site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends; and
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted as electronic data deliverables to a NYSDEC in the latest approved format.
- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific ROD and ESD;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
  - The overall performance and effectiveness of the remedy.
- A performance summary for all treatment systems at the Site during the calendar year, including information such as:
  - The number of days the system was run for the reporting period;
  - The average, high, and low flows per day;
  - The contaminant mass removed;
  - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
  - A description of the resolution of performance problems;
  - A summary of the performance, effluent and/or effectiveness monitoring; and
  - Comments, conclusions, and recommendations based on data evaluation.

The PRR will be submitted, in electronic format, to the NYSDEC Central Office and the U.S. Environmental Protection Agency Region 2 office.

5.3 Corrective Measures Plan

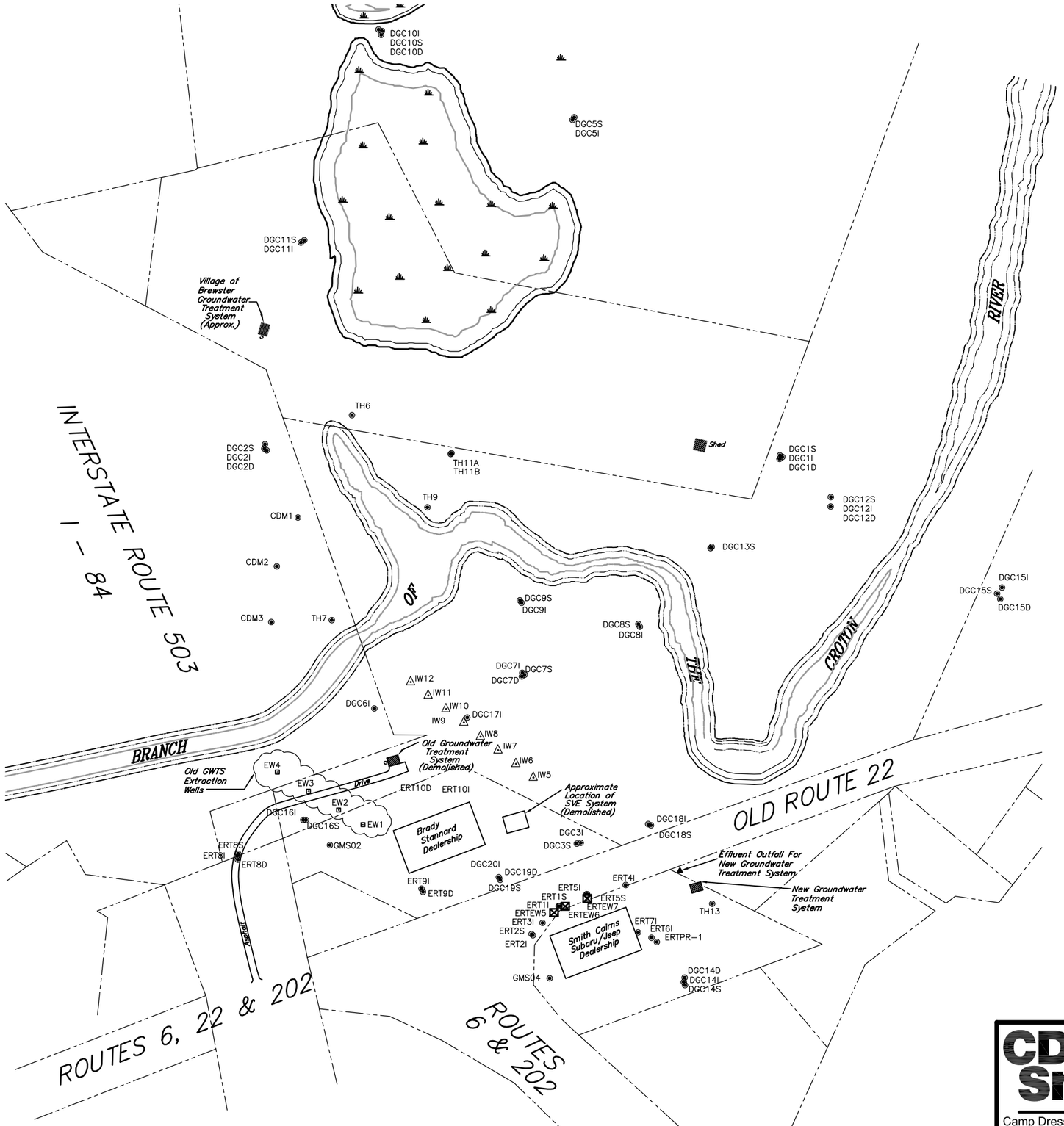
If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an EC/IC, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

Figures



CDM Smith Camp Dresser McKee and Smith	BREWSTER VILLAGE WELL FIELD	SITE LOCATION MAP (NOT TO SCALE) SEPTEMBER 2012	FIGURE NO. 1

0897-61712



LEGEND

◉ *DG5I*	MONITORING WELL WITH DESIGNATION
⊡ *EW1*	OLD GWTS EXTRACTION WELL WITH DESIGNATION
△ *IW1*	OLD GWTS INJECTION WELL WITH DESIGNATION
⊠ *ERT-EW5*	NEW GWTS EXTRACTION WELL WITH DESIGNATION
— — — — —	APPROXIMATE PROPERTY LINE
	WETLANDS

THIS MAP WAS PREPARED FOR THE EXCLUSIVE USE OF AND IS CERTIFIED ONLY TO: SEVENSON ENVIRONMENTAL SERVICES, INC.

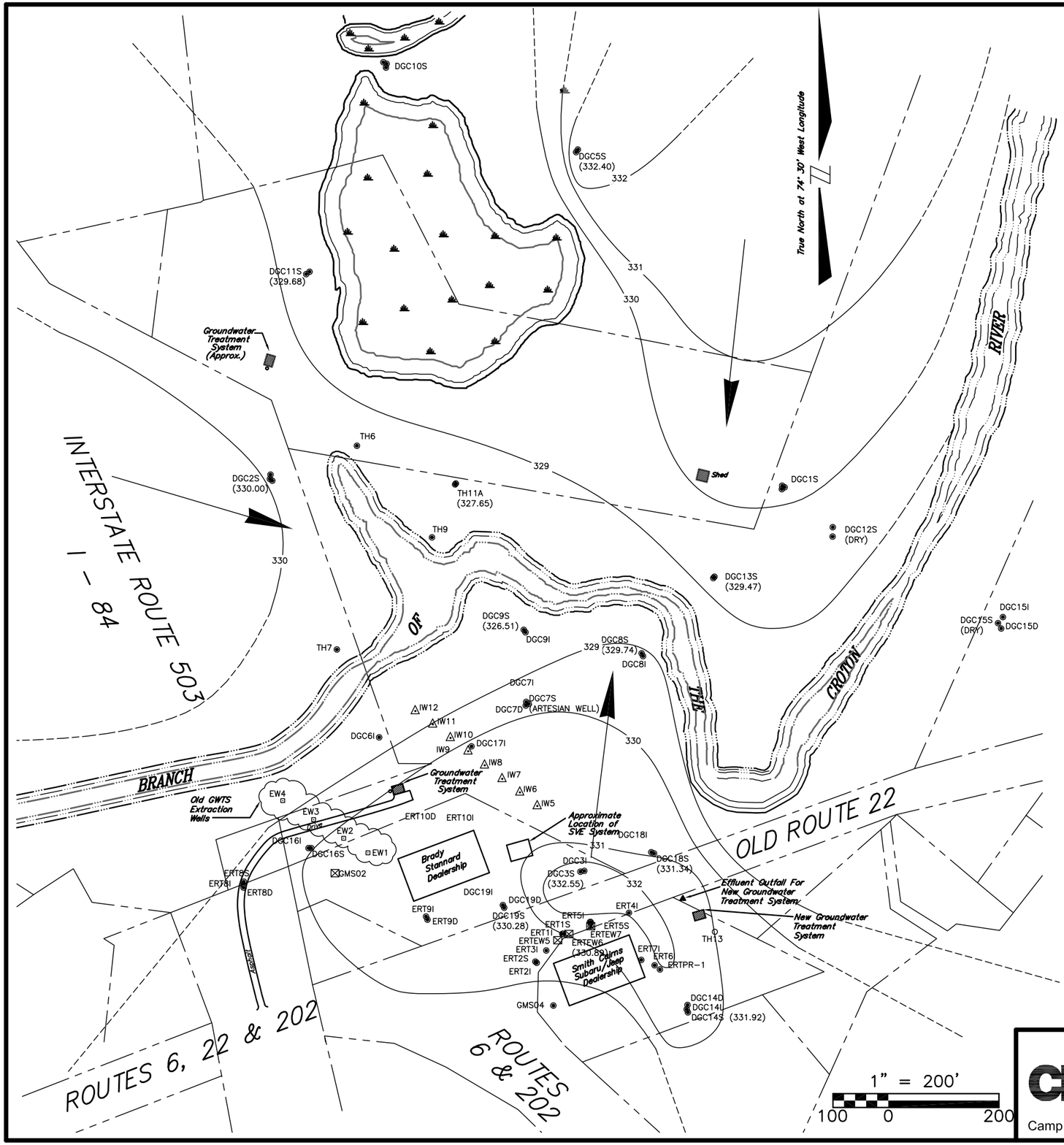
CDM Smith
Camp Dresser McKee and Smith

BREWSTER VILLAGE WELL FIELD

SITE PLAN

NOVEMBER 2012
UPDATED MARCH 2017

FIGURE NO.
2



LEGEND

DG5S (330.49)	Monitoring Well with Designation (Groundwater Elevation, FT BGS)
EW1	Old GWTS Extraction Well with Designation
IW1	Old GWTS Injection Well with Designation
ERT-EW5	New GWTS Extraction Well with Designation
—— - - ——	Approximate Property Line
—— 330 ——	Conceptual Groundwater Contour Line (FT BGS)
----------	Inferred Groundwater Contour Line
	Groundwater Flow Direction (non-pumping conditions)

This map was prepared for the exclusive use of and is certified only to:
SEVENSON ENVIRONMENTAL SERVICES, INC.

MAY 5, 2008 GAUGING DATA

WELL	TOP OF CASING	Depth to Water	Depth to bottom	Groundwater Elevation
DGC2S	338.22	5.22	--	333.00
DGC3S	335.97	3.42	10.11	332.55
DGC5S	340.99	8.59	20.26	332.40
DGC7S	334.09	#	--	NA
DGC8S	334.78	5.04	10.24	329.74
DGC9S	333.42	6.91	10.41	326.51
DGC11S	336.99	7.31	10.22	329.68
DGC12S	337.02	DRY	6.10	NA
DGC13S	335.84	6.37	10.17	329.47
DGC14S	341.37	9.45	12.65	331.92
DGC16S	339.96	8.99	10.48	330.97
DGC18S	338.04	6.70	10.48	331.34
DGC19S	337.19	6.91	10.41	330.28
ERTEW6	337.74	6.85	14.85	330.89
TH11A	332.62	4.97	9.90	327.65

NOTES:
WELL ELEVATIONS BASED ON BADEY & WATSON JUNE 6, 2002 SURVEY FOR SEVENSON ENVIRONMENTAL SERVICES, INC.

WELL FULL WITH GROUNDWATER, POSSIBLE ARTESIAN WELL.
-- DEPTH NOT RECORDED
NA NOT AVAILABLE

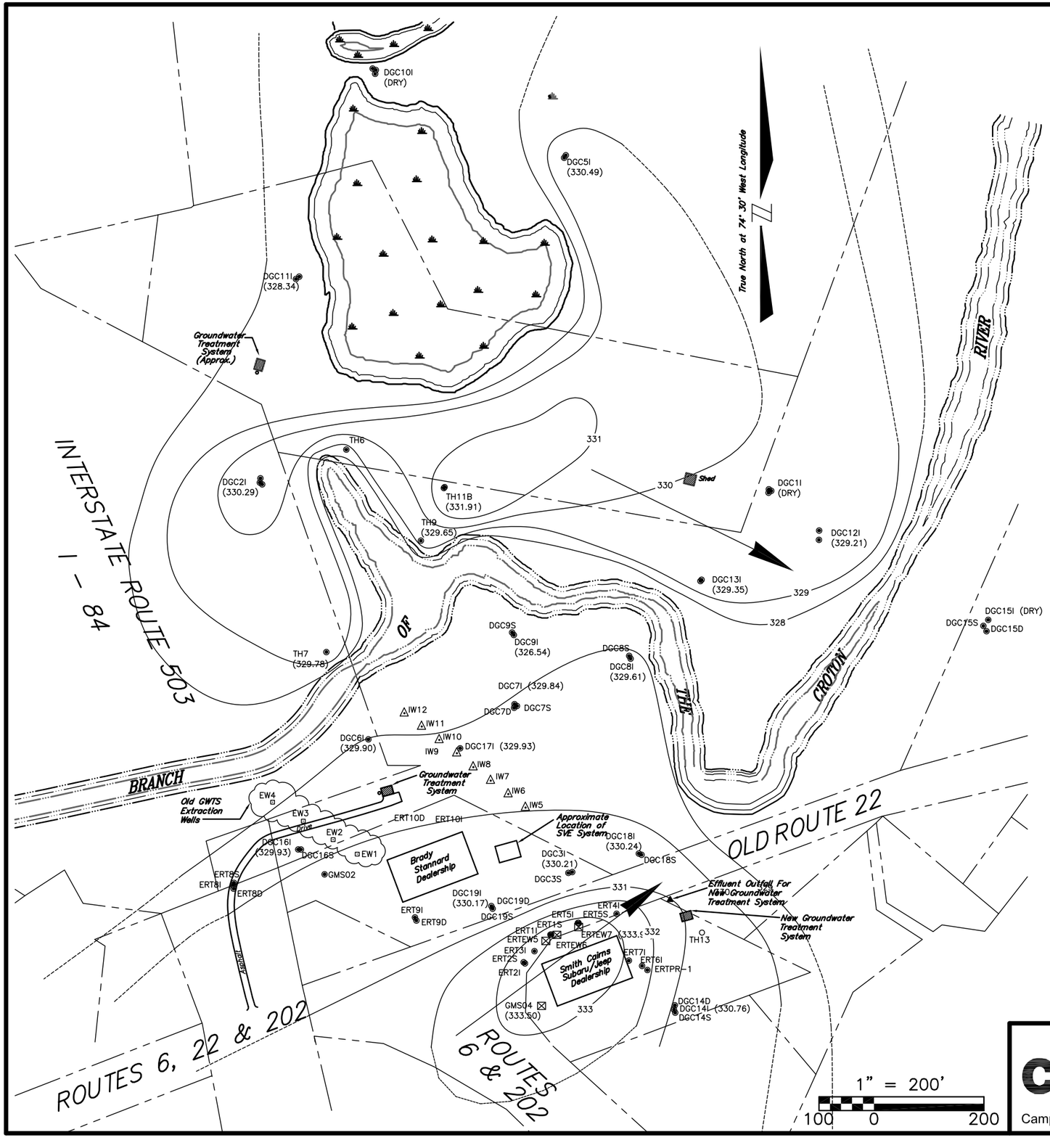
Camp Dresser & McKee

BREWSTER VILLAGE WELL FIELD

GROUNDWATER CONTOURS FOR SHALLOW WELLS

MAY 2008

FIGURE NO. 3



LEGEND

- DG5I (330.49) — Monitoring Well with Designation (Groundwater Elevation, FT BGS)
- EW1 — Old GWTS Extraction Well with Designation
- IW1 — Old GWTS Injection Well with Designation
- ERT–EW5 — New GWTS Extraction Well with Designation
- Approximate Property Line
- 330 — Conceptual Groundwater Contour Line (FT BGS)
- Inferred Groundwater Contour Line
- Groundwater Flow Direction (non–pumping conditions)

This map was prepared for the exclusive use of and is certified only to:
SEVENSON ENVIRONMENTAL SERVICES, INC.

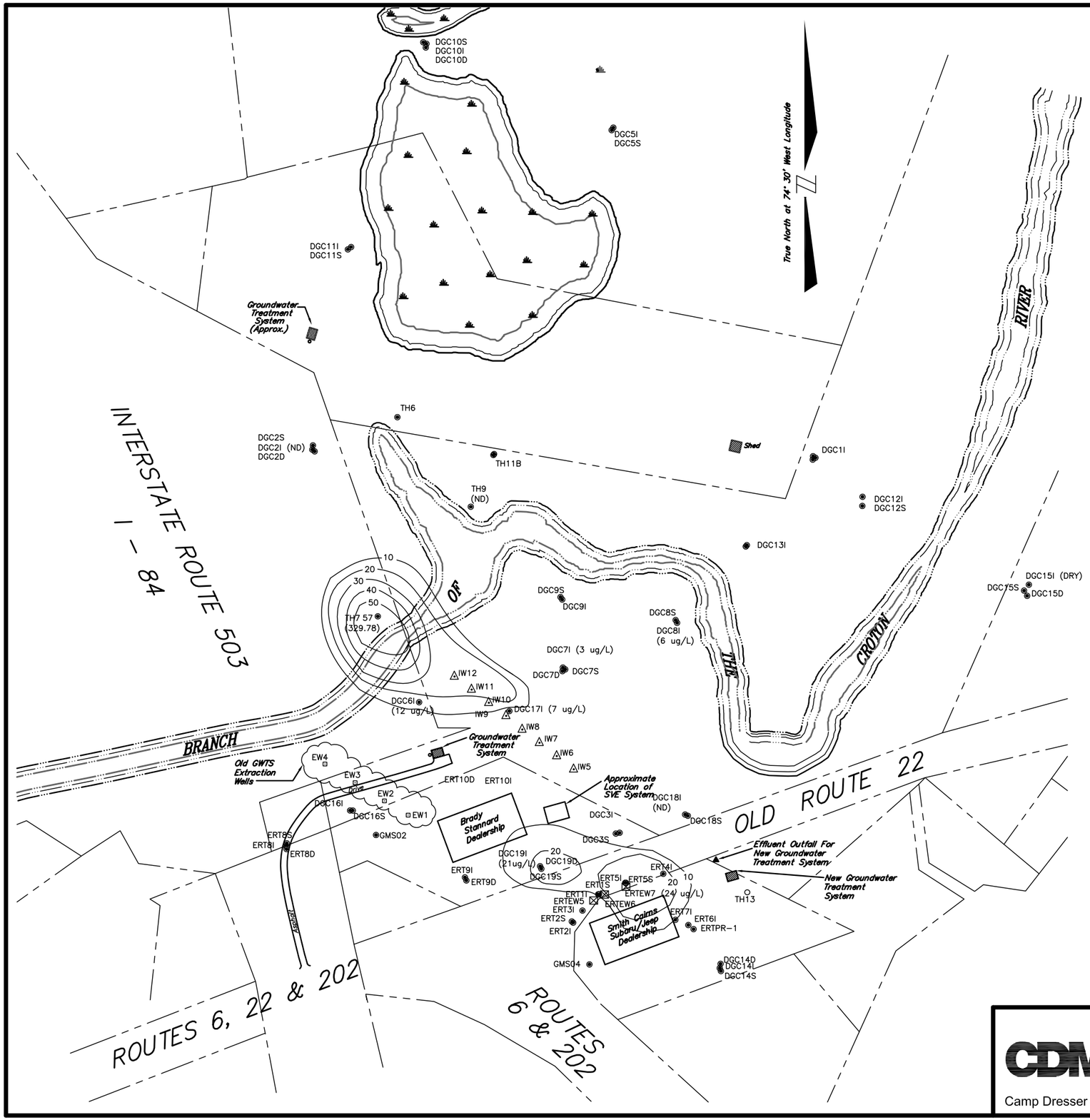
MAY 5, 2008 GAUGING DATA

WELL	TOP OF CASING	Depth to Water	Depth to bottom	Groundwater Elevation
DGC2I	338.55	8.26	19.80	330.29
DGC3I	335.49	5.28	22.58	330.21
DGC5I	341.97	11.48	74.75	330.49
DGC6I	337.64	7.74	39.65	329.90
DGC7I	333.74	3.90	40.25	329.84
DGC8I	335.20	5.59	75.15	329.61
DGC9I	333.29	6.75	21.80	326.54
DGC11I	336.67	8.33	42.72	328.34
DGC12I	337.81	8.60	42.89	329.21
DGC13I	334.43	5.08	64.72	329.35
DGC14I	340.21	9.45	24.36	330.76
DGC16I	339.11	9.18	37.63	329.93
DGC17I	335.25	5.32	34.70	329.93
DGC18I	338.43	8.19	30.10	330.24
DGC19I	336.92	6.75	21.80	330.17
ERTEW7	337.76	6.82	36.56	330.94
GMS04 ***	339.60	6.10	28.87	333.50
TH7	337.35	7.57	28.45	329.78
TH9	333.64	3.99	27.15	329.65
TH11B	334.70	2.79	22.71	331.91

NOTES:
WELL ELEVATIONS BASED ON BADEY & WATSON JUNE 6, 2002 SURVEY FOR SEVENSON ENVIRONMENTAL SERVICES, INC.

\# WELL FULL WITH GROUNDWATER, POSSIBLE ARTESIAN WELL.
-- DEPTH NOT RECORDED
NA NOT AVAILABLE

CDM Camp Dresser & McKee	**BREWSTER VILLAGE WELL FIELD**	GROUNDWATER CONTOURS FOR INTERMEDIATE WELLS	FIGURE NO.
		MAY 2008	4



LEGEND

DG5I (330.49)	Monitoring Well with Designation (Groundwater Elevation, FT BGS)
EW1	Old GWTS Extraction Well with Designation
IW1	Old GWTS Injection Well with Designation
ERT–EW5	New GWTS Extraction Well with Designation
——— - - ———	Approximate Property Line
—— 30 ——	Isoconcentration Line

This map was prepared for the exclusive use of and is certified only to:
SEVENSON ENVIRONMENTAL SERVICES, INC.

1" = 200'
100 0 200

CDM Camp Dresser & McKee	**BREWSTER VILLAGE WELL FIELD**	TETRACHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS	FIGURE NO.
		MAY 2008	5

LEGEND

DG5I (330.49)	Monitoring Well with Designation (Groundwater Elevation, FT BGS)
EW1	Old GWTS Extraction Well with Designation
IW1	Old GWTS Injection Well with Designation
ERT–EW5	New GWTS Extraction Well with Designation
———	Approximate Property Line
—— 30 ——	Isoconcentration Line

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SEVENSON ENVIRONMENTAL SERVICES, INC.

1" = 200'
100 0 200

CDM Camp Dresser & McKee	BREWSTER VILLAGE WELL FIELD	1,2–DICHLOROETHENE ISOCONCENTRATION INTERMEDIATE WELLS	FIGURE NO.
		MAY 2008	6

LEGEND

- DG5S (330.49) — Monitoring Well with Designation (Groundwater Elevation, FT BGS)
- EW1 — Old GWTS Extraction Well with Designation
- IW1 — Old GWTS Injection Well with Designation
- ERT-EW5 — New GWTS Extraction Well with Designation
- Approximate Property Line
- 2 — Isoconcentration Line

This map was prepared for the exclusive use of and is certified only to:

SEVENSON ENVIRONMENTAL SERVICES, INC.

DGC10I
DGC10S
DGC10D
DGC5S
DGC5I
DGC11S
DGC11I
Groundwater Treatment System (Approx.)
True North at 74° 30' West Longitude
HUDSON RIVER
TH6
DGC2S
DGC2I
DGC2D
TH11A
Shed
DGC1S
DGC1I
DGC1D
TH9 (2UG/L)
2
DGC12S
DGC12I
DGC12D
DGC13S
INTERSTATE ROUTE 503
I – 84
DGC15I
DGC15S
DGC15D
DGC9S
DGC9I
TH7
DGC8S
DGC8I
DGC7I
DGC7S
DGC7D
IW12
IW11
IW10
IW9
DGC17I
IW8
IW7
IW6
IW5
DGC6I (2ug/L)
2
Groundwater Treatment System
Old GWTS Extraction Wells
EW4
EW3
EW2
EW1
Drive
ERT10D
ERT10I
Approximate Location of SVE System
DGC16I
DGC16S
GMS02
Brady Stannard Dealership
340
DGC18I
DGC18S
DGC3I
DGC3S
ERT8S
ERT8I
ERT8D
DGC19I (340ug/L)
DGC19D
DGC19S
ERT9I
ERT9D
Effluent Outfall For New Groundwater Treatment System
New Groundwater Treatment System
ERT4I
ERT5I
ERT1S
ERT5S
ERT1I
ERTEW7 (1ug/L)
ERTEW5
ERTEW6
TH13
ERT3I
ERT7I
ERT2S
ERT6I
ERT2I
ERTPR-1
Smith Cairns Subaru/Jeep Dealership
GMS04
DGC14D
DGC14I
DGC14S
OLD ROUTE 22
ROUTES 6, 22 & 202
ROUTES 6 & 202
EAST BRANCH
CROTON
CLAVERACK
1" = 200'
100 0 200

CDM Camp Dresser & McKee	BREWSTER VILLAGE WELL FIELD	VINYL CHLORIDE ISOCONCENTRATION INTERMEDIATE WELLS	FIGURE NO.
		MAY 2008	7

Appendices

Appendix A

EPA/ROD/R02-86/036
1986

EPA Superfund
Record of Decision:

BREWSTER WELL FIELD
EPA ID: NYD980652275
OU 01
PUTNAM COUNTY, NY
09/30/1986

- BREWSTER WELL FIELD FOCUSED FEASIBILITY STUDY
- BREWSTER WELL FIELD REMEDIAL INVESTIGATION
- BREWSTER WELL FIELD FEASIBILITY STUDY
- STAFF SUMMARIES AND RECOMMENDATIONS
- RESPONSIVENESS SUMMARY.

#DE
DECLARATIONS

CONSISTENT WITH THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (CERCLA) AND THE NATIONAL CONTINGENCY PLAN (40 CFR PART 300), I HAVE DETERMINED THAT THE CONTINUED OPERATION OF THE EXISTING AIR STRIPPING SYSTEM TREATING THE VILLAGE OF BREWSTER'S WATER SUPPLY AND CONSTRUCTION OF A GROUNDWATER MANAGEMENT SYSTEM TO CONTAIN THE PLUME OF CONTAMINATION AND RESTORE GROUNDWATER QUALITY SOUTH OF THE RIVER, IS A COST-EFFECTIVE REMEDY AND PROVIDES ADEQUATE PROTECTION OF PUBLIC HEALTH, WELFARE AND THE ENVIRONMENT. FURTHERMORE, I HAVE DETERMINED THAT IT IS NECESSARY TO UNDERTAKE A SUPPLEMENTAL REMEDIAL INVESTIGATION AND FEASIBILITY STUDY TO GATHER ADDITIONAL DATA AND TO EVALUATE THE NECESSITY TO IMPLEMENT SOURCE CONTROL MEASURES. A DETERMINATION REGARDING FUTURE SOURCE CONTROL ACTIONS WILL BE MADE UPON COMPLETION OF THIS WORK.

THE STATE OF NEW YORK HAS BEEN CONSULTED AND AGREES WITH THE APPROVED REMEDY. IN ADDITION, THESE ACTIONS WILL REQUIRE FUTURE OPERATION, MAINTENANCE, AND MONITORING ACTIVITIES TO ENSURE THE CONTINUED EFFECTIVENESS OF THE REMEDY. THESE ACTIVITIES AT THE PROPOSED OFF-SITE AIR STRIPPER ARE PRESENTLY CONSIDERED ELIGIBLE FOR TRUST FUND MONIES FOR A PERIOD OF ONE YEAR, ALTHOUGH PENDING CERCLA LEGISLATION MAY AFFECT THIS ELIGIBILITY AND/OR THE PERIOD OF ELIGIBILITY. HOWEVER, EPA WILL NOT PARTICIPATE IN THE COST OF THESE ACTIVITIES AT THE EXISTING ON-SITE AIR STRIPPER. SAID COSTS WILL CONTINUE TO BE PAID BY THE VILLAGE OF BREWSTER.

FUNDING OF THIS REMEDIAL ACTION WILL OCCUR AT THE TIME OF CERCLA REAUTHORIZATION; MOREOVER, I HAVE DETERMINED THAT THE ACTION BEING TAKEN WILL BE APPROPRIATE WHEN BALANCED AGAINST THE FUTURE AVAILABILITY OF TRUST FUND MONIES FOR USE AT OTHER ACTIVITIES.

SEPTEMBER 30, 1986 CHRISTOPHER J. DAGGETT
DATE REGIONAL ADMINISTRATOR.

SUMMARY OF
REMEDIAL ALTERNATIVE SELECTION
BREWSTER WELL FIELD

#SLD
SITE LOCATION AND DESCRIPTION

THE BREWSTER WELL FIELD IS LOCATED ON THE NORTHERN BANK OF THE EAST BRANCH CROTON RIVER, 3/4 OF A MILE EAST OF THE VILLAGE OF BREWSTER, TOWN OF SOUTHEAST IN PUTNAM COUNTY, NEW YORK. THE SITE IS APPROXIMATELY 3 MILES WEST OF THE CONNECTICUT/NEW YORK BORDER AND APPROXIMATELY 47 MILES NORTH OF NEW YORK CITY. INTERSTATE 84 PASSES JUST TO THE WEST OF THE SITE (SEE FIGURE 1).

THE LAND TO THE NORTH OF THE STUDY AREA, CONTAINING THE COMMUNITY OF BREWSTER HILL, IS LARGELY RESIDENTIAL WITH SOME AGRICULTURAL USE. MOST OF THE LAND SOUTH OF THE STUDY AREA IS OCCUPIED BY COMMERCIAL OR LIGHT INDUSTRIAL FACILITIES. TO THE WEST IS THE RESIDENTIAL COMMUNITY OF THE VILLAGE OF BREWSTER.

THE 1980 CENSUS RECORDS THE POPULATION OF PUTNAM COUNTY AS 77,193. PROJECTED 1980 FIGURES FOR THE TOWN OF SOUTHEAST AND THE VILLAGE OF BREWSTER ARE 15,500 AND 1,700 RESPECTIVELY. THE MUNICIPAL WATER SYSTEM SERVES THE VILLAGE AND SEVERAL AREAS IN THE TOWN OF SOUTHEAST, A NUMBER OF BUSINESS ESTABLISHMENTS AND THE CONSOLIDATED RAIL CORPORATION'S PUTNAM JUNCTION RAIL YARD. RESIDENTIAL USERS ALONE COUNT FOR AN ESTIMATED 2,100 PEOPLE.

ADDITIONAL POTENTIAL RECEPTORS ARE DOWNSTREAM USERS OF THE EAST BRANCH CROTON RIVER WHICH CONTRIBUTES TO THE CROTON FALLS RESERVOIR APPROXIMATELY 3.5 MILES DOWNSTREAM. THE EAST BRANCH CROTON RIVER FLOWS ADJACENT TO AND SOUTH OF THE WELL FIELD. THREE THOUSAND FEET TO THE EAST OF THE SITE (UPSTREAM) THE RIVER IS IMPOUNDED TO FORM THE EAST BRANCH RESERVOIR, PART OF NEW YORK CITY'S CROTON WATERSHED RESERVOIR SYSTEM. THREE THOUSAND FEET FROM THE SITE TO THE NORTHEAST, BOG BROOK, A TRIBUTARY TO THE EAST BRANCH CROTON RIVER, IS IMPOUNDED TO FORM BOG BROOK RESERVOIR, ALSO OWNED BY NEW YORK CITY AS SHOWN ON FIGURE 2.

THE SUBSURFACE GEOLOGY OF THE AREA IS HIGHLY VARIED GIVING RISE TO AN EXTREMELY COMPLEX SUBSURFACE HYDROLOGY. GROUNDWATER THROUGHOUT THE AREA MAY BE FOUND IN BOTH THE BEDROCK AND UNCONSOLIDATED SEDIMENTS. IN BEDROCK, THE WATER PRIMARILY OCCURS IN JOINTS AND FRACTURES. IN THE UNCONSOLIDATED DEPOSITS WATER EXISTS IN THE PORE SPACES. PERMEABILITY VARIES OVER MANY ORDERS OF MAGNITUDE. THE BEDROCK AND UNCONSOLIDATED AQUIFERS MAY ACT AS DISTINCT AQUIFERS, OR AS ONE, DEPENDING ON THE DEGREE OF HYDRAULIC CONNECTION BETWEEN THE TWO. BOTH SITUATIONS OCCUR IN THE VICINITY OF THE BREWSTER WELL FIELD.

#SH
SITE HISTORY

BEGINNING IN 1954, WHEN WELL FIELD NO. 1 WAS DEVELOPED, THE VILLAGE OF BREWSTER HAS USED THE AQUIFERS BENEATH THE VILLAGE-OWNED LAND, IN THE TOWN OF SOUTHEAST, AS A SOURCE OF WATER FOR ITS WATER SUPPLY SYSTEM. IN 1967 WELL FIELD NO. 2 WAS BROUGHT ON-LINE. THE TWO WELL FIELDS CONSIST OF A TOTAL OF 18 SHALLOW WELLS. EVIDENCE OF VOLATILE HALOGENATED ORGANIC COMPOUND (VHO) CONTAMINATION FIRST APPEARED IN 1978, AND ALTERNATIVE WATER SOURCES WERE SUBSEQUENTLY ADDED TO THE WATER SUPPLY SYSTEM, INCLUDING A DEEP BEDROCK WELL (DW-2) AND TWO SEPARATE SHALLOW WELLS (SG-1 AND SG-2) LOCATED AS SHOWN ON FIGURE 3. AS A RESULT OF LOW YIELD DW-1 WAS NOT CONNECTED TO THE SUPPLY SYSTEM. TWO NEW WELLS SG-3 AND SG-4 WERE ADDED TO THE SYSTEM IN 1984. PRIOR TO DROUGHT CONDITIONS ARISING IN 1981, EAST BRANCH CROTON RIVER SURFACE WATER WAS ALSO USED AT TIMES TO SUPPLEMENT THE WATER SUPPLY SYSTEM.

SINCE 1979, THE VILLAGE HAS HAD SEVERAL STUDIES CONDUCTED TO IDENTIFY POTENTIAL ALTERNATIVE GROUNDWATER SOURCES AND TO TEST SPRAY AERATION AS A POTENTIAL TREATMENT METHOD FOR VHO REMOVAL. IT HAS SINCE BEEN CONCLUDED THAT TREATMENT OF EXISTING SOURCES IS THE MOST PROMISING OF THE ALTERNATIVES FOR SOLVING EXISTING CONTAMINATION PROBLEMS IN THE WELL FIELD. UNDER A COOPERATIVE AGREEMENT WITH THE EPA, OFFICE OF RESEARCH AND DEVELOPMENT, THE VILLAGE HAS CONSTRUCTED, TESTED AND IN 1984, PLACED ON LINE, A FULL SCALE PACKED COLUMN FOR TREATMENT OF THE ENTIRE VILLAGE SUPPLY.

IN 1985, A STUDY (FOCUSED FEASIBILITY STUDY) WAS CONDUCTED BY NYSDEC, TO INVESTIGATE THE FEASIBILITY OF

ON-SITE TREATMENT ALTERNATIVES FOR REMOVAL OF VOLATILE HALOGENATED ORGANIC COMPOUNDS FROM THE VILLAGE'S WATER SUPPLY. CONSIDERING COST, RELIABILITY, OFF-SITE RELEASES AND FLEXIBILITY, THE PACKED COLUMN WAS ADJUDGED SUPERIOR TO OTHER ALTERNATIVES.

#CSS
CURRENT SITE STATUS

CONCURRENT WITH THE FOCUSED FEASIBILITY STUDY A REMEDIAL INVESTIGATION (RI) WAS INITIATED BY NYSDEC TO DETERMINE THE NATURE AND EXTENT OF CONTAMINATION AT AND IN THE VICINITY OF THE SITE.

VOLATILE HALOGENATED ORGANIC COMPOUNDS HAVE BEEN THE PRIMARY CONTAMINANTS DETECTED IN THE GROUNDWATER FROM THE WELL FIELD AND IN THE VICINITY OF THE SITE. GROUNDWATER SAMPLES TAKEN DURING THE RI WERE ANALYZED FOR A WIDE VARIETY OF ORGANIC VOLATILES AND SAMPLES FROM WELLS DGC-6, DGC-14 AND THE RAW WATER INFLUENT TO THE AIR STRIPPER WERE SUBJECTED TO FULL HAZARDOUS SUBSTANCE LIST (HSL) ANALYSIS. THE PRINCIPLE CONTAMINANTS WERE FOUND TO BE TETRACHLOROETHYLENE (PCE), TRICHLOROETHYLENE (TCE) AND 1,2 DICHLOROETHYLENE (DCE).

GROUNDWATER SAMPLING AND MONITORING HAS BEEN ONGOING AT THE SITE SINCE 1978 WHEN VHO CONTAMINATION WAS FIRST DISCOVERED. TABLE 1 LISTS THE FULL RANGE OF CONTAMINANTS AND THEIR MAXIMUM REPORTED CONCENTRATIONS DISCOVERED AT THE SITE BASED ON RI FINDINGS, NYSDOH STUDIES AND OTHER REPORTS.

TABLE 2 SUMMARIZES THE RI ANALYTICAL DATA FOR THE MOST PREVALENT CONTAMINANTS (PCE, TCE, AND DCE) BY MEDIA SAMPLED.

PCE, TCE AND DCE ARE SUSPECTED CARCINOGENS AND KNOWN CAUSES OF LIVER AND KIDNEY DAMAGE AND CENTRAL NERVOUS SYSTEM DEPRESSION IN HUMANS. TOXICITY PROFILES FOR EACH OF THESE PRINCIPLE CONTAMINANTS ARE PROVIDED IN APPENDIX A.

BASED ON THE RESULTS OF THE EXTENSIVE FIELD RECONNAISSANCE, SAMPLING AND ANALYSIS OF DATA COLLECTED DURING THE RI, THE EXTENT OF THE CONTAMINATION AT THE BREWSTER WELL FIELD CAN BE APPROXIMATED. FIGURE 4 IS A SCHEMATIC OF THE CONTAMINATION FOUND AT AND IN THE VICINITY OF THE WELL FIELD IN TERMS OF TOTAL VHO. THE HIGHEST LEVELS OF CONTAMINATION ENCOUNTERED IN THIS AREA WERE IN GROUNDWATER SAMPLED FROM RI MONITORING WELL CLUSTER DGC-6, IN THE INTERMEDIATE WELL SCREENED AT A DEPTH OF 29.7 TO 32.2 FEET. AS EVIDENCED IN FIGURE 4, OTHER ELEVATED LEVELS OF VHOS WERE ALSO ENCOUNTERED IN THE WELL FIELD AND IN AREAS SOUTH OF THE EAST BRANCH CROTON RIVER. THE HIGHEST LEVELS ARE THEORIZED TO OCCUR IN A RELATIVELY NARROW BAND SOUTH OF THE RIVER, WITH LOWER CONCENTRATIONS EXTENDING TO THE NORTH.

THE CONTOURS SHOWN ON FIGURE 4 WERE DEVELOPED BASED ON THE OCTOBER 1985 FIELD SAMPLING ANALYSIS AND HYDROGEOLOGIC INFORMATION DESCRIBED IN THE RI. THE SHAPE OF THE PLUME THEORIZED AND REPRESENTED ON FIGURE 4 WAS DEVELOPED INCORPORATING THE RESULTS OF GROUNDWATER ANALYSES AND CONSIDERING GROUNDWATER FLOW CONDITIONS IN THE WELL FIELD VICINITY WHILE THE PRODUCTION WELLS WERE EXTRACTING WATER FOR SERVICE TO THE VILLAGE SYSTEM. THE ASYMMETRICAL SHAPE OF THE ISOCONCENTRATION LINES DEPICTS THE INFLUENCE OF BOTH GROUNDWATER FLOW AND PRODUCTION WELL PUMPING. THIS CONFIGURATION TENDS TO SUPPORT THE PREMISE THAT CONTAMINANTS WERE DISCHARGED SOUTHEAST OF DGC-6 AND HAVE MOVED AS A "SLUG" TO THEIR PRESENT POSITION UNDER THE INFLUENCE OF NATURAL AND WELL FIELD-INDUCED GROUNDWATER FLOW. THE ISOCONCENTRATION LINES IN THE VICINITY OF THE ALBEN CLEANERS PREMISES (A SUSPECTED SOURCE) ARE SUBJECT TO VERIFICATION BECAUSE BORINGS WERE NOT EXECUTED ON THAT PROPERTY.

RESULTS OF GROUNDWATER SAMPLE ANALYSES FROM INTERMEDIATE WELLS AT RI WELL CLUSTERS DGC-1 (SCREENED AT 35.7 TO 40.7 FEET) AND DGC-12 (SCREENED AT 35 TO 40 FEET) INDICATE LOW LEVELS OF VHO. THE PRESENCE OF THESE CONTAMINANTS AT THE LOCATIONS SHOWN ON FIGURE 4 IS NOT FULLY EXPLAINED BY HYDROGEOLOGIC CONDITIONS AND PUMPING. SINCE THE CONCENTRATIONS ARE LOW, THE OBSERVED CONTAMINATION MAY SIMPLY INDICATE DISPERSION OF THE PLUME. IN REGARD TO THE CONTAMINATION INDICATED IN THE VICINITY OF SG-3 & 4 AND SG-1 & 2 (SEE FIGURE 4) IT IS PROBABLE THAT CONTAMINATION INITIALLY DRAWN TO WELL FIELD NO. 1 WAS DRAWN DIRECTLY TO THE EAST AT THE 25-40 FEET DEPTH BY SUBSEQUENT PUMPING IN WELL FIELD NO. 2, SG-3 & 4 AND SG-1 & 2. APPARENTLY THROUGH CONTINUAL PUMPING BY WELLS SG-1 & 2 AND SG-3 & 4, CONTAMINATION HAS ALSO BEEN MOVING FROM THE DGC-6 AREA DIRECTLY NORTHEAST TOWARD THESE PUMPING WELLS BUT AT SIGNIFICANTLY INCREASED DEPTHS. EVIDENCE OF THIS IS THE CONCENTRATION AND DEPTH OF CONTAMINATION OBSERVED IN THE INTERMEDIATE WELL AT DGC-8.

DEEP WELL SAMPLES OF WELLS INSTALLED DURING THE RI IN BEDROCK SHOWED NO CONTAMINATION AT AND IN THE VICINITY OF THE WELL FIELD. BASED ON RI FINDINGS GROUNDWATER FLOW IS EXPECTED TO BE FROM THE BEDROCK TO THE OVERLYING UNCONSOLIDATED AQUIFER UNDER NON-PUMPING CONDITIONS. UNDER PUMPING CONDITIONS FROM WELLS IN BEDROCK (I.E., DW-2) HYDRAULIC HEAD IS REDUCED LOCALLY AND FLOW FROM THE UNCONSOLIDATED CONTAMINATED AQUIFER MAY BE INDUCED INTO THE BEDROCK. THIS WOULD ACCOUNT FOR CONTAMINATION DETECTED IN DW-2 WHICH IS IN CLOSE PROXIMITY TO WELL FIELD NO. 1.

SAMPLING AND ANALYSIS CONDUCTED DURING THE RI, IN ADDITION TO GROUNDWATER, INCLUDED WATER IN DRAINLINES IN THE VICINITY OF THE SITE, SURFACE WATER, PRIVATE WATER WELLS, SOIL AND AIR.

DISCHARGES FROM A CULVERT NORTHEAST OF ALBEN CLEANERS REVEALED AVERAGE LEVELS OF PCE AT 88 UG/L, TCE AT 14 UG/L AND DCE AT 6 UG/L BASED ON 134 SAMPLES TAKEN. SURFACE WATER SAMPLES TAKEN AT VARIOUS LOCATIONS IN THE VICINITY OF THE WELL FIELD SHOW ISOLATED INCIDENTS OF TRACE AMOUNTS (LESS THAN 5 UG/L) OF VHO. IN THE EAST BRANCH CROTON RIVER A MAXIMUM OF 5.4 UG/L OF TOTAL VHO WAS ENCOUNTERED IN THE VICINITY OF THE ALBEN CLEANERS CULVERT OUTFALL.

SURVEYS (INCLUDING DRAINLINE INVENTORIES AND SAMPLING) OF TWO OTHER BUSINESS ESTABLISHMENTS IN THE IMMEDIATE STUDY AREA, BRADY STANNARD'S AND SAVINO'S GARAGES, INDICATE THAT NEITHER ARE LIKELY SOURCES OF CONTAMINANT DISCHARGES OF THE TYPE ENCOUNTERED IN GROUNDWATER SOUTH OF THE RIVER.

FURTHER DOWNSTREAM TOWARD THE I-84 OVERPASS AND BEYOND I-84 SAMPLES FROM THE RIVER SHOWED TRACE AMOUNTS (2 TO 4 UG/L) OF PCE. WHILE THESE CONCENTRATIONS ARE LOW THEY DEMONSTRATE THE POTENTIAL FOR AN INTERCHANGE OF CONTAMINATED GROUNDWATER WITH THE RIVER. BASED ON THE RI RESULTS, HOWEVER THERE IS NO SIGNIFICANT SURFACE WATER CONTAMINATION AT AND IN THE VICINITY OF THE SITE EXCEPT FOR THE CULVERT DISCHARGE NORTHEAST OF ALBEN CLEANERS.

BASED ON 65 PRIVATE WELLS WATER SAMPLES HIGH CONCENTRATIONS OF PCE (64 UG/L) WERE FOUND IN THE VICINITY OF THE HENRY VAN MOTEL, EAST AND UPGRADIENT OF THE SITE. TRACE AMOUNTS (LESS THAN 5 UG/L) OF VHO WERE ALSO FOUND AT THE HARLEY DAVIDSON SHOP EAST OF THE SITE. HOWEVER, IT IS NOT LIKELY THAT THESE LEVELS OF CONTAMINATION ARE ASSOCIATED WITH THE WELL FIELD CONTAMINATION, SINCE A DOWNGRADIENT MONITORING WELL WAS FOUND TO BE CLEAN DURING THE INVESTIGATION. MONITORING OF THESE FACILITIES WAS RECOMMENDED IN THE RI.

DURING THE INSTALLATION OF THE RI MONITORING WELL CLUSTERS, SOIL SAMPLES WERE SCREENED TO DETERMINE CONCENTRATIONS OF PCE, TCE AND DCE AT VARYING DEPTHS USING A SEMI-QUANTITATIVE ANALYSIS METHOD ON AN HNU 301 PORTABLE GAS CHROMATOGRAPH. A TOTAL OF 326 SOIL SAMPLES WERE SCREENED AS PART OF THE RI FIELD PROGRAM. VARIOUS DEGREES OF CONTAMINATION WERE FOUND IN WELL LOCATIONS DGC-1, -3, -6, -7, -8, -9, -12, -13, -14, -15, -16, -17, AND -19. HIGHEST LEVELS OF VHO CONTAMINATION IN THE SOIL WERE FOUND IN BORING LOCATIONS DGC-6 (247 PPB), DGC-7 (71 PPB), DGC-9 (172 PPB), DGC-17 (44 PPB) AND DGC-19 (290 PPB) (SEE TABLE 3). THESE LOCATIONS COINCIDE WITH THE MAXIMUM GROUNDWATER CONTAMINATION LEVELS FOUND DURING THE RI.

AN AMBIENT AIR MONITORING SURVEY WAS CONDUCTED AROUND THE SITE VICINITY DURING THE RI. VOLATILES WERE NOT DETECTED IN ANY OF THE LOCATIONS.

BASED ON HYDROGEOLOGIC FINDINGS (GROUNDWATER MODELING) AND ANALYTICAL DATA FOR GROUNDWATER SAMPLES IN THE VICINITY OF THE SITE, HIGHLY CONTAMINATED GROUNDWATER SOUTH OF THE RIVER IS IN HYDRAULIC CONNECTION WITH WATERS BEING WITHDRAWN FROM THE WELL FIELD FOR VILLAGE USE. CONTAMINANT LEVELS IN THE VILLAGE WELLS HAVE NEVER SHOWN TOTAL VHOS AS HIGH AS 5,000 UG/L AS DISCOVERED IN MONITORING WELL DGC-6. GROUNDWATER MODELING SHOWS THAT THIS IS DUE TO INFILTRATION FROM THE RIVER AND THE INFILTRATION CHANNEL NEAR WELL FIELD NO. 1 DILUTING CONTAMINATION IN WATERS WITHDRAWN IN THE PRODUCTION WELLS. DISPERSION CAUSED BY PUMPING FROM WIDELY SCATTERED WELL LOCATIONS AND COMINGLING WITH UNCONTAMINATED WATER FROM OTHER AREAS OF THE AQUIFER ALSO DILUTE GROUNDWATER WITHDRAWN FROM THE WELL FIELD.

BASED ON TRENDS, IT IS BELIEVED THAT THE WELL FIELD HAS REACHED A STEADY STATE CONDITION, WHEREBY CONTAMINANT LEVELS ARE NOT EXPECTED TO INCREASE AT THE WELL FIELD IN THE FUTURE.

#ENF
ENFORCEMENT

NO NEGOTIATIONS WITH POTENTIALLY RESPONSIBLE PARTIES HAVE BEEN CONDUCTED UP TO THE PRESENT TIME. LACK OF AN OBVIOUS SOURCE OF CONTAMINATION HAS DETERRED ENFORCEMENT EFFORTS. THE RI/FS HAS SUCCEEDED IN SUGGESTING ALBEN DRY CLEANERS AS A PROBABLE SOURCE. ENFORCEMENT ACTIVITY WILL COMMENCE, CONCURRENT WITH THE DEVELOPMENT OF THE SUPPLEMENTAL RI/FS, TO FURTHER INVESTIGATE THIS PROBABILITY. THE SUPPLEMENTAL RI/FS, RECOMMENDED IN THIS RECORD OF DECISION, WILL FURTHER INVESTIGATE SUSPECTED SOURCE AREAS AND WILL BE DESIGNED TO FACILITATE THIS ENFORCEMENT EFFORT.

#AE
ALTERNATIVES EVALUATION

THE PUBLIC HEALTH AND ENVIRONMENTAL OBJECTIVES OF THE RI/FS WERE AS FOLLOWS:

- PROVIDE A SAFE, RELIABLE WATER SUPPLY, MEETING EPA STANDARDS, TO THE VILLAGE OF BREWSTER;
- CONTAIN THE PLUME OF CONTAMINATION TO MITIGATE FURTHER CONTAMINATION OF PUBLIC WATER SUPPLIES;
- RESTORE GROUNDWATER QUALITY AT AND IN THE VICINITY OF THE BREWSTER WELL FIELD TO ACCEPTABLE LEVELS (NYS GROUNDWATER STANDARDS).

THE OBJECTIVE OF THE PROPOSED SUPPLEMENTAL SOURCE CONTROL RI/FS WILL BE TO DETERMINE WHICH, IF ANY, ADDITIONAL SOURCE CONTROL MEASURES ARE NECESSARY, FEASIBLE AND COST EFFECTIVE.

INITIAL SCREENING OF ALTERNATIVES

REMEDIAL ACTION OBJECTIVES ESTABLISHED FOR THE FS INCLUDE BOTH SYSTEM OBJECTIVES (WATER SUPPLY TREATMENT) AND SOURCE CONTROL OBJECTIVES (PLUME CONTAINMENT). THE SYSTEM OBJECTIVES FOCUS ON CONTROL OF THE QUALITY OF THE WATER DELIVERED TO THE USERS OF THE BREWSTER SUPPLY SYSTEM. THE SOURCE CONTROL OBJECTIVES ADDRESS MEANS OF CONTAINMENT OF CONTAMINATION IDENTIFIED IN THE PLUME AREA SOUTH OF THE EAST BRANCH CROTON RIVER AND AQUIFER RESTORATION. ACCORDINGLY, A FULL RANGE OF MORE THAN 110 ALTERNATIVE TECHNOLOGIES, AND VARIATION OF TECHNOLOGIES, FOR TREATMENT AND SOURCE CONTROL WERE INITIALLY SCREENED TO DETERMINE POTENTIAL APPLICABILITY AND APPROPRIATENESS TO THE PARTICULAR PROBLEMS EXISTING IN THE BREWSTER WELL FIELD AND ITS VICINITY.

THESE TECHNOLOGIES WERE THEN EVALUATED BASED ON EXISTING SITE CONDITIONS, INCLUDING CONTAMINANT DISTRIBUTION, GEOLOGICAL AND HYDROLOGICAL CONDITIONS, TECHNICAL MERIT AND RELIABILITY, POTENTIAL EFFECTIVENESS IN MEETING REMEDIAL OBJECTIVES, AND COSTS, IN ORDER TO ESTABLISH A FINAL LIST OF CANDIDATE TECHNOLOGIES TO BE CONSIDERED IN FORMULATING REMEDIAL ACTION ALTERNATIVES. SEE TABLE 4.

THE TECHNOLOGY SCREENING PROCESS RESULTED IN A REDUCED LIST OF TECHNOLOGIES JUDGED TO BE SUITABLE FOR INCLUSION, SINGLY OR IN COMBINATION, AS COMPONENTS OF REMEDIAL ACTION ALTERNATIVES. SEE TABLE 5.

THESE SELECTED TECHNOLOGIES WERE THEN COMBINED TO FORMULATE POTENTIAL ALTERNATIVE ACTIONS THAT ADDRESS SITE PROBLEMS (I.E., GROUNDWATER CONTAMINATION) EXISTING AT THE WELL FIELD AND OFF-SITE SOUTH OF THE RIVER. THIS EFFORT RESULTED IN FORMULATION OF ELEVEN POTENTIAL REMEDIAL ACTION ALTERNATIVES BY CONSIDERING TECHNOLOGIES WHICH ADDRESS REMEDIAL ACTION OBJECTIVES FOR BOTH SYSTEM CONTROL AND SOURCE CONTROL.

OF THE ELEVEN ALTERNATIVES FIVE WERE ELIMINATED. THE INDIVIDUAL TREATMENT SYSTEMS ALTERNATIVE WAS DROPPED FROM CONSIDERATION DUE TO UNCERTAINTIES REGARDING OPERATION AND MAINTENANCE (O&M) AND HIGH CAPITAL AND O&M COSTS.

ALTERNATIVE WATER SUPPLIES WERE ELIMINATED AS AN OPTION BASED ON INSTITUTIONAL CONSTRAINTS (E.G., CONSTRAINTS ON WATER QUANTITY SUPPLIED BY ANOTHER MUNICIPALITY), POTENTIAL PROBLEMS DURING DROUGHT CONDITIONS, AND HIGH COSTS.

GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO THE RIVER WAS DROPPED FROM CONSIDERATION BECAUSE OTHER ALTERNATIVES PROVIDE THE SAME BENEFITS OF EXTRACTION AND TREATMENT WITH THE ADDED BENEFIT OF EMPLOYING AN INNOVATIVE GROUNDWATER MANAGEMENT TECHNIQUE WHICH WOULD CONTROL THE CONTAMINATION SOURCE BY RECHARGE OF TREATED WATER TO THE PLUME AREA. ADDITIONALLY, THIS ALTERNATIVE COULD POSSIBLY INTRODUCE CONTAMINATED WATER

TO THE RIVER.

GROUNDWATER COLLECTION, TREATMENT AND RECHARGE TO THE WELL FIELD WAS ALSO ELIMINATED FROM FURTHER CONSIDERATION DUE TO HIGHER CAPITAL AND O&M COSTS AND BECAUSE IT LACKS THE BENEFIT OF GROUNDWATER MANAGEMENT TO CONTROL THE CONTAMINATION SOURCE BY RECHARGE TO THE PLUME AREA.

SOIL AERATION WAS ELIMINATED DUE TO THE LENGTH OF TIME REQUIRED TO ACHIEVE REMEDIATION AS COMPARED TO SOIL EXCAVATION AND REMOVAL.

IN FORMULATING THE FINAL ALTERNATIVES FOR EVALUATION IT WAS RECOGNIZED THAT NONE OF THE SOURCE CONTROL ALTERNATIVES WOULD BE EFFECTIVE IN MEETING THE WATER QUALITY OBJECTIVES REQUIRED IN THE VILLAGE WATER SUPPLY SYSTEM WITHOUT ALSO INCORPORATING TREATMENT IN THE PACKED COLUMN. ACCORDINGLY, THE EXISTING PACKED COLUMN AIR STRIPPER WAS INCLUDED IN EACH OF THE REMEDIAL ACTION ALTERNATIVE SCENARIOS CHOSEN FOR DETAILED EVALUATION. THE FINAL LISTING OF ALTERNATIVES EVALUATED IN DETAIL IS THEREFORE:

ALTERNATIVE I - NO ACTION

ALTERNATIVE II - OPERATION OF THE EXISTING PACKED COLUMN AIR STRIPPER

ALTERNATIVE III - EXISTING AIR STRIPPER, GROUNDWATER COLLECTION, TREATMENT AND INJECTION EAST OF PLUME

ALTERNATIVE IV - EXISTING AIR STRIPPER, GROUNDWATER COLLECTION, TREATMENT AND INJECTION WEST OF PLUME

ALTERNATIVE V - EXISTING AIR STRIPPER, GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO THE EXISTING AIR STRIPPER AT THE WELL FIELD

ALTERNATIVE VI - SOIL HANDLING ALTERNATIVES.

A DETAILED ANALYSIS OF THESE ALTERNATIVES WAS THEN PERFORMED, CONSISTENT WITH 40 CFR PART 300.68(I). THE DETAILED ANALYSIS OF EACH ALTERNATIVE INCLUDED REFINEMENT AND SPECIFICATION OF ALTERNATIVES IN DETAIL, WITH RECOGNITION OF THE RELIABILITY OF THE USE OF ESTABLISHED TECHNOLOGY; DETAILED COST ESTIMATION, INCLUDING OPERATION AND MAINTENANCE COST, AND DISTRIBUTION OF COSTS OVER TIME; EVALUATION CONSTRUCTABILITY; ASSESSMENT OF THE EXTENT TO WHICH THE ALTERNATIVE IS EXPECTED TO EFFECTIVELY PREVENT, MITIGATE, OR MINIMIZE THREATS TO, AND PROVIDE ADEQUATE PROTECTION OF PUBLIC HEALTH; AND AN ANALYSIS OF ANY ADVERSE ENVIRONMENTAL IMPACTS.

APPLICABLE OR RELEVANT AND APPROPRIATE STANDARDS FOR THIS SITE INCLUDE EPA'S MAXIMUM CONTAMINANT LEVELS (MCLS), WHICH HAVE BEEN PROPOSED PURSUANT TO THE SAFE DRINKING WATER ACT, AND NEW YORK STATE'S GROUNDWATER QUALITY STANDARDS ESTABLISHED PURSUANT TO THE CLEAN WATER ACT. THE APPLICABLE PROPOSED MCL FOR TRICHLOROETHYLENE IS 5 UG/L; THE APPLICABLE STATE GROUNDWATER STANDARD FOR TRICHLOROETHYLENE IS 10 UG/L.

CONTAMINANT	APPLICABLE STANDARD	CONCENTRATION LIMIT
TCE	EPA SAFE DRINKING WATER ACT	5 UG/L
TCE	NYS GROUNDWATER STANDARDS	10 UG/L.

AN EVALUATION OF ALTERNATIVES (WHICH IS SUMMARIZED IN TABLE 6) FOLLOWS. COMPLETE COSTS ASSOCIATED WITH THESE ALTERNATIVES ARE PRESENTED IN APPENDIX B.

ALTERNATIVE I - NO ACTION

FOR THE BREWSTER WELL FIELD EVALUATION, THE NO ACTION ALTERNATIVE DEPICTED CONDITIONS THAT WOULD EXIST IN THE WELL FIELD AND MUNICIPAL WATER SUPPLY SYSTEM WITHOUT THE PRESENCE OF THE PACKED COLUMN AIR STRIPPER CONSTRUCTED IN 1984. CONDITIONS THAT WOULD EXIST WITHOUT EXISTING TREATMENT THEN FORMED A BASELINE AGAINST WHICH THE OTHER ALTERNATIVES WERE COMPARED. THE NO ACTION ALTERNATIVE DOES ASSUME, HOWEVER, THAT ACTIONS TAKEN BY THE COMMUNITY FOLLOWING THE DISCOVERY OF CONTAMINATION IN 1978, SUCH AS WELL FIELD MANAGEMENT TO BLEND WATERS TO CONTROL CONTAMINATION AND CONSTRUCTION OF THE NEW WELLS ON-SITE, HAVE BEEN IMPLEMENTED.

THE NO ACTION ALTERNATIVE IS COMPLETELY UNACCEPTABLE IN ITS ABILITY TO PROVIDE A DRINKING WATER SUPPLY IN THE NEAR FUTURE MEETING EPA MCLS FOR TRICHLOROETHYLENE. BASED ON MODELS AND SIMULATIONS, NORMAL PUMPING OF THE WELL FIELD WOULD NOT RESULT IN CONTAMINANT REDUCTION IN THE WELL FIELD TO 5 PPB LEVELS (ASSUMING NO NEW SOURCE) FOR ABOUT 25 YEARS; AND GROUNDWATER SOUTH OF THE RIVER WOULD BE CONTAMINATED AT LEVELS IN EXCESS OF 5 PPB FOR 30-35 YEARS.

ALTERNATIVE II - OPERATION OF EXISTING PACKED COLUMN AIR STRIPPER

THIS ALTERNATIVE CONSISTS OF THE CONTINUED OPERATION OF THE ON-SITE PACKED TOWER AIR STRIPPER. THE PACKED TOWER HAS BEEN DESIGNATED BY EPA AS A BEST TECHNOLOGY GENERALLY AVAILABLE (BTGA) FOR VOLATILE ORGANIC COMPOUNDS (VOC) REMOVAL FROM DRINKING WATER (40 CFR 141 AND 142) AND HAS BEEN EXTENSIVELY TESTED AND PROVEN AT THE BREWSTER SITE. REMOVALS OF CONTAMINANTS HAVE BEEN REPORTED AT 99% OR MORE AND LEVELS MEETING EPA MCLS HAVE RELIABLY BEEN MET. THEREFORE, THIS ALTERNATIVE WILL EXCEED APPLICABLE OR APPROPRIATE AND RELEVANT STANDARDS, PROVIDING A VERY HIGH LEVEL OF PUBLIC HEALTH PROTECTION WITH RESPECT TO THE VILLAGE'S WATER SUPPLY. THIS ALTERNATIVE DOES NOT INCLUDE SOURCE CONTROL MEASURES.

TIMES TO RESTORE GROUNDWATER QUALITY AT THE WELL FIELD AND AREA SOUTH OF THE RIVER WOULD BE THE SAME AS ALTERNATIVE I.

GASEOUS EMISSIONS FROM THE AIR STRIPPER CONSIST OF EXTREMELY LOW LEVELS OF VOLATILES WHICH WILL POSE NO CHRONIC OR SUBCHRONIC HEALTH THREATS TO DOWNWIND RECEPTORS (E.G., WORST CASE PCE CONCENTRATIONS AT THE TOP OF THE STRIPPER ARE ESTIMATED AT 1.6 PPM VERSUS 8 HOUR THRESHOLD LIMIT VALUES OF 50 PPM RECOMMENDED BY THE AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGENISTS).

ALTERNATIVE III - EXISTING AIR STRIPPER, GROUNDWATER COLLECTION, TREATMENT AND INJECTION EAST OF PLUME

THIS ALTERNATIVE ASSUMES THAT ALTERNATIVE II (TREATMENT OF THE EXISTING PUBLIC WATER SUPPLY BY AN ON-SITE PACKED COLUMN STRIPPER) WOULD BE IMPLEMENTED AND, ADDITIONALLY, ASSUMES THAT REMEDIAL FACILITIES WOULD BE CONSTRUCTED IN THE AREA SOUTH OF THE RIVER. THESE FACILITIES WOULD INCLUDE EXTRACTION WELLS, AN ADDITIONAL PACKED COLUMN STRIPPER TO TREAT EXTRACTED WATER (TO 99.9% REMOVAL OF VOCS) AND PASSIVE INJECTION WELLS EAST OF THE PLUME AREA. SEE FIGURE 5.

GROUNDWATER MODELING OF THE COLLECTION/TREATMENT/RECHARGE SYSTEM INDICATE THAT THE QUANTITY OF WATER FROM THE PRODUCING WELLS AT THE WELL FIELD WOULD NOT SIGNIFICANTLY BE AFFECTED. SIMULATIONS ALSO PREDICT THAT CONTAMINANT LEVELS OF 5 PPB OR LESS COULD BE ACHIEVED AT THE WELL FIELD AND IN GROUNDWATER SOUTH OF THE RIVER IN ABOUT 10 YEARS WITH COLLECTION/TREATMENT/RECHARGE.

ALTERNATIVE III, THEREFORE, PRESENTS A SOLUTION TO THE SOURCE CONTAMINATION PROBLEM BY MEETING THE OBJECTIVES OF PLUME CONTAINMENT AND RESTORATION OF AQUIFER QUALITY AS WELL AS REDUCING LONG TERM PUBLIC HEALTH AND ENVIRONMENTAL RISKS BY REMEDIATING THE CONTAMINATED PUBLIC WATER SUPPLY.

EXTRACTION AND INJECTION WELLS AND THE AIR STRIPPER COULD BE INSTALLED WITH NO ADVERSE IMPACTS ON NEW YORK STATE REGULATED WETLANDS AND WITH MINOR IMPACT TO AREAS CLASSIFIED AS WETLANDS UNDER FEDERAL REGULATIONS. NO SIGNIFICANT ADVERSE AIR QUALITY IMPACTS WOULD BE EXPECTED FROM THE AIR STRIPPING PROCESS. THE PASSIVE INJECTION WELLS WOULD REQUIRE APPROVAL FROM THE EPA AS CLASS V WELLS UNDER UNDERGROUND INJECTION CONTROL REGULATIONS PURSUANT TO THE FEDERAL SAFE DRINKING WATER ACT.

SINCE MUCH OF THE WORK CONTEMPLATED SOUTH OF THE RIVER IS ON LANDS UNDER CONTROL OF THE CITY OF NEW YORK, CITY APPROVAL WOULD ALSO BE REQUIRED. THE BENEFIT OF CLEANUP WOULD ACCRUE TO THE CITY AS WELL AS THE VILLAGE AND, AS A RESULT, APPROVAL WOULD BE ANTICIPATED.

ALTERNATIVE IV - EXISTING AIR STRIPPER, GROUNDWATER COLLECTION, TREATMENT AND INJECTION WEST OF PLUME

THIS ALTERNATIVE CONSISTS OF THE SAME TECHNOLOGY COMPONENTS IDENTIFIED IN ALTERNATIVE III. THE DIFFERENCE BETWEEN THE ALTERNATIVES INVOLVES THE LOCATION OF THE INJECTION WELLS. IN ALTERNATIVE IV EXTRACTION WELLS WOULD BE PLACED ON THE EASTERN SIDE OF THE PLUME AREA, WITH INJECTION WELLS TO THE WEST. AS IN THE CASE OF ALTERNATIVE III AN ON-SITE AIR STRIPPER, TO TREAT THE VILLAGE WATER SUPPLY, IS ALSO ASSUMED. SEE FIGURE 6.

THIS SCENARIO WAS IDENTIFIED DURING ANALYTICAL MODELING AS POTENTIALLY THE MOST EFFECTIVE. FLUSHING OF WATER ACROSS THE MOST CONTAMINATED AREAS IS ENABLED AND A HYDRODYNAMIC BARRIER IS PLACED DOWN-VALLEY FROM THE PLUME. HOWEVER, WITHOUT 100 PERCENT TREATMENT EFFICIENCY (ESTIMATED AT 99.9%) SOME INJECTED WATER WITH LOW-LEVEL (5.6 PPB) VHO CONTAMINATION WOULD PROBABLY FLOW DOWNGRADIENT AND SOME OF THE WATER INJECTED ON THE WEST SIDE OF THE PLUME AREA MAY BE LOST DOWNGRADIENT TO THE WEST, OUT OF THE VICINITY OF THE INFLUENCE OF THE WELL FIELD PRODUCTION WELLS. FURTHER, THE PRECISE LOCATION OF THE WESTERN BOUNDARY OF THE PLUME IS NOT YET KNOWN, MAKING MONITORING OF THIS ALTERNATIVE DIFFICULT.

OTHERWISE THIS ALTERNATIVE IS SIMILAR AND JUDGED EQUAL TO ALTERNATIVE III. GROUNDWATER RESTORATION TIMES WOULD BE EQUAL TO ALTERNATIVE III (10 YEARS).

ALTERNATIVE V - EXISTING AIR STRIPPER, GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO EXISTING AIR STRIPPER AT THE WELL FIELD

ALTERNATIVE V INCLUDES AN ON-SITE PACKED COLUMN AIR STRIPPER, THE SAME AS ALTERNATIVES II, III AND IV. SIMILAR TO ALTERNATIVES III AND IV, EXTRACTION AND TREATMENT, IN AN OFF-SITE STRIPPER, OF WATER FROM THE CONTAMINATED PLUME AREA SOUTH OF THE RIVER IS ALSO ASSUMED. UNDER THIS ALTERNATIVE, HOWEVER, NO INJECTION WELL WOULD BE USED. INSTEAD, THE TREATED EFFLUENT FROM THE OFF-SITE STRIPPING COLUMN WOULD BE PIPED TO THE ON-SITE TREATMENT SYSTEM FOR FURTHER TREATMENT ALONG WITH WATER FROM THE WELL FIELD PRODUCTION WELLS. SEE FIGURE 7.

THE PERFORMANCE OF THE ON-SITE STRIPPER, IN REMOVAL OF VHOS FROM THE PUBLIC WATER SUPPLY, WOULD BE EXCELLENT AS LONG AS THE EFFLUENT FROM THE OFF-SITE STRIPPER CONTAINS VHO LEVELS EQUAL TO OR LESS THAN LEVELS ENCOUNTERED IN WATER FROM THE PRODUCTION WELLS. ACCORDINGLY, STATE STANDARDS AND PROPOSED FEDERAL MCLS SHOULD BE MET. IN REGARD TO SOURCE CONTROL OBJECTIVES, THE EXTRACTION AND TREATMENT OF GROUNDWATER FROM THE SOURCE AREA SOUTH OF THE RIVER WOULD CONTRIBUTE BOTH TO CONTAINMENT AND RESTORATION OBJECTIVES. PROJECTED BENEFITS TO GROUNDWATER QUALITY ARE SIMILAR TO ALTERNATIVES III AND IV. HOWEVER, EXTRACTION WITHOUT REINJECTION IN THE AREA SOUTH OF THE RIVER MAY RESULT IN A SLIGHTLY LONGER PERIOD FOR RESTORATION OF GROUNDWATER QUALITY, WHEN COMPARED TO ALTERNATIVES III AND IV.

IN ORDER TO ENSURE THAT THE OFF-SITE STRIPPING SYSTEM IS WORKING PROPERLY TO PRODUCE AN EFFLUENT AMENABLE TO MIXING WITH WATERS FROM THE PROJECTION WELLS EXTRA PRECAUTIONS WOULD BE NECESSARY. AT THE OFF-SITE STRIPPER THIS WOULD BE PROVIDED BY ADDITIONAL CONTROLS AND MORE FREQUENT MAINTENANCE AND MONITORING. THESE ADDITIONS ARE REFLECTED IN ADDITIONAL COSTS.

RISKS EXIST IN THIS ALTERNATIVE OF POSSIBLY INDUCING A NEW CLASS OF POLLUTANTS INTO THE SOURCE OF BREWSTER WATER SUPPLY. FOR EXAMPLE, IF YET UNDETECTED NON-VOLATILE CONTAMINANTS EXIST IN THE GROUNDWATER SOUTH OF THE RIVER THEY COULD BE DRAWN INTO THE SYSTEM AND NOT REMOVED BY THE AIR STRIPPERS, BECAUSE AIR STRIPPING IS EFFECTIVE ONLY ON VOLATILE COMPOUNDS. AT A MINIMUM, FULL MONITORING FOR ALL HAZARDOUS SUBSTANCES LIST (HSL) COMPOUNDS WOULD BE REQUIRED ON A PERIODIC BASIS TO AVOID THIS POSSIBILITY.

THIS ALTERNATIVE WOULD REQUIRE A PIPELINE CROSSING UNDER THE RIVER (WITH PROBABLE ADVERSE ENVIRONMENTAL IMPACT) AND A PHYSICAL HOOKUP TO THE RAW WATER FEED LINE OF THE ON-SITE STRIPPER. IN ADDITION, CERTAIN INSTITUTIONAL APPROVALS WOULD BE REQUIRED FROM THE STATE, THE CITY OF NEW YORK AND THE VILLAGE OF BREWSTER.

THE COMPLEXITIES INVOLVED IN IMPLEMENTATION OF THIS ALTERNATIVE MAKES IT LESS ATTRACTIVE THAN OTHER ALTERNATIVES.

ALTERNATIVE VI - SOIL HANDLING

SOIL CONTAMINATION ALTERNATIVES ARE ADDRESSED SEPARATELY BECAUSE THESE ACTIONS MAY BE IMPLEMENTED AS PART OF ANY REMEDIAL ACTION PLAN. THE OBJECTIVES OF THE SOIL CONTAMINATION ALTERNATIVES ARE TO IDENTIFY ZONES OF SOIL CONTAMINATION OR RESIDUES THAT MAY BE CONTRIBUTING TO GROUNDWATER CONTAMINATION AND IDENTIFY THE MEANS TO ELIMINATE SUCH SOURCES, IF FEASIBLE.

MEETING THESE OBJECTIVES WOULD REQUIRE TWO STEPS: FIRST, IDENTIFICATION OF SOIL CONTAMINATION AREAS; AND SECOND, REMEDIATION. THE MOST LIKELY SOURCE OF VHO CONTAMINATION IDENTIFIED DURING THE RI IS THE PREMISES OF

ALBEN CLEANERS. HOWEVER, NO CONFIRMATION OF THE EXISTENCE OF LOCALIZED CONTAMINATION IN THE ALBEN CLEANERS AREA WAS PROVIDED DURING THE RI STUDIES. IN ORDER TO IDENTIFY WHETHER A CONTINUED SOURCE OF CONTAMINATION EXISTS ON THOSE PREMISES A PROGRAM OF TEST PITTING, SHALLOW WELL INSTALLATION AND CONTAMINANT ANALYSIS WOULD BE UNDERTAKEN.

IF SOIL CONTAMINATION IS ENCOUNTERED IN SIGNIFICANT LEVELS, A PROGRAM TO EXCAVATE THE SOILS IN THE UNSATURATED ZONE WOULD BE CARRIED OUT. FOR PURPOSES OF ESTIMATES IT WAS ASSUMED THAT AN AREA ABOUT 43 FEET WIDE BY 80 FEET LONG BY 6 FEET DEEP WOULD REQUIRE EXCAVATION EAST OF THE ALBEN CLEANERS BUILDING. SEVERAL OPTIONS EXIST FOR SOILS HANDLING UNDER THESE CONDITIONS, DEPENDING ON CONTAMINATION LEVELS ENCOUNTERED. FOR EXAMPLE, SOILS COULD BE LOADED AND TRANSPORTED OFF-SITE TO A SECURE (RCRA APPROVED) LANDFILL. SOILS COULD ALSO BE TREATED ON-SITE USING ROTARY KILN OR INFRARED INCINERATION. DATA FROM THE SUPPLEMENTAL RI/FS WILL ASSIST IN FURTHER EVALUATING THIS ALTERNATIVE.

ANY OF SEVERAL INNOVATIVE SOIL REMEDIATION MEASURES COULD BE EFFECTIVE IN ACHIEVING THE STATED OBJECTIVES DEPENDING UPON THE TYPE AND QUANTITY OF CONTAMINANTS PRESENT. OFF-SITE DISPOSAL COULD BE ACCOMPLISHED RELATIVELY EASILY, WHILE ON-SITE SOIL REMEDIATION WOULD BE MORE DIFFICULT TO IMPLEMENT. ALL ALTERNATIVES COULD BE CARRIED OUT IN ACCORDANCE WITH ENVIRONMENTAL REGULATIONS.

#RA
RECOMMENDED ALTERNATIVE

THE APPROPRIATE EXTENT OF REMEDY SHALL BE DETERMINED BY EPA'S SELECTION OF A COST-EFFECTIVE REMEDIAL ALTERNATIVE THAT EFFECTIVELY MITIGATES AND MINIMIZES THREATS TO AND PROVIDES ADEQUATE PROTECTION OF PUBLIC HEALTH AND WELFARE AND THE ENVIRONMENT. THIS WILL NORMALLY REQUIRE SELECTION OF A REMEDY THAT ATTAINS OR EXCEEDS APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL AND STATE PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENTS THAT HAVE BEEN IDENTIFIED FOR THE SITE.

DISCOUNTING THE NO ACTION ALTERNATIVE (SINCE THE PACKED TOWER AIR STRIPPER IS ALREADY IN PLACE), EACH OF THE ALTERNATIVES SELECTED FOR DETAILED EVALUATION WOULD PROVIDE AN APPROPRIATE EXTENT OF REMEDY WITHIN THE ABOVE DEFINITION. BASED ON MEETINGS WITH NEW YORK STATE, ITS CONSULTANTS, THE VILLAGE OF BREWSTER AND THE PUBLIC, IT IS RECOMMENDED THAT CONTINUED OPERATION OF THE EXISTING AIR STRIPPER TO TREAT THE VILLAGE'S WATER SUPPLY AND DESIGN AND CONSTRUCTION OF A GROUNDWATER MANAGEMENT SYSTEM TO CONTAIN THE PLUME OF CONTAMINATION AND RESTORE GROUNDWATER QUALITY SOUTH OF THE RIVER, BE SELECTED AS THE REMEDY FOR THIS PROJECT. THE GROUNDWATER MANAGEMENT SYSTEM WILL INCLUDE GROUNDWATER EXTRACTION WELLS, AIR STRIPPER TREATMENT OF EXTRACTED GROUNDWATER AND REINJECTION OF TREATED WATER. DETAILS OF THE GROUNDWATER MANAGEMENT SYSTEM WILL BE DETERMINED DURING DESIGN.

THIS ALTERNATIVE PROVIDES A SAFE AND RELIABLE WATER SUPPLY TO THE VILLAGE THAT EXCEEDS APPLICABLE OR RELEVANT AND APPROPRIATE STANDARDS, THEREBY PROVIDING A VERY HIGH LEVEL OF PUBLIC HEALTH PROTECTION. THIS ALTERNATIVE WILL ALSO RESTORE GROUNDWATER QUALITY SOUTH OF THE RIVER TO LEVELS EXCEEDING APPLICABLE STATE GROUNDWATER STANDARDS.

DETAILED COST ESTIMATES FOR THE RECOMMENDED ALTERNATIVE ARE INCLUDED IN APPENDIX C.

#CR
COMMUNITY RELATIONS

COMMUNITY PERCEPTION OF THE BREWSTER CONTAMINATION PROBLEM HAS BEEN AN IMPORTANT FACTOR IN PLACING THIS SITE ON THE SUPERFUND NATIONAL PRIORITIES LIST. VHOS WERE DISCOVERED IN THE VILLAGE'S WATER SUPPLY IN 1978. CONSIDERABLE LOCAL PRESS REGARDING THE ISSUE CONTRIBUTED TO PUBLIC AWARENESS.

SINCE THE NPL LISTING IN DECEMBER 1982, PUBLIC CONCERN HAS SUBSIDED, AND THE TOWNSPEOPLE HAVE BEEN GENERALLY SATISFIED THAT APPROPRIATE ACTION IS BEING TAKEN AND THAT NO CONTAMINATED WATER IS BEING CONSUMED. HOWEVER, THERE IS STILL CONCERN REGARDING THE POTENTIAL SPREAD OF CONTAMINATION.

SPECIFIC CONCERNS THAT WERE RAISED DURING THE PUBLIC COMMENT PERIOD ARE ANSWERED IN THE RESPONSIVENESS SUMMARY. ALL COMMENTS WERE MADE AT THE PUBLIC MEETING HELD ON AUGUST 21, 1986 AT THE BREWSTER VILLAGE HALL.

NO OTHER COMMENTS, WRITTEN OR OTHERWISE, WERE RECEIVED DURING THE PUBLIC COMMENT PERIOD.

#OEL
CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

AT THE PRESENT TIME, THERE ARE NO FEDERAL ENVIRONMENTAL LAWS OTHER THAN THE SAFE DRINKING WATER ACT WHICH ARE APPLICABLE TO IMPLEMENTING THE SELECTED REMEDIAL ACTION AT THIS SITE.

TRICHLOROETHYLENE HAS BEEN CHOSEN BY EPA FOR EVALUATION AND POSSIBLE FUTURE REGULATION PURSUANT TO THE CLEAN AIR ACT'S NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP). HOWEVER, SUCH REGULATION WILL LIKELY NOT BE PROMULGATED FOR 1-2 YEARS. AT THE PRESENT TIME, EPA BELIEVES THAT THE RISK ASSESSMENT PERFORMED FOR THE OPERATION OF THE PACKED COLUMN AIR STRIPPER (USING WORST CASE ASSUMPTIONS THROUGHOUT THE ANALYSIS) HAS SUFFICIENTLY DEMONSTRATED THE EXTREMELY LOW RISK ASSOCIATED WITH THE PREDICTED LEVEL OF AIR EMISSIONS ON LIKELY RECEPTOR AREAS.

#OM
OPERATION AND MAINTENANCE

PACKED COLUMN TECHNOLOGY HAS BEEN SUCCESSFULLY APPLIED FOR REMOVAL OF VOCS AT FULL SCALE WATER TREATMENT PLANTS IN AT LEAST 24 LOCATIONS IN THE UNITED STATES. THE EQUIPMENT IS COMMERCIALLY AVAILABLE; IS RELATIVELY EASY TO OPERATE; START-UP AND SHUT DOWN CAN BE ACCOMPLISHED QUICKLY; AND THE EQUIPMENT CAN BE DESIGNED TO OPERATE FOR A NUMBER OF YEARS. IT HAS ALSO BEEN SHOWN TO OPERATE UNDER VARYING CLIMATIC CONDITIONS. THE EXISTING BREWSTER ON-SITE AIR STRIPPER HAS SUCCESSFULLY BEEN OPERATING FOR MORE THAN A YEAR.

COSTS ESTIMATES FOR THE OPERATION AND MAINTENANCE OF THE ON-SITE (WATER SUPPLY) AND OFF-SITE (GROUNDWATER REMEDIATION) SYSTEMS OF THE SELECTED REMEDY ARE INCLUDED IN APPENDIX C. EPA WILL NOT PARTICIPATE IN THE COST OF OPERATING AND MAINTAINING THE EXISTING ON-SITE AIR STRIPPER. SAID COSTS ARE TO BE BORNE BY THE VILLAGE.

#FA
FUTURE ACTIONS

A SECOND OPERABLE UNIT CONSISTING OF ADDITIONAL SOURCE CONTROL REMEDIAL MEASURES MAY BE IMPLEMENTED FOLLOWING THE SUPPLEMENTAL RI/FS AND ISSUANCE OF A SUBSEQUENT EPA RECORD OF DECISION.

#TMA
TABLES, MEMORANDA, ATTACHMENTS

APPENDICES

APPENDIX A

TETRACHLOROETHYLENE

CHEMISTRY AND METABOLISM

TETRACHLOROETHYLENE (PERCHLOROETHYLENE) IS A HALOGENATED ALIPHATIC HYDROCARBON OF MOLECULAR WEIGHT 165.83.

ORAL ABSORPTION DATA IS SCANTY AND QUALITATIVE. AN EARLY STUDY NOTED THAT INTESTINAL ABSORPTION IN DOGS WAS FACILITATED BY FATS AND OILS. IN HUMANS, PULMONARY ABSORPTION IS RAPID AND INHALATION IS THE MOST COMMON EXPOSURE ROUTE. WHILE METABOLISM OF PERCHLOROETHYLENE IS FAIRLY SLOW IN HUMANS, METABOLIC PRODUCTS, SUCH AS THE REACTIVE PCE EPOXIDE, HAVE BEEN SHOWN TO BE BOTH CARCINOGENIC AND MUTAGENIC, EMBODYING MUCH OF THE RISK POTENTIAL OF THE PARENT COMPOUND (EPA, 1986). LOW PERCENTAGES OF DOSES ARE REPORTED AS BEING EXCRETED AS METABOLITES, PRINCIPALLY AS TRICHLOROACETIC ACID.

TOXICITY

TETRACHLOROETHYLENE IS CONSIDERED A PROBABLE HUMAN CARCINOGEN. A COHORT STUDY OF DECEASED LAUNDRY AND DRY CLEANING WORKERS' MEDICAL HISTORIES REVEALED EXCESSIVE LUNG, CERVICAL, AND SKIN CANCERS, AND A SLIGHT EXCESS OF LEUKEMIAS AND LIVER CANCERS, BUT THE SUBJECTS' EXPOSURE TO TRICHLOROETHYLENE AND CARBON TETRACHLORIDE IN ADDITION TO PERCHLOROETHYLENE PRECLUDED DEFINITIVE IDENTIFICATION OF THE CAUSAL ROLE OF PERCHLOROETHYLENE.

PCE'S CARCINOGENIC POTENTIAL RESIDES PRIMARILY IN ITS BIOLOGICALLY REACTIVE METABOLITES SUCH AS THE PCE EPOXIDE INTERMEDIATE (EPA, 1986). A 1977 INGESTION STUDY USING RATS AND MICE REPORTED DECREASED SURVIVAL RATES IN BOTH SPECIES AND HIGHLY SIGNIFICANT INCREASES IN HEPATOCELLULAR CARCINOMAS IN THE MICE. (NO INCREASE WAS OBSERVED FOR RATS).

A 1985 (DRAFT) NATIONAL TOXICOLOGY PROGRAM LIFETIME INHALATION BIOASSAY WITH RATS AND MICE DEMONSTRATED THAT PERCHLOROETHYLENE INDUCED CARCINOGENIC EFFECTS IN RATS AND MICE. ALTHOUGH EPA ACKNOWLEDGED THAT CERTAIN ASPECTS OF THE CONDUCT OF THE BIOASSAY MIGHT INVALIDATE A REPORTED MARGINALLY STATISTICALLY SIGNIFICANT LEUKEMIA INCIDENCE IN ONE STRAIN OF MALE RATS, THE TWO SETS OF ANIMAL STUDIES WERE CONSIDERED TO PROVIDE EVIDENCE JUSTIFYING ALTERATION OF THE PREVIOUSLY DEVELOPED CARCINOGENIC RISK FACTOR IN MARCH, 1986.

THE 1985 NTP STUDY DATA WERE USED TO ESTIMATE UNIT RISK OF PCE VIA INHALATION IN THREE RANGES. THE FIRST RANGE USES A METABOLIZED DOSE DERIVED FROM A SINGLE EXPOSURE BALANCE STUDY AND THE SECOND AND THIRD RANGES ARE CALCULATED ON THE BASIS OF METABOLIZED DOSES DERIVED FROM A PHYSIOLOGICALLY-BASED PHARMACOKINETIC (PB-PK) MODEL. UNTIL UNCERTAINTIES REGARDING PB-PK MODEL PARAMETERS ARE RESOLVED, EPA RECOMMENDS USING THE FIRST RANGE, WHICH YIELDS A REVISED UPPER-BOUND ESTIMATE OF INCREMENTAL CANCER RISK (DUE TO LIFETIME EXPOSURE OF 1 UG/M3 OF PCE IN AIR) RANGING FROM 2.9 X 10-7 TO 9.5 X 10-7.

(THIS IS APPLICABLE ONLY TO LOW LEVEL EXPOSURES WHERE A LINEAR RELATIONSHIP EXISTS BETWEEN AMBIENT CONCENTRATION AND METABOLIZED DOSE.).

IN SEPTEMBER 1985, EPA PUBLISHED A CARCINOGENIC POTENCY FACTOR FOR HUMANS OF 5.10 X 10-2 (MG/KG/DAY)-1. ACGIH (1983) RECOMMENDED A TWA-TLV OF 50 PPM AND A STEL OF 200 PPP, WHILE OSHA HAS IMPLEMENTED A PERMISSIBLE EXPOSURE LEVEL (8-HOUR TWA) OF 100 PPM (CRF, 1981).

IN HUMANS, CHRONIC INHALATION EXPOSURE TO A RANGE OF PERCHLOROETHYLENE CONCENTRATIONS HAVE BEEN REPORTED TO LEAD TO RESPIRATORY IRRITATION, NAUSEA AND OTHER INTESTINAL EFFECTS, INSOMNIA, HEADACHE, LIVER CIRRHOSIS, HEPATITIS, AND NEPHRITIS, ALTHOUGH DOSE LEVELS WERE NOT QUANTIFIED.

EFFECTS OF SUBCHRONIC INHALATION EXPOSURE TO PERCHLOROETHYLENE IN EXPERIMENTAL ANIMALS INCLUDE A NUMBER OF HISTOPATHOLOGICAL AND ORGAN FUNCTION ALTERATIONS. FOR EXAMPLE, RATS SHOWED EEG CHANGES AND CEREBRAL CORTICAL CELL CHANGES, LIVER AND SPLEEN CONGESTION AND KIDNEY INJURY. MICE DEMONSTRATED ALTERATIONS IN MUSCLE RESPONSE WHILE RABBITS SHOWED PATHOMORPHOLOGICAL AND ORGAN FUNCTION ABNORMALITIES. GUINEA PIGS ARE UNUSUALLY

SUSCEPTIBLE TO PERCHLOROETHYLENE, ACCORDING TO EVIDENCE FROM STUDIES WHICH FOUND PATHOLOGIC CHANGES IN BOTH LIVER AND KIDNEY AT DOSES LOWER OR COMPARABLE TO THOSE WHICH INDUCED NO EVIDENCE OF DAMAGE IN MONKEYS, RABBITS OR RATS.

LITTLE INFORMATION EXISTS REGARDING CHRONIC TOXICITY DUE TO PERCHLOROETHYLENE EXPOSURE. IN A 1977 NCI ORAL CARCINOGENICITY BIOASSAY WITH MICE AND RATS, TOXIC NEPHROPATHY WAS OBSERVED AT ALL DOSE LEVELS IN BOTH SEXES OF BOTH SPECIES, LEADING TO ESTABLISHMENT OF LOAEL'S FOR TOXIC NEPHROPATHY OF 300 MG/KG/DAY FOR MICE AND 471 MG/KG/DAY FOR RATS. UNSPECIFIED REVERSIBLE LIVER DAMAGE WAS REPORTED.

OTHER ASPECTS OF TETRACHLOROETHYLENE TOXICOLOGY INCLUDE TERATOGENICITY AND POTENTIAL INTERACTION WITH OTHER TOXICANTS. TERATOGENIC EFFECTS WERE FOUND IN TWO SPECIES OF RODENTS WHEN 300 PPM WAS ADMINISTERED VIA INHALATION FOR 7 HOURS PER DAY DURING A PORTION OF THE GESTATION PERIOD.

TETRACHLOROETHYLENE TOXICITY IS BELIEVED TO BE AFFECTED BY COMPOUNDS THAT ALTER MICROSOMAL ENZYME FUNCTION, BECAUSE OF ITS METABOLISM BY MIXED FUNCTION OXIDASES. SYNERGISTIC EFFECTS HAVE BEEN DEMONSTRATED WITH AROCHLOR PRETREATMENT, WITH ALCOHOL, AND WITH BENZENE.

IN THE FEW REPORTS AVAILABLE, PERCHLOROETHYLENE HAS ELICITED MIXED RESPONSES IN MUTAGENICITY TESTS. RESULTS WERE POSITIVE IN TESTS WITH TWO SALMONELLA ASSAYS, BUT WERE NEGATIVE WITH ESCHERICHIA COLI AND WITH BONE MARROW CELLS IN INTRAPERITONEALLY INJECTED MICE.

TRICHLOROETHYLENE

CHEMISTRY AND METABOLISM

TRICHLOROETHYLENE (TCE) IS A HALOGENATED ALIPHATIC HYDROCARBON OF MOLECULAR WEIGHT 131.5.

THE METABOLISM OF TRICHLOROETHYLENE HAS BEEN REVIEWED BY NUMEROUS AUTHORS. ALTHOUGH ORAL ABSORPTION RATES ARE NOT AVAILABLE FOR HUMANS, RATS WERE FOUND TO ABSORB 80-100% OF INGESTED TCE. HUMAN ABSORPTION OF INHALED TCE IS RAPID, LEADING TO EQUILIBRIUM BODY LEVELS IN ROUGHLY TWO HOURS.

MAJOR METABOLITES OF TCE ARE TRICHLOROACETIC (TCA) ACID AND TRICHLOROETHANOL. OTHER MINOR METABOLITES NOTED IN THE LITERATURE INCLUDE CHLOROFORM AND MONOCHLOROACETIC ACID. OF THESE, TRICHLOROETHANOL IS EXCRETED IN THE HIGHEST VOLUMES AND HAS ITSELF BEEN FOUND TO HAVE A PRONOUNCED DEPRESSING EFFECT ON THE CENTRAL NERVOUS SYSTEM. GIVEN THE LONG BIOLOGICAL HALF-LIFE OF TCE, CUMULATIVE EFFECTS OF THE PARENT COMPOUND AND THE METABOLITE MAY BE VERY SIGNIFICANT. IKEDA AND OTHERS (1972) FOUND THAT WORKERS EXPOSED TO 100 PPM TCE EXCRETED ONLY ONE THIRD OF THE DOSE AS METABOLITES DURING THE WORK DAY, WHILE OTHER INVESTIGATORS HAVE FOUND GRADUALLY INCREASED METABOLITE EXCRETION SUGGESTIVE OF BIOACCUMULATION OF METABOLITES.

TOXICITY

THE PRINCIPAL TOXIC EFFECT OF CONCERN WITH TCE IS CARCINOGENICITY TCE WAS SHOWN TO BE CARCINOGENIC IN MICE VIA INHALATION EXPOSURE IN THREE SETS OF REPORTED RESULTS, ALTHOUGH TWO OF THESE STUDIES WERE FAULTY. AS OF THE PUBLICATION DATE OF EPA'S HEALTH ASSESSMENT DOCUMENT ON TCE, INHALATION CANCER BIOASSAYS HAD NOT YIELDED POSITIVE RESULTS WITH RATS OR HAMSTERS. IN TWO ORAL STUDIES CONDUCTED BY NTP AND NCI, ON THE OTHER HAND, AN INCREASED INCIDENCE OF HEPATOCELLAR CARCINOMA WAS FOUND IN MICE. CARCINOGENIC POTENCY FACTORS OF 6 X 10-3 (MG/KG/DAY) -1 FOR INHALATION AND 1.9 X 10-2 (MG/KG/DAY). BASED ON ORAL INGESTION WERE COMPUTED BY FUKADA ET AL. (1983) AND EPA RESPECTIVELY.

ALTHOUGH HUMAN EPIDEMIOLOGICAL STUDIES HAVE FAILED TO DEMONSTRATE A RELATIONSHIP BETWEEN INCREASED CANCER RISK AND TCE EXPOSURE, EPA HAS APPLIED PROPOSED CAG CRITERIA IN EVALUATING OVERALL ANIMAL EVIDENCE, AND HAS CLASSIFIED TCE AS A GROUP B2-PROBABLE HUMAN CARCINOGEN. HUMAN OVEREXPOSURE TO TCE PRODUCES DEPRESSION OF THE CENTRAL NERVOUS SYSTEM. MENTAL CONFUSION, INCOORDINATION AND INSOMNIA HAVE BEEN REPORTED. THE ACGIH (1983) RECOMMENDED A TWA-TLV OF 50 PPM (270 MG/M3) AND A STEL OF 150 PPM (560 MG/M3) FOR TCE.

TCE HAS BEEN FOUND TO CAUSE INCREASED MUTAGENESIS IN SEVERAL TESTS USING SALMONELLA TYPHINAURIUM AND SACCHAROMYCED CEREVISIAE AFTER METABOLIC ACTIVATION AND IN A MOUSE SPOT TEST CONDUCTED BY FAHRIG (1977).

TOXIC EFFECTS OF TCE HAVE BEEN DEMONSTRATED IN HUMANS AND EXPERIMENTAL ANIMALS. RESULTS OF SUBCHRONIC ORAL EXPOSURE IN ANIMALS INCLUDE INCREASED LIVER WEIGHT RATIO AND ELEVATED URINE KETONE AND PROTEIN LEVELS IN MALE RATS AT MODERATE DOSES AND DECREASED BODY WEIGHTS, INCREASED LIVER AND KIDNEY WEIGHTS, AND ELEVATED URINE KETONE AND PROTEIN LEVELS IN BOTH SEXES OF RATS AT HIGH DOSES. IN SUBCHRONIC INHALATION STUDIES WITH RATS AND GUINEA PIGS, GUINEA PIGS WERE FOUND TO BE MORE SENSITIVE THAN RATS, DEMONSTRATING DECREASED BODY WEIGHT AT HALF THE DOSAGES INDUCING SIMILAR EFFECTS IN RATS.

ACUTE RESPONSES OF ANIMALS TO TCE REPORTED INCLUDE INCREASED LIVER AND KIDNEY WEIGHT AND CELL CHANGES IN THE CEREBELLUM. TCE FATALITIES INVESTIGATED HAVE BEEN REPORTED TO RESULT FROM CARDIAC ARRHYTHMIA CAUSED BY THE POTENTIATION OF ENDOGENOUS EPINEPHRENE BY TCE.

1,2-DICHLOROETHYLENE

THIS TOXICITY PROFILE WILL PRESENT A SUMMARY OF AVAILABLE TOXICOLOGICAL INFORMATION ON BOTH ISOMERS OF DICHLOROETHYLENE, TRANS-1,2-DICHLOROETHYLENE AND CIS-1,2-DICHLOROETHYLENE. VERY LITTLE EMPIRICAL DATA EXISTS ON EITHER OF THE ISOMERS. MOLECULAR WEIGHT IS 96.95.

CHEMISTRY AND METABOLISM

ALTHOUGH PERTINENT DATA REGARDING ORAL ABSORPTION OF DOES IS UNAVAILABLE, EPA (1980A) ESTIMATED THAT "VIRTUALLY 100% OF INGESTED DCE MAY BE ABSORBED SYSTEMICALLY," BASED ON EXPERIMENTAL STUDIES BY DANIEL (1963) AND MONSTER (1976) USING TRICHLOROETHYLENE.

DATA REGARDING ABSORPTION VIA INHALATION ARE SIMILARLY UNAVAILABLE, BUT THE DANIEL AND MONSTER STUDIES FORMED THE BASIS FOR AN EPA ESTIMATE OF 35 TO 50 PERCENT ABSORPTION (EPA, 1980A).

DCE METABOLISM HAS NOT BEEN INVESTIGATED.

TOXICITY

VERY LITTLE EXPERIMENTAL INVESTIGATION HAS ADDRESSED DCE'S TOXICITY TO LABORATORY ANIMALS OR HUMANS. SIMILARLY, BOTH ISOMERS OF 1,2-DCE ARE DESIGNATED AS GROUP D-UNCLASSIFIED BY EPA'S CANCER ASSESSMENT GROUP.

LIMITED DATA ON SUBCHRONIC EXPOSURE DATA ON THE TRANS ISOMER WERE FOUND. AN ORAL STUDY WITH A MIXTURE OF ISOMERS BY SPRINGER (1965) AND AN INHALATION STUDY BY TORKELSON (UNPUBLISHED, 1965) REPORTED NO ADVERSE EFFECTS. FREUNDT ET AL. (1977) FOUND PROGRESSIVE DAMAGE TO THE LUNGS AND FATTY CHANGES IN THE LIVERS OF WISTAR RATS ADMINISTERED T-1,2,-DCE VIA INHALATION.

CIS-1,2-DCE ADMINISTERED TO RATS BY JENKINS ET AL. (1972) IN A SINGLE ORAL DOSE RESULTED IN INCREASED LEVELS OF A SERIES OF HEPATIC ENZYMES INDICATIVE OF HEPATOTOXICITY. THE AUTHORS SUGGESTED THAT THE CIS ISOMER WAS LESS HEPATOTOXIC THAN 1,1-DCE, BUT MORE HEPATOTOXIC THAN THE TRANS ISOMER.

FREUNDT ET AL. (1977) EXPOSED RATS VIA INHALATION TO 200 PPM CIS ISOMER, FINDING INHIBITION OF THE MIXED FUNCTION OXIDASE SYSTEM AS MEASURED BY SEVERAL PARAMETERS, AND SUGGESTED THAT THE CIS ISOMER WAS A MORE POTENT INHIBITOR THAN THE TRANS ISOMER IN A LATER STUDY (FREUNDT AND MACHOLZ, 1978). SIMILARLY, EPA (1984) POSTULATES THAT THE CIS ISOMER MIGHT BE EXPECTED TO EFFECT THE TOXICITY OF OTHER COMPOUNDS METABOLIZED VIA THE MIXED FUNCTION OXIDASE SYSTEM, DUE TO THE EFFECTS OF CIS-1,2-DCE ON CYTOCHROME P-450. SUBSEQUENT RESEARCH INTO TOXIC ACTIONS OF METABOLITES (COSTS AND IVANETICH, 1982) INDICATES THAT THE CIS ISOMER IS PROBABLY NEPHROTOXIC BY ANALOGY TO 1,1-DCE (U.S. EPA, 1980B).

DATA ON ACUTE TOXIC EFFECTS OF THE DCE ISOMERS ARE EXTREMELY LIMITED. THE MERCK INDEX (1983) REPORTS RESEARCH INDICATING ANIMAL LIVER AND KIDNEY INJURY AND AN LD50 (ISOMER UNSPECIFIED) IN RATS OF 770 MG/KG ORALLY (RTECS, V.1, R.J. LEWIS AND R.L. TATKEN, EDS., 1979), WHILE SAX (1983) REPORTS LETHAL DOSES OF 65,000 MG/M3/2 HRS AND 20,000 MG/M3/6 HRS ADMINISTERED TO MICE AND CATS RESPECTIVELY. SAX REPORTS A LOW TOXIC THRESHOLD VIA ORAL ROUTES, STATING THAT HIGH CONCENTRATIONS CAUSE IRRITATION AND NARCOSIS (SPECIES UNSPECIFIED).

NO DATA IS AVAILABLE ON THE TERATOGENICITY OR CARCINOGENICITY OF EITHER DCE ISOMER. THE ACGIH (1980, 1983) ESTABLISHED A TLV FOR BOTH ISOMERS OF 200 PPM (APPROXIMATELY 1000 MG/M3) BASED ON TORKELSEN'S UNPUBLISHED 1965 STUDY OF SUB-CHRONIC INHALATION EFFECTS.

RESEARCH ON THE MUTAGENICITY OF THE DCE ISOMERS HAS BEEN LIMITED AND HAS PRODUCED MIXED RESULTS. GREION ET AL. (1975) FOUND BOTH CIS AND TRANS ISOMERS TO BE NONMUTAGENIC TO E.COLI K12. CERNA AND KYPENOVA (1977) TESTED BOTH ISOMERS WITH SALMONELLA TESTER STRAINS USING THE SPOT TEST. IN THE SAME STUDY, THE TRANS ISOMER FAILED TO INDUCE CHROMOSOMAL ABERRATIONS IN MOUSE BONE MARROW CELLS FOLLOWING INJECTIONS, BUT THE CIS ISOMER DID PRODUCE DOSE-DEPENDENT INCREASES IN MUTATIONS USING THE HOST MEDIA BIOASSAY. THE CIS ISOMER ALSO INDUCED CHROMOSOMAL ABERRATIONS IN THE BONE MARROW CELLS OF MICE GIVEN REPEATED INJECTIONS. THE CIS ISOMER FAILED TO INDUCE MUTATION OR GENE CONVERSION IN SACCHAROMYCES CEREVESIAE (GALLI ET AL., 1982).

APPENDIX C

ESTIMATED COSTS - SELECTED ALTERNATIVE

ALTERNATIVE III - EXISTING AIR STRIPPER, GROUNDWATER COLLECTION, TREATMENT AND INJECTION EAST OF THE PLUME

FOR THE ALTERNATIVES WITH REMEDIAL ACTION SOUTH OF THE RIVER THE COMPUTER SIMULATIONS INDICATE THE CONTAMINATION IN THE WELL FIELD COULD REACH 5 PPB IN 10 YEARS. ACCORDINGLY, THE PRESENT WORTH CALCULATIONS, BOTH FOR THE ON-SITE STRIPPING COLUMN AND THE OFF-SITE REMEDIAL SYSTEM ARE ASSUMED TO HAVE A USEFUL LIFE OF 10 YEARS FOR THE ECONOMIC EVALUATION.

A. CAPITAL COSTS - OFFSITE STRIPPER

1. EQUIPMENT		$ 28,000	
2. LABOR		32,100	
3. OTHER		11,000	
	SUBTOTAL	$ 71,100	
4. ENGINEERING (15%)		10,665	
5. CONTINGENCIES (15%)		10,665	
	CAPITAL COST	$ 92,410	$92,410

B. CAPITAL COSTS - WELLS

1. 4 EXTRACTION WELLS		$ 28,553	
2. 6 PASSIVE INJECTION WELLS		26,449	
	SUBTOTAL	$ 55,002	
3. ENGINEERING (15%)		$ 8,250	
4. CONTINGENCIES (15%)		8,250	
	CAPITAL COST	$ 71,502	$ 71,502
- TOTAL CAPITAL COST OF GW TREATMENT			$163,912

C. O&M COSTS - OFF SITE STRIPPER

1. POWER		$ 4,600	
2. MATERIALS		$ 1,400	
3. LABOR		$ 9,600	
	TOTAL O&M	$ 15,600	$ 15,600

D. O&M COSTS - WELLS

1. EXTRACTION WELLS		$ 6,568	
2. PASSIVE INJECTION WELLS		$ 5,300	
	TOTAL O&M	$ 11,868	$ 11,868
- TOTAL O&M COST OF GW TREATMENT			$ 27,468

E. CAPITAL COSTS - EXISTING STRIPPER

1. COLUMN SHELL, INTERNALS AND PACKING	$ 40,775
2. AIR BLOWERS	4,620
3. AIR WELL/FOUNDATION FOR BUILDING	12,875
4. PIPING VALVES AND APPURTENANCES	7,500
5. AIR DUCT WORK AND APPURTENANCES	7,260
6. INSTRUMENTATION	1,320

7. ELECTRICAL		14,700
8. BUILDING AND SITE WORK		21,800
9. ENGINEERING (15%)	$	16,630
10. CONTINGENCY (10% IN THIS CASE BECAUSE ACTUAL COSTS FIGURES ARE AVAILABLE)	$	11,080
TOTAL CAPITAL COST	$	138,500
- TOTAL CAPITAL COST OF EXISTING STRIPPER	$	138,500 (1)

F. OPERATION AND MAINTENANCE (ANNUAL)

1. POWER	$	3,430
2. MATERIALS		200
3. LABOR		6,240
TOTAL O&M	$	9,870
- TOTAL O&M COST OF EXISTING STRIPPER	$	9,870 (2)

NOTES:

1. EXISTING STRIPPER IS ALREADY BUILT & PAID FOR
2. O&M OF EXISTING STRIPPER PAID BY VILLAGE.

#RS
RESPONSIVENESS SUMMARY

BREWSTER RESPONSIVENESS SUMMARY
TO COMMENTS AT PUBLIC MEETING 8/21/86

C - ONE COMMENTER ASKED IF IT WAS POSSIBLE THAT THE CONTAMINATION EXISTED BEFORE 1978 AND HOW THE CONTAMINATION WAS DISCOVERED IN 1978.

R - IT IS POSSIBLE THAT THE CONTAMINATION EXISTED IN THE SOIL AND GROUNDWATER BEFORE 1978 BUT NO CONTAMINATION WAS FOUND IN THE WATER SUPPLY UNTIL 1978 WHEN IT WAS DISCOVERED IN ROUTINE SAMPLING.

C - THE SAME COMMENTER ASKED WHY IT TOOK FROM 1978 TO 1985 TO DO THE SUPERFUND STUDY.

R - SINCE THE CONTAMINATION WAS FIRST DISCOVERED IN 1978 SEVERAL MEASURES WERE TAKEN TO PROTECT THE PUBLIC HEALTH. THESE MEASURES INCLUDED THE INVESTIGATION AND USE OF ALTERNATE WATER SUPPLIES, PUBLIC HEALTH ADVISORIES TO BOIL WATER WHEN IT WAS NECESSARY, AND ULTIMATELY THE CONSTRUCTION OF THE PACKED COLUMN AIR STRIPPING SYSTEM THAT IS NOW SUCCESSFULLY BEING UTILIZED. SUPERFUND LEGISLATION WAS NOT ENACTED UNTIL 1980 AND IT WAS NOT UNTIL 1983 THAT BREWSTER WAS ADDED TO THE NATIONAL PRIORITIES LIST OF SUPERFUND SITES.

C - ONE COMMENTER ASKED WHAT SOIL CONTAMINATION HAS BEEN FOUND.

R - SEMI-QUANTITATIVE SOIL SCREENING WAS CONDUCTED DURING SOIL BORING OPERATIONS OF THE REMEDIAL INVESTIGATION AND THE RESULTS ARE INCLUDED IN THE REMEDIAL INVESTIGATION REPORT. HEAVY CONTAMINANT CONCENTRATIONS HAVE BEEN FOUND AT DEPTHS OF 30 FEET AND MORE AT SOME LOCATIONS.

C - ANOTHER COMMENTER ASKED WHETHER PCE WAS USED IN OTHER THAN DRY CLEANING OPERATIONS.

R - PCE IS ALSO USED FOR METAL DEGREASING.

C - ONE COMMENTER ASKED WHERE OTHER CONTAMINANTS SUCH AS BENZENE AND XYLENE MAY HAVE COME FROM.

R - BENZENE AND XYLENE ARE FOUND IN GASOLINE WHICH MAY HAVE COME FROM A SPILL.

C - ANOTHER COMMENTER ASKED WHAT THE SOURCE OF THE VINYL CHLORIDE FOUND MIGHT HAVE BEEN.

R - VINYL CHLORIDE MAY HAVE BEEN GENERATED AS THE RESULT OF THE BIOLOGICAL DEGRADATION OF PCE.

C - ONE COMMENTER ASKED HOW IT IS POSSIBLE TO PINPOINT THE LOCATION OF THE CONTAMINANT SOURCE OR SOURCES.

R - HISTORICAL STUDIES OF THE AREA AND BUSINESS INVENTORIES COULD HELP TO IDENTIFY POSSIBLE SOURCES. SITE INVESTIGATION, SAMPLING AND MONITORING WOULD HELP TO CONFIRM THE LOCATION OF THE SOURCE.

C - ONE COMMENTER ASKED WHETHER THE ALTERNATE 2 PACKED COLUMN WOULD CONTINUE TO WORK AS THE HIGHLY CONCENTRATED CONTAMINANT PLUME IS DRAWN TOWARD THE WELL FIELD.

R - ANY CONTAMINATION FROM THE PLUME WILL BE DILUTED WITH SURROUNDING GROUNDWATER AS IT IS DRAWN TOWARD THE WELL FIELD. AND BY HOLDING ON TO CONTAMINANTS THE SOIL ITSELF MITIGATES CONTAMINANT MOVEMENT TO A DEGREE. ADDITIONALLY, THE PACKED TOWER HAS FLEXIBILITY AND CAN REACT TO HIGHER CONCENTRATIONS; ALTHOUGH WE BELIEVE CONDITIONS HAVE REACHED STEADY STATE.

C - TWO COMMENTERS ASKED IF THE SYSTEM WAS REVIEWED PERIODICALLY AND HOW OFTEN SAMPLES WERE TAKEN.

R - SAMPLES ARE TAKEN AND REVIEWED MONTHLY AS AN INDICATOR OF THE SYSTEM'S OPERATION. THE HISTORICAL TREND, AGAINST WHICH THE SAMPLES ARE REVIEWED IS A GOOD INDICATION OF CONCENTRATION LEVELS AND ABRUPT SYSTEM ADJUSTMENTS AND MORE FREQUENT SAMPLING AREN'T CONSIDERED NECESSARY.

C - ONE COMMENTER ASKED FOR CLARIFICATION OF THE REMEDIATION PROPOSED SOUTH OF THE RIVER AND ITS COST.

R - THE REMEDIATION PROPOSED SOUTH OF THE RIVER CONSISTS OF GROUNDWATER EXTRACTION VIA WELLS, PACK COLUMN TREATMENT, AND REINJECTION VIA WELLS. THIS WOULD ENABLE CLEAN-UP OF TCE TO PROPOSED FEDERAL STANDARDS (5 PPB) AT BOTH THE WELL FIELD AND THE AREA SOUTH OF THE RIVER IN 10 YEARS. WITHOUT THIS REMEDIATION CLEAN-UP WOULD TAKE 25-30 YEARS AT THE WELL FIELD AND 30-35 YEARS SOUTH OF THE RIVER. THE COST OF THIS REMEDIATION WOULD BE THE COSTS OF ALTERNATE 3 MINUS ALTERNATE 2 OR $243,000.

C - ONE COMMENTER WANTED TO KNOW WHEN A FINAL DECISION WOULD BE MADE.

R - A FINAL DECISION WILL BE MADE AFTER THE PUBLIC COMMENT PERIOD ENDS ON SEPTEMBER 8, 1986 VIA A RECORD OF DECISION WHICH WILL BE ISSUED BY EPA.

C - ONE COMMENTER ASKED IF THE BREWSTER CONTAMINATION COULD BE AFFECTING OTHER WATER SUPPLY SYSTEMS.

R - THERE IS NO EVIDENCE OF THIS AND THIS IS NOT SUSPECTED. THE PUTNAM COUNTY DEPARTMENT OF HEALTH WOULD ADVISE AFFECTED COMMUNITIES IF THERE WERE.

C - ONE COMMENTER ASKED IF THERE WERE ANY DISCHARGE TO THE RIVER AND CONCERN WAS EXPRESSED OVER FISH UPTAKE.

R - VERY LOW CONCENTRATIONS (4 PPB) WERE RECORDED AT SEVERAL POINTS ALONG THE RIVER AND CONTINUED MONITORING IS RECOMMENDED AT THOSE LOCATIONS. THE RIVER ITSELF THOUGH, HAS A NATURAL STRIPPING ACTION. AT THESE LOW LEVELS FISH UPTAKE IS NOT A CONCERN.

C - ONE COMMENTER ASKED IF ANY MONITORING WAS DONE IN THE VICINITY OF THE BOTTGE SEPTAGE SITE.

R - THIS STORAGE AREA RESTS ON FILL DIRECTLY OVER BEDROCK AND ANY CONTAMINATION FROM THIS SITE WOULD AFFECT THE BEDROCK AQUIFER. HOWEVER, THE BREWSTER CONTAMINATION EXISTS PRIMARILY IN THE UNCONSOLIDATED AQUIFER AND APPARENTLY IS UNRELATED TO THE SITE. THE NATURE AND QUANTITY OF SUBSTANCES USED AT THIS SITE ALSO MAKE IT AN UNLIKELY SOURCE. THEREFORE, NO MONITORING WAS DONE.

C - ONE COMMENTER ASKED WHAT THE LIKELY SOURCES OF GASOLINE WERE.

R - THE MOST LIKELY SOURCE WAS A SPILL.

C - ONE COMMENTER ASKED IF VHO'S COULD BE ASSIMILATED OTHER THAN BY DIRECT INGESTION.

R - VHO'S CAN ALSO BE ASSIMILATED BY INHALATION AND DERMAL CONTACT.

C - ANOTHER COMMENTER WANTED TO KNOW WHAT LEVELS CAN NOW BE FOUND IN THE VILLAGE'S DRINKING WATER.

R - THE MOST RECENT SAMPLING SHOWED LESS THAN DETECTABLE LEVELS OF VHOS (LESS THAN 1 PPB).

C - ANOTHER COMMENTER ASKED HOW LONG IT WOULD TAKE FOR ANY CONTAMINATION TO TRAVEL FROM ALBEN CLEANERS TO REACH THE WELL FIELD.

R - GROUNDWATER WOULD TAKE APPROXIMATELY 6 YEARS TO TRAVEL THIS ROUTE. CONTAMINANT TRAVEL WOULD TAKE SOMEWHAT LONGER BECAUSE OF THE MITIGATING EFFECTS OF THE SOIL.

C - ONE COMMENTER WANTED TO KNOW IF IT WAS POSSIBLE TO ESTIMATE THE QUANTITY OF CONTAMINANTS IN THE GROUNDWATER.

R - NOT ACCURATELY, BUT WE COULD ESTIMATE THE AMOUNT WHICH HAS BEEN STRIPPED OUT TO DATE, BASED ON FLOW AND REMOVAL PERCENTAGES.

C - ANOTHER COMMENTER ASKED IF ANYTHING WAS BEING DONE TO AVOID THIS TYPE OF CONTAMINATION IN THE FUTURE.

R - AT THE FEDERAL LEVEL LEGISLATION AND REGULATION SUCH AS THE RESOURCE CONSERVATION AND RECOVERY ACT REQUIRES HAZARDOUS SUBSTANCES TO BE MONITORED FROM CRADLE TO GRAVE. VARIOUS OTHER FEDERAL AND STATE PROGRAMS REQUIRE PERMITS TO TRANSPORT, STORE AND DISPOSE OF THESE SUBSTANCES.

C - ANOTHER COMMENTER ASKED IF THERE WERE GOING TO BE ANY MORE PUBLIC MEETINGS.

R - NO FURTHER PUBLIC MEETINGS WILL BE HELD ON THE FIRST OPERABLE UNIT (CONSISTING OF CONTINUED OPERATION OF THE EXISTING ON-SITE AIR STRIPPER AND CONSTRUCTION OF A GROUNDWATER MANAGEMENT SYSTEM OF EXTRACTION WELLS, TREATMENT OF EXTRACT GROUNDWATER, AND REINJECTION, TO CONTAIN THE PLUME OF CONTAMINATION AND RESTORE GROUNDWATER QUALITY SOUTH OF THE RIVER). HOWEVER WRITTEN COMMENTS CAN BE SUBMITTED UNTIL SEPTEMBER 8, 1986. IN THE FUTURE AN ADDITIONAL PUBLIC MEETING WILL BE HELD ON THE SECOND OPERABLE UNIT WHICH WILL ADDRESS SOURCE CONTROL MEASURES.

C - A FINAL COMMENTER ASKED IF AN ENDANGERMENT ASSESSMENT WAS DONE.

R - A RISK ASSESSMENT WAS CONDUCTED AND THE RESULTS ARE PRESENTED IN THE FEASIBILITY STUDY REPORT.

TABLE 2

SUMMARY OF RI ANALYTICAL DATA
FOR CRITICAL CONTAMINANTS

MEDIA	PCE	TCE	1,2-DCE
GROUNDWATER *			
FREQUENCY (1)	13/44	10/44	7/44
MAXIMUM LEVEL (PPB)	5600	100	210
AVERAGE (PPB)	696	47	107
GROUNDWATER **			
FREQUENCY	12/19	9/19	8/19
MAXIMUM LEVEL (PPB)	3900	67	160
AVERAGE (PPB)	668	37	68
SURFACE WATER (CROTON RIVER)			
FREQUENCY	3/29	0/29	0/29
MAXIMUM LEVEL	4	--	--
AVERAGE	3	--	--
SURFACE WATER (CULVERT DISCHARGES)			
FREQUENCY	108/135	101/135	100/135
MAXIMUM LEVEL	1000	136	37
AVERAGE	102.1	16.8	5.9
SOILS			
FREQUENCY	59/326	41/326	46/3265
MAXIMUM	280	46	21
AVERAGE	28	5.5	3.3

* COMPUCHEM RESULTS - SAMPLE ROUND 1 (1985)
** COMPUCHEM RESULTS - SAMPLE ROUND 2 (1986)
(1) SHOWS NUMBER OF SAMPLES CONTAINING CONTAMINANT OVER TOTAL NUMBER OF SAMPLES TAKEN.

TABLE 4

CANDIDATE REMEDIAL ACTION TECHNOLOGIES

TECHNOLOGY	APPLICABILITY	REMEDIAL OBJECTIVE
CONTAINMENT BARRIERS - SLURRY WALLS - VIBRATED BEAM WALLS - GROUT CURTAINS - SHEET PILING	MAY BE EFFECTIVE IN PLUME CONTAINMENT IF GEOLOGICAL CONDITIONS AND CONTAMINANT CAPABILITY WARRANT	SOURCE CONTROL
GROUNDWATER PUMPING - EXTRACTION WELLS - INJECTION WELLS	MAY BE EFFECTIVE IN PLUME CONTAINMENT AND AQUIFER CLEANUP	SOURCE CONTROL
SOIL AND WASTE EXCAVATION AND REMOVAL	MAY BE EFFECTIVE IN ELIMINATING A SOURCE OF CONTAMINATION IN PLUME AREA	SOURCE CONTROL
ROTARY KILN INCINERATOR	COULD BE EFFECTIVE IN ELIMINATION OF CONTAMINANTS IN SOIL OR MATERIAL EXCAVATED IN SOURCE AREA	SOURCE CONTROL
INFRARED INCINERATION	COULD BE EFFECTIVE IN ELIMINATION OF CONTAMINANTS IN SOIL OR MATERIAL EXCAVATED IN SOURCE AREA	SOURCE CONTROL
ACTIVATED CARBON TREATMENT	COULD BE EFFECTIVE IN TREATING WATER FOR WATER SUPPLY SYSTEM, FOR TREATMENT OF GROUNDWATER EXTRACTED IN PLUME AREA AND FOR REDUCTION OF EMISSIONS FROM AIR STRIPPING COLUMNS	SYSTEM CONTROL AND SOURCE CONTROL
PACKED COLUMN AERATION	EFFECTIVE IN TREATMENT OF WATER FOR WATER SUPPLY SYSTEM AND FOR TREATMENT OF GROUNDWATER EXTRACTED IN PLUME AREA	SYSTEM CONTROL AND SOURCE CONTROL

TABLE 4 (CONT'D)
CANDIDATE REMEDIAL ACTION TECHNOLOGIES

TECHNOLOGY	APPLICABILITY	REMEDIAL OBJECTIVE
DRYING/DEWATERING BED	COULD BE EFFECTIVE IN HANDLING SOILS OR MATERIALS EXCAVATED IN SOURCE AREA	SOURCE CONTROL
LANDFILL	IF EXCAVATION OF SOILS OR MATERIAL IS UNDERTAKEN IN PLUME AREA, IT MAY BE NECESSARY TO DISPOSE OF MATERIALS IN APPROVED LANDFILL	SOURCE CONTROL
ALTERNATIVE WATER SUPPLIES SOURCES - NYC RESERVOIR - RIVER INTAKE	MAY BE FEASIBLE IF INSTITUTIONAL AND TECHNICAL CONSTRAINTS ARE RESOLVED	SYSTEM CONTROL
INDIVIDUAL TREATMENT UNITS	MAY BE FEASIBLE IF COSTS AND OTHER TECHNICAL CONSTRAINTS ARE RESOLVED.	SYSTEM CONTROL

TABLE 5

TECHNOLOGIES SELECTED AS
COMPONENTS OF REMEDIAL ALTERNATIVES

- GROUNDWATER PUMPING
  - EXTRACTION WELLS
  - INJECTION WELLS
- SOIL & WASTE EXCAVATION AND REMOVAL
  - BACKHOE
- DEWATERING
  - DRYING OR DEWATERING BEDS
- LAND DISPOSAL
  - SECURE LANDFILL
- INCINERATION
  - ROTARY KILN
  - INFRARED
- TREATMENT OF LIQUID WASTE STREAMS
  - PACKED COLUMN AERATION
- ALTERNATIVE WATER SUPPLIES
  - RESERVOIR
  - RIVER
  - INDIVIDUAL TREATMENT SYSTEMS.

Appendix B

Explanation of Significant Differences

BREWSTER WELL FIELD SITE

TOWN OF SOUTHEAST
Putnam County, New York

EPA
Region 2

October 2009

INTRODUCTION

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 117(c) and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Contingency Plan, if after the adoption of a final remedial action plan, there is a significant change with respect to the final plan, an explanation of the significant differences and the reasons such changes were made must be published.

The Environmental Protection Agency's (EPA's) 1986 Record of Decision (ROD) for the Brewster Well Field site called for the continued operation of an existing air stripper treatment system at the Brewster Well Field in order to continue to provide a safe and reliable water supply and the design and construction of a groundwater management system (GMS) to restore groundwater quality. EPA's 1988 ROD called for the excavation of the source of the contamination (the dry well of a former dry cleaner). It was the intention of the decision documents that the soil and groundwater be remediated to levels that would allow for unlimited use without restriction. Institutional controls[1] were not selected as part of the final site remedy. Since the finalization of the RODs, EPA determined that institutional controls would be beneficial at the site.

The results of soil gas samples collected beneath the slab of the former dry cleaner (now a Subaru dealership) showed elevated volatile organic compound (VOC) concentrations. Because of concerns that vapors could be impacting indoor air at the dealership, a subslab mitigation system was installed. Further investigation at the dealership indicated that a small volume of contaminated soil was present underneath the building. The subslab mitigation system was enhanced so that it could target the contaminated soil.[2]

There are no impacted private water supply wells in the vicinity of the groundwater plume. Since new wells cannot be drilled without a permit from the County Department of Health, the installation of new wells in the contaminated plume is effectively prevented. To prevent the potential exposure to the contaminated soils on the Subaru dealership property and to area groundwater, EPA notified the local planning board that EPA should be contacted prior to the approval of any construction on the dealership property and any planned development in the general vicinity of the site. The dealership was similarly notified. Periodic reminders will be issued by EPA or NYSDEC to the planning board and the dealership. The County Department of Health's restrictions related to the installation of wells and the notifications to the planning board and the dealership constitute institutional controls, which are being added to the implemented remedy.

This Explanation of Significant Differences (ESD) serves to document the above-noted changes to the remedy. The changes to the remedy are not considered by EPA to have fundamentally altered the remedies selected in the RODs. The remedy remains protective of human health and the environment.

This ESD will become part of the Administrative Record file for the Brewster Well Field site. The entire Administrative Record for the site, which includes the remedial investigation and feasibility study (RI/FS) reports, Proposed Plans, and RODs, and other relevant reports and documents related to the site are available for public review at the following location:

Brewster Village Hall
208 East Main Street
Brewster, NY 10509
Hours: 9:00 a.m. - 4:00 p.m.
Monday - Friday

The Administrative Record file and other relevant reports and documents are also available for public review at the EPA Region II office at the following location:

U.S. Environmental Protection Agency
290 Broadway, 18th Floor
New York, New York 10007

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[1] Institutional controls are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of a remedy.

[2] The enhanced subslab mitigation system draws air from beneath the subslab, capturing volatilized organics from beneath the subslab and volatilizing and capturing the VOCs from the soil. The collected vapors are vented to the atmosphere consistent with the requirements of the New York State Department of Environmental Conservation's (NYSDEC's) DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants (1997).

Hours: 9:00 a.m. - 5:00 p.m.
Monday - Friday

SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

The Brewster Well Field site is located on the northern bank of the East Branch Croton River and east of Interstate 84, approximately three-fourths of a mile east of the Village of Brewster, in the Town of Southeast, Putnam County, New York.

The Brewster Well Field, which supplies water to approximately 2,200 people in the Village of Brewster was found to be contaminated with VOCs in 1978. Under a cooperative agreement with EPA, the Village installed a full-scale air stripper, which is currently providing safe drinking water to the Village. The site was placed on the National Priorities List of Superfund sites in December 1982.

From 1984 to 1986, through a cooperative agreement between NYSDEC and EPA, NYSDEC's consultant performed an RI/FS at the site. Based on the results of the RI/FS, a ROD was signed by EPA in September 1986. The selected remedy included the continued operation of the existing air stripping system at the well field and designing and constructing a GMS to contain the groundwater contaminant plume and to restore groundwater quality at the site, by extracting, treating by air stripping, and reinjecting the contaminated groundwater. The ROD also called for a source control RI/FS to identify and address the source of the groundwater contamination. The construction of the GMS was completed in 1991.

In 1988, the source control RI/FS was completed by EPA. It identified a drywell located adjacent to Alben Dry Cleaners (situated at 1021 Route 22, Brewster, New York) as a significant source of the contamination present at the well field. Alben Dry Cleaners had been in operation since 1965, and dry-cleaning wastes were disposed of in the drywell at least since that time. The source control ROD, signed in September 1988 by EPA, called for the excavation, removal, and off-site incineration of the contents of the dry well and the surrounding contaminated soils. The implementation of the source control remedy was completed in 1991.

After construction of the GMS, due to operational difficulties related to the reinjection system, the remedy was modified via an ESD in December 1996. The ESD changed the final disposition of the treated groundwater from reinjection to surface water discharge.

To improve the capture of the contaminated groundwater, two new extraction wells and one combination monitoring and extraction well were installed in the source area. Also, since the air stripper was found to be nearing the end of its useful life, it was replaced. The modified GMS became operational in Fall 2007, at which time NYSDEC assumed responsibility for its operation and maintenance.[3]

DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES

The 1986 ROD for the site called for the continued operation of the existing air stripping system at the Brewster Well Field and the construction of a GMS to contain the groundwater contaminant plume and to restore groundwater quality. The 1988 ROD called for the excavation, removal, and off-site incineration of the source of the contamination, which was identified as a drywell at the former Alben Dry Cleaners. Institutional controls were not selected as part of the final site remedy.

Subsequently, the GMS was constructed and the drywell was removed.

Because of the potential for the migration of volatile chemicals from the subsurface into overlying buildings at properties located near VOC-contaminated groundwater, soil gas (vapor) samples were collected from beneath the slab of the former Alben Dry Cleaners (now a Subaru dealership) in May 2006. The results of this investigation showed elevated VOC concentrations. Because of concerns that these vapors could be impacting indoor air at the dealership, a subslab mitigation system was installed in January 2007. In January 2009, a soil investigation beneath the dealership building was performed to determine if residual soil contamination was present. The results of this investigation indicated that a small volume of contaminated soil was located underneath the building. Although the removal of the contaminated soil was considered, since this would significantly disrupt the dealership's business and could potentially impact the structural integrity of the building, the subslab mitigation system was enhanced with a greater capacity blower and additional piping so that it could target the contaminated soil. It is estimated that the enhanced subslab mitigation system will reduce the contaminated soil to 4 milligrams per kilogram perchloroethylene (the soil cleanup objective called for in the ROD) in one year.

In February 2009, subslab soil gas and indoor air samples were collected from the Subaru dealership building. The results showed that the building's subslab VOC concentrations have been substantially reduced since the enhancement of the subslab mitigation system. While the majority of the indoor air contamination is in or near the acceptable range, slightly elevated indoor air levels remain in a few samples collected from a storage room. Considering the fact that the building subslab is under a negative vacuum and based upon an inventory of the products being used at the dealership, it appears that these products and/or the

[3] At Superfund sites, if after 10 years of GMS operation by EPA, groundwater cleanup goals are not achieved, states take over responsibility for the operation and maintenance of the GMS.

automobiles in the showroom are the source of the indoor air concentrations. Determining whether these products or the automobiles in the showroom are the source of the indoor air problem would likely seriously disrupt the business (they would have to be removed from the building). In a June 18, 2009 letter to the Subaru dealership, EPA suggested increasing ventilation in the building and using alternative products to the extent practicable to reduce the concentrations of VOCs in the indoor air.

There are no impacted private water supply wells in the vicinity of the groundwater plume. Since new wells cannot be drilled without a permit from the County Department of Health, the installation of new wells in the contaminated plume is effectively prevented.

To prevent the potential exposure to the contaminated soils and groundwater and to prevent any actions which might adversely impact the remedy, the Town of Southeast Planning Board was notified via a March 19, 2007 letter that EPA should be contacted prior to the approval of any construction on the Subaru dealership property. A similar letter was sent to the Subaru dealership on June 18, 2009. On July 29, 2009, a letter was sent to the Town of Southeast Planning Board requesting that EPA be contacted prior to the approval of any construction on the dealership property and to be informed of any planned future development in the general vicinity of the site[4]. Periodic written reminders will be issued by EPA or NYSDEC to the planning board and the dealership. These actions constitute an "informational device" institutional control. In addition, on an annual basis, the site will be inspected to determine whether any intrusive activities have been performed at the site (*i.e.*, at the Subaru dealership).

The County Department of Health's restrictions related to the private wells and the notifications to the Planning Board and the dealership constitute institutional controls, which are being added to the implemented remedy.

SUPPORT AGENCY COMMENTS

NYSDEC supports the modified remedy due to its environmental, public health, and technical advantages, and due to the fact that the modified remedy significantly changes but does not fundamentally alter the remedy selected in the RODs with respect to scope, performance, protectiveness, or cost.

FIVE-YEAR REVIEW

Upon completion of remedial activities at the site, hazardous substances will be reduced to levels which will permit unlimited use of, and unrestricted exposure to, soil and groundwater, under its current land use. It is the policy of EPA to conduct five-year reviews when remedial activities, including monitoring, will continue for more than five years. Since it will take more than five years to attain cleanup levels at the site, reviews are being conducted every five years.

The second five-year review for the Brewster Well Field Superfund site, which was completed in April 2007, raised concerns about vapor intrusion potentially impacting indoor air at the Subaru dealership and the nearby Brady Stannard Chevrolet dealership; potential residual source material underneath the Subaru dealership building; contaminated groundwater capture; and the overall performance of the GMS. As a consequence of these concerns, a protectiveness determination for the site could not be made until additional information was obtained.

Based upon the collection and assessment of additional data, a five-year review addendum was completed in September 2009. The addendum concluded that the implemented remedial actions protect human health and the environment in the short term. Currently, there are no exposure pathways that could result in unacceptable risks (the enhanced subslab mitigation system installed at the Subaru dealership is functioning properly and is addressing the residual source area and the indoor air concentrations at the Chevrolet dealership are in the acceptable range). In order for the remedy to be protective in the long term, additional data needs to be collected to ensure that the GMS is effectively capturing the groundwater plume and that the enhanced subslab mitigation system is addressing the contaminated soil.

AFFIRMATION OF STATUTORY DETERMINATIONS

EPA and NYSDEC believe that the remedy, as modified, remains protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective. In addition, the modified remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site.

PUBLIC PARTICIPATION ACTIVITIES

EPA and NYSDEC are making this ESD available to the public to update them on the progress made at the site and to inform them of the changes made to the remedy. Should there be any questions regarding this ESD, please contact:

Lisa Wong
Remedial Project Manager
Central New York Remediation Section

[4] On September 10, 2009, a representative of the Town of Southeast Planning Board confirmed that the July 29, 2009 letter was filed in the Town Planning Board's office and that EPA will be notified of any planned construction or development on the dealership property and in the general vicinity of the site.

U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, New York 10007-1866
(212) 637-4267

Appendix C

Well	Well Type	DESCRIPTION	Ground Elevation	Top of Cap Elevation	Top of Riser Elevation	Top of Casing Elevation	Stickup Height	Depth (feet)	Screened Interval	Start Date of Installation[8]	End Date of Installation[8]	Recent Sampling Date[2]
CDM-1	MW	ID = 2" steel casing, stickup	339.32 ft amsl[6]	342.34 ft amsl[6]	N/P	342.42 ft amsl[6]	3 ft ags[9]	52 ft bgs[9]	25-50 ft bgs[9]	2/5/2009[9]	2/5/2009[9]	May 2016
CDM-2	MW	ID = 2" steel casing, stickup	347.00 ft amsl[6]	349.82 ft amsl[6]	N/P	349.88 ft amsl[6]	2.88 ft ags[9]	N/P	N/P	N/P	N/P	April 2013
CDM-3	MW	ID = 2" steel casing, flushmount	352.30 ft amsl[6]	351.95 ft amsl[6]	N/P	352.30 ft amsl[6]	0 ft ags[9]	N/P	N/P	N/P	N/P	May 2016
DGC-1D	MW	ID = 4" steel casing, stickup	335.87 ft amsl[8]	N/P	337.57 ft amsl[8]	336.63 ft amsl[4]	1.7 ft ags[8]	103.0 ft bgs[8]	N/P	9/17/1985	9/18/1985	N/P
DGC-1I	MW	ID = 2" steel casing, stickup	335.74 ft amsl[8]	N/P	337.54 ft amsl[8]	336.61 ft amsl[4]	1.8 ft ags[8]	67.5 ft bgs[8]	35.7-40.7 ft bgs[8]	9/23/1985	10/9/1985	May 2016
DGC-1S	MW	ID = 2" steel casing, stickup	335.72 ft amsl[8]	N/P	337.52 ft amsl[8]	336.66 ft amsl[4]	1.8 ft ags[8]	9.0 ft bgs[8]	3.2-8.2 ft bgs[8]	9/20/1985	9/20/1985	N/P
DGC-2D	MW	ID = 4" steel casing, stickup	337.73 ft amsl[8]	N/P	339.23 ft amsl[8]	338.43 ft amsl[4]	1.5 ft ags[8]	39.1 ft bgs[8]	N/P	9/16/1985	9/17/1985	May 2008
DGC-2I	MW	ID = 2" steel casing, stickup	337.28 ft amsl[8]	N/P	339.48 ft amsl[8]	338.55 ft amsl[4]	2.2 ft ags[8]	27.6 ft bgs[8]	15.3-17.8 ft bgs[8]	7/30/1985	8/1/1985	May 2016
DGC-2S	MW	ID = 2" steel casing, stickup	337.76 ft amsl[8]	N/P	339.16 ft amsl[8]	338.22 ft amsl[4]	1.4 ft ags[8]	9.0 ft bgs[8]	3.6-8.6 ft bgs[8]	8/1/1985	8/1/1985	May 2008
DGC-3I	MW	ID = 2" steel casing, flushmount	337.13 ft amsl[8]	336.40 ft amsl[5]	336.43 ft amsl[8]	336.34 ft amsl[5]	0.0 ft ags[8]	52.5 ft bgs[8]	20.75-23.25 ft bgs[8]	8/7/1985	8/12/1985	May 2016
DGC-3S	MW	ID = 2" steel casing, flushmount	337.22 ft amsl[8]	336.86 ft amsl[5]	336.92 ft amsl[8]	336.81 ft amsl[5]	0.3 ft bgs[8]	12.8 ft bgs[8]	5.3-10.3 ft bgs[8]	8/27/1985	8/27/1985	May 2016
DGC-5I	MW	ID = 2" steel casing, stickup	340.16 ft amsl[8]	N/P	342.86 ft amsl[8]	341.97 ft amsl[4]	2.7 ft ags[8]	80.9 ft bgs[8]	67.3-72.3 ft bgs[8]	8/21/1985	8/26/1985	N/P
DGC-5S	MW	ID = 2" steel casing, stickup	340.59 ft amsl[8]	N/P	341.89 ft amsl[8]	340.99 ft amsl[4]	1.3 ft ags[8]	22.0 ft bgs[8]	8.7-18.7 ft bgs[8]	8/27/1985	8/27/1985	N/P
DGC-6I	MW	ID = 2" steel casing, stickup	337.54 ft amsl[8]	338.59 ft amsl[5]	340.34 ft amsl[8]	338.47 ft amsl[5]	2.8 ft ags[8]	42.0 ft bgs[8]	29.7-32.2 ft bgs[8]	8/20/1985	8/21/1985	May 2016
DGC-6S	MW	ID = 2" steel casing, stickup	337.74 ft amsl[8]	N/P	339.14 ft amsl[8]	N/P	1.4 ft ags[8]	10.0 ft bgs[8]	3.6-8.6 ft bgs[8]	9/19/1985	9/19/1985	N/P
DGC-7D	MW	ID = 4" steel casing. stickup	333.84 ft amsl[8]	335.17 ft amsl[5]	334.84 ft amsl[8]	335.00 ft amsl[5]	1.0 ft ags[8]	112.0 ft bgs[8]	N/P	10/3/1985	10/14/1985	May 2016
DGC-7I	MW	ID = 2" steel casing, stickup	333.15 ft amsl[8]	334.66 ft amsl[5]	334.65 ft smsl[8]	334.60 ft amsl[5]	1.5 ft ags[8]	77.0 ft bgs[8]	36.0-38.5 ft bgs[8]	9/9/2015	9/17/2015	May 2016
DGC-7S	MW	ID = 2" steel casing, stickup	333.39 ft amsl[8]	335.11 ft amsl[5]	334.99 ft amsl[8]	335.03 ft amsl[5]	1.6 ft ags[8]	9.0 ft bgs[8]	3.4-8.4 ft bgs[8]	9/19/1985	9/19/1985	May 2008
DGC-8I	MW	ID = 2" steel casing, stickup	334.14 ft amsl[8]	336.25 ft amsl[5]	336.14 ft amsl[8]	336.09 ft amsl[5]	2.0 ft ags[8]	82.0 ft bgs[8]	63.0-73.0 ft bgs[8]	9/18/1985	9/23/1985	May 2016
DGC-8S	MW	ID = 2" steel casing, stickup	333.91 ft amsl[8]	335.72 ft amsl[5]	336.61 ft amsl[8]	335.68 ft amsl[5]	1.7 ft ags[8]	9.5 ft bgs[8]	3.3-8.3 ft bgs[8]	9/25/1985	9/25/1985	May 2008
DGC-9I	MW	ID = 2" steel casing, stickup	332.60 ft amsl[8]	334.33 ft amsl[5]	334.20 ft amsl[8]	334.17 ft amsl[5]	1.6 ft ags[8]	52.0 ft bgs[8]	33.4-43.4 ft bgs[8]	9/25/1985	9/26/1985	May 2016
DGC-9S	MW	ID = 2" steel casing, stickup	332.76 ft amsl[8]	334.46 ft amsl[5]	334.26 ft amsl[8]	334.45 ft amsl[5]	1.5 ft ags[8]	9.5 ft bgs[8]	3.5-8.5 ft bgs[8]	9/26/1985	9/26/1985	April 2013
DGC-10D	MW	ID = 4" steel casing, stickup	336.22 ft amsl[8]	N/P	337.52 ft amsl[8]	336.61 ft amsl[4]	1.5 ft ags[8]	66.0 ft bgs[8]	N/P	10/1/1985	10/1/1985	N/P
DGC-10I	MW	ID = 2" steel casing, stickup	336.41 ft amsl[8]	N/P	339.31 ft amsl[8]	338.43 ft amsl[4]	2.9 ft ags[8]	50.5 ft bgs[8]	39.6-42.1 ft bgs[8]	8/27/1985	8/29/1985	N/P
DGC-10S	MW	ID = 2" steel casing, stickup	336.13 ft amsl[8]	N/P	337.03 ft amsl[8]	336.63 ft amsl[4]	0.9 ft ags[8]	10.3 ft bgs[8]	4.1-9.1 ft bgs[8]	9/25/1985	9/25/1985	N/P
DGC-11I	MW	ID = 2" steel casing, stickup; non-functioning due to frost damage[12]	335.71 ft amsl[8]	N/P	337.61 ft amsl[8]	336.67 ft amsl[4]	1.9 ft ags[8]	30.1 ft bgs[8]	20.6-23.1 ft bgs[8]	8/29/1985	9/4/1985	May 2016
DGC-11S	MW	ID = 2" steel casing, stickup	335.71 ft amsl[8]	N/P	337.91 ft amsl[8]	336.99 ft amsl[4]	2.2 ft ags[8]	9.0 ft bgs[8]	2.8-7.8 ft bgs[8]	9/16/1985	9/16/1985	N/P
DGC-12IA	MW	ID = 2" steel casing, stickup	336.44 ft amsl[8]	N/P	338.74 ft amsl[8]	337.81 ft amsl[4]	2.3 ft ags[8]	52.0 ft bgs[8]	35.2-40.5 ft bgs[8]	10/11/1985	10/21/1985	May 2016
DGC-12S	MW	ID = 2" steel casing, stickup	336.61 ft amsl[8]	N/P	337.91 ft amsl[8]	337.02 ft amsl[4]	1.3 ft ags[8]	10.0 ft bgs[8]	3.7-8.7 ft bgs[8]	9/20/1985	9/20/1985	N/P
DGC-13I	MW	ID = 2" steel casing, stickup	334.37 ft amsl[8]	N/P	335.37 ft amsl[8]	334.43 ft amsl[4]	1.0 ft ags[8]	67.0 ft bgs[8]	59.0-64.0 ft bgs[8]	9/5/1985	9/10/1985	May 2016
DGC-13S	MW	ID = 2" steel casing, stickup	334.42 ft amsl[8]	N/P	336.72 ft amsl[8]	335.84 ft amsl[4]	2.3 ft ags[8]	9.0 ft bgs[8]	2.7-7.7 ft bgs[8]	9/19/1985	9/19/1985	N/P
DGC-14D	MW	ID = 4" steel, stickup	339.92 ft amsl[8]	341.41 ft amsl[5]	341.22 ft amsl[8]	341.12 ft amsl[5]	1.3 ft ags[8]	80.2 ft bgs[8]	N/P	9/10/1985	9/11/1985	May 2008
DGC-14I	MW	ID = 2" steel, stickup	340.65 ft amsl[8]	341.18 ft amsl[5]	341.45 ft amsl[8]	341.07 ft amsl[5]	0.8 ft ags[8]	50.4 ft bgs[8]	26.7-29.2 ft bgs[8]	8/1/1985	8/6/1985	April 2013
DGC-14S	MW	ID = 2" steel, stickup	340.32 ft amsl[8]	342.29 ft amsl[5]	342.22 ft amsl[8]	342.24 ft amsl[5]	1.9 ft ags[8]	11.5 ft bgs[8]	5.6-10.6 ft bgs[8]	8/6/1985	8/6/1985	May 2008
DGC-15D	MW	ID = 4" steel, stickup	341.50 ft amsl[8]	342.87 ft amsl[5]	342.80 ft amsl[8]	342.69 ft amsl[5]	1.3 ft ags[8]	106.2 ft bgs[8]	N/P	9/12/1985	9/13/1985	N/P
DGC-15I	MW	ID = 2" steel, stickup	341.45 ft amsl[8]	342.85 ft amsl[5]	342.85 ft amsl[8]	342.76 ft amsl[5]	1.4 ft ags[8]	55.0 ft bgs[8]	46.1-48.6 ft bgs[8]	8/13/1985	8/9/1985	N/P
DGC-15S	MW	ID = 2" steel, stickup	341.46 ft amsl[8]	344.39 ft amsl[5]	344.46 ft amsl[8]	344.36 ft amsl[5]	3.0 ft ags[8]	13.0 ft bgs[8]	4.5-12.0 ft bgs[8]	8/26/1985	8/27/1985	N/P
DGC-16I	MW	ID = 2" steel, stickup	338.66 ft amsl[8]	340.06 ft amsl[5]	340.06 ft amsl[8]	340.00 ft amsl[5]	1.4 ft ags[8]	43.0 ft bgs[8]	31.1-36.1 ft bgs[8]	10/4/1985	10/7/1985	May 2016
DGC-16S	MW	ID = 2" steel, stickup	338.57 ft amsl[8]	341.01 ft amsl[5]	340.57 ft amsl[8]	340.92 ft amsl[5]	2.0 ft ags[8]	10.0 ft bgs[8]	3.0-8.0 ft bgs[8]	9/25/1985	9/25/1985	April 2013
DGC-17I	MW	ID = 2" steel, stickup	334.39 ft amsl[8]	336.16 ft amsl[5]	335.99 ft amsl[8]	336.10 ft amsl[5]	1.8 ft ags[8]	50.0 ft bgs[8]	28.2-33.2 ft bgs[8]	10/1/1985	10/3/1985	May 2016
DGC-17S	MW	ID = 2" steel, stickup	334.69 ft amsl[8]	N/P	336.49 ft amsl[8]	N/P	1.6 ft ags[8]	10.0 ft bgs[8]	3.4-8.4 ft bgs[8]	9/26/1985	9/26/1985	N/P
DGC-18I	MW	ID = 2" steel, stickup	337.09 ft amsl[8]	339.43 ft amsl[5]	339.39 ft amsl[8]	339.28 ft amsl[5]	2.3 ft ags[8]	62.0 ft bgs[8]	17.7-27.7 ft bgs[8]	N/P	N/P	May 2016
DGC-18S	MW	ID = 2" steel, stickup	337.25 ft amsl[8]	338.89 ft amsl[5]	339.05 ft amsl[8]	338.87 ft amsl[5]	1.8 ft ags[8]	10.0 ft bgs[8]	3.0-8.0 ft bgs[8]	N/P	N/P	May 2013
ERT-19D	MW	ID = 2" PVC, flushmount	338.28 ft amsl[5]	338.16 ft amsl[5]	N/P	338.04 ft amsl[5]	0.0 ft bgs[8]	34 ft bgs[7]	23.7-33.7 ft bgs[7]	11/7/2006[7]	11/7/2006[7]	April 2015
DGC-19I	MW	ID = 2" steel, flushmount	338.16 ft amsl[8]	338.03 ft amsl[5]	337.86 ft amsl[8]	337.90 ft amsl[5]	0.3 ft bgs[8]	42.0 ft bgs[8]	17.8-23.1 ft bgs[8]	10/15/1985	10/17/1985	May 2016
DGC-19S	MW	ID = 2" steel, flushmount	338.19 ft amsl[8]	337.90 ft amsl[5]	337.89 ft amsl[8]	337.76 ft amsl[5]	0.3 ft bgs[8]	12.0 ft bgs[8]	5.0-10.5 ft bgs[8]	N/P	N/P	May 2016
DGC-20I	MW	ID = 2" steel, flushmount	348.80 ft amsl[8]	N/P	348.50 ft amsl[8]	N/P	0.3 ft bgs[8]	13.5 ft bgs[8]	1.7-11.7 ft bgs[8]	10/22/1985	10/22/1985	N/P
ERT-10D	MW	ID = 2" PVC, flushmount	338.20 ft amsl[5]	338.00 ft amsl[5]	N/P	337.89 ft amsl[5]	0.0 ft bgs[5]	40 ft bgs[7]	29.7-39.7 ft bgs[7]	11/8/2006[7]	11/8/2006[7]	N/P
ERT-10I	MW	ID = 2" PVC, flushmount	338.29 ft amsl[5]	338.02 ft amsl[5]	N/P	337.91 ft amsl[5]	0.0 ft bgs[5]	24 ft bgs[7]	13.7-23.7 ft bgs[7]	11/8/2006[7]	11/8/2006[7]	N/P
ERT-1I	MW	ID = .5" PVC, flushmount	338.13 ft amsl[5]	338.01 ft amsl[5]	N/P	337.94 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
ERT-1S	MW	ID = .5" PVC, flushmount	338.18 ft amsl[5]	338.08 ft amsl[5]	N/P	338.05 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	May 2016
ERT-2I	MW	ID = .5" PVC, flushmount	338.62 ft amsl[5]	338.37 ft amsl[5]	N/P	338.31 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	May 2016

Well	Well Type	DESCRIPTION	Ground Elevation	Top of Cap Elevation	Top of Riser Elevation	Top of Casing Elevation	Stickup Height	Depth (feet)	Screened Interval	Start Date of Installation[8]	End Date of Installation[8]	Recent Sampling Date[2]
ERT-2S	MW	ID = .5" PVC, flushmount	338.54 ft amsl[5]	338.27 ft amsl[5]	N/P	338.20 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	May 2008
ERT-3I	MW	ID = .5" PVC, flushmount	339.01 ft amsl[5]	338.71 ft amsl[5]	N/P	338.64 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
ERT-4I	MW	ID = .5" PVC, flushmount	338.63 ft amsl[5]	338.50 ft amsl[5]	N/P	338.47 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	May 2016
ERT-5I	MW	ID = .5" PVC, flushmount	338.29 ft amsl[5]	338.08 ft amsl[5]	N/P	338.03 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
ERT-5S	MW	ID = .5" PVC, flushmount	338.40 ft amsl[5]	338.13 ft amsl[5]	N/P	338.08 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
ERT-6I	MW	ID = .5" PVC, flushmount	339.78 ft amsl[5]	339.69 ft amsl[5]	N/P	339.65 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
ERT-7I	MW	ID = .5" PVC, flushmount	340.14 ft amsl[5]	340.03 ft amsl[5]	N/P	339.99 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	May 2016
ERT-8D	MW	ID = 2" PVC, flushmount	342.33 ft amsl[5]	342.11 ft amsl[5]	N/P	341.99 ft amsl[5]	0.0 ft bgs[5]	56.68 ft btoc[7]	46.35-56.35 ft btoc[7]	10/31/2006[7]	10/31/2006[7]	April 2015
ERT-8I	MW	ID = 2" PVC, flushmount	342.00 ft amsl[5]	341.81 ft amsl[5]	N/P	341.70 ft amsl[5]	0.0 ft bgs[5]	39.75 ft btoc[7]	29.42-39.42 ft btoc[7]	10/31/2006[7]	10/31/2006[7]	May 2016
ERT-8S	MW	ID = 2" PVC, flushmount	341.72 ft amsl[5]	341.54 ft amsl[5]	N/P	341.43 ft amsl[5]	0.0 ft bgs[5]	15.18 ft btoc[7]	4.85-14.85 ft btoc[7]	11/1/2006[7]	11/1/2006[7]	May 2016
ERT-9D	MW	ID = 2" PVC, flushmount	339.88 ft amsl[5]	339.74 ft amsl[5]	N/P	339.63 ft amsl[5]	0.0 ft bgs[5]	41 ft bgs[7]	30.7-40.7 ft bgs[7]	11/7/2006[7]	11/7/2006[7]	May 2016
ERT-9I	MW	ID = 2" PVC, flushmount	339.83 ft amsl[5]	339.64 ft amsl[5]	N/P	339.51 ft amsl[5]	0.0 ft bgs[5]	28.5 ft bgs[7]	18.2-28.2 ft bgs[7]	11/8/2006[7]	11/8/2006[7]	May 2016
ERT-PR-1	Air Sparge	north well 2" PVC, flushmount	339.83 ft amsl[5]	339.35 ft amsl[5]	N/P	339.27 ft amsl[5]	0.0 ft bgs[5]	18 ft bgs[7]	14.89-18 ft bgs[7]	11/6/2006[7]	11/6/2006[7]	N/P
ERT-PR-1	Air Sparge	west well 2" PVC, flushmount	339.83 ft amsl[5]	339.38 ft amsl[5]	N/P	339.25 ft amsl[5]	0.0 ft bgs[5]	25 ft bgs[7]	21.89-25 ft bgs[7]	11/6/2006[7]	11/6/2006[7]	N/P
ERT-PR-1	Air Sparge	east well 2" PVC, flushmount	339.83 ft amsl[5]	339.37 ft amsl[5]	N/P	339.23 ft amsl[5]	0.0 ft bgs[5]	38 ft bgs[7]	34.89-38 ft bgs[7]	11/6/2006[7]	11/6/2006[7]	N/P
EW-01	EW	ID = 4" steel inside full size manhole	338.26 ft amsl[5]	338.21 ft amsl[5]	N/P	332.56* ft amsl[4]	0.0 ft bgs[5]	39.0 ft bgs[1]	24.25-34.25 ft bgs[8]	N/P	N/P	N/P
EW-02	EW	ID = 4" steel inside full size manhole	337.34 ft amsl[5]	337.67 ft amsl[5]	N/P	332.27* ft amsl[4]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
EW-03	EW	ID = 4" steel inside full size manhole	337.41 ft amsl[5]	337.78 ft amsl[5]	N/P	332.08* ft amsl[4]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
EW-04	EW	ID = 4" steel inside full size manhole; taken off-line due to burnt breaker switch and pump motor failure[12]	336.32 ft amsl[5]	336.85 ft amsl[5]	N/P	332.28* ft amsl[4]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
GMS-02	MW	ID = 2" PVC, locking well cap, flushmount	339.93 ft amsl[5]	339.75 ft amsl[5]	N/P	339.59 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	May 2016
GMS-04	MW	ID = 2", locking well cap, flushmount	339.95 ft amsl[5]	339.74 ft amsl[5]	N/P	339.60 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
IW-10	IW	ID = 6" steel; stickup	333.60 ft amsl[5]	335.29 ft amsl[5]	N/P	333.80 ft amsl[5]	0.20 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
IW-11	IW	ID = 6" steel; flushmount	333.48 ft amsl[5]	333.30 ft amsl[5]	N/P	333.30 ft amsl[5]	0.0 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
IW-12	IW	ID = 6" steel; stickup	333.04 ft amsl[5]	335.19 ft amsl[5]	N/P	333.37 ft amsl[5]	0.33 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
IW-5	IW	ID = 6" steel; stickup	334.08 ft amsl[5]	334.03 ft amsl[5]	N/P	334.64 ft amsl[5]	0.56 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
IW-6	IW	ID = 6" steel; stickup	334.22 ft amsl[5]	335.23 ft amsl[5]	N/P	334.24* ft amsl[4]	N/P	N/P	N/P	N/P	N/P	N/P
IW-7	IW	ID = 6" steel; stickup	334.62 ft amsl[5]	334.52 ft amsl[5]	N/P	334.21* ft amsl[4]	N/P	N/P	N/P	N/P	N/P	N/P
IW-8	IW	ID = 6" steel; stickup	334.40 ft amsl[5]	335.21 ft amsl[5]	N/P	334.23* ft amsl[4]	N/P	N/P	N/P	N/P	N/P	N/P
IW-9	IW	ID = 6" steel; stickup	333.66 ft amsl[5]	333.77 ft amsl[5]	N/P	334.29 ft amsl[5]	0.63 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
ERT-EW-5 (RW-5	EW	ID = 6" PVC, Sch 80, PVC cap, flushmount	338.28 ft amsl[5]	338.18 ft amsl[5]	N/P	337.78 ft amsl[5]	0.0 ft bgs[5]	34.50 ft btoc[3]	17.24-37.24 ft btoc[7]	11/1/2006[7]	11/2/2006[7]	May 2016
ERT-EW-6 (RW-6	MW & EW	ID = 4" PVC, flushmount, destroyed	338.33 ft amsl[5]	337.90 ft amsl[5]	N/P	337.74 ft amsl[5]	0.0 ft bgs[5]	20.08 ft btoc[3]	10.04-20.08 ft btoc[7]	11/2/2006[7]	11/2/2006[7]	N/P
T-EW-6 (RW-6 2	EW	ID = 4" PVC, flushmount	N/P	N/P	N/P	N/P	0.0 ft bgs[3]	33.75 ft btoc[3]	N/P	N/P	N/P	May 2016
ERT-EW-7 (RW-7	EW	ID = 6" PVC, flushmount	338.30 ft amsl[5]	338.20 ft amsl[5]	N/P	337.86 ft amsl[5]	0.0 ft bgs[5]	36.30 ft btoc[3]	16.18-36.18 ft btoc[7]	11/2/2006[7]	11/2/2006[7]	May 2016
SG-1	Village DW	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
SG-2	Village DW	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
SG-3	Village DW	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
SG-4	Village DW	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
TH-11A	MW	ID = 2" PVC, stickup	332.29 ft amsl[4]	N/P	N/P	332.62 ft amsl[4]	0.33 ft bgs[4]	N/P	N/P	N/P	N/P	N/P
TH-11B	MW	ID = 2" PVC, stickup	332.45 ft amsl[4]	N/P	N/P	334.70 ft amsl[4]	2.25 ft bgs[4]	N/P	N/P	N/P	N/P	May 2013
TH-12	MW	N/P	N/P	N/P	N/P	N/P	N/P	35.0 ft bgs[1]	302.1-316.8 ft amsl[8]	N/P	N/P	N/P
TH-13	MW	ID = 1.5" pvc, stickup, 4" outer casing, blank rubber cap	337.81 ft amsl[5]	338.21 ft amsl[5]	N/P	338.20 ft amsl[5]	0.39 ft bgs[5]	N/P	N/P	N/P	N/P	N/P
TH-6	MW	ID = 2" PVC, stickup	333.64 ft amsl[4]	N/P	N/P	337.05 ft amsl[4]	3.41 ft bgs[4]	22.9 ft bgs[1]	315.0-324.6 ft amsl[8]	N/P	N/P	May 2013
TH-7	MW	ID = 2" PVC, stickup	335.44 ft amsl[4]	N/P	N/P	337.35 ft amsl[4]	1.91 ft bgs[4]	35.0 ft bgs[1]	305.9-311.9 ft amsl[8]	N/P	N/P	May 2016
TH-9	MW	ID = 2" PVC, stickup	332.84 ft amsl[4]	N/P	N/P	333.64 ft amsl[4]	0.80 ft bgs[4]	28.2 ft bgs[1]	326.1-329.1 ft amsl[8]	N/P	N/P	May 2016

Notes:
1 = Figures 3a through 3d of RI/FS July 1984
2 = Laboratory reports May 2008 through May 2016 by H2H/Pace Analytical
3 = Well Configuration Figures 4 Sept 2008 and 10 Oct 2013
4 = 2011 Badey & Watson Well Survey; Assume well elevation measured from top of casing since CDM-1 through CDM-3 elevations are identical to their 2006 survey's top of casing elevations
5 = 2006 Maser Well Survey
6 = CDM Wells Survey Data.xls (2006)
7 = EarthTech Well Installation Trip Report 14 Dec 2006
8 = Monitoring Well Construction Details from Boring Logs of Appendix G and Well Construction Details of Appendix H of RI July 1984; Top of casing (Well elevation) calculated as stickup + ground elevation
9 = CDM-1 Well Construction Summary 2009
12 = EPA Second Five-Year Report Addendum 9.2009
ags = above ground surface
amsl = above mean sea level
bgs = below ground surface
btoc = below top of casing
DW = Drinking Water
EW = Extraction Well
ft = feet
ID = Interior diameter
MW = Monitoring Well
N/P = Not Provided
* = Well elevation taken at bottom of manhole
** = Well elevation taken at cross mark set on flange

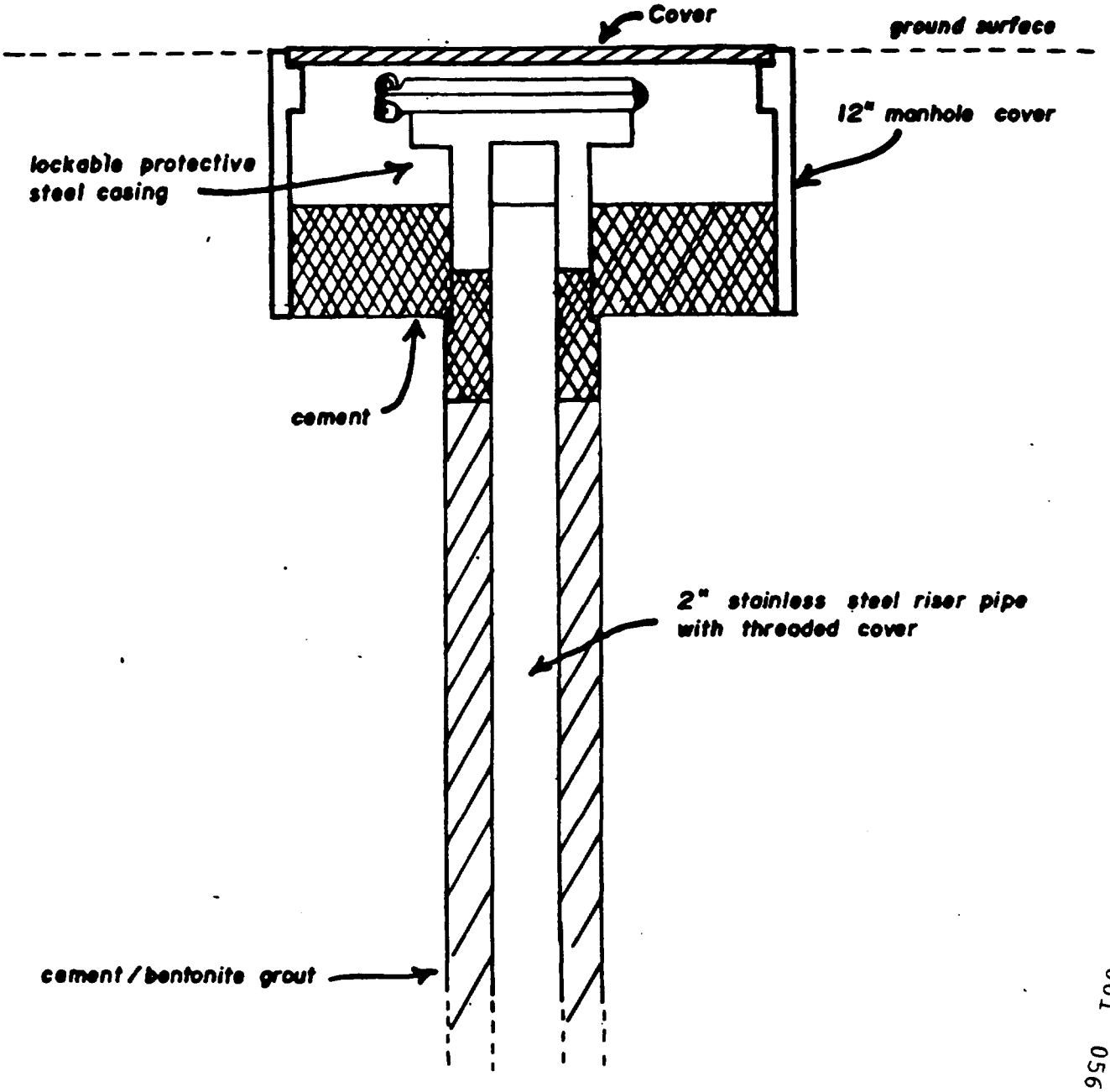
Appendix D

APPENDIX H

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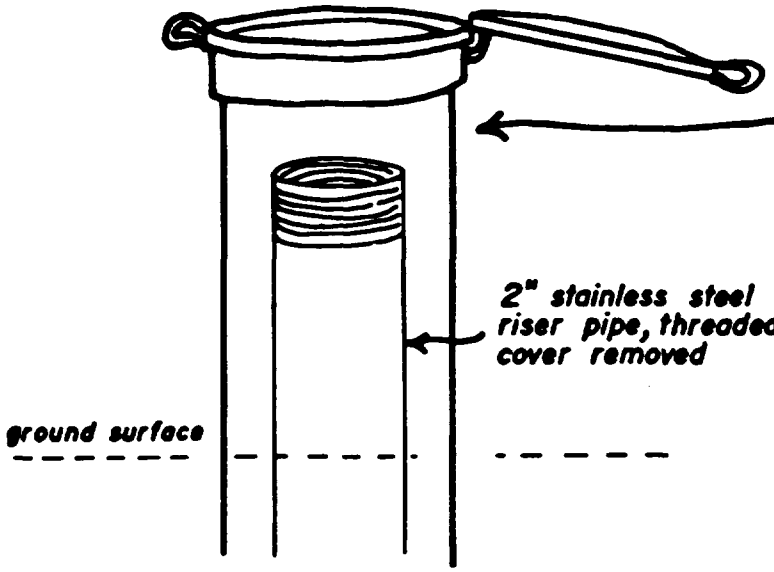
MONITORING WELL CONSTRUCTION DETAIL
TOP PORTION OF WELL

TYPICAL SUBGRADE SHALLOW AND INTERMEDIATE WELL CONSTRUCTION

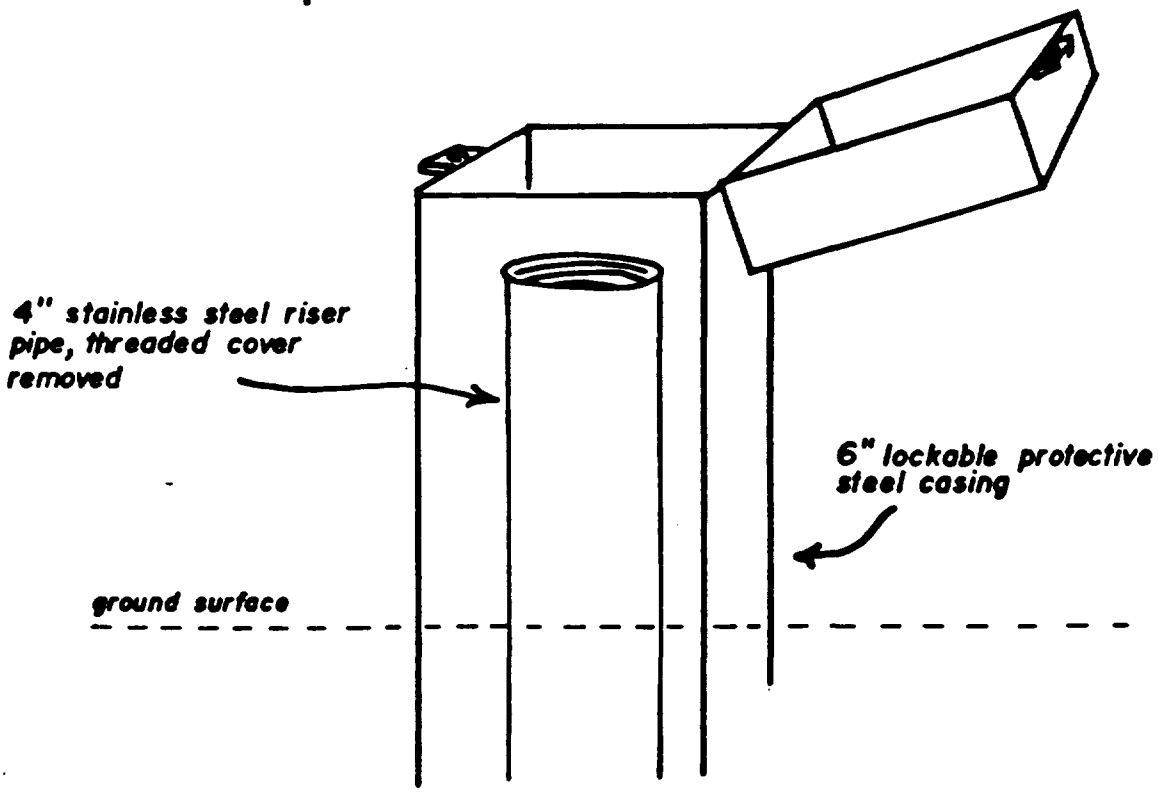


MONITORING WELL CONSTRUCTION DETAIL
TOP PORTION OF WELL

TYPICAL ABOVE GROUND SHALLOW AND INTERMEDIATE WELL CONSTRUCTION

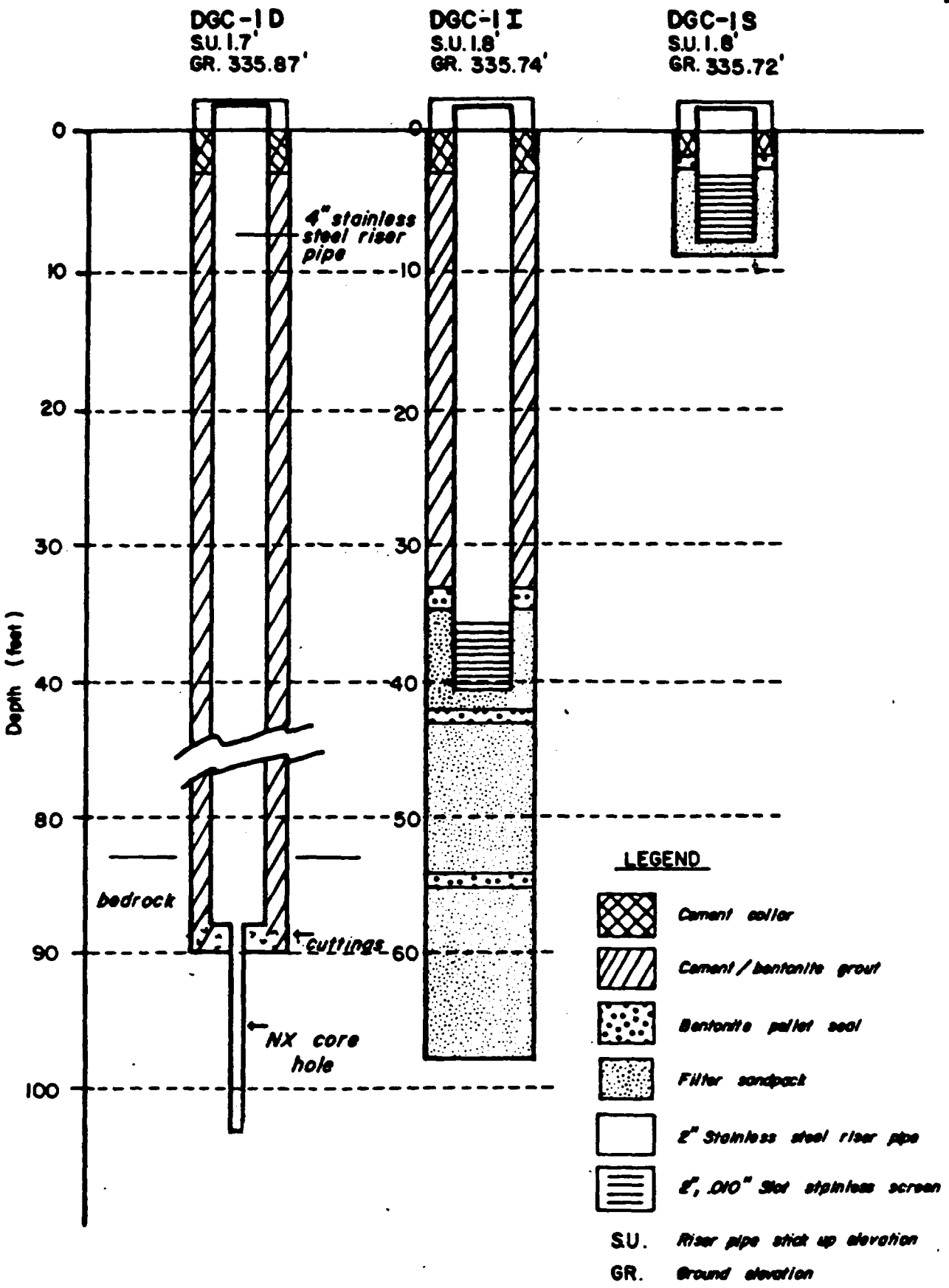


TYPICAL ABOVE GROUND DEEP WELL CONSTRUCTION



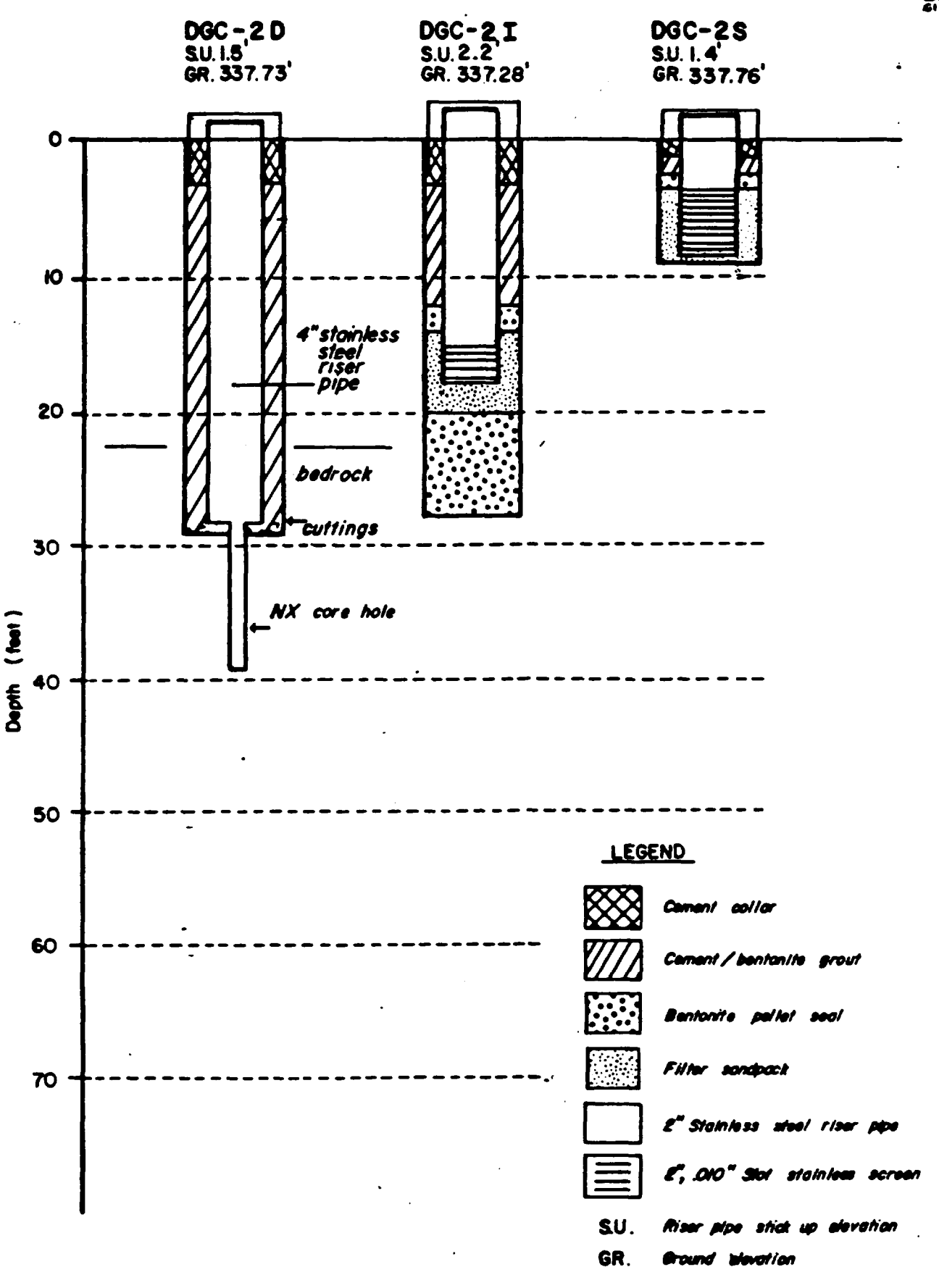
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MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



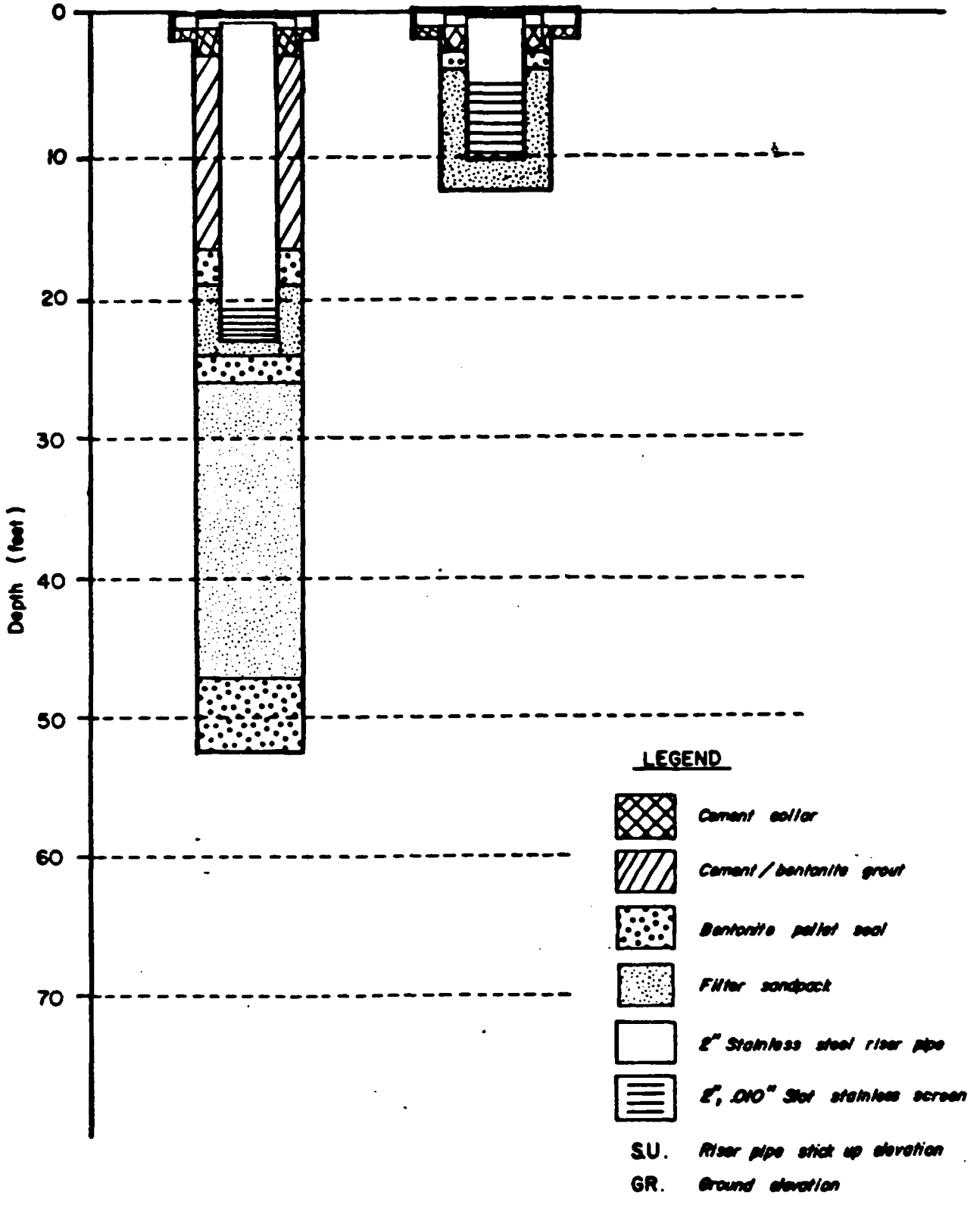
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MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



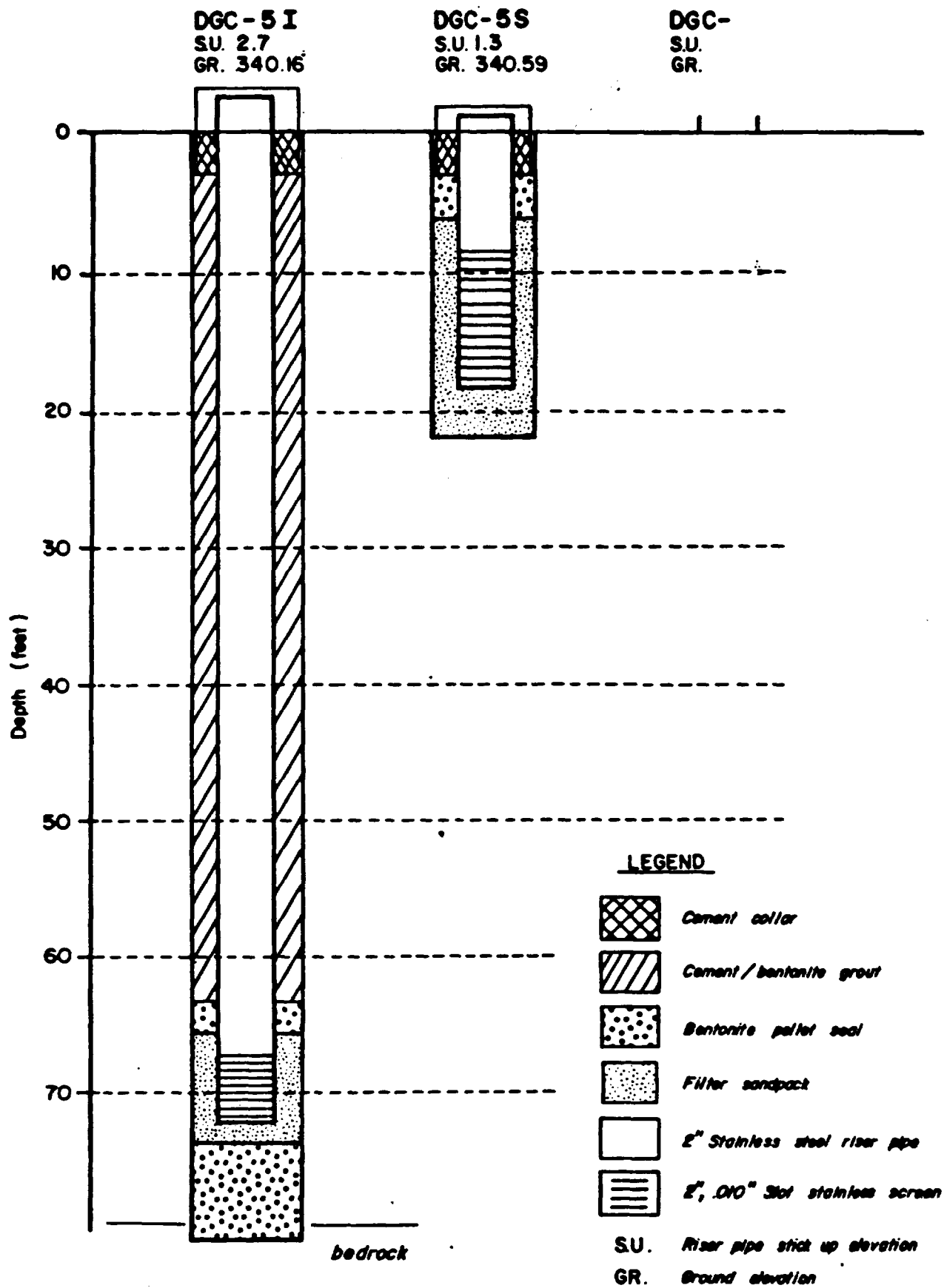
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MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



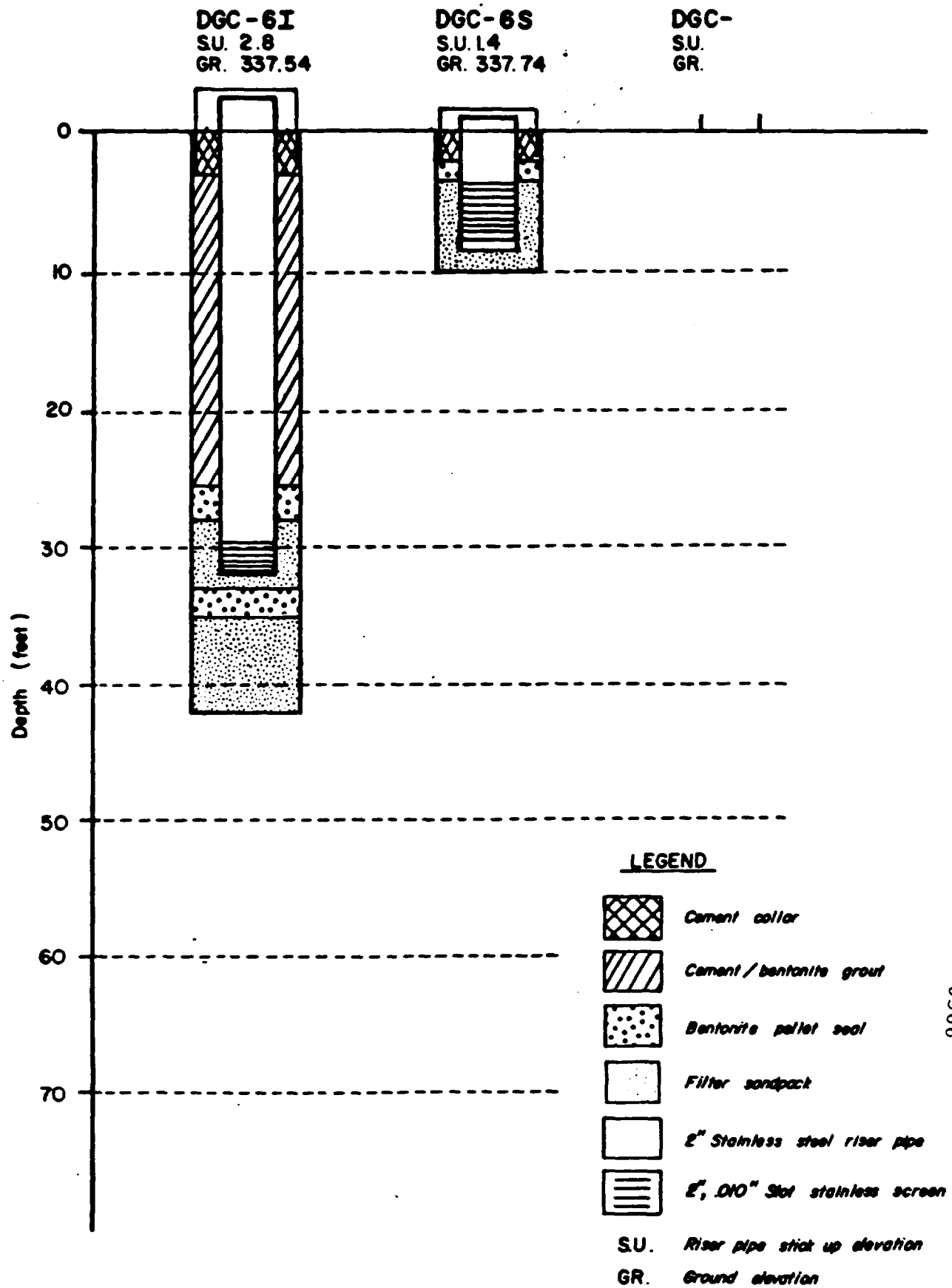
BWF 001 0564

MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



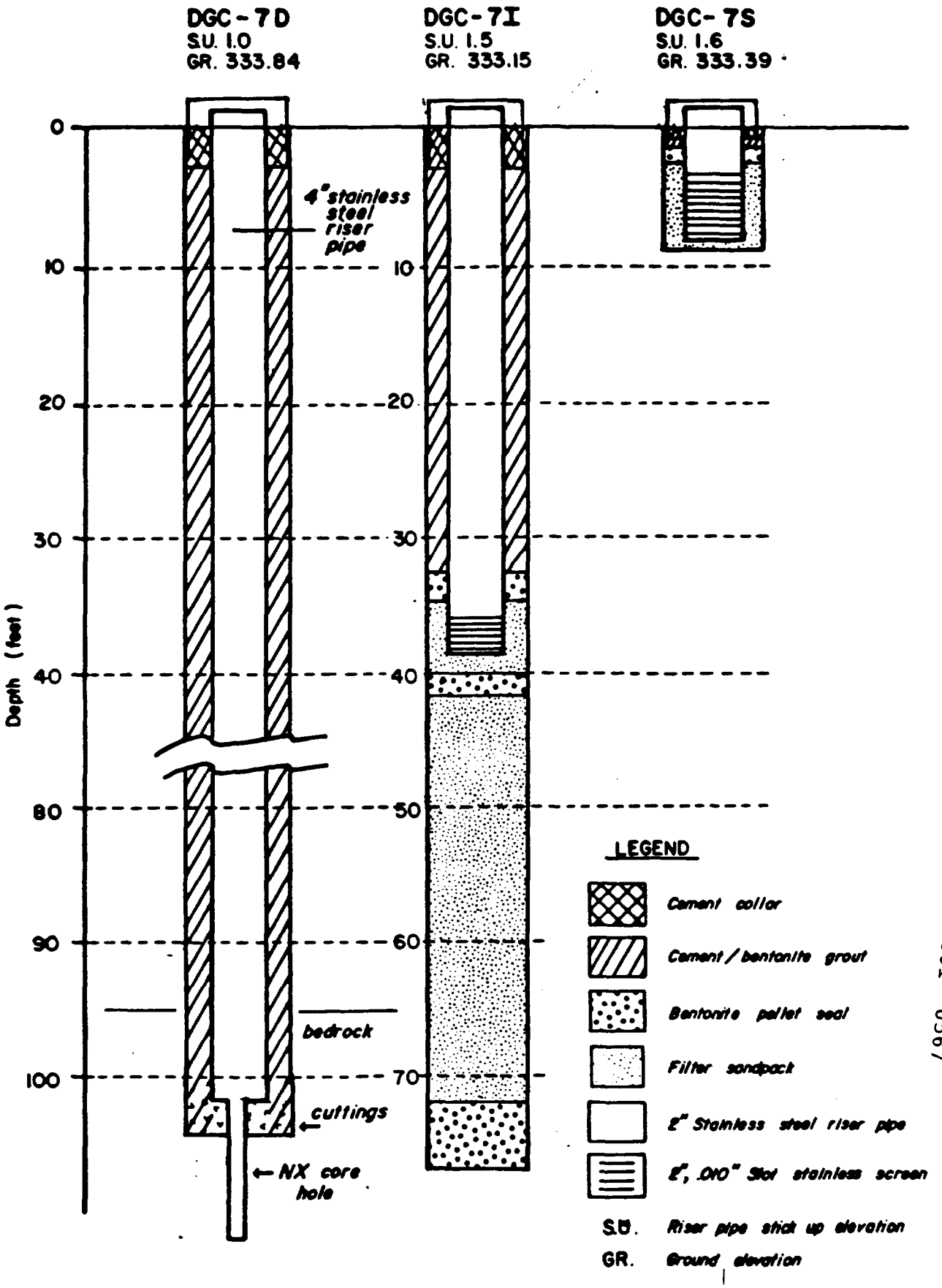
PWF 001 0565

MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



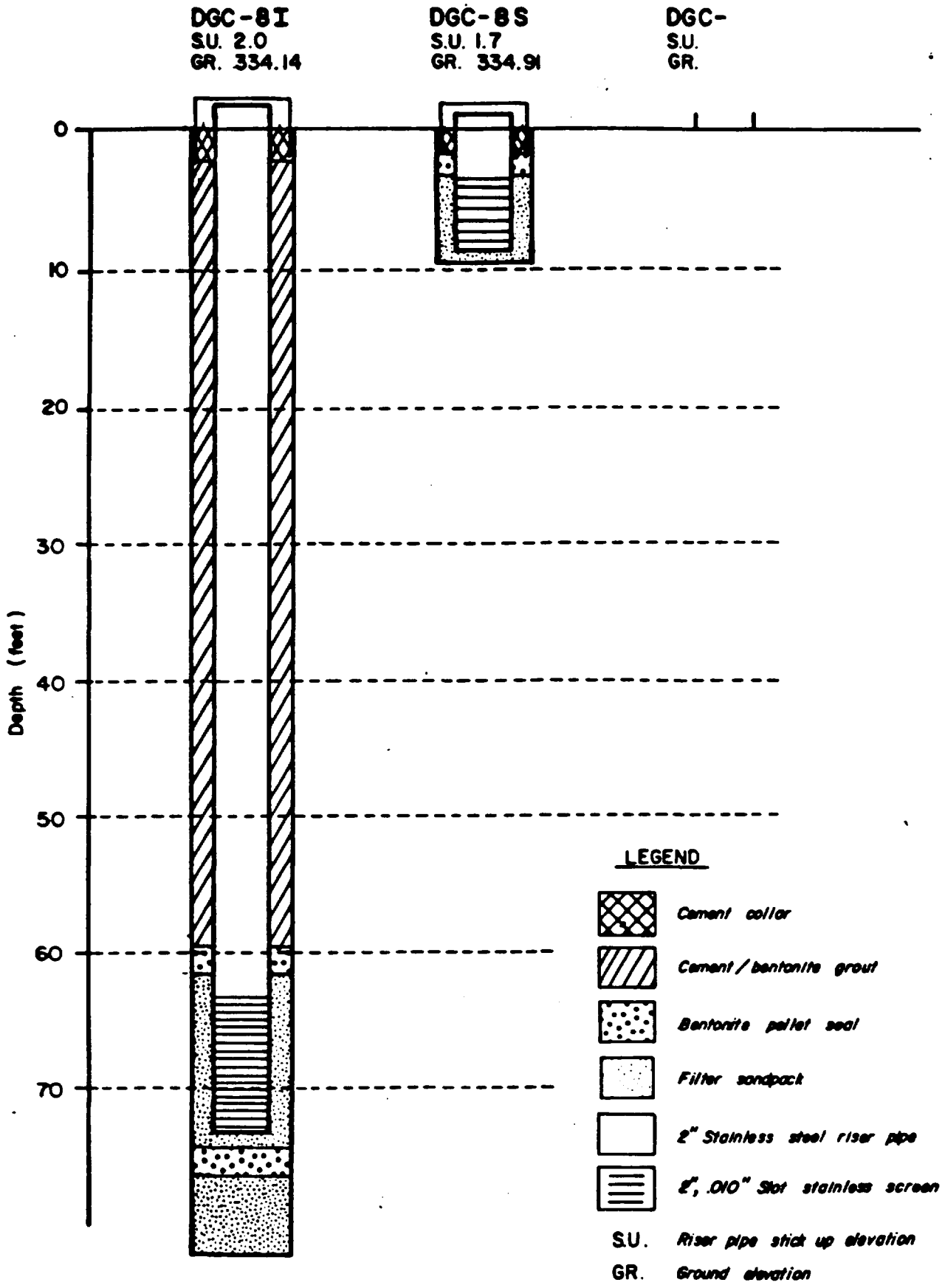
RWF 001 0566

MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



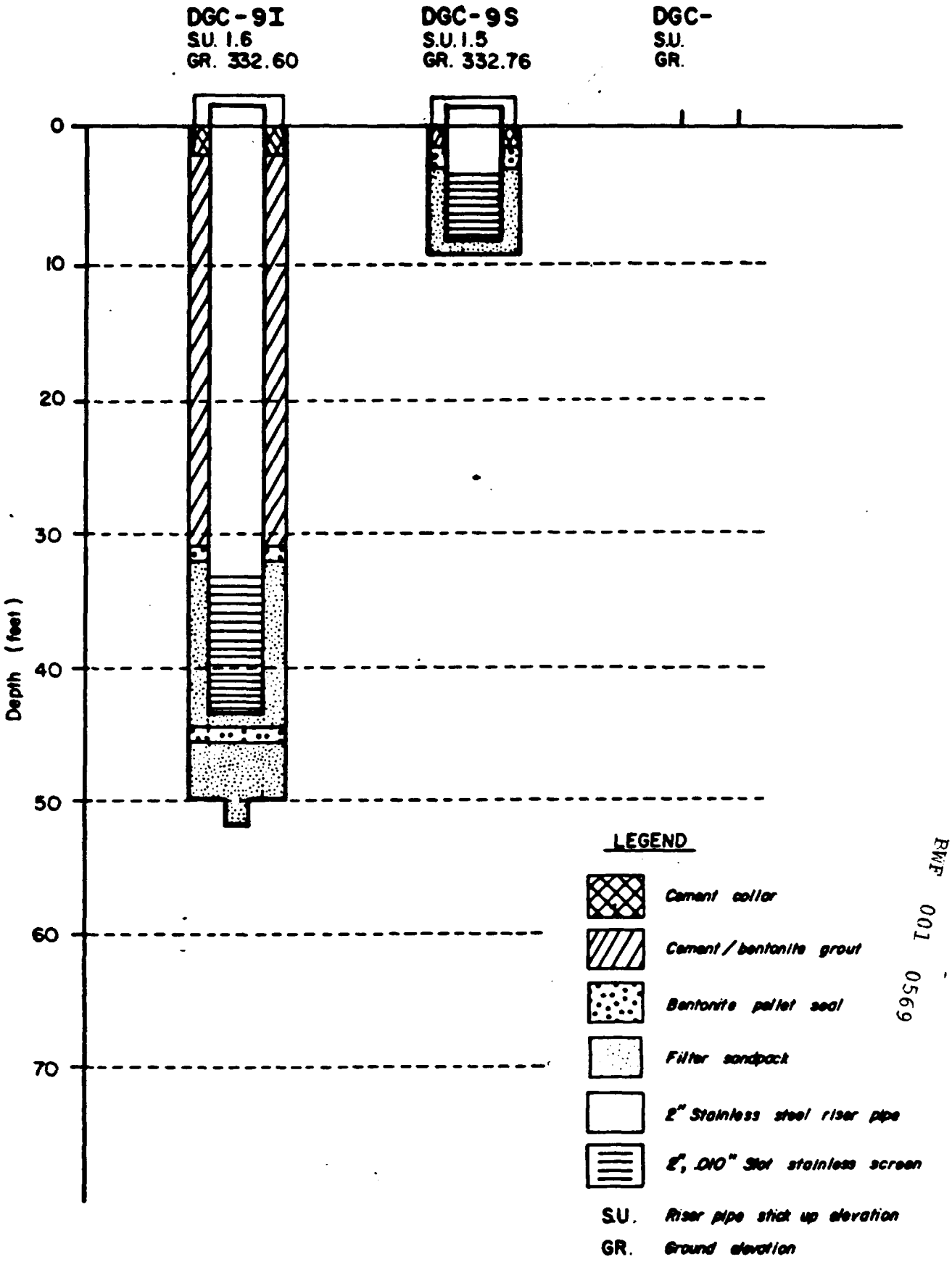
EMF 001 0567

MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



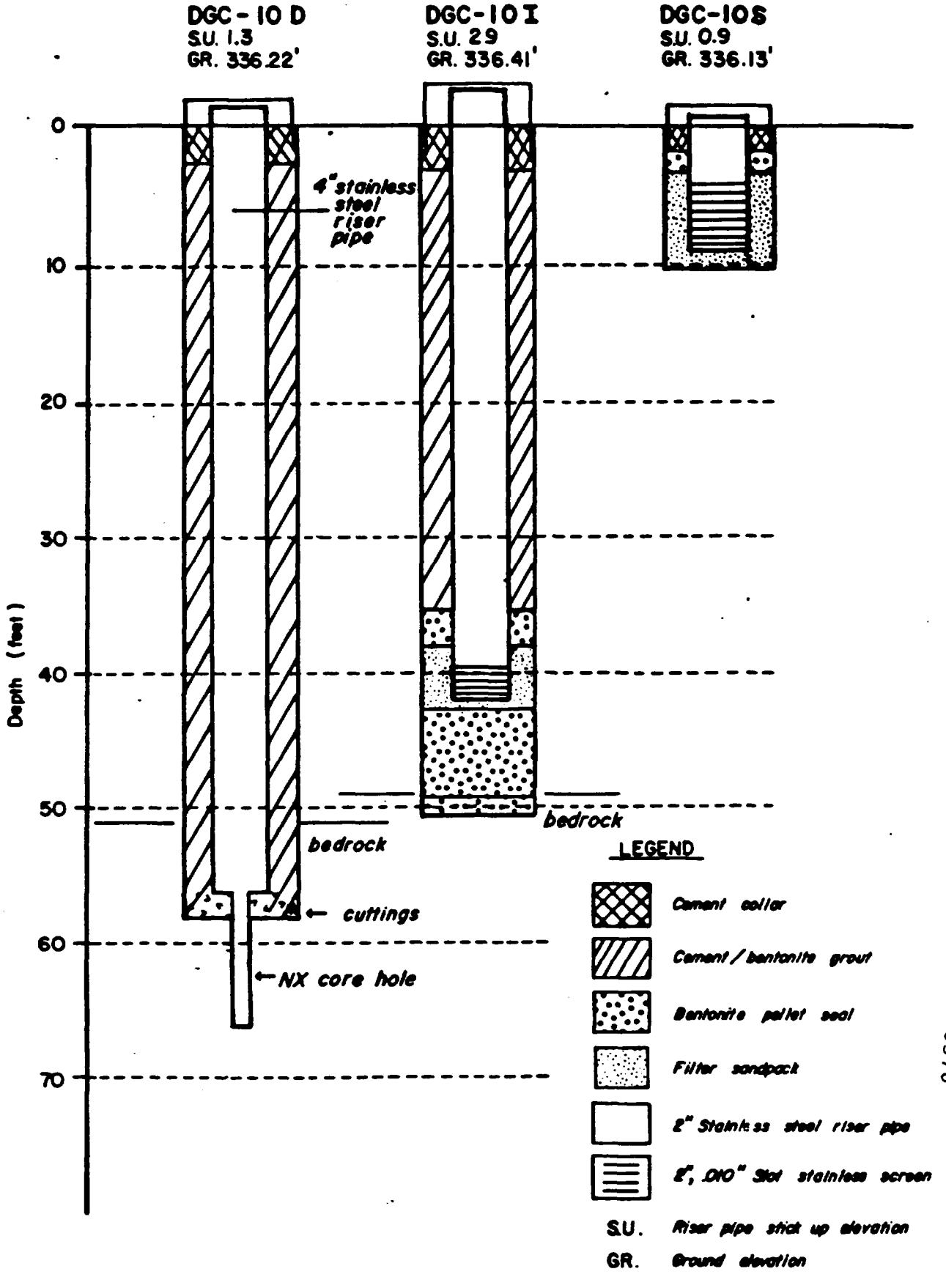
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MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



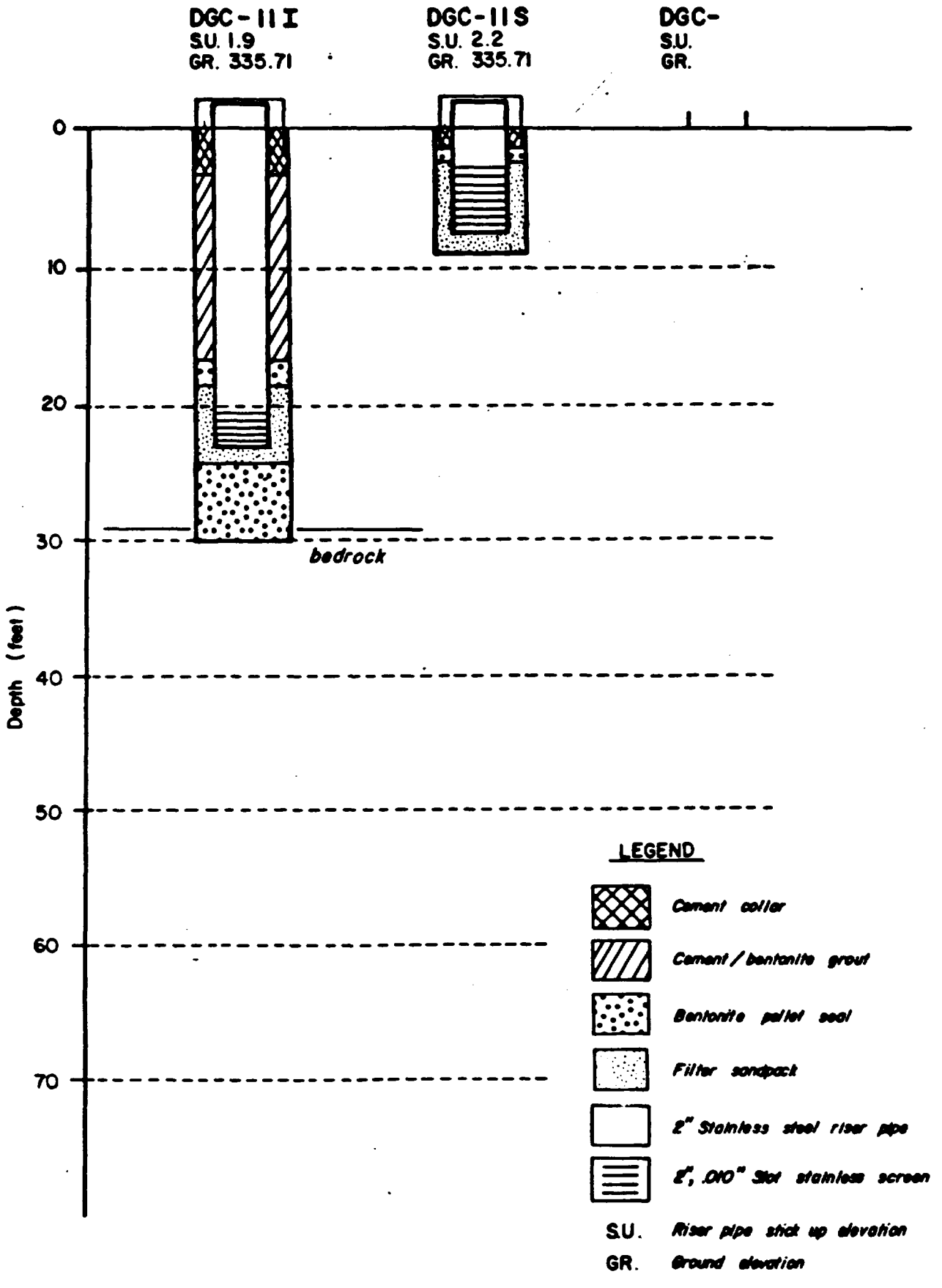
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MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



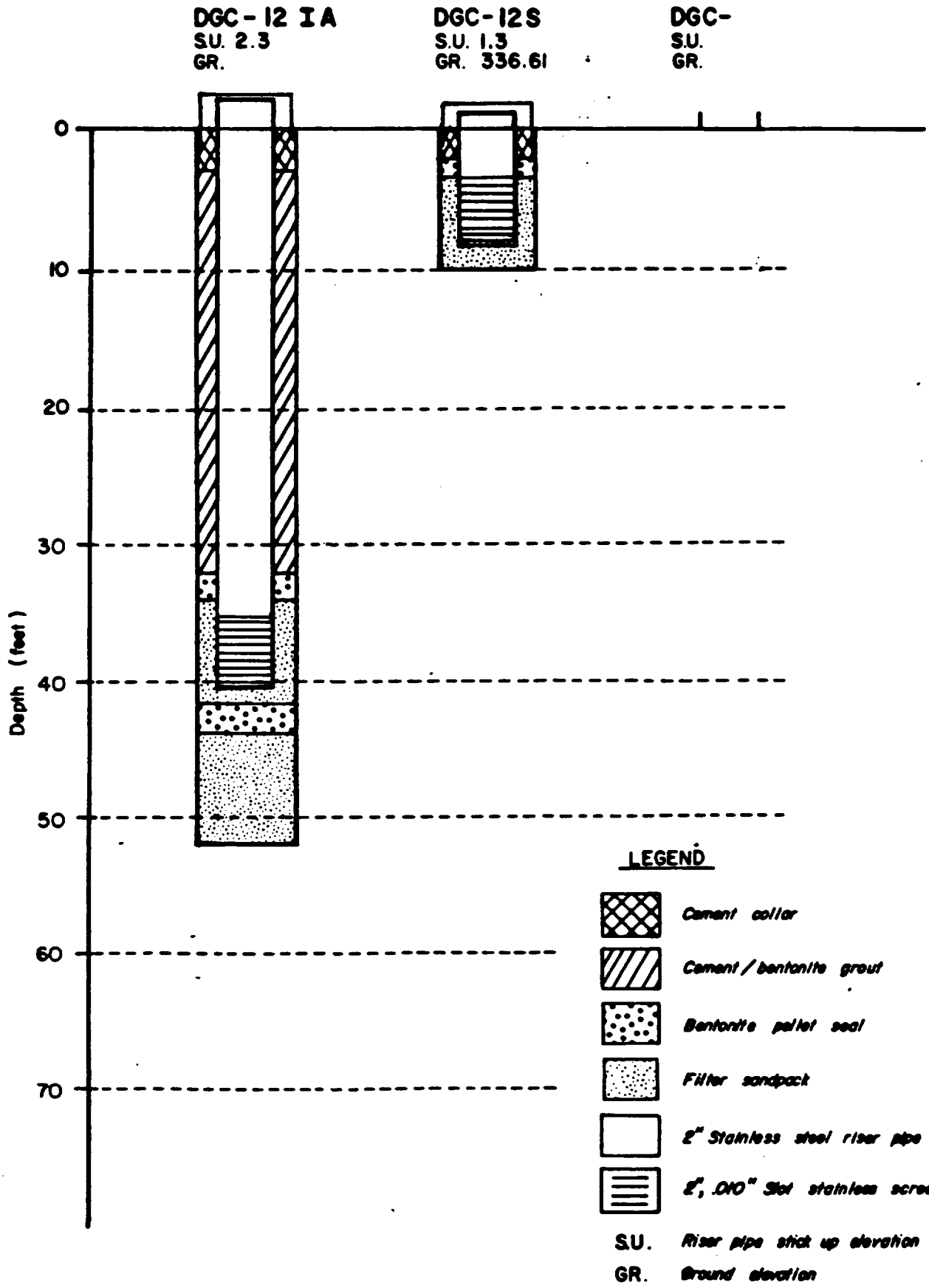
BWF 001 0570

MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



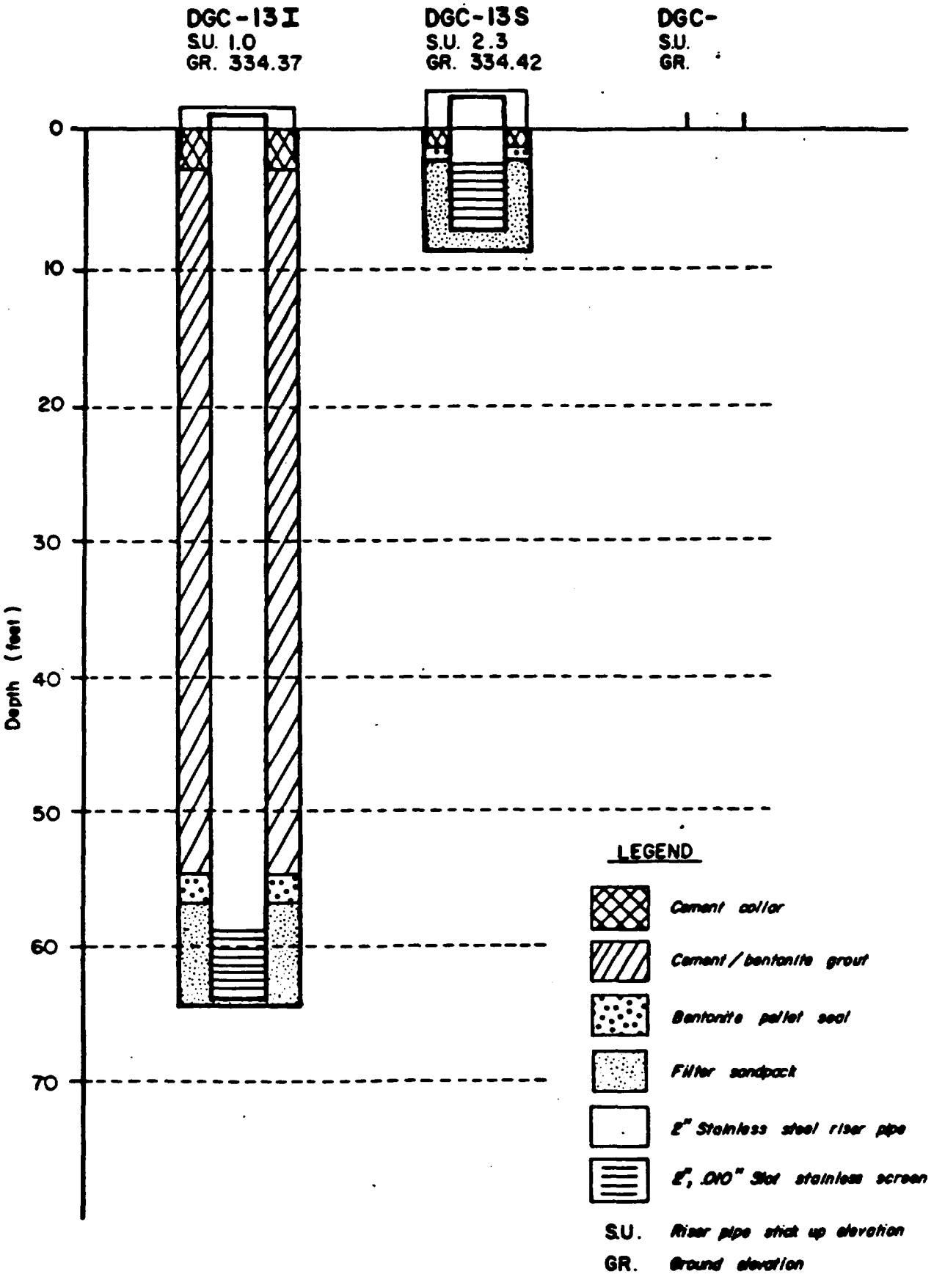
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MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



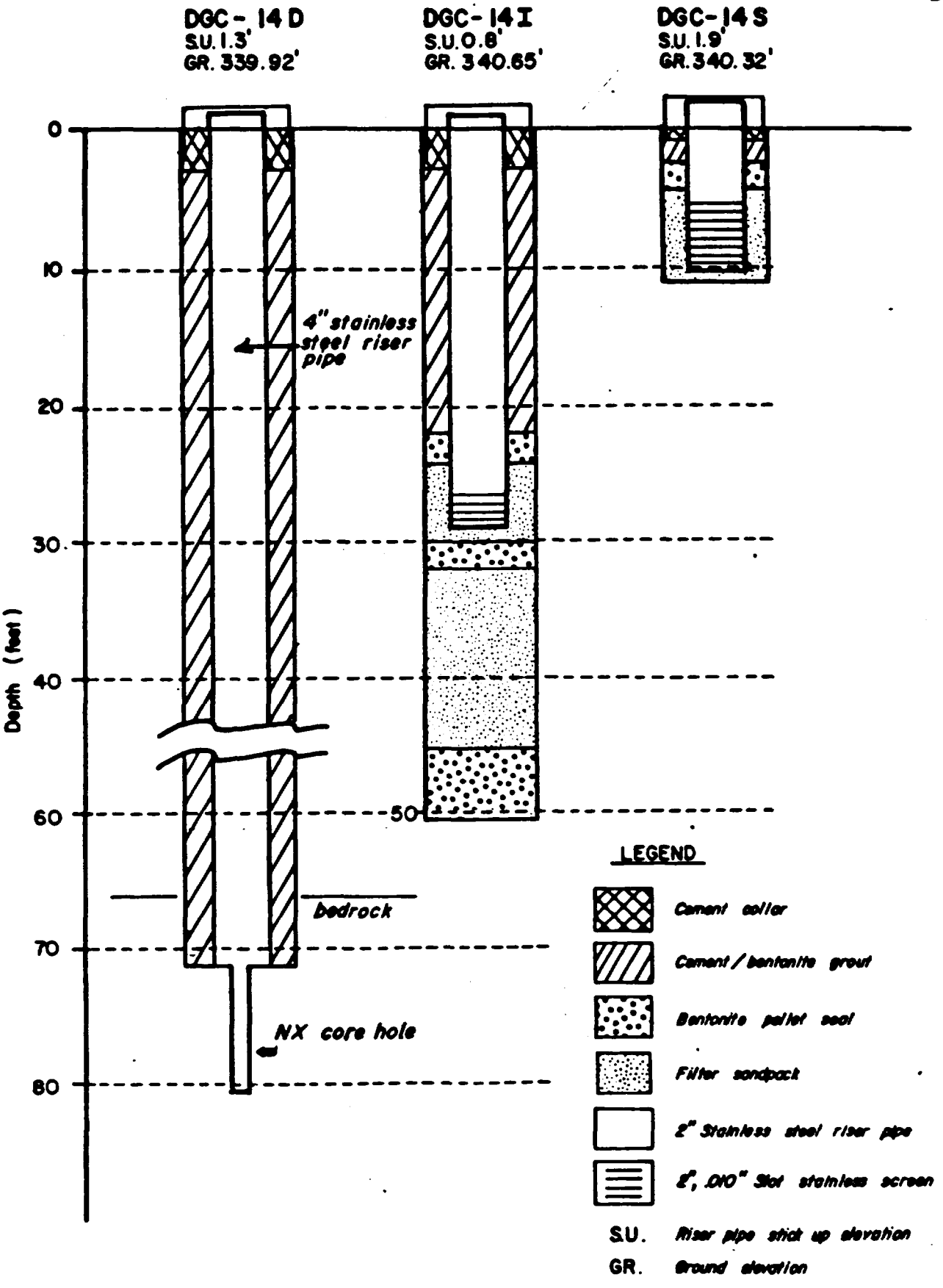
EWF 001 0572

MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



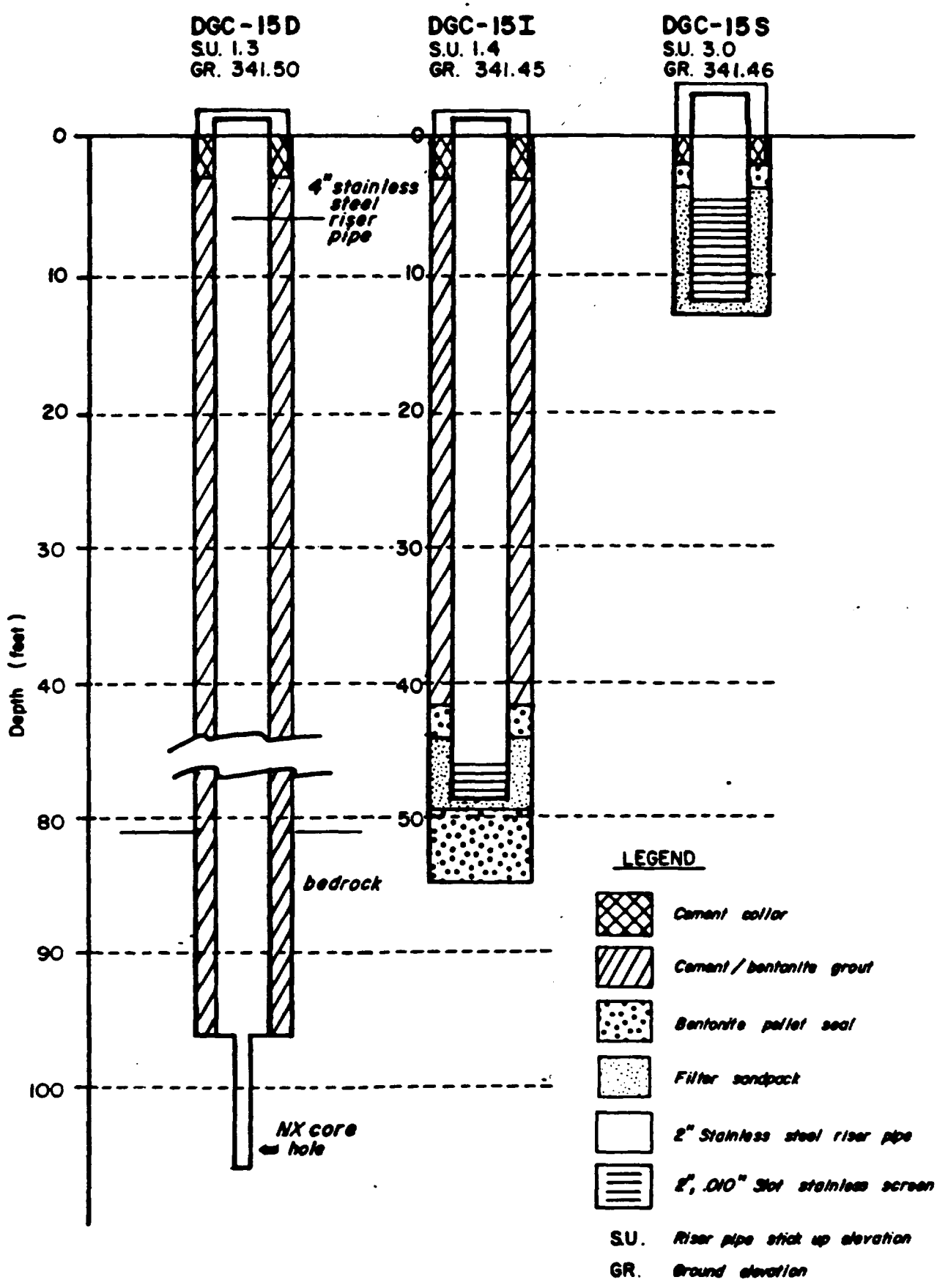
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MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



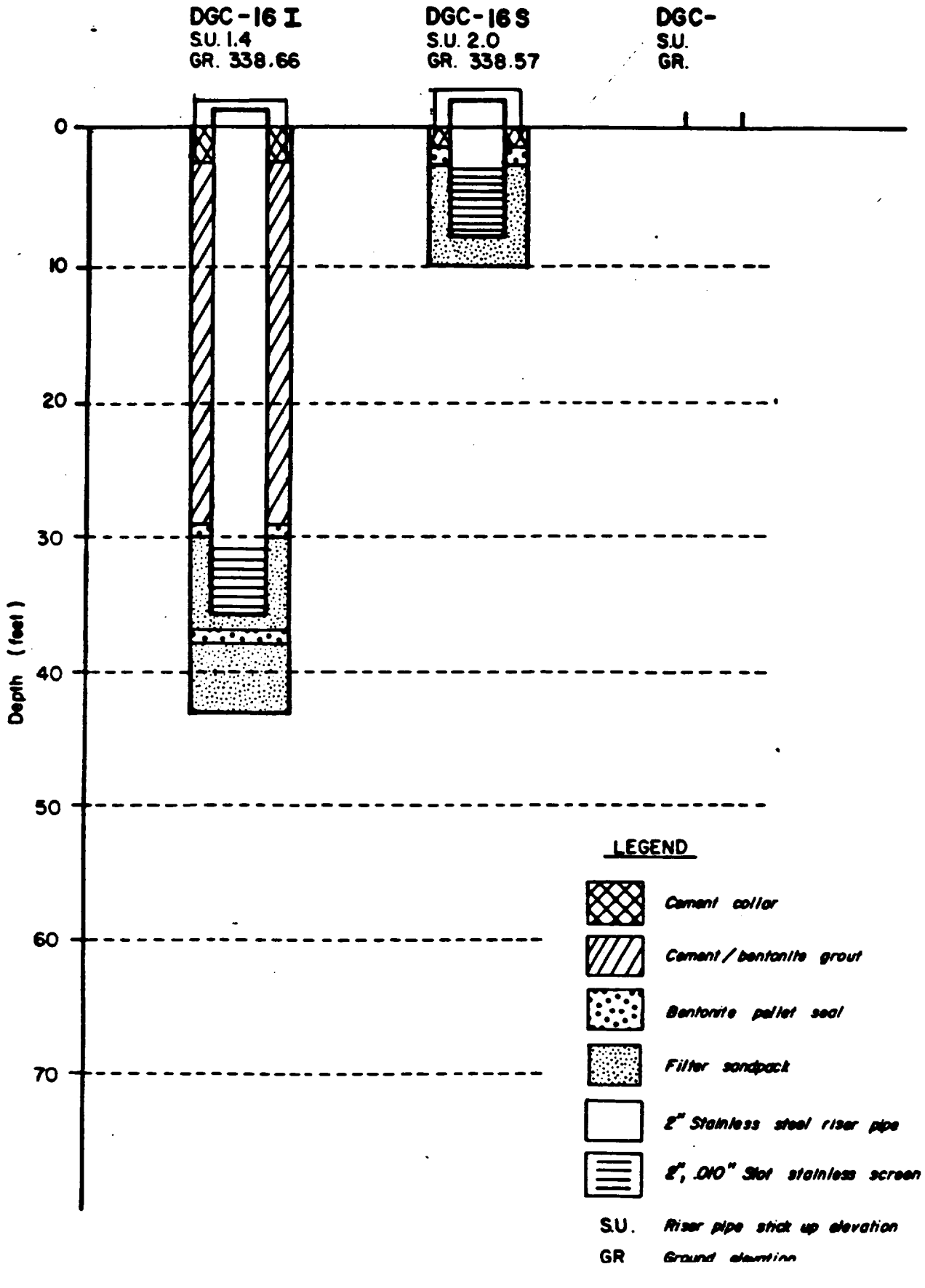
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MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



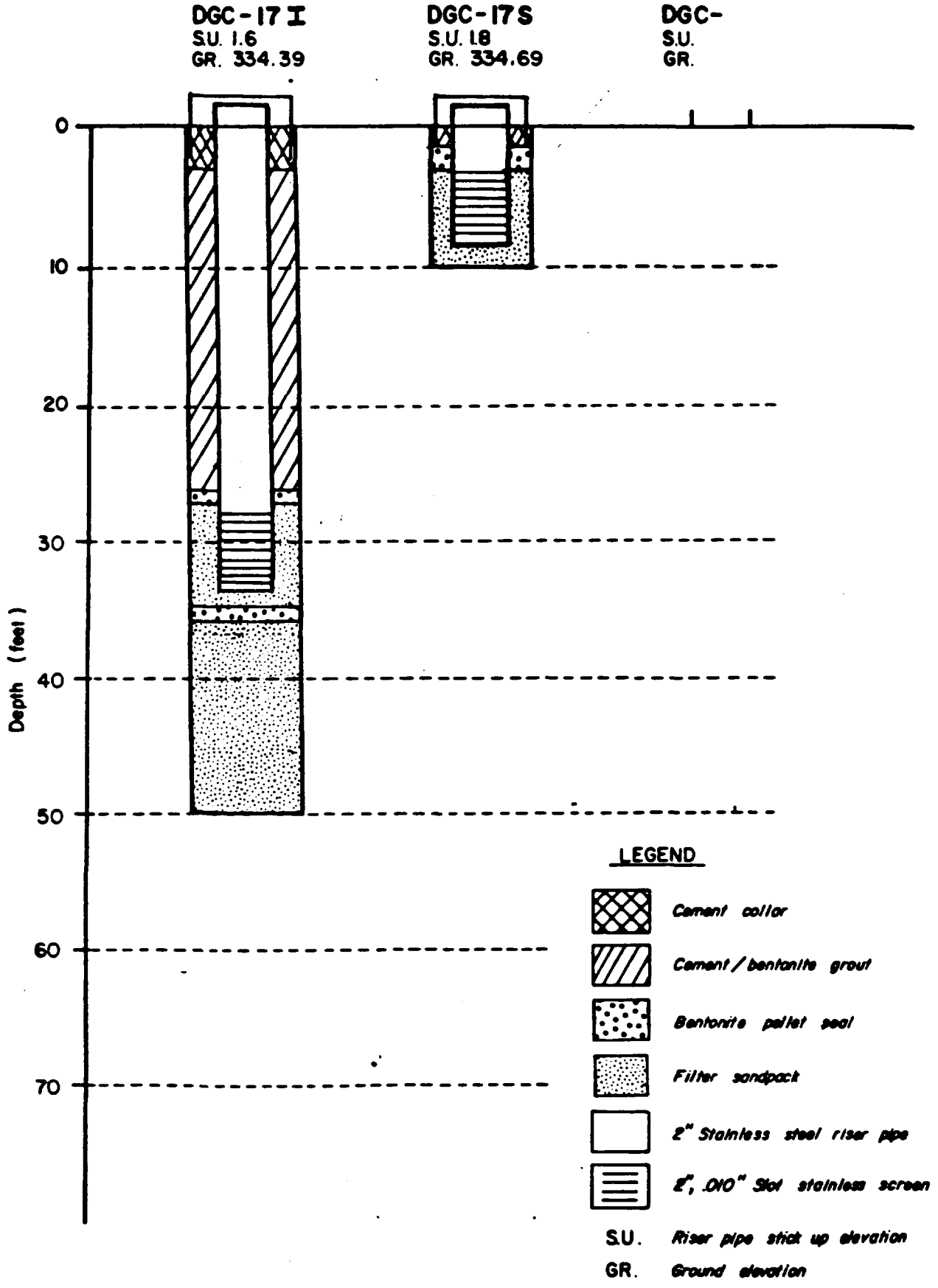
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MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



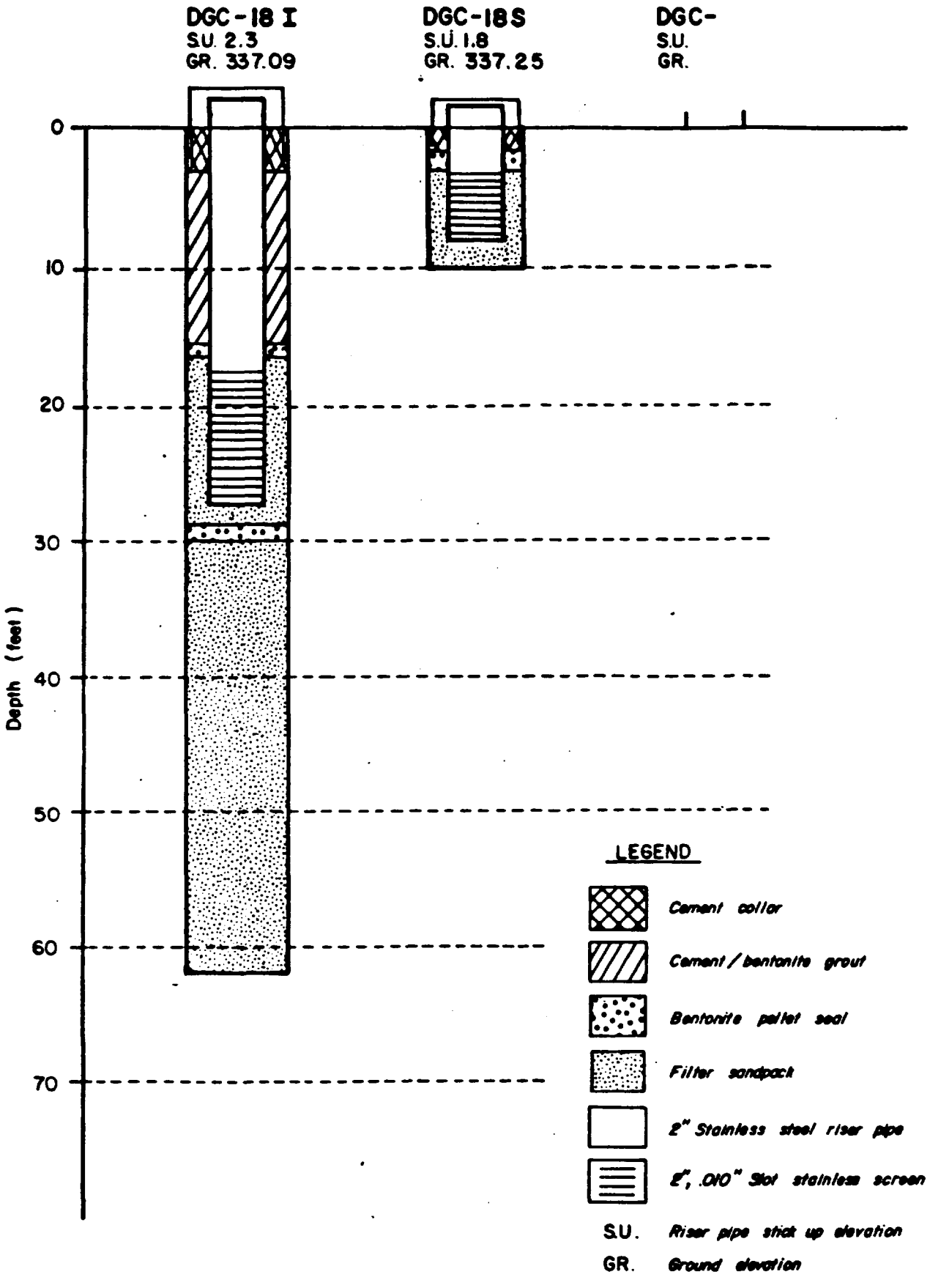
BWF 001 0576

MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



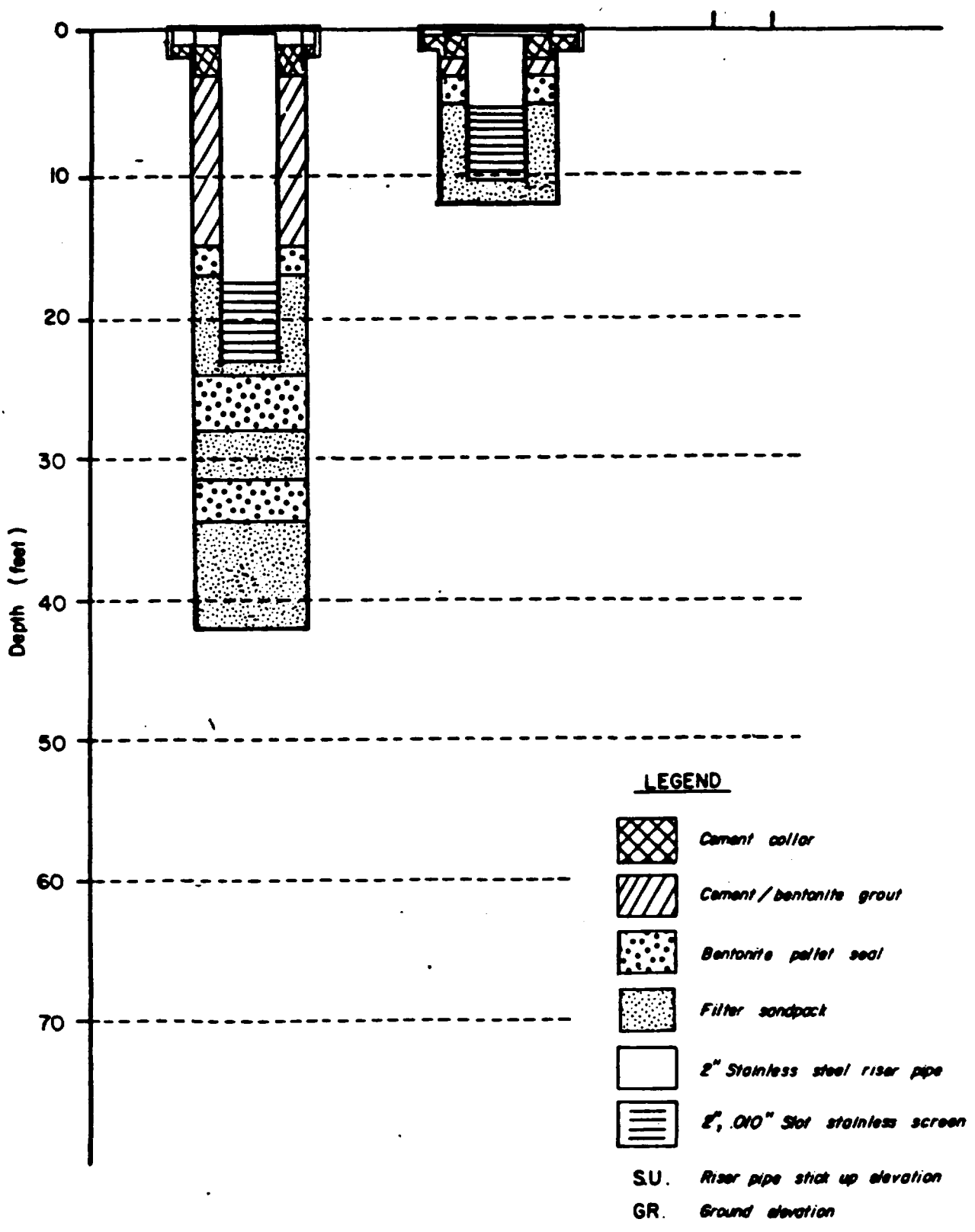
BWF 001 0577

MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



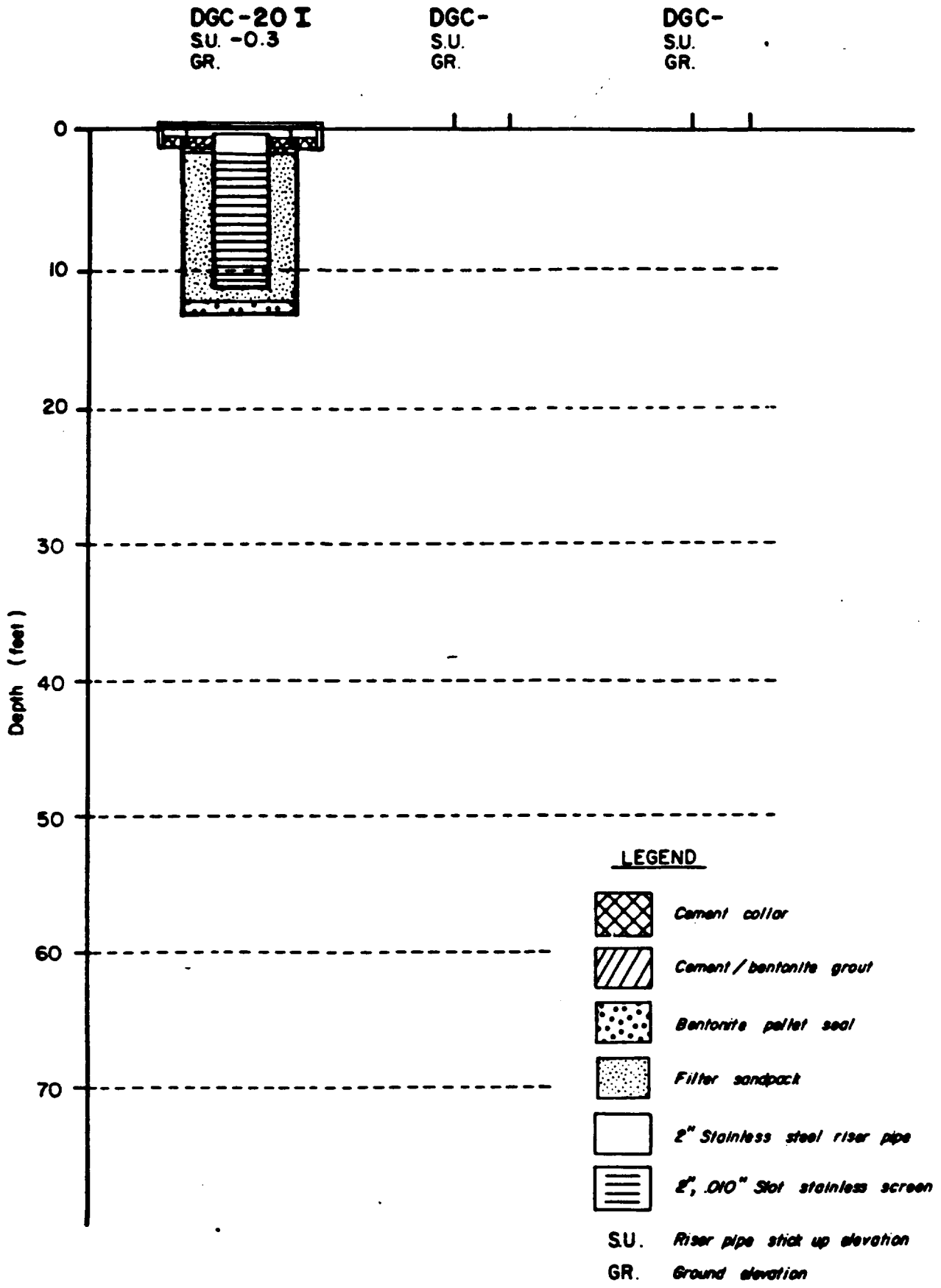
EMF 001 0578

MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



BMF 001 0579

MONITORING WELL CONSTRUCTION DETAIL
BREWSTER WELL FIELD
REMEDIAL INVESTIGATION



BWF 001 0580

DATE: December 14, 2006

TO: Lou DiGuardia, On-Scene Coordinator
United States Environmental Protection Agency
Region II
2890 Woodbridge Avenue, Building 209
Edison, New Jersey 08837

FROM: Leslee Alexander
Hydrogeologist
Earth Tech, Inc.

SUBJECT: Well Installation Trip Report
Brewster Well Field Superfund Site (NYD980652275)
Village of Brewster, Putnam County, New York

Dear Mr. DiGuardia,

This letter presents documentation for field work performed by Earth Tech during well installation activities at the Brewster Well Field Superfund Site, located at the intersection of I-84 and Route 22 in the Village of Brewster, Putnam County, New York (Figure 1). The work was performed at the request of the United States Environmental Protection Agency (U.S. EPA) Region II and was completed during the period of October 30, 2006 through November 8.

Drilling activities were managed by Lockheed Martin/REAC personnel. Earth Tech provided additional oversight and support for well installations between October 31, 2006 and November 6, 2006, including logging soil lithology, monitoring the soil headspace and the breathing zone for organic vapors, and recording well construction details. Lockheed Martin/REAC personnel performed drilling support activities on November 7 and 8, 2006. Activities completed by Earth Tech were recorded in the Daily Quality Control Reports (DQCRS) included in Attachment A. These activities are described in the paragraphs below.

Eight 2-inch monitoring wells (ERT-8D, ERT-8I, ERT-8S, ERT-9D, ERT-9I, ERT-10D, ERT-10I, and ERT-19D) were installed in front of the Subaru dealership and along the GMS access road to help delineate residual contamination. In addition, two 6-inch extraction wells (ERT-EW-5 and ERT-EW-7) and one combination monitoring and extraction well (ERT-EW-6) were installed in front of the Subaru dealership to provide groundwater extraction capability immediately down-gradient of the source area (i.e., former dry well location in the vicinity of ERT-6). One multipoint air sparge well (ERT-SPR-1) was installed immediately up-gradient of the source area to provide a possible alternative treatment method. Figure 2 depicts the locations of the new wells in reference to the Site features and existing well locations.

All drilling and well installation activities were completed by Prosonic Corporation, located in Medford, New Jersey, using a model SR-077 rotosonic rig. Soil lithologic details and headspace screening results for each boring were recorded on Test Boring Reports by an Earth Tech geologist or a Lockheed Martin/REAC geologist and are included in Attachment A. Well construction details were recorded in the field on Well Installation Detail logs, which are included in Attachment A. Photographs were taken to document well installation activities and are included as a Photo Log in Attachment B.

Please feel free to contact me at 864-234-2282 or via e-mail at leslee.Alexander@earthtech.com if you have any further questions.

Very truly yours,

Earth Tech, Inc.



Leslee J. Alexander

Attachments

c: James Kearns, Earth Tech
Jeff Catanzarita, U. S. EPA ERT
Project File 92066

FIGURES



SOURCE: TERRASERVER DRG (DANBURY CONNECTICUT, UNITED STATE). PROJECTION: WGS84; UNITS: ARC DEGREES. WEST LONGITUDE=73° 41' 21.12" W, NORTH LATITUDE=41° 32' 04.13" N, EAST LONGITUDE=73° 17' 43.51" W, SOUTH LATITUDE= 41° 14' 20.55"N.

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A tyco International Ltd. Company

FIGURE 1
SITE LOCATION MAP

BREWSTER WELL FIELD SUPERFUND SITE
VILLAGE OF BREWSTER - TOWN OF SOUTHEAST
PUTNAM COUNTY, NEW YORK

92066.01

DECEMBER 2006

DGC-10I
DGC-10D
DGC-10S
DGC-5I
DGC-5S
DGC-11I
DGC-11S
DW-2
SG-3
SG-1
SG-4
TH-6
DGC-2D
DGC-2S
DGC-2I
TH-11A
TH-11B
DGC-1S
DGC-1D
DGC-1I
SG-2
TH-9
DGC-12A
DGC-12S
DGC-13I
DGC-13S
DGC-15I
DGC-15S
DGC-15D
DGC-9S
DGC-9I
TH-7
DGC-8I
DGC-8S
DGC-7I
DGC-7S
DGC-7D
IW-12
IW-11
IW-10
IW-9
IW-8
IW-7
IW-6
IW-5
DGC-6I
DGC-17I
GMS BLDG
EW-4
EW-3
EW-2
EW-1
ERT-10D
ERT-10I
DGC-16I
DGC-16S
DGC-18I
DGC-18S
GMS-02
DGC-3S
DGC-3I
ERT-8I
ERT-8S
ERT-8D
DGC-19I
ERT-19D
DGC-19S
ERT-9I
ERT-9D
ERT-4I
ERT-5I
ERT-5S
ERT-1I
ERT-1S
ERT-EW-6
ERT-EW-7
ERT-EW-5
ERT-3I
TH-13
ERT-2S
ERT-2I
ERT-7I
ERT-6I
ERT-SPR-1
SUBARU DEALERSHIP
RT 22
I-84 SOUTH
I-84 NORTH
GMS-04
DGC-14D
DGC-14I
DGC-14S

LEGEND

- VILLAGE WELLS
- GMS INJECTION WELLS
- GMS EXTRACTION WELLS
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- DEEP MONITORING WELL
- US EPA/ERT SHALLOW MONITORING WELL
- US EPA/ERT INTERMEDIATE MONITORING WELL
- US EPA/ERT DEEP MONITORING WELL
- US EPA/ERT SHALLOW EXTRACTION WELL
- US EPA/ERT INTERMEDIATE MONITORING WELL
- US EPA/ERT MULTIPOINT SPARGE WELL

0 150 300
FEET

N W E S

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FIGURE 2
WELL LOCATION MAP
BREWSTER WELL FIELD SUPERFUND SITE
VILLAGE OF BREWSTER - TOWN OF SOUTHEAST
PUTNAM COUNTY, NEW YORK

92066.01 DECEMBER 2006

ATTACHMENT A

FIELD FORMS

Daily Quality Control Reports

EarthTech
A tyco International Ltd. Company

DAILY QUALITY CONTROL REPORT

JOB NUMBER 92066.01 DATE 10/30/2006 REPORT NUMBER 1

PROJECT & LOCATION Brewster Well Field Site, Putnam County, New York / Well Installation

WEATHER mostly sunny TEMPERATURE RANGE 40-55 °F WIND light

EARTH TECH PERSONNEL ON SITE L. Alexander, R. Morgan TIME ON SITE 830

SUMMARY OF SITE ACTIVITIES Meet with U. S. EPA/ERT engineer (J. Catanzarita) at the Site. Discuss schedule, logistics, and SOW. Perform Site walk. Calibrate miniRae. Check equipment. Meet with Prosonic (drillers) and REAC/Lockheed Martin hydrogeologist (D. Edgerton) in the afternoon and set schedule for drilling on 10/31/06.

LEVEL OF HEALTH & SAFETY PROTECTION Modified Level D (steel toe boots, hard hats, safety glasses, nitrile gloves, safety vests, and ear plugs as necessary)

INSTRUMENTATION USED miniRae Plus multiparamter meter.

CALIBRATION(S) PERFORMED Calibrated miniRae PID to isobutylene standard.

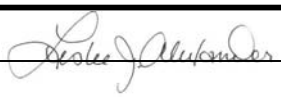
INSTRUMENT PROBLEMS/REMEDIES None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S) NA

QUALITY CONTROL SAMPLES* NA

ADDITIONAL REMARKS Drillers are scheduled to arrive ~8am on 10/31/06 to begin drilling/installing monitoring wells.

SIGNATURE: 

* INDICATE SAMPLE MEDIA: SOIL OR QA/QC.

EarthTech
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DAILY QUALITY CONTROL REPORT

JOB NUMBER 92066.01 DATE 10/31/2006 REPORT NUMBER 2

PROJECT & LOCATION Brewster Well Field Site, Putnam County, New York / Well Installation

WEATHER mostly sunny TEMPERATURE RANGE 40-67 °F WIND light to none

EARTH TECH PERSONNEL ON SITE L. Alexander, R. Morgan TIME ON SITE 730

SUMMARY OF SITE ACTIVITIES Conduct H&S briefing for Earth Tech personnel in accordance with HASP. Meet with drillers and EPA Project team to discuss plan and schedule for drilling. D. Edgerton (REAC/LMC) conducts safety meeting for project team. Provide drilling oversight, including logging soil lithology, recording well installation details, and monitoring headspace and breathing zone during drilling. Drill ERT-8D to 58 ft and ERT-8I to 40 ft. Install a 2 inch monitoring well at each location.

LEVEL OF HEALTH & SAFETY PROTECTION Modified Level D (steel toe boots, hard hats, safety glasses, nitrile gloves, safety vests, and ear plugs as necessary)

INSTRUMENTATION USED miniRae Plus multiparamter meter.

CALIBRATION(S) PERFORMED Calibrated miniRae PID to isobutylene standard.

INSTRUMENT PROBLEMS/REMEDIES None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S) NA

QUALITY CONTROL SAMPLES* NA

ADDITIONAL REMARKS

SIGNATURE:

* INDICATE SAMPLE MEDIA: SOIL OR QA/QC.

EarthTech
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DAILY QUALITY CONTROL REPORT

JOB NUMBER 92066.01 DATE 11/1/2006 REPORT NUMBER 3

PROJECT & LOCATION Brewster Well Field Site, Putnam County, New York / Well Installation

WEATHER sunny TEMPERATURE RANGE 50-68 °F WIND light

EARTH TECH PERSONNEL ON SITE L. Alexander, R. Morgan TIME ON SITE 700

SUMMARY OF SITE ACTIVITIES Conduct H&S briefing for Earth Tech personnel in accordance with HASP. Calibrate PID. Provide drilling oversight, including logging soil lithology, recording well installation details, and monitoring headspace and breathing zone during drilling. Drill ERT-8S to 15.5 ft bgs and install a 2 inch monitoring well. Drill ERT-EW-6 to 38 ft bgs and install a 6 inch extraction well with a 1-inch "spywell" for water leve monitoring/GW sampling.

LEVEL OF HEALTH & SAFETY PROTECTION Modified Level D (steel toe boots, hard hats, safety glasses, nitrile gloves, safety vests, and ear plugs as necessary)

INSTRUMENTATION USED miniRae Plus multiparamter meter.

CALIBRATION(S) PERFORMED Calibrated miniRae PID to isobutylene standard.

INSTRUMENT PROBLEMS/REMEDIES None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S) NA

QUALITY CONTROL SAMPLES* NA

ADDITIONAL REMARKS NOTE: ERT-EW-5 was completed up through bentonite seal. Will grout well to surface on 11/2/06.

SIGNATURE:

* INDICATE SAMPLE MEDIA: SOIL OR QA/QC.

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DAILY QUALITY CONTROL REPORT

JOB NUMBER 92066.01 DATE 11/2/2006 REPORT NUMBER 4

PROJECT & LOCATION Brewster Well Field Site, Putnam County, New York / Well Installation

WEATHER light rain AM, sunny PM TEMPERATURE RANGE 40-50 °F WIND light

EARTH TECH PERSONNEL ON SITE L. Alexander, R. Morgan TIME ON SITE 700

SUMMARY OF SITE ACTIVITIES Conduct H&S briefing for Earth Tech personnel in accordance with HASP. Calibrate PID. Provide drilling oversight, including logging soil lithology, recording well installation details, and monitoring headspace and breathing zone during drilling. Grout and complete ERT-EW-6. Drill ERT-EW-6 to 21.4 ft and set a 4 inch combination monitoring/extraction well. Drill ERT-EW-7 to 37 ft bgs and set a 6 inch monitoring well with a 1-inch "spywell" for water level monitoring/GW sampling.

LEVEL OF HEALTH & SAFETY PROTECTION Modified Level D (steel toe boots, hard hats, safety glasses, nitrile gloves, safety vests, and ear plugs as necessary)

INSTRUMENTATION USED miniRae Plus multiparamter meter.

CALIBRATION(S) PERFORMED Calibrated miniRae PID to isobutylene standard.

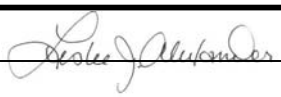
INSTRUMENT PROBLEMS/REMEDIES None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S) NA

QUALITY CONTROL SAMPLES* NA

ADDITIONAL REMARKS NOTE: Drillers completed surface pad at ERT-EW-5. Will complete pads at ERT-EW-6 and ERT-EW-7 on 11/3/06.

SIGNATURE: 

* INDICATE SAMPLE MEDIA: SOIL OR QA/QC.

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DAILY QUALITY CONTROL REPORT

JOB NUMBER 92066.01 DATE 11/3/2006 REPORT NUMBER 5

PROJECT & LOCATION Brewster Well Field Site, Putnam County, New York / Well Installation

WEATHER mostly sunny TEMPERATURE RANGE 35-50 °F WIND light

EARTH TECH PERSONNEL ON SITE L. Alexander, R. Morgan TIME ON SITE 700

SUMMARY OF SITE ACTIVITIES Conduct H&S briefing for Earth Tech personnel in accordance with HASP. Provide oversight of well completion activities at ERT-EW-6 and ERT-EW-7, including recording well installation details. Earth Tech personnel demob after extraction well surface competions are finished. U.S. EPA ERT and REAC/LMC personnel remain onsight to supervise remaining well completion activities.

LEVEL OF HEALTH & SAFETY PROTECTION Modified Level D (steel toe boots, hard hats, safety glasses, nitrile gloves, safety vests, and ear plugs as necessary)

INSTRUMENTATION USED None.

CALIBRATION(S) PERFORMED None.

INSTRUMENT PROBLEMS/REMEDIES None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S) NA

QUALITY CONTROL SAMPLES* NA

ADDITIONAL REMARKS

SIGNATURE:

* INDICATE SAMPLE MEDIA: SOIL OR QA/QC.

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DAILY QUALITY CONTROL REPORT

JOB NUMBER 92066.01 DATE 11/6/2006 REPORT NUMBER 6

PROJECT & LOCATION Brewster Well Field Site, Putnam County, New York / Well Installation

WEATHER sunny TEMPERATURE RANGE 40-60 °F WIND light to none

EARTH TECH PERSONNEL ON SITE L. Alexander TIME ON SITE 815

SUMMARY OF SITE ACTIVITIES Conduct H&S briefing for Earth Tech personnel in accordance with HASP. Calibrate PID. Provide drilling oversight, including logging soil lithology, recording well installation details, and monitoring headspace and breathing zone during drilling. Drill ERT-SPR-1 to 41 ft and install 3 2-inch Microporous Spargepoints® in borehole.

LEVEL OF HEALTH & SAFETY PROTECTION Modified Level D (steel toe boots, hard hats, safety glasses, nitrile gloves, and ear plugs as necessary)

LEVEL OF HEALTH & SAFETY PROTECTION Modified Level D (steel toe boots, hard hats, safety glasses, nitrile gloves, safety vests, and ear plugs as necessary)

CALIBRATION(S) PERFORMED Calibrated miniRae PID to isobutylene standard.

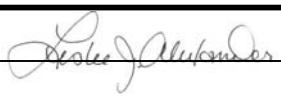
INSTRUMENT PROBLEMS/REMEDIES None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S) NA

QUALITY CONTROL SAMPLES* NA

ADDITIONAL REMARKS Note: Sparge wells completed up through bentonite seal. Will grout and finish surface completion on 11/7/06. Earth Tech personnel demob from Site to perform work at an alternate Site at the request of the RM. REAC/LMC personnel will provide oversight for remaining well installations.

SIGNATURE: 

* INDICATE SAMPLE MEDIA: SOIL OR QA/QC.

Test Boring Reports

EarthTech Test Boring Report

BORING NO. ERT-8D
PAGE 1 OF 3

PROJECT: Brewster Well Field Site - Additional Well Installation
CLIENT: U.S. EPA Region II
CONTRACTOR: Prosonic
EQUIPMENT: SR-077

PROJECT NO: 92066.01
LOCATION:
ELEVATION:
DATE START: 10/31/06 1125
DATE FINISH: 10/31/06 1350
DRILLER: Rick Tabor
PREPARED BY: L. Alexander

GROUND WATER		DEPTH TO:			CASING		SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			6 inch

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
		Drill to 6 ft with 6 inch core barrel. Set 8 inch starter pipe to ~4-5 feet bgs. Well is located partway down the access road, under the overpass.	0-6'	5'	0 ft - ASPHALT SURFACE - ~4 inches thick 0.5 ft - SANDY CLAY (CL), moist, very dark grayish brown (2.5Y 3/2), mostly clay and silt, some med-fine sand, few-little gravel. FILL. 2.8 ft - Pulverized CONCRETE. FILL. 3.2 ft - SILT WITH SAND (ML), moist, very dark gray (2.5Y 3/1), mostly silt, little clay, little fine-med sand, trace coarse sand and sm. gravel.
	5				
	5.5				
5.0					
	3.5				
	1.8		6-16'	10'	6 ft - SANDY ORGANIC SOIL (OL/OH), wet, very dark brown (2.5Y 3/2), mostly clay and silt, some fine-med sand, few wood fragments, with abundant wood fragments at 6.5-8 ft bgs. WETLANDS ENVIRONMENT. 8 ft - ORGANIC SOIL (OL/OH), wet, black (2.5/1), soft-med dense,mostly clay and organic material, little-some silt, trace-some wood fragments and organic debris. WETLANDS ENVIRONMENT.
	1.9				
	7.6				
10.0					
	5.4				11 ft - Same as above but very dark gray (2.5Y 3/1), grading to medium stiff to stiff.
	2.7				
	3.8				
15.0					
	0.5				14.5 ft - SILTY CLAY (CH), very dark grayish brown (2.5Y 3/2), soft to med stiff, mostly clay, some silt and fine sand. ALLUVIUM.
			16-26'	8'	16 ft - WELL GRADED SAND (SW), wet, very dark grayish brown (2.5Y 3/2), mostly fine-very coarse sand, little silt and clay. GLACIAL OUTWASH.
	4.2				
	0				
	1.6				19 ft - SILT (ML), wet, olive gray (5Y 4/2), mostly silt, little-some fine sand. GLACIOLACUSTRINE or GLACIOFLUVIAL DELTAIC.
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech

Test Boring Report

BORING NO. ERT-8D

PAGE 2 OF 3

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0	2.8				20.3 ft - POORLY GRADED SAND (SP), wet, olive brown (2.5Y 4/4), mostly fine sand, little silt. OUTWASH/GLACIOFLUVIAL DELTAIC.
	3.7				
					23.5 ft - WELL GRADED GRAVEL (GW), wet, olive brown (2.5Y 4/4), mostly gravel and cobbles, 0.5-4.5 inch, subangular, little-some silt and coarse sand. OUTWASH/GLACIOFLUVIAL DELTAIC.
	2.8				
25.0					25 ft - WELL GRADED SAND AND GRAVEL (SW), wet, dark olive brown (2.5Y 3/3), mostly fine-very coarse sand, little-some gravel, 0.2-3 inch.
	8.4	Very wet and coarse - lost some recovery - fell out/pushed aside.			26 ft - WELL GRADED GRAVEL WITH SAND (GW), wet, dark olive brown (2.5Y 3/3), mostly gravel/cobbles, 0.2-6 inch, some fine-coarse sand, trace-few silt. OUTWASH/GLACIOFLUVIAL DELTAIC.
	7.8				
30.0					
	2.4		26-36'	7'	
	7.9				
	5.2				
	2.6				
35.0					
	3.1				36 ft - Same as above.
	6.7				
	5.1				37.5 ft - SILT WITH GRAVEL (ML), wet, dark gray (5Y 4/1), mostly silt, little-some gravel, few-little fine-med sand. TILL.
	6.4				
40.0	5		36-46'	10'	40 ft - Same as above but little-some fine sand.
	6.5				40.5 ft - SILT WITH SAND (ML), wet, dark gray (5Y 4/1), mostly silt, little-some fine-med sand, trace gravel.
	7.2				42 ft - Grading to moist.
	8.9				
	6.1				
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech Test Boring Report

BORING NO. ERT-8D

PAGE 3 OF 3

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
45.0					
	2.5				46 ft - Same as above but dry-moist, stiff, few-little sand.
	2.1				47 ft - SANDY SILT (ML), wet, soft, dark gray (5Y 4/1), mostly silt, some fine sand, trace med sand and gravel. TILL.
	2.8				49 ft - SANDY SILT WITH GRAVEL (ML), wet, soft, dark gray (5Y 4/1), mostly silt, some fine sand, little gravel and cobbles, 1-5 inch, angular, trace med sand. TILL.
50.0					
	3.4		46-56'	10'	51 ft - SANDY SILT WITH GRAVEL (ML), wet, dark gray (5Y 4/1), mostly silt, some fine-med sand, little-some gravel, 0.5-5 inch. TILL.
	11.1				52.5 ft - Same as above but dry, stiff.
	7.3				
	10.4				
55.0	2.8				
			56-58'	2'	55 ft - SANDY CLAY (CL), dry, hard, olive gray (5Y 5/2) and pale yellow (5Y 7/3), mostly clay and silt, weak-mod cementation, some fine-coarse sand and gravel, visible quartz and mica, few gravel, angular. WEATHERED BEDROCK (GNEISS).
					Boring terminated at 58 ft at refusal. 2 inch monitoring well ERT-8D installed in borehole - see well construction log for details.
60.0					
65.0					
70.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech Test Boring Report

BORING NO. ERT-8I
PAGE 1 OF 2

PROJECT: Brewster Well Field Site - Additional Well Installation
CLIENT: U.S. EPA Region II
CONTRACTOR: Prosonic
EQUIPMENT: SR-077

PROJECT NO: 92066.01
LOCATION: ~5 ft NW of ERT8D
ELEVATION:
DATE START: 10/31/06 1510
DATE FINISH: 10/31/06 1620
DRILLER: Rick Tabor
PREPARED BY: L. Alexander

GROUND WATER		DEPTH TO:			CASING		SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			6 inch

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
5.0		8 inch starter pipe to ~5-6 ft bgs Well is located ~5 ft NW of ERT-8D along the access road			No lithologic data collected. See boring log from ERT-8D for lithologic details.
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech

Test Boring Report

BORING NO. ERT-8I

PAGE 2 OF 2

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0					
25.0					
30.0					
35.0					
40.0					Boring terminated at 40 ft bgs. 2 inch monitoring well installed - see well installation diagram for details.
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech

Test Boring Report

BORING NO. ERT-8S

PAGE 1 OF 1

PROJECT: Brewster Well Field Site - Additional Well Installation

CLIENT: U.S. EPA Region II

CONTRACTOR: Prosonic

EQUIPMENT: SR-077

PROJECT NO: 92066.01

LOCATION: ~5 ft NW of ERT8I

ELEVATION:

DATE START: 11/1/06 0812

DATE FINISH: 11/1/06 0938

DRILLER: Rick Tabor

PREPARED BY: L. Alexander

GROUND WATER		DEPTH TO:			CASING		SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			6 inch

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
5.0		8 inch starter pipe to ~5-6 ft bgs Well is located ~5 ft NW of ERT-8I, ~10 ft NW of ERT8D, along the access road			No lithologic data collected. See boring log from ERT-8D for lithologic details.
10.0					
15.0					
20.0					Boring terminated at 15.5 ft bgs. 2 inch monitoring well installed - see well installation log for details.

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-9D

PAGE 1 OF 3

PROJECT: Brewster Well Field Site - Additional Well Installation

CLIENT: U.S. EPA ERT/ Region II

CONTRACTOR: Prosonic

EQUIPMENT: SR-077

PROJECT NO: 92066.01

LOCATION:

ELEVATION:

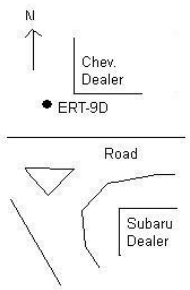
DATE START: 11/7/2006

DATE FINISH: 11/7/2006

DRILLER: Rick Tabor

PREPARED BY: C. Sklaney

GROUND WATER		DEPTH TO:			CASING		SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
	UR		UR	UNK.	Asphalt surface - 5 inches. Unable to collect upper interval (0-6') in bags. Lithology determined after removed from core barrel. Dk gray-brown, well sorted, medium to coarse sand, trace f-m gravel, trace cobbles (SW). No PID recorded in this interval
	UR				
	UR				
	UR				
	UR				
5.0	UR				
	0	6" advanced to 6'; 4" advanced inside to depth	6-16'	116 /120"	6.0-8.0' - Greenish gray sandy silt (ML).
	0				
	0				8.0-9.0' - Orange-brown (mottled) and med. gray sandy silt (ML).
	0				9.0' - Dk gray f-m sand, well sorted (SW) c. sand locally present, all in well-sorted bands/layers 1-3" thick.
10.0	0				
	0				11.0' - Change in color to med gray-brown
	0				
	0				
	0				
	0				
15.0	0				15-16.0' - Dk gray clay, little m-c sand, little organic material (roots) (OL).
	0		16-26'	64 /120"	16-18' (estimated) Poor recovery. Same as 15-16' interval.
	0				
	0				18-26' Med gray-brown, poorly sorted m-c sand and f-c gravel, some cobbles up to 5" in legnth. Cobbles restricted recovery (GP-GM).
	0				
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-9D

PAGE 2 OF 3

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0	0				
	0				
	0				
	0				
	0				
25.0	0				
	0		26-36'	56/120"	Med-brown, poorly sorted m-c sand, little f gravel, trace m-c gravel and f sand, trace silt. Mottled coloration appears due to c sand and f gravel of igneous origin (granite, diorite, gabbro) (SP)
	0				
	0				
	0				
30.0	0				
	0				
	0				
	0				
	0				
35.0	0				
	0				
	0		36-46'	115 /120"	
	0				
	0				
	0				
40.0	0				
	0				41.0 Dk gray sandy silt, few clay, trace f-c gravel and cobbles (OL). Silt slightly compressable, moist. Contact with overlying unit sharp.
	0				
	0				
	0				
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-9D

PAGE 3 OF 3

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
45.0	0				
					Terminated boring at 46'
					Will install well ~31-41'. 9D
					10-15' 9S
50.0					18-28' 9I
					Color descriptions are qualitative.
55.0					
60.0					
65.0					
70.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-9I

PAGE 1 OF 2

PROJECT: Brewster Well Field Site - Additional Well Installation

CLIENT: U.S. EPA ERT/ Region II

CONTRACTOR: Prosonic

EQUIPMENT: SR-077

PROJECT NO: 92066.01

LOCATION:

ELEVATION:

DATE START: 11/8/2006

DATE FINISH: 11/8/2006

DRILLER: Rick Tabor

PREPARED BY: C. Sklaney

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
	UR	Refer to ERT-9D log for location. ERT-9I located ~5 ft north of ERT-9D.			No lithology recorded per client instructions.
	UR				
	UR				
	UR				
	UR				
5.0	UR				
	UR				
	UR				
	UR				
	UR				
10.0	UR				
	UR				
	UR				
	UR				
	UR				
15.0	UR				
	UR				
	UR				
	UR				
	UR				
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-9I

PAGE 2 OF 2

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0					UR
25.0					
30.0					Terminated boring at 28.5'
35.0					
40.0					
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

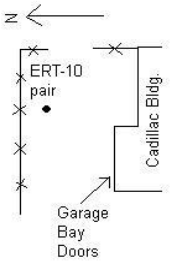
Test Boring Report

BORING NO. ERT-10D
PAGE 1 OF 3

PROJECT: Brewster Well Field Site - Additional Well Installation
CLIENT: U.S. EPA ERT/ Region II
CONTRACTOR: Prosonic
EQUIPMENT: SR-077

PROJECT NO: 92066.01
LOCATION:
ELEVATION:
DATE START: 11/8/2006
DATE FINISH: 11/8/2006
DRILLER: Rick Tabor
PREPARED BY: C. Sklaney

GROUND WATER		DEPTH TO:			CASING		SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
	0				Asphalt surface - 4 inches. 0.3-3.0 Med gray unsorted fine sand to coarse gravel, some silt and clay. Probably fill (could be GP-GM or SP-SM).
	0				
	0				
	0				3.0-4.5 Light brown, well-sorted f-m sand, probably fill (SW).
	0				
5.0	0				4.5-8.0 Organic silt, roots common (OL). Dark gray in upper 6", med. Gray below. Methane odor present.
	0				
	0	6" advanced with 4" inside			
	0				8.0-10.0 Dark brown-gray and blue-gray organic silt (OL), in 1-3" laminated "bands". Methane odor.
	0				
10.0	0				10.0-12.7 Medium gray and brownish gray, poorly sorted medium to coarse gravel with cobbles, little medium to coarse sand, little fine gravel, trace silt (GP-GM).
	0				
	4.3				12.7-26.0 Medium gray poorly sorted fine-medium gravel, little fine to coarse sand, few silt and clay (GP-GM).
	5.2				
	6.4				
15.0	2.2				
	/				
	/				
	18.1				
	/				
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-10D

PAGE 2 OF 3

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0	/				
	19.1				
	/				
	19.2				
	/				
25.0	20.1				
	/		26-36'	45/120"	26.0-40.0 Medium brown-gray, poorly sorted f-m gravel, some f-c sand, little silt and clay (GP-GM). Color change gradational; classification boundary subjective.
	/				
	UR				
	UR				
30.0	UR				
	UR				
	UR				
	UR				
	UR				
	UR				
35.0	UR				
	UR		36-46'	108 /120"	
	UR				
	UR				
	UR				
40.0	UR				40.0-45.0 Dark gray sandy silt, trace f-c gravel and angular to subrounded cobbles. Moist. Contact with overlying unit sharp.
	UR				
	UR				
	UR				
	UR				
45.0	UR				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-9D

PAGE 3 OF 3

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
45.0	UR				45.0-46.0 - Same as 26.0-40.0. Contact with overlying unit sharp.
					End of boring. Boring terminated at 46'.
50.0					
55.0					
60.0					
65.0					
70.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-10I

PAGE 1 OF 2

PROJECT: Brewster Well Field Site - Additional Well Installation

CLIENT: U.S. EPA ERT/ Region II

CONTRACTOR: Prosonic

EQUIPMENT: SR-077

PROJECT NO: 92066.01

LOCATION:

ELEVATION:

DATE START: 11/8/2006

DATE FINISH: 11/8/2006

DRILLER: Rick Tabor

PREPARED BY: C. Sklaney

GROUND WATER		DEPTH TO:			CASING		SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
	UR	Refer to ERT-10D log for location. ERT-10I located ~5 ft east of ERT-10D.			No lithology recorded per client instructions.
	UR				
	UR				
	UR				
	UR				
5.0	UR				
	UR				
	UR				
	UR				
	UR				
10.0	UR				
	UR				
	UR				
	UR				
	UR				
15.0	UR				
	UR				
	UR				
	UR				
	UR				
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-10I

PAGE 2 OF 2

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0	UR				UR
	UR				
	UR				
	UR				
					Terminated boring at 24'.
25.0					
30.0					
35.0					
40.0					
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-19D

PAGE 1 OF 3

PROJECT: Brewster Well Field Site - Additional Well Installation

CLIENT: U.S. EPA ERT/ Region II

CONTRACTOR: Prosonic

EQUIPMENT: SR-077

PROJECT NO: 92066.01

LOCATION:

ELEVATION:

DATE START: 11/7/2006 1040

DATE FINISH: 11/7/2006

DRILLER: Rick Tabor

PREPARED BY: C. Sklaney

GROUND WATER		DEPTH TO:			CASING		SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
	UR	6" casing to 26'			No lithology data recorded 0-26' per client. Used previous logs from adjacent wells/borings to determine drilling specifications.
			UR	UR	Hiatus ↓
5.0					
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-19D

PAGE 2 OF 2

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0	UR	No sample	UR	UR	
25.0	UR	4" casing used to collect boring for ID	UR	UR	Dk gray-brown, poorly sorted (well graded) f-c sand, trace silt and clay. Sand subrounded.
30.0	UR				Dk greenish gray clay, trace fine gravel.
35.0					Terminated boring at 36'. Will set well 26-36' w/ 10 slot PVC.
40.0					
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech Test Boring Report

BORING NO. ERT-SPR-1
PAGE 1 OF 2

PROJECT: Brewster Well Field Site - Additional Well Installation
CLIENT: U.S. EPA Region II
CONTRACTOR: Prosonic
EQUIPMENT: SR-077

PROJECT NO: 92066.01
LOCATION: ~5 ft SE of ERT-6I
ELEVATION:
DATE START: 11/6/06 0920
DATE FINISH: 11/6/06 1200
DRILLER: Rick Tabor
PREPARED BY: L. Alexander

GROUND WATER		DEPTH TO:			CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID	10 inch		4 inch

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
	0	Located in the east part of Subaru P-lot, ~5-8 ft SE of ERT-6I.	0-6'	6'	0 ft - ASPHALT surface.
	0				0.5 ft - SILT (ML), dry, dark olive brown (2.5Y 3/3), mostly silt, few clay, trace to few sand and small gravel. FILL.
	2.7				2 ft - Grading to SILTY SAND (SM), dry, dark olive brown (2.5Y 3/3), mostly fine sand, little-some silt/clay, few med sand and small gravel. FILL.
	3.9				
	12				4 ft - Grading to CLAYEY SAND (SC), dry, dark olive brown (2.5Y 3/3), mostly fine sand, little-some clay, few med sand and small gravel. FILL.
5.0	12.9				
	1.2		6-16'	9'	6 ft - SILTY SAND (SM), same as 2 ft above but moist-wet.
	1.8				
	3.4				
10.0	3.0				10 ft - Grading to CLAYEY SAND (SC), same as 4 ft above but moist.
		Took picture of fill/outwash contact			
	12.7				
	1.2	Strong petro/ oil odor			13 ft - WELL GRADED SAND WITH CLAY AND GRAVEL (SW-SC), moist, very dark gray (GLEY 1 3/N) to black (GLEY1 2.5/N), mostly fine-coarse sand, little gravel, 0.2-3.5 inch, subangular-subround, few clay, strong petroleum/oil odor. GALCIAL OUTWASH.
					14.5 ft - WELL GRADED SAND WITH GRAVEL (SW), wet, very dark gray (GLEY1 3/N), mostly fine-coarse sand, little-some gravel, 0.2-4 inch, subangular-subround, petro/oil odor. GLACIAL OUTWASH.
15.0	0				15.5 ft - WELL GRADED SAND WITH CLAY AND GRAVEL (SW-SC), same as 13 ft above but dark olive gray (5Y 3/2). GLACIAL OUTWASH.
			16-26'	7'	
	0				18 ft - WELL GRADED SAND WITH GRAVEL and WELL GRADED GRAVEL WITH SAND (SW-GW), wet, dark grayish brown (2.5Y 3/1), mostly fine-coarse sand and gravel, 0.2-3 inch, subangular, trace silt and clay. GLACIAL OUTWASH.
	0				
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech

Test Boring Report

BORING NO. ERT-SPR-1

PAGE 2 OF 2

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0	0				20 ft - POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC), wet, dark olive brown (2.5Y 3/3), mostly fine sand, little med-coarse sand, few-little clay, little gravel, 0.2-3 inch, subangular. GLACIAL OUTWASH.
	1.4				22 ft - Grading to WELL GRADED SAND WITH GRAVEL AND CLAY (SW-SC), same as above but mostly fine-very coarse sand.
	0				
25.0	0				
	0		26-36'	6'	
	0				
30.0	0				30 ft - WELL GRADED GRAVEL WITH SAND (GW), wet, mostly gravel, 0.2-4 inch, subround-subangular, some fine-very coarse sand, few clay. GLACIAL OUTWASH.
	0				
35.0					34 ft - WELL GRADED GRAVEL W ITH SAND (GW), same as 30 ft above but trace clay/silt. GLACIAL OUTWASH.
	0	Photo of contact between outwash and till.			36 ft - WELL GRADED SAND (SW), moist, olive brown (2.5Y 4/3), mostly fine-coarse sand, few gravel, 0.2-1 inch, subround. GLACIAL OUTWASH.
	0		36-41'	8'	36.5 ft - Grading to WELL GRADED SAND WITH GRAVEL (SW), wet, olive brown (2.5Y 4/3), mostly fine-coarse sand, little-some gravel, 0.2-3 inch, subround, trace silt. GLACIAL OUTWASH.
	0				38 ft - Grading to WELL GRADED GRAVEL WITH SAND (GW), same as 36.5 ft above but mostly gravel, some fine-very coarse sand. GLACIAL OUTWASH.
40.0	0				39 ft - SILT WITH SAND (ML), moist-wet, dark gray (5Y 4/1), mostly silt, little fine-medium sand, trace-few gravel, 0.2-2 inch, subangular. TILL.
					Boring terminated at 41 ft. 3 nested sparge points set in borehole - see well installation log for details.
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech Test Boring Report

BORING NO. ERT-EW-5
PAGE 1 OF 2

PROJECT: Brewster Well Field Site - Additional Well Installation
CLIENT: U.S. EPA Region II
CONTRACTOR: Prosonic
EQUIPMENT: SR-077

PROJECT NO: 92066.01
LOCATION: ~12 ft WSW of ERT1S
ELEVATION:
DATE START: 11/1/06 1315
DATE FINISH: 11/1/06 1615
DRILLER: Rick Tabor
PREPARED BY: L. Alexander

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID	10 inch		6 inch

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
		Well is located in the driveway of the Subaru dealer ~12 ft W-NW of ERT-1S, between the ERT-1 and the ERT-2 series wells.	0-6'	6'	0 ft - ASPHALT surface, ~2-3 inches thick. 0.25 ft - SANDY CLAY WITH GRAVEL (CL), dry, olive brown (2.5Y 4/3), mostly clay, some fine-coarse sand, little gravel. FILL.
	4.3				3 ft - SANDY CLAY WITH GRAVEL (CL), wet, very dark grayish brown (2.5Y 3/2), mostlyclay, some fine-coarse sand, little gravel, with a very large boulder at ~3.5 ft, gneiss, likely rip-rap. FILL.
5.0					
		No PID readings sample too wet Boulder at ~3.5 ft bgs - prevented sample recovery	6-16'	3'	6 ft - CLAY WITH SAND AND GRAVEL (CH), wet, black (2.5Y 2.5/1) to very dark grayish brown (2.5Y 3/2), mostly clay and silt, little fine-med sand, little gravel. 8.5 ft - Large cobble, gneiss, likely rip-rap. FILL.
10.0					
15.0					
	1.9		16-26'	9'	16 ft - WELL GRADED SAND WITH GRAVEL (SW), wet, dark olive brown (2.5Y 3/3), mostly fine-very coarse sand, little gravel, 0.5-3 inch, sub-angular, few silt/clay. GLACIAL OUTWASH.
	4.3				
	7.2				
	5.1				
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech Test Boring Report

BORING NO. ERT-EW-5

PAGE 2 OF 2

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0	3.8				20 ft - WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), wet, dark olive brown (2.5Y 3/3), mostly fine-very coarse sand, little gravel, 0.2-2 inch,few-little silt. OUTWASH.
	3.8				21.5 ft - Grading to WELL GRADED GRAVEL WITH SAND (GW), wet, dark olive brown (2.5Y 3/3), mostly gravel, 0.2-3.5 inch, subangular, some fine-very coarse sand, trace-few silt. OUTWASH.
	5.9				22.3 ft - SILT (ML), moist, olive brown (2.5Y 4/4), mostly silt, few fine sand.
	6.7				
	8.0				
25.0					
		No PID readings sample too wet			26 ft - POORLY GRADED SAND WITH SILT (SP-SM), wet, olive brown (2.5Y 4/4), mostly fine sand, little-some silt, trace-few med-coarse sand.
30.0			26-36'	3'	
35.0					
					36 ft - SILTY CLAY WITH GRAVEL (CL), wet, dark gray (5Y 4/1), mostly clay and silt, little gravel, 0.2-2 inch, subangular, few fine-coarse sand. TILL.
			36-40'	5'	37.5 ft - Grading to SANDY CLAY WITH GRAVEL (CL), wet, dark gray (5Y 4/1), soft-med stiff, mostly clay and silt, little gravel, little-some fine-med sand. TILL.
	5.2				38.5 ft - Same as 37.5 ft above but grading to moist, med-stiff to stiff. TILL.
40.0					6 inch borehole terminated at 40 ft bgs. Reamed out with 10 inch casing to 38 ft. 6 inch extraction well ERT-EW-5 installed - see log for details.
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech

Test Boring Report

BORING NO. ERT-EW-6

PAGE 1 OF 2

PROJECT: Brewster Well Field Site - Additional Well Installation

CLIENT: U.S. EPA Region II

CONTRACTOR: Prosonic

EQUIPMENT: SR-077

PROJECT NO: 92066.01

LOCATION: ~10 ft ENE of ERT1

ELEVATION:

DATE START: 11/2/06 0940

DATE FINISH: 11/2/06 1130

DRILLER: Rick Tabor

PREPARED BY: L. Alexander

GROUND WATER		DEPTH TO:			CASING		SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			8 inch

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
		Well is located in the P-lot of the Subaru dealership ~10 ft E-NE of ERT-1 series wells			No lithologic data collected. See boring log from ERT-EW-5 for lithologic details. Aspahlt surface. rip-rap/gneiss - very large pieces (>8 inch) from 2-6 ft bgs; likely large cobbles used as rip-rap or fill.
5.0					
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Test Boring Report

BORING NO. ERT-EW-6

PAGE 2 OF 2

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0					
					Boring terminated at 21.4 ft bgs. 4 inch combination monitoring and extraction well installed - see well installation diagram for details.
25.0					
30.0					
35.0					
40.0					
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech Test Boring Report

BORING NO. ERT-EW-7
PAGE 1 OF 2

PROJECT: Brewster Well Field Site - Additional Well Installation
CLIENT: U.S. EPA Region II
CONTRACTOR: Prosonic
EQUIPMENT: SR-077

PROJECT NO: 92066.01
LOCATION: ~8 ft SW of ERT-5
ELEVATION:
DATE START: 11/2/06 1318
DATE FINISH: 11/2/06 1453
DRILLER: Rick Tabor
PREPARED BY: L. Alexander

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID	10 inch		4 inch

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
	0.8	Drill 4" X 10" advancing casing along with sample core to save time Well is located in the Subaru P-lot ~8 ft SW of the ERT-5 series wells	0-6'	5'	0 ft - ASPHALT surface - ~3 inches thick. 0.25 ft - CLAYEY SAND WITH GRAVEL (SC), dry, dark olive bown (2.5Y 3/3), mostly fine-coarse sand, little silt/clay, little-some gravel, 0.2-3 inch. FILL.
	1.2				
	2				
	0				
	8.6				
5.0	0.6				4.5 ft - SANDY CLAY (CL), moist, very dark grayish brown (2.5Y 3/2), mostly clay, some fine-very coarse sand. FILL.
			6-16'	9'	6 ft - CLAY WITH SAND (CH), moist, very dark grayish brown (2.5Y 3/2), mostly clay, little fine-med sand, trace-few coarse sand and small gravel, organics and wood/peat from 8-10 ft bgs. ALLUVIUM/WETLANDS.
	0.1				
	0.7				
10.0	2.6				10 ft - ORGANIC SOIL (OL/OH), moist, very dark gray (2.5Y 3/1), organic soil, few fine-med sand, peat/wood fragments. WETLANDS.
	1.6				
	2.4				11.5 ft - WELL GRADED GRAVEL WITH SAND (GW), wet, dark grayish brown (2.5Y 3/2), mostly gravel, 0.2-3 inch, subangular-subround, some fine-very coarse sand, trace-few silt/clay. GLACIAL OUTWASH.
	3.4				
	9.9				14 ft - Grading to WELL GRADED SAND WITH GRAVEL (SW), wet, dark grayish brown (2.5Y 3/2), mostly fine-very coarse sand, little-some gravel, trace-few silt/clay. GLACIAL OUTWASH.
15.0	6				15 ft - WELL GRADED SAND WITH CLAY AND GRAVEL (SW), same as 14 ft above but few-little clay/silt.
	1.7		16-26'	5'	16 ft - CLAYEY SAND WITH GRAVEL (SC), wet, olive brown (2.5Y 4/4), mostly fine-coarse sand, little clay/silt, little gravel.
	1.6				
	1				
	0				19 ft - WELL GRADED GRAVEL WITH SAND (GW), wet, olive brown (2.5Y 4/4), mostly gravel, 0.2-4 inch, subangular, trace-few silt and clay.
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

EarthTech

Test Boring Report

BORING NO. ERT-EW-7

PAGE 2 OF 2

DEPTH IN FEET	PID READING (PPM)	MISCELLANEOUS DRILLING INFORMATION	CORE SAMPLE DEPTH RANGE	RECOVERY	FIELD CLASSIFICATION AND REMARKS
20.0					20 ft - WELL GRADED SAND (SW), moist, dark grayish brown (2.5Y 4/2), mostly med-very coarse sand, few small gravel, large cobble at ~21 ft bgs, ~5 inch, subround. OUTWASH.
					22.5 ft - SILT (ML), moist, dark yellowish brown (10YR 4/6), mostly silt, few fine sand, mica evident.
					23 ft - WELL GRADED SAND WITH GRAVEL (SW), moist, dark grayish brown (2.5Y 4/2), mostly med-very coarse sand, little gravel, 0.2-3 inch, subround-subangular. OUTWASH.
25.0					
					26 ft - WELL GRADED GRAVEL WITH SAND (GW), wet, olive brown (2.5Y 4/3), mostly gravel, 0.2-3 inch, subangular, some med-very coarse sand, trace-few silt/clay. OUTWASH.
					29 ft - WELL GRADED SAND WITH GRAVEL (SW), wet, olive brown (2.5Y 4/3), mostly fine-very coarse sand, little-some gravel, 0.2-3 inch, subangular-subround, with a 1 inch thick layer of SILTY SAND (SM), dark brown (10YR 3/3), at 30 ft.
30.0	2.5		26-36'	8'	
	1.5				
	2				
	1.7				
	0.6				
35.0	1.2				
			36-37'	1'	35.5 ft - SANDY CLAY WITH GRAVEL (CL), moist, dark olive brown (2.5Y 3/3), mostly clay/silt, little-some fine-coarse sand, little gravel, 0.2-3 inch. TILL.
					Boring terminated at 37 ft bgs. 6 inch extraction well ERT-EW-7 constructed in borehole - See log for details.
40.0					
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Well Installation Details

EarthTech

A tyco International Ltd. Company

GROUND WATER MONITORING WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

EARTH TECH FIELD REPRESENTATIVE: Leslee Alexander

JOB NO. 92066.01

INSTALLATION NO. ERT-8D

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-8D

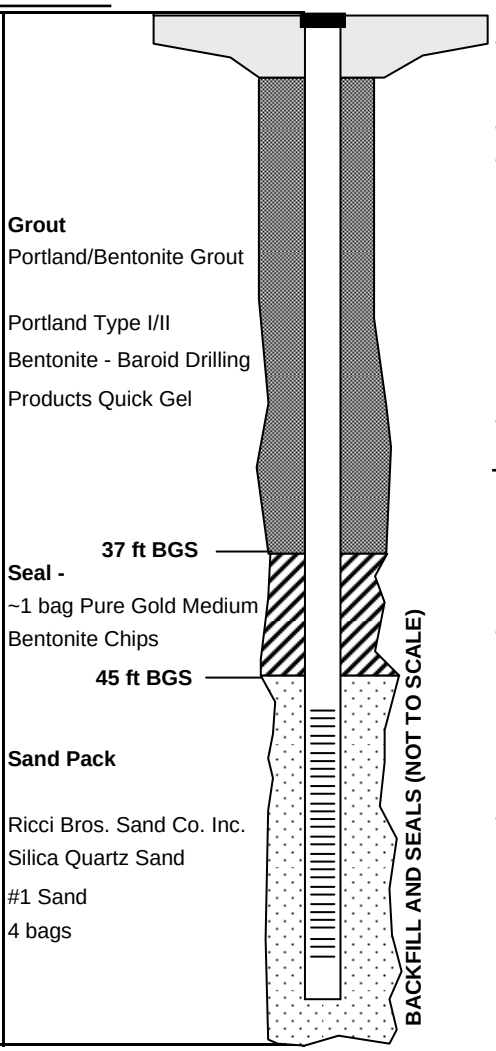
LOCATION Access Rd under overpass

INSTALLATION DATE 10/31/2006

SURVEY DATUM: Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA

See boring log for ERT-8D for lithologic details



*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland/Bentonite Grout

THICKNESS OF SURFACE SEAL ~37 ft

TYPE OF WELL CASING OR RISER PIPE Sch 40 PVC

INSIDE DIAMETER 2 inch

APPROXIMATE DIAMETER OF BOREHOLE 6 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 46.35 ft BTOC

SCREEN TYPE Sch 40 PVC factory slot

SCREEN GAUGE OR SIZE OF OPENINGS 0.010 inch

INSIDE DIAMETER 2 inch

TYPE OF BACKFILL AROUND POINT #1 Sand

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 56.35 ft BTOC

BOTTOM OF WELL ELEV. _____ **DEPTH** 56.68 ft BTOC

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 58 ft BGS

46.35 ft	+	10 ft	+	0.33 ft	=	56.68 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT

SEALS

SAND PACK

EarthTech

A tyco International Ltd. Company

GROUND WATER MONITORING WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

EARTH TECH FIELD REPRESENTATIVE: Leslee Alexander

JOB NO. 92066.01

INSTALLATION NO. ERT-8I

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-8I

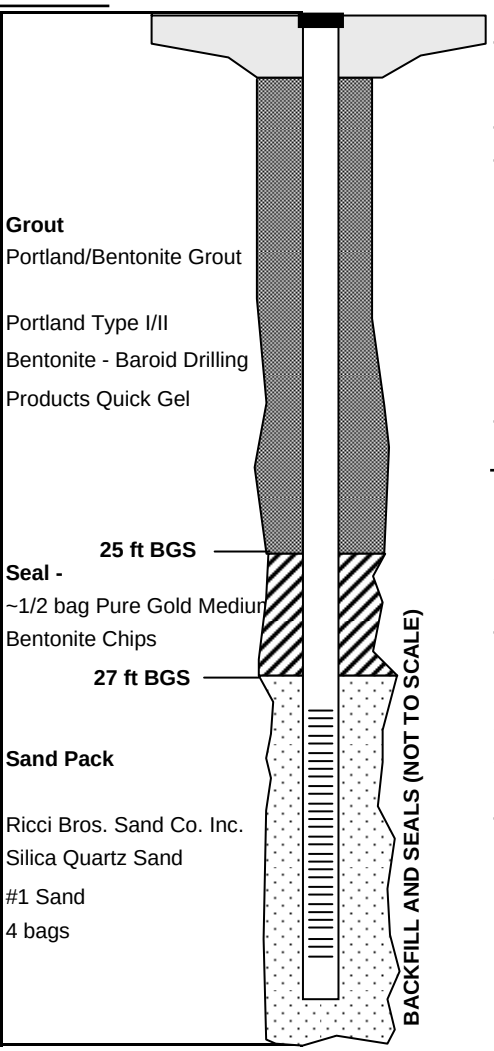
LOCATION ~5 ft NW of ERT-8D

INSTALLATION DATE 10/31/2006

SURVEY DATUM: - Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA

See boring log for ERT-8D for lithologic details



*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland/Bentonite Grout

THICKNESS OF SURFACE SEAL ~25 ft

TYPE OF WELL CASING OR RISER PIPE Sch 40 PVC

INSIDE DIAMETER 2 inch

APPROXIMATE DIAMETER OF BOREHOLE 6 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 29.42 ft BTOC

SCREEN TYPE Sch 40 PVC factory slot

SCREEN GAUGE OR SIZE OF OPENINGS 0.010 inch

INSIDE DIAMETER 2 inch

TYPE OF BACKFILL AROUND POINT #1 Sand

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 39.42 ft BTOC

BOTTOM OF WELL ELEV. _____ **DEPTH** 39.75 ft BTOC

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 40 ft BGS

29.42 ft	+	10 ft	+	0.33 ft	=	39.75 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT

SEALS

SAND PACK

EarthTech

A tyco International Ltd. Company

GROUND WATER MONITORING WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

EARTH TECH FIELD REPRESENTATIVE: Leslee Alexander

JOB NO. 92066.01

INSTALLATION NO. ERT-8S

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-8S

LOCATION ~5 ft NW of ERT-8I

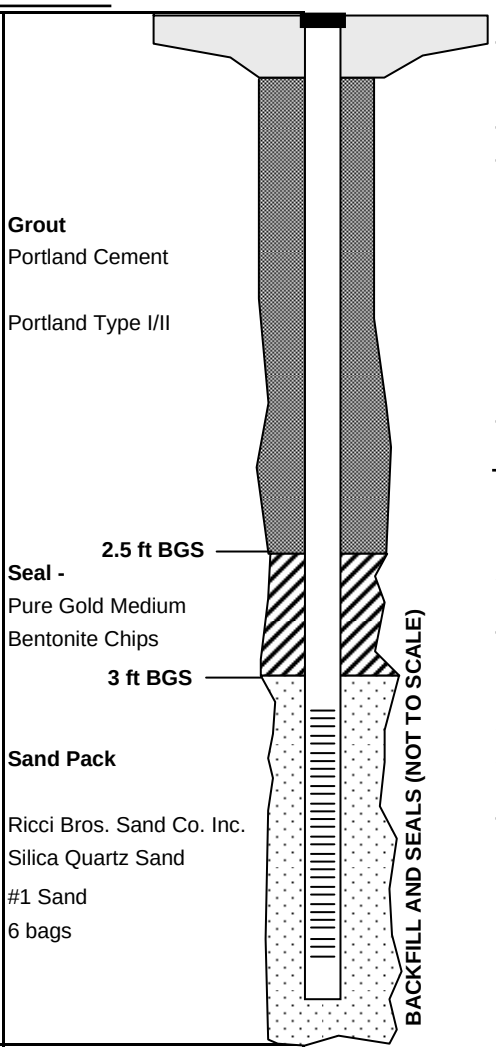
INSTALLATION DATE 11/1/2006

SURVEY DATUM: - Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA

See boring log for ERT-8D for lithologic details

Note:
hit a large boulder/cobble at ~14 ft. Driller tried to push it out of the way.
Resulted in a very large borehole near screen - required extra sand to fill annular space around well



*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland type I/II Cement

THICKNESS OF SURFACE SEAL ~2.5 ft

TYPE OF WELL CASING OR RISER PIPE Sch 40 PVC

INSIDE DIAMETER 2 inch

APPROXIMATE DIAMETER OF BOREHOLE 6 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 4.85 ft BTOC

SCREEN TYPE Sch 40 PVC factory slot

SCREEN GAUGE OR SIZE OF OPENINGS 0.010 inch

INSIDE DIAMETER 2 inch

TYPE OF BACKFILL AROUND POINT #1 Sand

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 14.85 ft BTOC

BOTTOM OF WELL ELEV. _____ **DEPTH** 15.18 ft BTOC

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 15.5 ft BGS

4.85 ft	+	10 ft	+	0.33 ft	=	15.18 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT

SEALS

SAND PACK

GROUND WATER MONITORING WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA ERT/ Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

REAC/LOCKHEED FIELD REPRESENTATIVE: Chris Sklaney

JOB NO. 92066.01

INSTALLATION NO. ERT-9D

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-9D

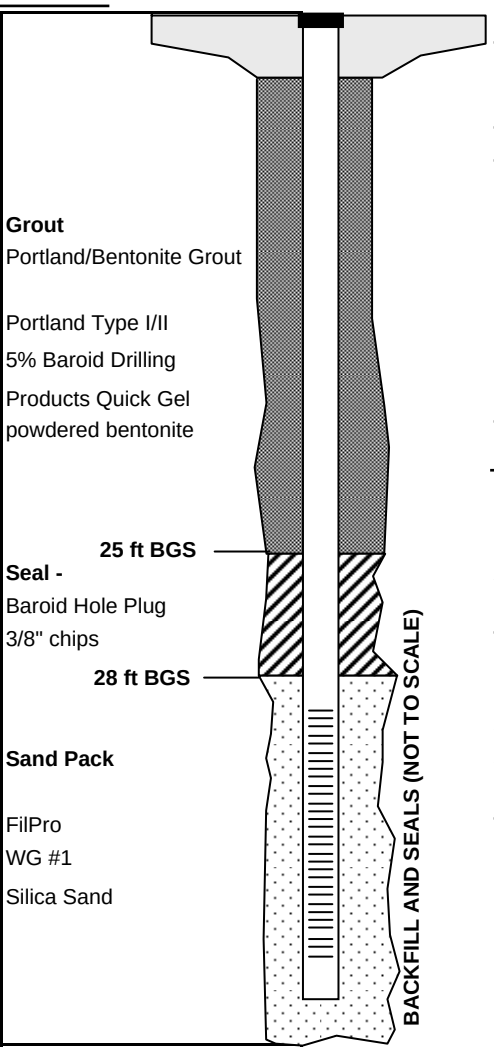
LOCATION

INSTALLATION DATE 11/7/2006

SURVEY DATUM: Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA

See boring log for ERT-9D for lithologic details



*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland Type I/II

THICKNESS OF SURFACE SEAL ~25 ft

TYPE OF WELL CASING OR RISER PIPE Sch 40 PVC

INSIDE DIAMETER 2 inch

APPROXIMATE DIAMETER OF BOREHOLE 6 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 30.7 ft BGS

SCREEN TYPE Sch 40 PVC factory slot

SCREEN GAUGE OR SIZE OF OPENINGS 0.010 inch

INSIDE DIAMETER 2 inch

TYPE OF BACKFILL AROUND POINT #1 WG Silica

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 40.7 ft BGS

BOTTOM OF WELL ELEV. _____ **DEPTH** 41 ft BGS

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 46 ft BGS

30.7 ft	+	10 ft	+	0.3 ft	=	41 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT

SEALS

SAND PACK

GROUND WATER MONITORING WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA ERT/Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

REAC/LOCKHEED FIELD REPRESENTATIVE: Chris Sklaney

JOB NO. 92066.01

INSTALLATION NO. ERT-9I

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-9I

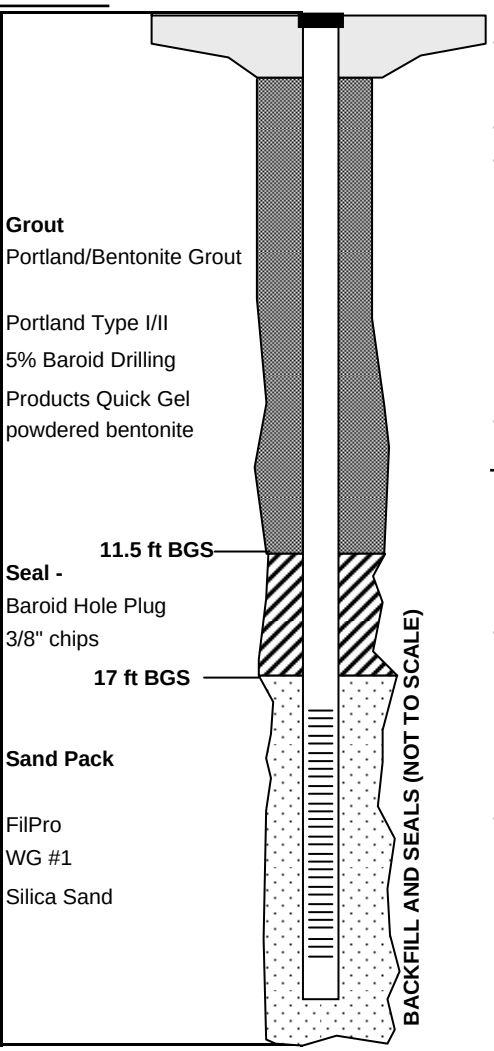
LOCATION

INSTALLATION DATE 11/8/2006

SURVEY DATUM: Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA

See boring log for ERT-9D for lithologic details



*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland Type I/II

THICKNESS OF SURFACE SEAL ~11.5 ft

TYPE OF WELL CASING OR RISER PIPE Sch 40 PVC

INSIDE DIAMETER 2 inch

APPROXIMATE DIAMETER OF BOREHOLE 6 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 18.2 ft BGS

SCREEN TYPE Sch 40 PVC factory slot

SCREEN GAUGE OR SIZE OF OPENINGS 0.010 inch

INSIDE DIAMETER 2 inch

TYPE OF BACKFILL AROUND POINT #1 WG Silica

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 28.2 ft BGS

BOTTOM OF WELL ELEV. _____ **DEPTH** 28.5 ft BGS

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 28.5 ft BGS

18.2 ft	+	10 ft	+	0.3 ft	=	28.5 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT

SEALS

SAND PACK

GROUND WATER MONITORING WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA ERT/Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

REAC/LOCKHEED FIELD REPRESENTATIVE: Chris Sklaney

JOB NO. 92066.01

INSTALLATION NO. ERT-10D

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-10D

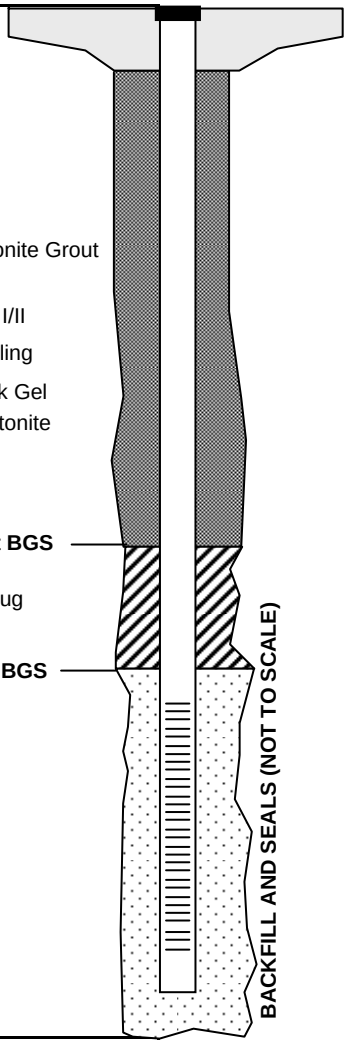
LOCATION

INSTALLATION DATE 11/8/2006

SURVEY DATUM: Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA

See boring log for ERT-10D for lithologic details



*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland Type I/II

THICKNESS OF SURFACE SEAL ~25 ft

TYPE OF WELL CASING OR RISER PIPE Sch 40 PVC

INSIDE DIAMETER 2 inch

APPROXIMATE DIAMETER OF BOREHOLE 6 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 29.7 ft BGS

SCREEN TYPE Sch 40 PVC factory slot

SCREEN GAUGE OR SIZE OF OPENINGS 0.010 inch

INSIDE DIAMETER 2 inch

TYPE OF BACKFILL AROUND POINT #1 WG Silica

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 39.7 ft BGS

BOTTOM OF WELL ELEV. _____ **DEPTH** 40 ft BGS

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 46 ft BGS

29.7 ft	+	10 ft	+	0.3 ft	=	40 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT

SEALS

SAND PACK

GROUND WATER MONITORING WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA ERT/Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

REAC/LOCKHEED FIELD REPRESENTATIVE: Chris Sklaney

JOB NO. 92066.01

INSTALLATION NO. ERT-10I

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-10I

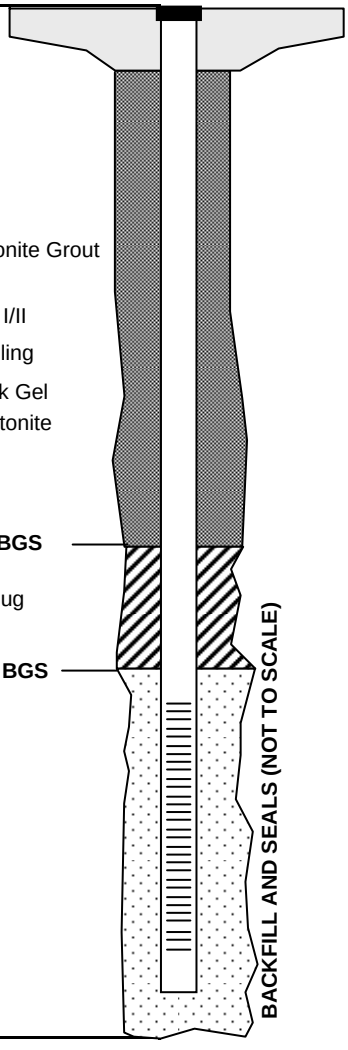
LOCATION

INSTALLATION DATE 11/8/2006

SURVEY DATUM: - Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA

See boring log for ERT-10D for lithologic details



*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland Type I/II

THICKNESS OF SURFACE SEAL ~9 ft

TYPE OF WELL CASING OR RISER PIPE Sch 40 PVC

INSIDE DIAMETER 2 inch

APPROXIMATE DIAMETER OF BOREHOLE 6 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 13.7 ft BGS

SCREEN TYPE Sch 40 PVC factory slot

SCREEN GAUGE OR SIZE OF OPENINGS 0.010 inch

INSIDE DIAMETER 2 inch

TYPE OF BACKFILL AROUND POINT #1 WG Silica

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 23.7 ft BGS

BOTTOM OF WELL ELEV. _____ **DEPTH** 24 ft BGS

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 24 ft BGS

13.7 ft	+	10 ft	+	0.3 ft	=	24 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT

SEALS

SAND PACK

GROUND WATER MONITORING WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA ERT/Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

REAC/LOCKHEED FIELD REPRESENTATIVE: Chris Sklaney

JOB NO. 92066.01

INSTALLATION NO. ERT-19D

TYPE OF INSTALLATION Rotosonic

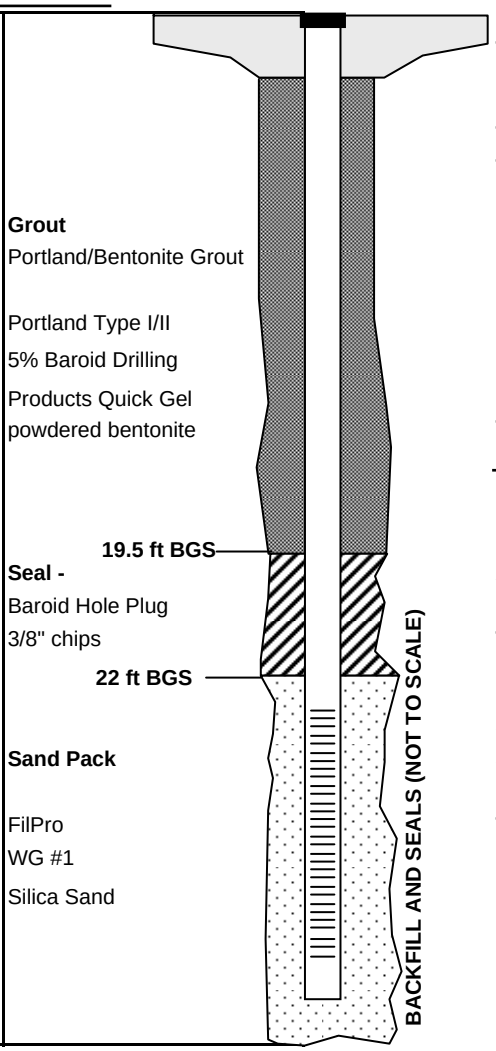
BORING NO. ERT-19D

LOCATION

INSTALLATION DATE 11/7/2006

SURVEY DATUM: - Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA



*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland Type I/II

THICKNESS OF SURFACE SEAL ~19.5 ft

TYPE OF WELL CASING OR RISER PIPE Sch 40 PVC

INSIDE DIAMETER 2 inch

APPROXIMATE DIAMETER OF BOREHOLE 6 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 23.7 ft BGS

SCREEN TYPE Sch 40 PVC factory slot

SCREEN GAUGE OR SIZE OF OPENINGS 0.010 inch

INSIDE DIAMETER 2 inch

TYPE OF BACKFILL AROUND POINT #1 WG Silica

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 33.7 ft BGS

BOTTOM OF WELL ELEV. _____ **DEPTH** 34 ft BGS

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 36 ft BGS

23.7 ft	+	10 ft	+	0.3 ft	=	34 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT

SEALS

SAND PACK

EarthTech

A tyco International Ltd. Company

GROUND EXTRACTION WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

EARTH TECH FIELD REPRESENTATIVE: Leslee Alexander

JOB NO. 92066.01

INSTALLATION NO. ERT-EW-5

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-EW-5

LOCATION ~12 ft WSW of ERT-1S

INSTALLATION DATE 11/1/06 - 11/2/06

SURVEY DATUM: - Not surveyed as of 11/30/06

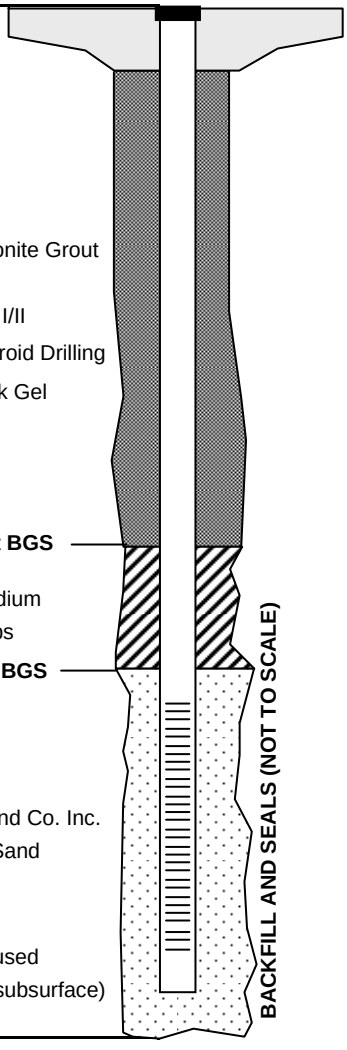
GROUND SURFACE ELEVATION: NA

See boring log for ERT-EW-5 for lithologic details

6 inch extraction well with 20 ft screen, with a 1 inch "spy well" (20 ft screen) installed in borehole adjacent to EW for purpose of water level monitoring once extraction system piped

NOTE:
6 inch hole to 40 ft

10 inch hole to 38 ft



Grout
Portland/Bentonite Grout

Portland Type I/II
Bentonite - Baroid Drilling Products Quick Gel

Seal -
Pure Gold Medium Bentonite Chips

Sand Pack

Ricci Bros. Sand Co. Inc.
Silica Quartz Sand
#2 Sand
15 bags
(large hole caused by cobbles in subsurface)

*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland/Bentonite Grout

THICKNESS OF SURFACE SEAL ~14 ft

TYPE OF WELL CASING OR RISER PIPE Sch 80 PVC

INSIDE DIAMETER ~6 inch

APPROXIMATE DIAMETER OF BOREHOLE 10 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 17.24 ft BTOC

SCREEN TYPE PVC Vee-Wire (continuouse slot)

SCREEN GAUGE OR SIZE OF OPENINGS 0.020 inch

INSIDE DIAMETER ~6 inch

TYPE OF BACKFILL AROUND POINT #2 Sand

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 37.24 ft BTOC

BOTTOM OF WELL ELEV. _____ **DEPTH** 37.65 ft BTOC

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 40 ft BGS

17.24 ft	+	20 ft	+	0.41 ft	=	37.65 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT
SEALS
SAND PACK

EarthTech

A tyco International Ltd. Company

GROUND EXTRACTION/MONITORING WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

EARTH TECH FIELD REPRESENTATIVE: Leslee Alexander

JOB NO. 92066.01

INSTALLATION NO. ERT-EW-6

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-EW-6

LOCATION ~10 ft ENE of ERT-1

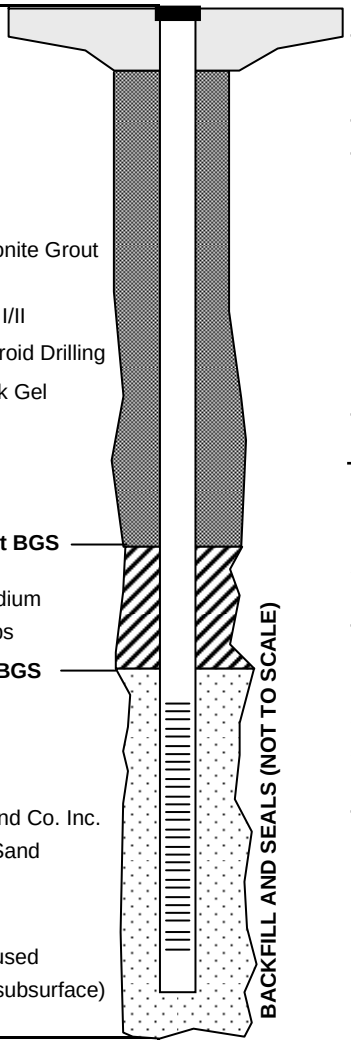
INSTALLATION DATE 11/2/2006

SURVEY DATUM: Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA

See boring log for ERT-EW-5 for lithologic details

No lithology collected on this hole



Grout
Portland/Bentonite Grout

Portland Type I/II
Bentonite - Baroid Drilling Products Quick Gel

Seal -
Pure Gold Medium Bentonite Chips

Sand Pack

Ricci Bros. Sand Co. Inc.
Silica Quartz Sand
#1 Sand
7 bags
(large hole caused by cobbles in subsurface)

*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland/Bentonite Grout

THICKNESS OF SURFACE SEAL ~14 ft

TYPE OF WELL CASING OR RISER PIPE Sch 40 PVC

INSIDE DIAMETER 4 inch

APPROXIMATE DIAMETER OF BOREHOLE 8 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 10.04 ft BTOC

SCREEN TYPE Sch 40 PVC

SCREEN GAUGE OR SIZE OF OPENINGS 0.010 inch

INSIDE DIAMETER 4 inch

TYPE OF BACKFILL AROUND POINT #1 Sand

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 20.08 ft BTOC

BOTTOM OF WELL ELEV. _____ **DEPTH** 20.48 ft BTOC

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 21.4 ft BGS

10.04 ft	+	10.04 ft	+	0.40 ft	=	20.48 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT
SEALS
SAND PACK

EarthTech

A tyco International Ltd. Company

GROUND EXTRACTION WELL INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

EARTH TECH FIELD REPRESENTATIVE: Leslee Alexander

JOB NO. 92066.01

INSTALLATION NO. ERT-EW-7

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-EW-7

LOCATION ~8 ft SW of ERT-5

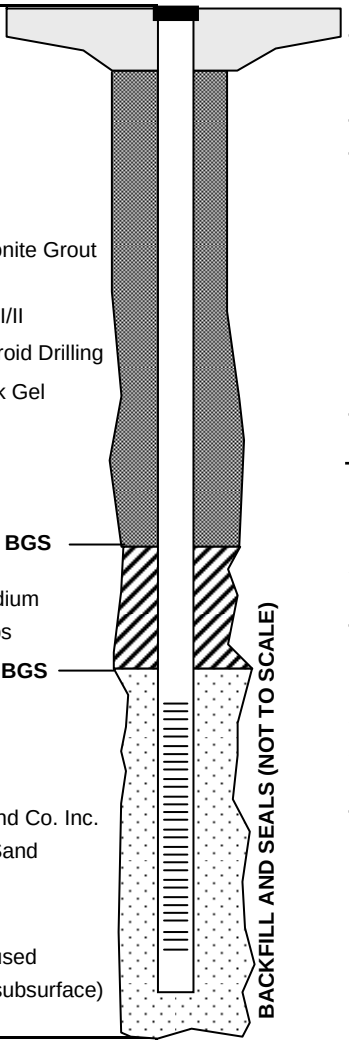
INSTALLATION DATE 11/2/2006

SURVEY DATUM: - Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA

See boring log for ERT-EW-7 for lithologic details

6 inch extraction well with 20 ft screen, with a 1 inch "spy well" (20 ft screen) installed in borehole adjacent to EW for purpose of water level monitoring once extraction system piped



Grout
Portland/Bentonite Grout

Portland Type I/II
Bentonite - Baroid Drilling Products Quick Gel

Seal -
Pure Gold Medium Bentonite Chips

Sand Pack

Ricci Bros. Sand Co. Inc.
Silica Quartz Sand
#2 Sand
12 bags
(large hole caused by cobbles in subsurface)

*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland/Bentonite Grout

THICKNESS OF SURFACE SEAL ~13 ft

TYPE OF WELL CASING OR RISER PIPE Sch 80 PVC

INSIDE DIAMETER ~6 inch

APPROXIMATE DIAMETER OF BOREHOLE 10 inch

TOP OF SCREEN ELEV. _____ **DEPTH** 16.18 ft BTOC

SCREEN TYPE PVC Vee-Wire (continuouse slot)

SCREEN GAUGE OR SIZE OF OPENINGS 0.020 inch

INSIDE DIAMETER ~6 inch

TYPE OF BACKFILL AROUND POINT #2 Sand

BOTTOM OF SCREEN ELEV. _____ **DEPTH** 36.18 ft BTOC

BOTTOM OF WELL ELEV. _____ **DEPTH** 36.59 ft BTOC

BOTTOM OF BOREHOLE ELEV. _____ **DEPTH** 37 ft BGS

16.18 ft	+	20 ft	+	0.41 ft	=	36.59 ft
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT
SEALS
SAND PACK

EarthTech

A tyco International Ltd. Company

MULTIPLE SPARGE POINT INSTALLATION DETAIL

PROJECT: Brewster Well Field - Additional Well Installation

LOCATION: Putnam County, New York

CLIENT: U.S. EPA Region II

CONTRACTOR: Prosonic Corp., Medford, NJ

DRILLER: Rick Tabor

EARTH TECH FIELD REPRESENTATIVE: Leslee Alexander

JOB NO. 92066.01

INSTALLATION NO. ERT-SPR-1

TYPE OF INSTALLATION Rotosonic

BORING NO. ERT-SPR-1

LOCATION ~5 ft SE of ERT-6I

INSTALLATION DATE 11/6/2006

SURVEY DATUM: - Not surveyed as of 11/30/06

GROUND SURFACE ELEVATION: NA

TOP OF FLUSHMOUNT PROTECTIVE PLATE ELEV. NA

TOP OF WELL CASING OR RISER PIPE ELEV. _____ **STICKUP** _____

TYPE OF SURFACE SEAL Portland/Bentonite Grout

THICKNESS OF SURFACE SEAL ~10 ft

TYPE OF WELL CASING OR RISER PIPE Sch 40 PVC

INSIDE DIAMETER 2 inch

APPROXIMATE DIAMETER OF BOREHOLE 10 inch

FIRST SCREEN INTERVAL
ELEV. _____ **DEPTH** 14.89-18 ft BGS

SECOND SCREEN INTERVAL
ELEV. _____ **DEPTH** 21.89-25 ft BGS

THIRD SCREEN INTERVAL
ELEV. _____ **DEPTH** 34.89-38 ft BGS

SCREEN TYPE Microporous Spargepoints®

SCREEN GAUGE OR SIZE OF OPENINGS NA - Microporous

INSIDE DIAMETER 2 inch

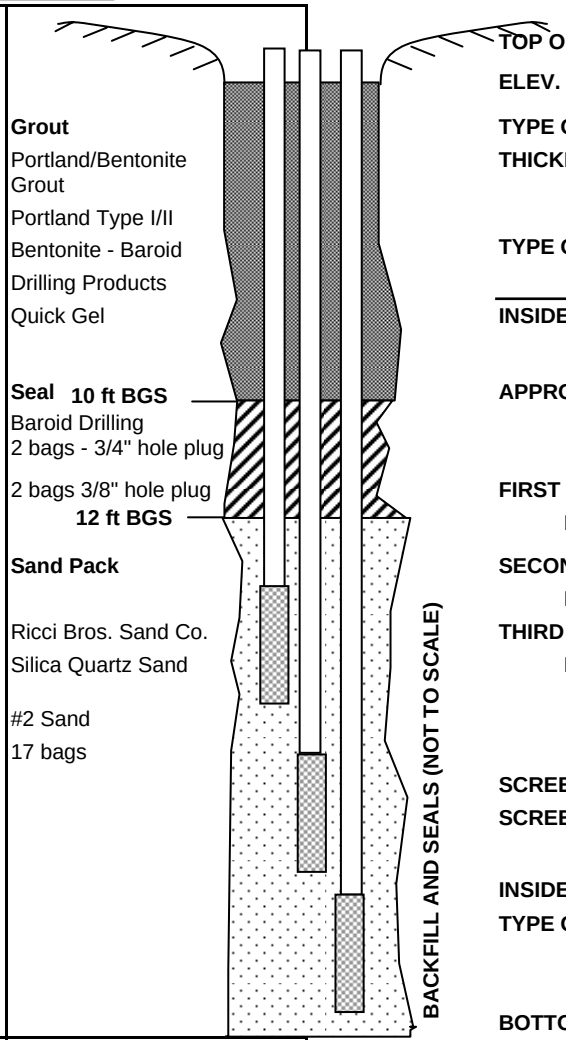
TYPE OF BACKFILL AROUND POINT #2 Sand

BOTTOM OF BOREHOLE
ELEV. _____ **DEPTH** 41 ft BGS

See boring log for ERT-SPR-1 for lithologic details

NOTE:

Lots of trouble pulling out/detatching casing- driller needed to use torch to loosen threads



*FIGURES ABOVE REFER TO DEPTH IN FEET

*ALL DEPTHS ARE RELATIVE TO GROUND SURFACE

NA	+	3.11 each	+	NA	=	NA
LENGTH OF RISER PIPE		SCREEN LENGTH		LENGTH OF BOTTOM CAP		TOTAL

GROUT

SEALS

SAND PACK

ATTACHMENT B

PHOTO LOG



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: October 31, 2006

Photo #: 028_25A.jpg

Taken by: R. Morgan
L. Alexander

Description:

Rotosonic rig set up on ERT-8D.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: October 31, 2006

Photo #: 026_23A.jpg

Taken by: R. Morgan
L. Alexander

Description:

Alluvium/wetlands soil at ~8 ft bgs in boring ERT-8D.

EarthTech
A tyco International Ltd. Company



Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	October 31, 2006
Photo #:	024_21A.jpg
Taken by:	R. Morgan L. Alexander

Description:

Rotosonic rig set up on ERT-8I with ERT-8D visible Under drilling platfrom.

EarthTech
A tyco International Ltd. Company

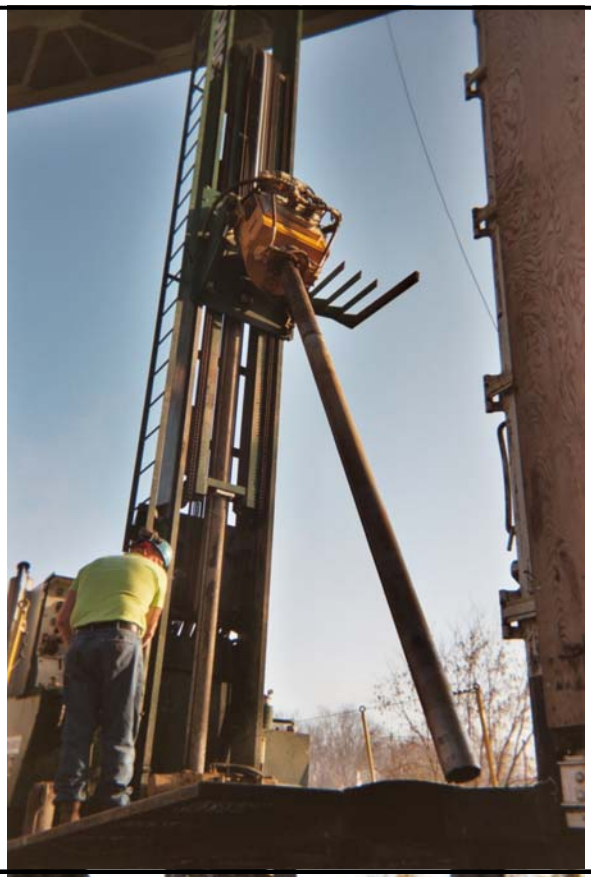


Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 1, 2006
Photo #:	022_19A.jpg
Taken by:	R. Morgan L. Alexander

Description:

Rotosonic rig set up on ERT-8S.

EarthTech
A tyco International Ltd. Company



Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 1, 2006
Photo #:	019_16A.jpg
Taken by:	R. Morgan L. Alexander

Description:

Rotosonic drilling at ERT-8S.

EarthTech
A tyco International Ltd. Company



Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 1, 2006
Photo #:	017_14A.jpg
Taken by:	R. Morgan L. Alexander

Description:

ERT-8S, ERT-8I, and ERT-8D Looking south towards Route 22.

EarthTech
A tyco International Ltd. Company



Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 1, 2006
Photo #:	016_13A.jpg
Taken by:	R. Morgan L. Alexander

Description:

Labeled drum with cuttings From ERT-8D.

EarthTech
A tyco International Ltd. Company



Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 1, 2006
Photo #:	014_11A.jpg
Taken by:	R. Morgan L. Alexander

Description:

EPA Superfund Cleanup Sign At fence to treatment system Access road.

EarthTech
A tyco International Ltd. Company



Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 1, 2006
Photo #:	013_10A.jpg
Taken by:	R. Morgan L. Alexander

Description:

Rotosonic rig set up at ERT-EW-5.

EarthTech
A tyco International Ltd. Company



Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 1, 2006
Photo #:	004_1A.jpg
Taken by:	R. Morgan L. Alexander

Description:

Rotosonic rig Set up at ERT-EW-5, preparing to overdrill With 10 inch casing.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 1, 2006

Photo #: DSCN1117.jpg

Taken by: R. Morgan
L. Alexander

Description:

Well graded sand with silt and Gravel at ~20 ft in boring ERT-EW-5.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 1, 2006

Photo #: DSCN1118.jpg

Taken by: R. Morgan
L. Alexander

Description:

Olive brown silt at 22.3 ft bgs In boring ERT-EW-5.

EarthTech
A tyco International Ltd. Company

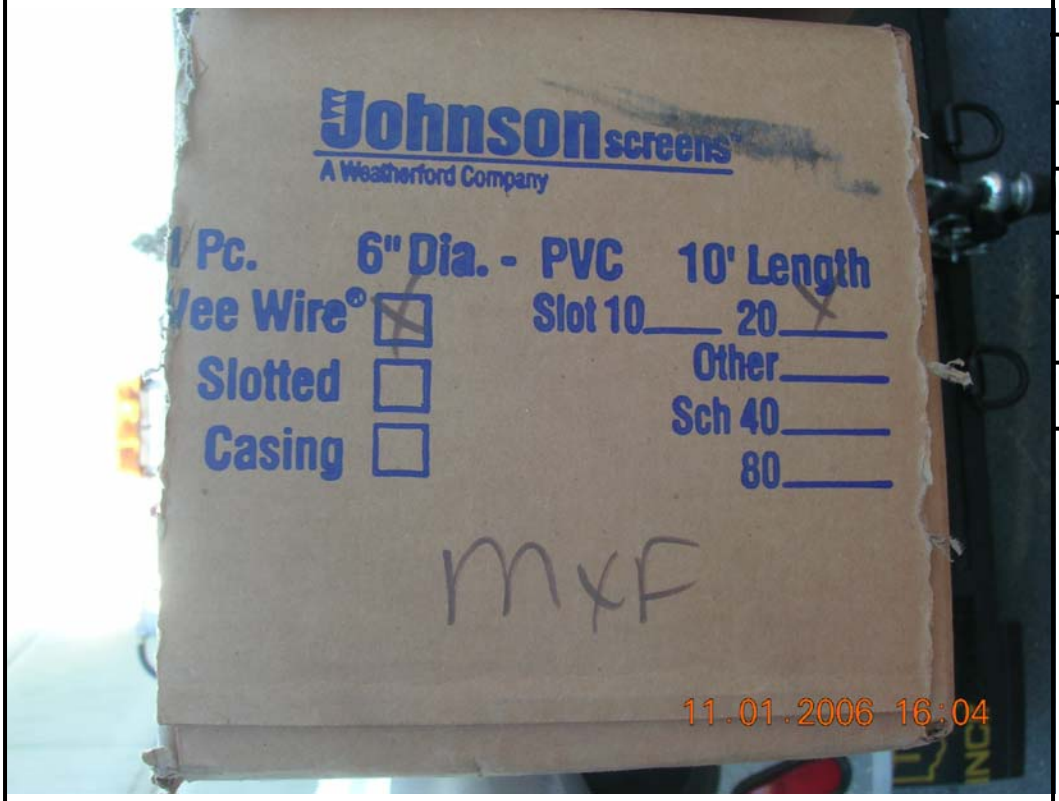


Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 1, 2006
Photo #:	DSCN1119.jpg
Taken by:	R. Morgan L. Alexander

Description:

Well construction materials (e.g., PVC well screens and Casing and filter pack sand) Loaded for transport to well Location.

EarthTech
A tyco International Ltd. Company



Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 1, 2006
Photo #:	DSCN1120.jpg
Taken by:	R. Morgan L. Alexander

Description:

Johnson screens 6 inch diameter PVE VEE Wire 20 slot screen Used for 6 inch extraction wells.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 1, 2006

Photo #: DSCN1122.jpg

Taken by: R. Morgan
L. Alexander

Description:

Photo looking inside the 6 inch, 20 slot, PVC Vee Wire screen.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 1, 2006

Photo #: DSCN1123.jpg

Taken by: R. Morgan
L. Alexander

Description:

10 inch casing for drilling with 6-inch, 20 slot PVC Vee Wire Screen and 6-inch Sch 80 well casing prepped for installation.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

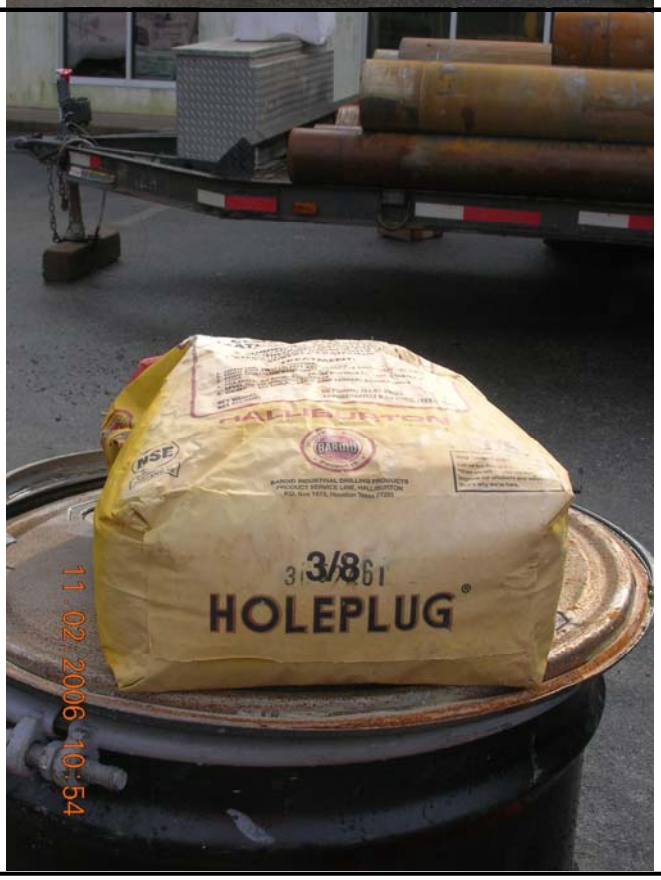
Photo #: DSCN1126.jpg

Taken by: R. Morgan
L. Alexander

Description:

Rotosonic rig set up on ERT-EW-6.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

Photo #: DSCN1127.jpg

Taken by: R. Morgan
L. Alexander

Description:

Baroid Drilling 3/8 inch hole Plug used for well seal.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

Photo #: DSCN1128.jpg

Taken by: R. Morgan
L. Alexander

Description:

Extraction well ERT-EW-5 Before surface completion, Showing 6-inch extraction Well with adjacent 1-inch “spywell” in the borehole.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

Photo #: DSCN1129.jpg

Taken by: R. Morgan
L. Alexander

Description:

Rotosonic rig set up on ERT-EW-6, with ERT-EW-5 visible In the foreground.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

Photo #: DSCN1132.jpg

Taken by: R. Morgan
L. Alexander

Description:

Earth Tech geologist measuring Well materials.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

Photo #: DSCN1135.jpg

Taken by: R. Morgan
L. Alexander

Description:

Gneiss cobbles encountered During drilling of ERT-EW-6.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

Photo #: DSCN1136.jpg

Taken by: R. Morgan
L. Alexander

Description:

Driller using jackhammer to Clear materials for surface Completion at ERT-EW-6.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

Photo #: DSCN1141.jpg

Taken by: R. Morgan
L. Alexander

Description:

Rotosonic rig set up on ERT-EW-7 drilling 4”X10”.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

Photo #: DSCN1143.jpg

Taken by: R. Morgan
L. Alexander

Description:

Close-up view of head on The rotosonic rig.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

Photo #: DSCN1144.jpg

Taken by: R. Morgan
L. Alexander

Description:

Drillers attach 10 inch casing To head at ERT-EW-7.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

Photo #: DSCN1146.jpg

Taken by: R. Morgan
L. Alexander

Description:

Earth Tech geologist logging Lithology and headpace at ERT-EW-7.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 2, 2006

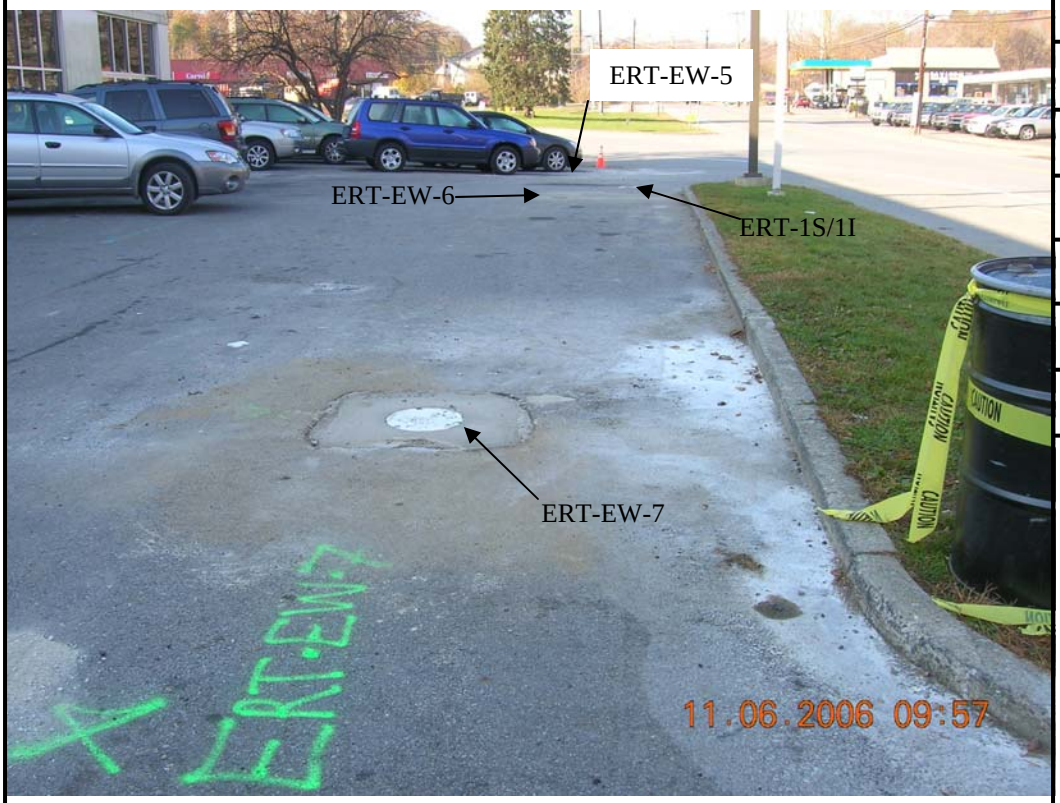
Photo #: DSCN1149.jpg

Taken by: R. Morgan
L. Alexander

Description:

Preparing to install 6-inch Extraction well, beginning With 20 slot PVC Vee Wire Well screen.

EarthTech
A tyco International Ltd. Company



Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 6, 2006
Photo #:	DSCN1155.jpg
Taken by:	R. Morgan L. Alexander

Description:

View of ERT-EW-5, ERT-EW-6 And ERT-EW-7 in front of Subaru dealership.

EarthTech
A tyco International Ltd. Company



Client:	U.S. EPA Region II
Site:	Brewster Well Field Superfund Site
Project:	Well Installation
Project No.:	92066.01
Date:	November 6, 2006
Photo #:	DSCN1156.jpg
Taken by:	R. Morgan L. Alexander

Description:

View of ERT-EW-7 in relation To ERT-5S/5I in front of Subaru Dealership.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 6, 2006

Photo #: DSCN1158.jpg

Taken by: R. Morgan
L. Alexander

Description:

View of ERT-EW-5 and ERT-EW-7 in relation to ERT-1S/1I In front of Subaru Dealership.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 6, 2006

Photo #: DSCN1159.jpg

Taken by: R. Morgan
L. Alexander

Description:

Microporous Spargepoint used For ERT-SPR-1.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 6, 2006

Photo #: DSCN1161.jpg

Taken by: R. Morgan
L. Alexander

Description:

Close up view of the inside Of the 2-inch Microporous Spargepoints used for ERT-SPR-1.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 6, 2006

Photo #: DSCN1163.jpg

Taken by: R. Morgan
L. Alexander

Description:

Contact between fill (dark olive Brown clayey sand) and native Soil (well graded sand with clay And gravel) at ~13 ft bgs in ERT-SPR-1. Note dark gray Staining of native soil. Strong Perto/oil odor present.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 6, 2006

Photo #: DSCN1166.jpg

Taken by: R. Morgan
L. Alexander

Description:

Contact between glacial outwash (well graded gravel with sand) And till (silt with sand) at ~39 ft Bgs in ERT-SPR-1.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 6, 2006

Photo #: DSCN1167.jpg

Taken by: R. Morgan
L. Alexander

Description:

Glacial outwash (well grade g Gravel with sand) at ~38 ft bgs In ERT-SPR-1.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 6, 2006

Photo #: DSCN1168.jpg

Taken by: R. Morgan
L. Alexander

Description:

Till (silt with sand) at ~39 ft bgs In ERT-SPr-1.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 6, 2006

Photo #: DSCN1170.jpg

Taken by: R. Morgan
L. Alexander

Description:

Rotosonic rig set up on ERT-SPR-1 and installing multipoint Sparge well.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 6, 2006

Photo #: DSCN1171.jpg

Taken by: R. Morgan
L. Alexander

Description:

Difficulties getting drill casings Apart. Driller using blow torch Heat up threads to help loosen.

EarthTech
A tyco International Ltd. Company



Client: U.S. EPA Region II

Site: Brewster Well Field Superfund Site

Project: Well Installation

Project No.: 92066.01

Date: November 6, 2006

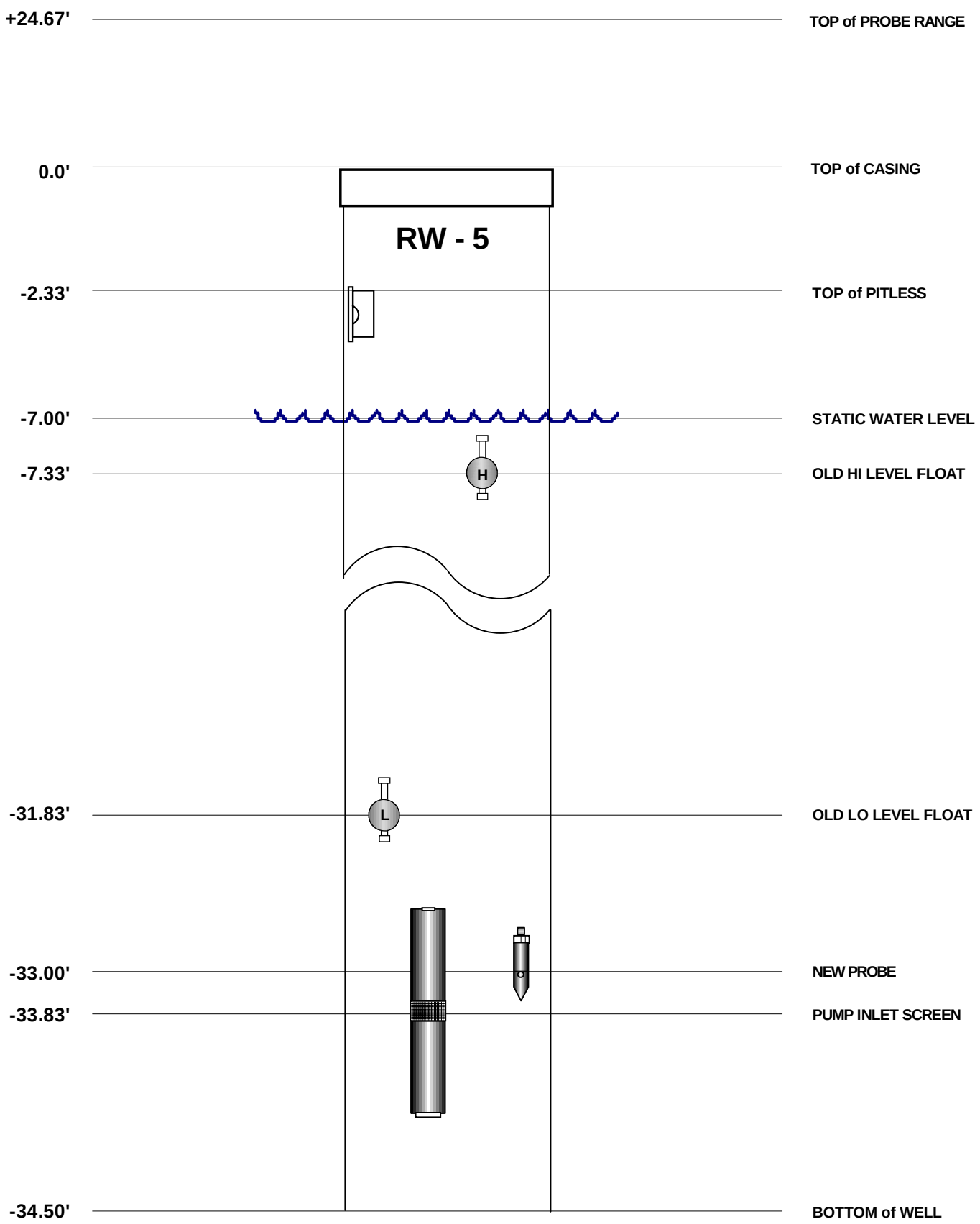
Photo #: DSCN1174.jpg

Taken by: R. Morgan
L. Alexander

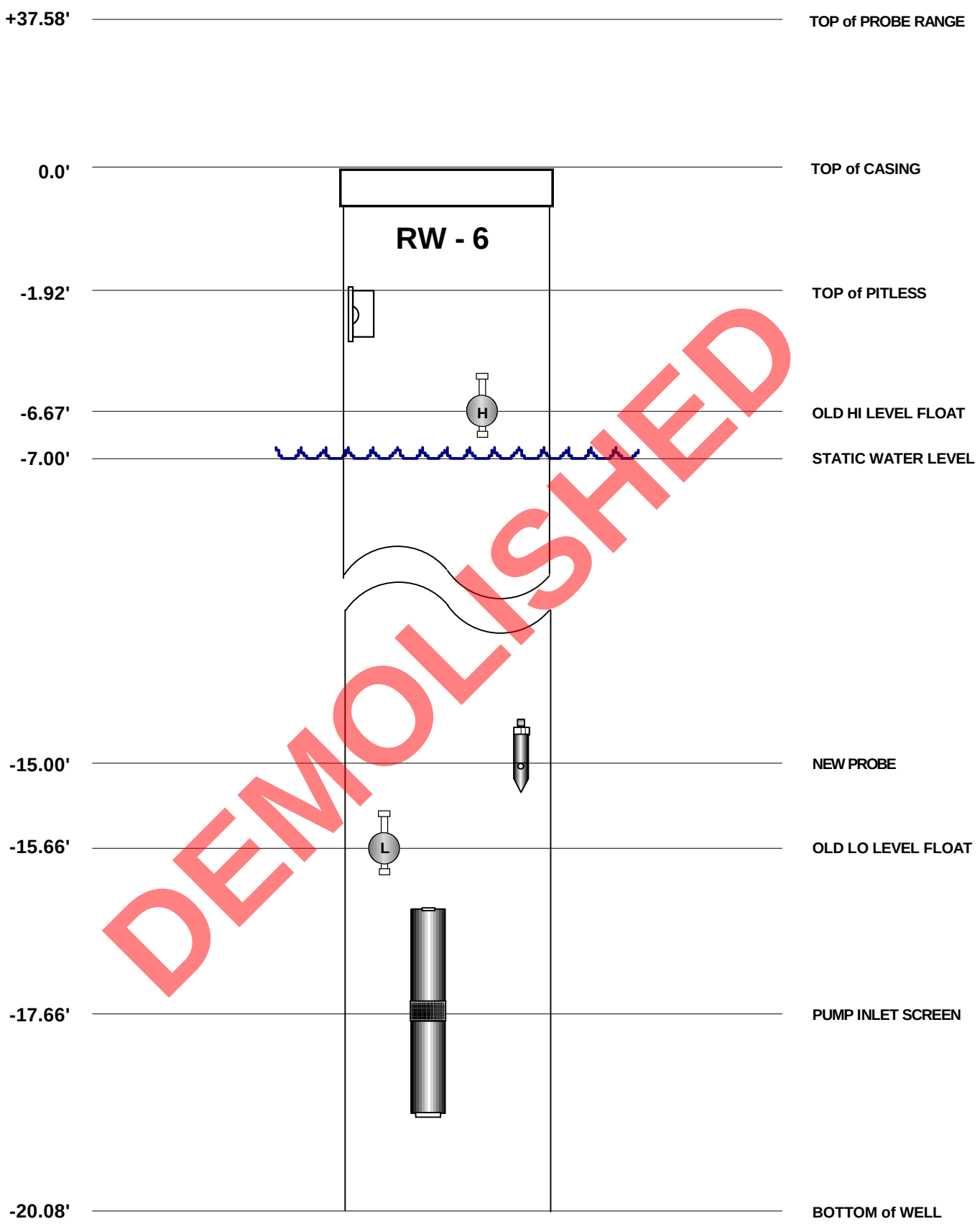
Description:

Close up of rig SR-077, showing Driller's information.

EarthTech
A tyco International Ltd. Company



Title: **RW - 5 BREWSTER VILLAGE WELLFIELD**	
Author: **TB**	
Date: **4 Sept 2008**	Sheet:
Revision:	**NOT TO SCALE**

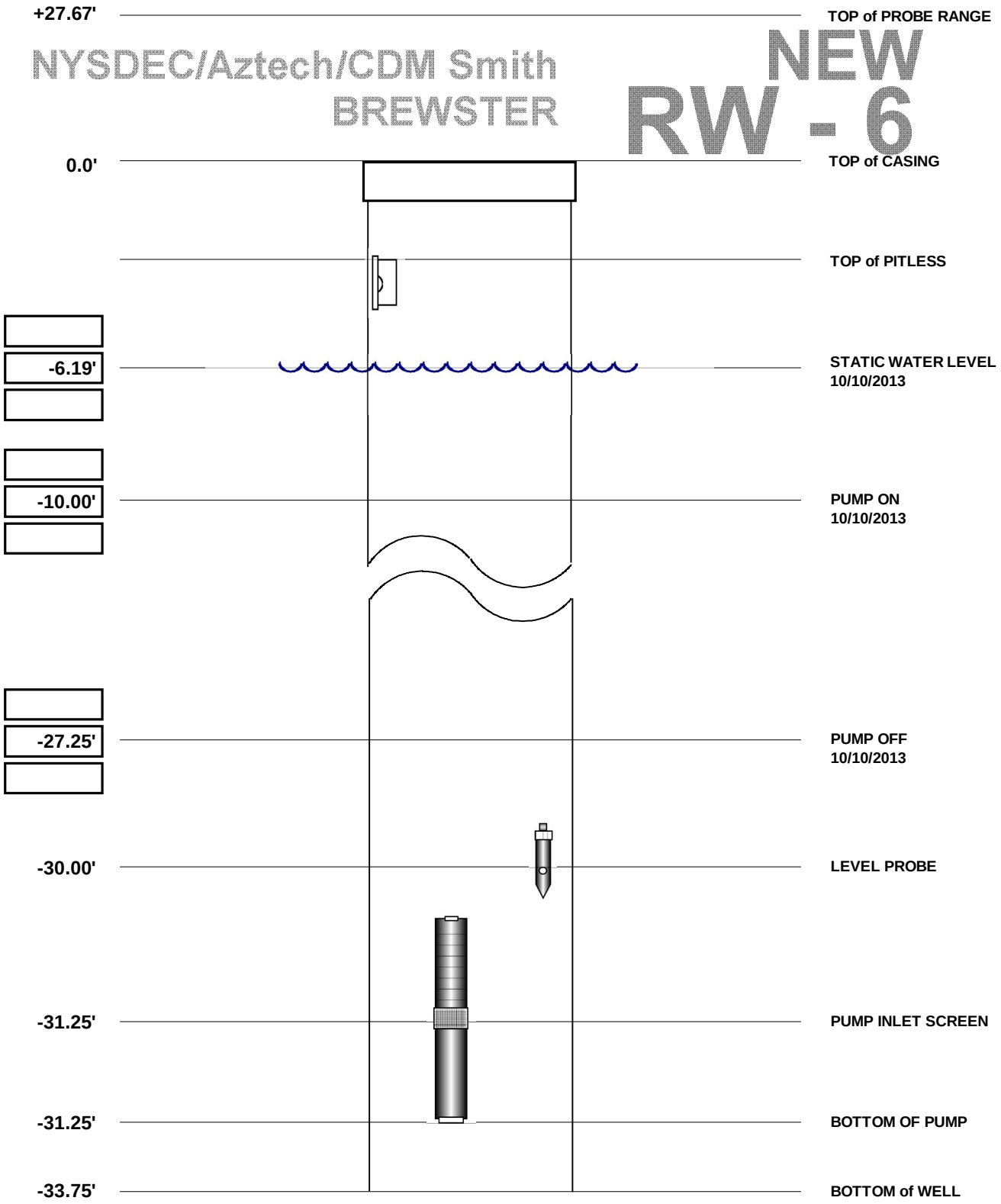


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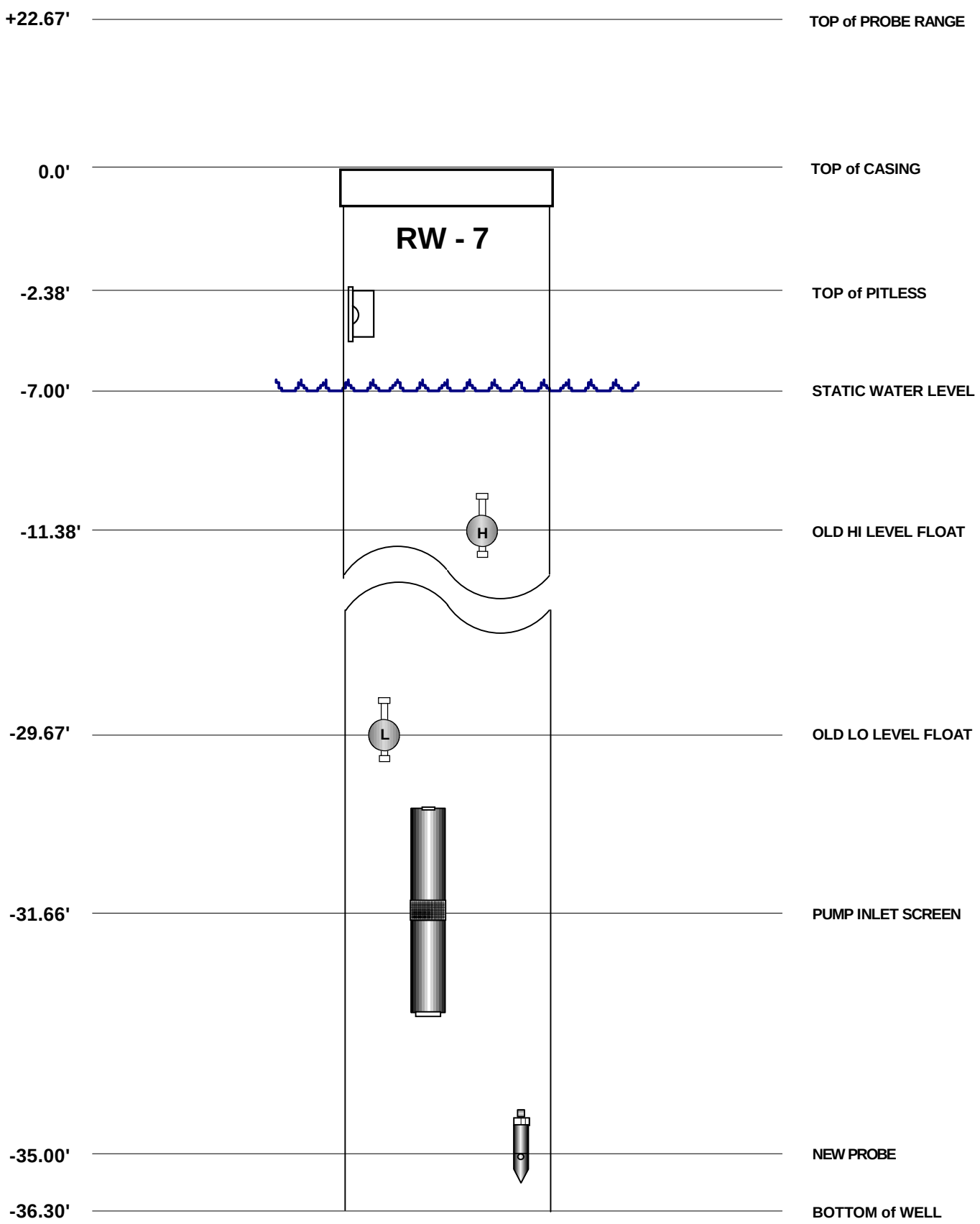
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Author: TB	
Date: 4 Sept 2008	Sheet:
Revision:	NOT TO SCALE

NYSDEC/Aztech/CDM Smith
BREWSTER

NEW RW - 6



Title: **New RW - 6 Brewster Village Wellfield**	
Author: **TB**	
Date: **10 Oct 2013**	Sheet:
Revision:	**NOT TO SCALE**



Title: **RW - 7 BREWSTER VILLAGE WELLFIELD**	
Author: **TB**	
Date: **4 Sept 2008**	Sheet:
Revision:	**NOT TO SCALE**

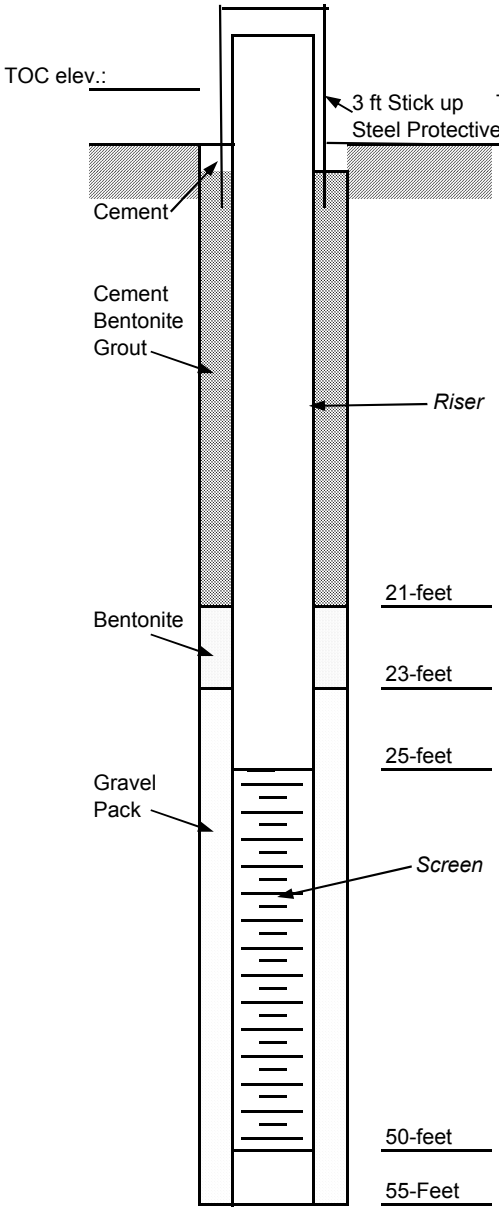
CDM

Consulting, Engineering, Construction & Operations

WELL CONSTRUCTION SUMMARY

Project: Brewster Well Field Location: Brewster, NY Well No.: **CDM-1**

Permit No.: DOT Access Permit # 82300



DRILLING SUMMARY

Drilling Company:	Aztech Technologies	Drillers:	Marty
Drill Rig/Model:	Air Rotary		
Borehole Diameters:	12-inches	Drilling Fluid:	NA
Bits/Depths:			
Total Depth:	42-feet	Depth To Water:	~12.68-feet TOC
Supervisor Geologist:	Ryan Kingsley		

WELL DESIGN

Casing Material:	Stainless Steel	Diameter:	6-inch
Screen Material:	Stainless Steel	Diameter:	6-inch
Slot Size:	0.025	Setting:	25-50-feet
Filter Material:	#2 Sand Pack	Setting:	23-55 feet
Seals Material:	Bentonite Pellets	Setting:	21-23 feet
Grout:	Cement/Bentonite	Setting:	2-21 feet
Surface Casing Material:	Aluminum Road Box	Setting:	0-2 feet

TIME LOG

	Started	Completed
Drilling:	02/05/09	02/05/09
Installation:	02/05/09	02/05/09
Development:	02/06/09	02/06/09

WELL DEVELOPMENT

Method:	Pumping and Surging		
Static Depth to Water:	~5-feet		
Pumping Depth To Water:	~7-feet		
Pumping Rate:	~30 gpm	Spec. Capacity:	
Volume Pumped:	5,000 gallons		

Appendix E

LOW FLOW SAMPLING SHEETS

SITE NAME: _____

DATE: **WELL #:**

SAMPLE TIME: **DEPTH OF PUMP:**

WEATHER CONDITIONS: **SAMPLERS:**

TIME	VOLUME PURGED (GALS)	DEPTH TO WATER (FT TIC)	FLOW RATE (ml/min)	DRAWDOWN FEET	ph (+/- 0.1 SU)	SPECIFIC COND. mS/cm (+/- 3%)	TURBIDITY NTUs (+/- 10%)	DISSOLVED OXYGEN mg/L (+/- 10%)	TEMP ^{0}C (+/- 10%)	REDOX POTENTIAL mV (+/- 10 mv)

The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Appendix F

BREWSTER Treatment System Operation/Inspection Checklist mo _____ yr _____ p.1/2

Action Required	Req'd Freq	Unit	Date of Inspection				
Sampling Event:							
RW-5 Influent collected	M	Y / N					
RW-6 Influent collected	M	Y / N					
RW-7 Influent collected	M	Y / N					
Combined Influent collected	M	Y / N					
Effluent collected	M	Y / N					
Duplicate? (indicate which)	M	Y / N					
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A					
<d> Motor Load	M	%					
<d> Output Voltage	M	V					
<d> DC Bus Voltage	M	V					
<d, d, d> Freq Setpoint	M	Hz					
<d> Output Frequency	M	Hz					
<d> Motor Speed	M	Rpm					
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC					
Clean exterior inlet screen	M	Y / N					
Verify HH Float Operation	M	Y / N					
Clean Air Stripper Trays	6M	Y / N					
Clean Air Stripper Window	6M	Y / N					
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	Y / N					
RW-6 pwheel (note:hi iron)	M	Y / N					
RW-7 paddlewheel	M	Y / N					
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N					
Replaced VFD Air Filters	M	Y / N					
Swept floor	M	Y / N					
Remv'd Garbage, new bag	As nec	Y / N					
Chk'd cleaning/maint supp's	M	Y / N					
Chk'd 1st Aid, eye wash	M	Y / N					
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N					
Log Off ProCtrl (pw:012)	Always	Y / N					
Plug in telephone line	Always	Y / N					
Chk/Reset Heat/Cool t-stats	Always	Y / N					

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date _____

Date _____

Date _____

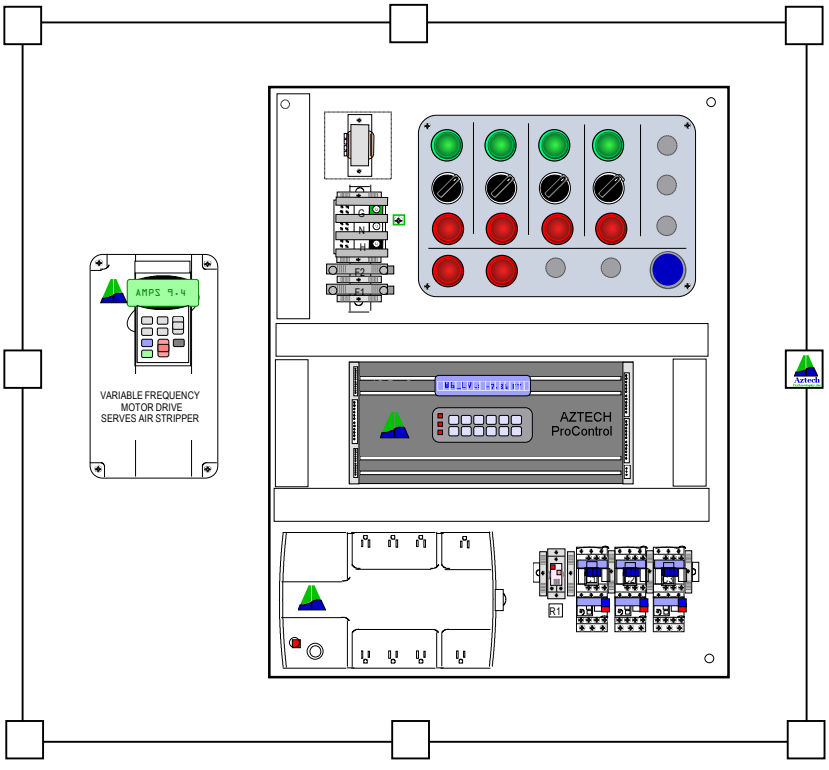
Date _____

Date _____

Appendix G

NYSDEC / AZTECH / CDM SMITH
BREWSTER NY VILLAGE WELLFIELD
REMEDIATION SYSTEM / CONTROL PACKAGE

OPERATION & MAINTENANCE MANUAL 2016



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NYSDEC / AZTECH / CDM SMITH
BREWSTER VILLAGE WELLFIELD REMEDIATION SYSTEM/CONTROL PACKAGE

O&M Manual
Table of Contents

Section	Contains
A:	Introduction
B:	System Quick Reference Guide
C:	September 2008 Upgrade Details
D:	Physical Components / Theory of Operation
E:	Normal System Operation
F:	Treatment System Operation & Maintenance

Appendix A:	Treatment System Operation/Inspection Checklist
Appendix B:	Figures
Appendix C:	ProControl Logic & Reports
Appendix D:	System Components

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NYSDEC / AZTECH / CDM SMITH
BREWSTER VILLAGE WELLFIELD REMEDIATION SYSTEM/CONTROL PACKAGE

A. Introduction

The Brewster Village Wellfield Remediation System is automated in operation, and was originally controlled by a small microprocessor-based programmable logic controller (PLC) to monitor inputs and supply power to various outputs. It was governed by a custom control program ("EarthTechBrewster0709(x).prj") authored by Aztech Environmental Technologies (Aztech). The control system, including sensors, controller, and communication capability, was upgraded in September 2008 by Aztech, to include a ProControl (integrated controller, datalogger, communication system, running an advanced Aztech-authored control program) as well as a Variable Frequency Drive to power the existing Air Stripper Blower.

Details of the upgrades are included in Section C of this manual.

Aztech control panels are designed to be maintenance free. However, the mechanical components that the controls address (sensors, pumps, blowers, etc.) do need periodic attention. Regular maintenance of these components is required to allow the system to continue to perform within design specifications. Be sure to read and follow all safety and maintenance recommendations/requirements provided by the equipment manufacturers attached.

NOTE: *A remediation system of this type inherently possesses dangers capable of inflicting serious injury or death to an untrained or careless operator. The system is further capable of causing ancillary damage to property or the environment if operated incorrectly.*

Aztech is not able to foresee every combination of actions (or lack thereof) that a technician could encounter in the course of operating, servicing, or modifying a remediation system; Aztech assumes no liability relating to operation or maintenance of equipment unless installed, operated, modified, and maintained regularly and exclusively by Aztech personnel.

Any person who intends to operate this system must read and understand all parts of this manual as well as all manufacturer-supplied equipment documentation before operating the System. *A remediation system is highly specialized and designed to be operated and maintained only by technicians who already possess an advanced level of familiarity with equipment of this nature*.

Full safety gear, including appropriate eye, ear, and/or body protection, is required whenever a technician is in the remediation system unit. Furthermore, the control cabinet, conduits, junction boxes, cabling, piping, and power distribution panels contain potentially lethal levels of electrical or other energy. Every caution must be exercised when in the remediation unit, especially when any electrical panel cover or junction box cover is opened.

Be sure to READ, UNDERSTAND, and FOLLOW all safety precautions in this manual as well as all included manufacturer's literature for component parts prior to system operation.

Modifications to the equipment or programming, unless specifically authorized in writing by Aztech, or a failure to adhere to manufacturer's supplied maintenance schedule(s) is potentially dangerous and could result in property damage, injury, or death. Aztech assumes no liability or responsibility for the system following such modification.

B. SYSTEM QUICK REFERENCE GUIDE

Theory of Operation

CAUTION: READ & UNDERSTAND THE COMPLETE O&M MANUAL INCLUDING INTRODUCTION AND ALL SAFETY NOTES PRIOR TO OPERATING SYSTEM!
SAFETY NOTE – READ, UNDERSTAND, & FOLLOW all operational and safety warnings. Proper PPE is ALWAYS REQUIRED when in remediation enclosure!

1. **Recovery Well Pumps #5, #6, and #7**

   a. The recovery well pumps function to supply liquid from the site wells to the air stripper, and are operated by Outputs Y1, Y2, and Y3, respectively. The pumps are operable manually by Hand-Off-Auto switches (S2, S3, and S4, respectively) in the Control Cabinet. Normal system operation calls for all well pump switches to be in the "AUTO" position.

   b. Respective well pump operation will be inhibited if: the initial staggered start delay is not past; the air stripper blower is in a fault condition or blower output pressure is not proven; the water level in the respective recovery well is not of sufficient depth, or the air stripper sump is in a HI-HI alarm condition.

2. **Air Stripper**

   a. The air stripper blower operation is such that when a well pump-down is called for, the blower starts. After the blower pressure is proven via the air stripper analog pressure sensor, the respective well pump(s) is allowed to start. After all wells are pumped down to their individually predetermined level, the pump(s) shut off. The air stripper blower, however, continues to run for a period of time in order that suspended liquid in the stripper trays has sufficient treatment duration. After the overrun period, the air stripper blower will shut off. In the event that another pump-down starts prior to the end of the overrun period, the well pump(s) will reactivate and the air stripper will continue to run. The overrun period resets each time that all recovery well pumps shut off.

   b. The air stripper blower is operated by Output Y4. The blower is operable manually by a Hand-Off-Auto switch (S1) in the control cabinet. Normal system operation calls for the switch to be in the "AUTO" position.

   c. While volatile organic compounds (VOCs) are "stripped" from the water and discharged into the atmosphere, the liquid effluent flows via gravity to the drain, eventually discharging into the on-site stream adjacent to the road.

3. **Sensors**

   a. All digital inputs (also known as discrete or "on-off") are powered by 5 volts direct current (VDC) sourced by the PLC. The return of the VDC to the respective input on the controller causes the input channel to become active.

   b. The analog sensors (including well level transducers, air stripper pressure transmitter, ambient temperature sensor, and the flow transmitters) are all powered by a controller-sourced 24 VDC power supply. Each sensor/transmitter modulates the milli-amp draw as an analog of the parameter it has been designed to measure. Each analog input channel has been programmed with scale and limit data. The flow data from the three well transmitters is also totalized by the PLC.

Normal System Operation

SAFETY NOTE – READ, UNDERSTAND, and FOLLOW ALL OPERATIONAL and SAFETY WARNINGS. Proper PPE is REQUIRED! ***System must never be operated unattended with an open cabinet, junction box, or any other safety feature defeated. 120 and 208V AC power is present in the control cabinet under normal operating conditions. The 200A MAIN circuit breaker in the load center can serve as a single-action motor shutdown in the event of service or emergency. However, to fully de-energize the control cabinet, the UPS power must be switched off as well.***

1. The 200A MAIN circuit breaker in the load center cabinet must be in the ON position.

2. The circuit breakers labeled CTRL, MON B, MON C, A-S BLOWER, WELL #5, WELL #6, and WELL #7 must all be in the ON position. HEAT, VENT, LIGHT, and GFCI may also be activated as desired.

3. Both fuses in the control cabinet must be in place and able to pass power (a short-circuit or an overload may result in fuse failure). Fuse F1 supplies 120 VAC input power to the Surge Suppressor/Uninterruptible Power Supply (UPS) unit. Fuse F2 passes the surge-suppressed 120 VAC output from the UPS. Both fuses are Bussman type MDL-5. These are 5 Amp (A) slow-blow fuses. Never substitute fuses of greater amperage or lesser voltage ratings.

4. All four Hand-Off-Auto switches must be in the “AUTO” position. Note that “HAND” allows the associated motor to run regardless of PLC logic stream. “OFF” inhibits the associated motor regardless of logic stream. Only “AUTO” allows the coordinated system operation directed by the PLC program.

5. All three overload relays serving the well pump motors must be in an untripped state. A pushbutton trip reset is on the front of each relay.

6. The Variable Frequency Drive (VFD) serving the air stripper blower motor must not be in an alarm state.

7. No control panel red alarm lights should be on. A system restart resets all alarms. If the condition that caused the alarm has been remedied, the system will remain operational. If the condition has not been fixed, the alarm will reoccur.

8. Contact Aztech if questions or problems occur. A copy of the control program is on file at Aztech for reference/diagnostics if needed. We also offer assistance with program or control modifications in the event that site conditions or scope of work change.

SAFETY NOTE – ***Power switch “HAND” position settings are true MANUAL settings and must be used with caution – Selecting “HAND” will power the associated output regardless of input status or system safety elements!***

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C. September 2008 Upgrade Details

The system was originally controlled by a small microprocessor- based PLC to monitor inputs and supply power to outputs. No ability for telemetry or outside communications existed.

In September 2008, Aztech upgraded many aspects of the system, detailed below.

1. The original Koyo 105-class PLC (main system controller), running custom program "EarthTechBrewster0709(x).prj", was replaced with a ProControl A1 PLC running a custom program, the current version of which is entitled "Brew1610.cfg". This upgrade added increased input and output capability, analog input capability, datalogging, integral hour meters for entire I/O complement, local display, Human Machine Interface (HMI), dialer, modem, fax, real-time clock, and password protection, as well as telemetry linked to an advanced graphical user interface.

2. Added Uninterruptible Power Supply/Surge Suppressor unit

3. Added telephone line for remote access.

4. Added VFD AC rive to serve air stripper blower motor.

5. Replaced discrete well-level floats reporting two levels (H & L) with submerged analog sensor/transmitters in RW-5, RW-6, and RW-7. Each new sensor is capable of reporting 4096 different levels.

6. Added analog sensor for system interior temperature monitoring.

7. Added analog sensor for air stripper pressure proving/monitoring.

8. Integrated existing flow sensor/ transmitters to control and telemetry system.

9. Brought well configuration logs up to date with new and old sensors shown.

10. Made new system check sheets to reflect additional data available.

D. Physical Components / Theory of Operation

1. Well Pump Operation

a. The system is designed to allow the well pumps to supply liquid from the extraction wells to the air stripper.

b. Well #5 pump is operated by Output #Y1. The pump is operable manually by a Hand-Off-Auto switch (S2) in the control cabinet. Normal system operation calls for the switch to be in the “AUTO” position.

c. Well #6 pump is operated by Output #Y2. The pump is operable manually by a Hand-Off-Auto switch (S3) in the control cabinet. Normal system operation calls for the switch to be in the “AUTO” position.

d. Well #7 pump is operated by Output #Y3. The pump is operable manually by a Hand-Off-Auto switch (S4) in the control cabinet. Normal system operation calls for the switch to be in the “AUTO” position.

e. - SAFETY NOTE – Power switch “HAND” position settings are true manual settings and must be used with caution – “HAND” will power the associated output regardless of input status or system safety elements.

f. Well pump operation will be inhibited if: the initial start delay is not past; the air stripper blower is in a fault condition or blower output pressure is unproven; the water level in the respective recovery well is not of sufficient depth, or if the air stripper sump is in a HI-HI alarm condition.

g. Well flow data is collected by the three well flow paddlewheels, each of which relays the flow rate to the corresponding flow transmitter. Real-time flow rate and totalized flow figures are shown on each transmitter’s display screen. The flow panel housing the transmitters is to the right of the load center panel. The flow panel also houses an additional display originally used for aggregate inflow rate and total. It is now reserved as a spare. All transmitters are powered by the controller 24 VDC output terminals.

h. The flow transmitters also send flow rate information to the PLC, which allows viewing the data remotely. The PLC independently totalizes each well’s output. Well #5 flow operates Controller Input X17, Well #6 flow is linked to X18, and Well #7 flow operates Input X19.

i. Well level data is collected and relayed by a submersible analog transmitter in each extraction well. Well #5, #6, and #7 send liquid level information to Input X25, X26, and X27, respectively.

2. Air Stripper Operation

a. The air stripper blower operation is such that when any well level is sufficient to commence a pump-down (programmed HI well level), the blower starts. After the blower pressure is proven via the air stripper pressure transmitter, the respective well pump (or pumps) is allowed to start. Each well pump stops when the level has decreased to the programmed low well level. However, the air stripper blower continues to run for a period of time even if all pumps stop, in order that suspended liquid in the stripper trays is not left untreated. After this overrun period, the air stripper blower will shut off. In the event that another pump-down event occurs prior to the end of the overrun period, the well pump(s) will reactivate and the air stripper will continue to run. The overrun timer resets every time that all recovery well pumps have shut off due to evacuated well liquid levels.

b. The air stripper blower is controlled by Output #Y4. The blower is operable manually by a Hand-Off-Auto switch (S1) in the control cabinet. Normal system operation calls for the switch to be in the “AUTO” position.

c. Liquid effluent from the air stripper sump, after treatment, flows via gravity to the drain. The drain line lateral in the treatment center incorporates a reverse trap with vacuum break and is adjustable for height to maintain desired liquid level in the air stripper sump.

3. Sensor Summary

a. All digital inputs are powered by the PLC-sourced 5 VDC. Analog sensors including well level transducers, air stripper pressure and ambient temperature transmitters, are powered by the PLC 24 VDC power supply. The return of VDC to the respective input on the PLC causes the input channel to become active. Well #5 flow operates Input X17, with Well #5 level reported at Input 25. Well #6 flow is linked to X18 and level reports to X26. Well #7 flow operates X19, and level is shown at X27. The air stripper HI-HI sump alarm float is wired to X8. The lamp test pushbutton switch is wired to Input X1, with the VFD run signal wired to Input X2.

E. Normal System Operation

1. The system 200A MAIN circuit breaker in the load center cabinet must be in the ON position. This circuit breaker also can serve as a single-action system shutdown in the event of service or emergency.

2. The circuit breakers labeled CTRL, (MON B, MON C), AIR STRIPPER BLOWER, WELL #5, WELL #6, and WELL #7 must all be in the ON position. HEAT, VENT, LIGHT, and GFCI may also be activated if desired.

3. Both fuses in the control cabinet must be able to pass power (a short-circuit or an overload may result in fuse failure). Both fuses are Bussmann type MDL-5. Spare fuses may be found in the control cabinet.
   a. Fuse F1 supplies 120 VAC input power to the Surge Suppressor/UPS unit. Fuse F2 passes the surge-suppressed 120 VAC output from the UPS. Both fuses are Bussman type MDL-5. These are 5A slow-blow fuses. Never substitute fuses of greater amperage or lesser voltage ratings.

4. All four Hand-Off-Auto switches must be in the “AUTO” position. Note that “HAND” allows the associated motor to run regardless of PLC logic stream. “OFF” inhibits the associated motor regardless of PLC logic stream. Only “AUTO” allows the coordinated system operation directed by the PLC program.

5. All three overload relays for the well pump motors must be in an untripped state. A pushbutton trip reset is on the front of each relay.

6. The VFD serving the Air Stripper Blower motor must not be in an alarm state.

7. All switch/indicator panel red alarm lights should be off. A system restart resets all alarms. If the condition that caused the alarm has been remedied, the system will remain operational. If the condition has not been fixed, the alarm will reoccur.

8. Contact Aztech if further questions or problems present themselves. A copy of the control program is on file at Aztech for reference or diagnostics if needed. Aztech is also available to offer assistance with program or control modifications in the event that site conditions or scope of work change.

F. Treatment System Operation & Maintenance

The treatment system is designed for continuous operation after start-up. The system extracts groundwater from the recovery wells and removes VOCs from the extracted water via air stripping prior to discharge.

The treatment system is designed to operate without continuous monitoring by a system operator. However, a system operator will be required to complete the Site Visit Operation/Inspection Checklist (Appendix A) at a minimum of once a month. The monthly inspection may reveal maintenance items that need to be addressed. Several common maintenance items are addressed below.

System operators should be familiar with all equipment manufacturers' operating and maintenance instructions and refer to these documents for detailed procedures.

1. System Observations – Observe operation of pumps, blowers, drives, meters, and controls to verify satisfactory system operation. Record system parameters on the Site Visit Operation/Inspection Checklist.

2. Submersible Pumps – Verify that the submersible pumps are operating properly. To do so, check the dedicated sampling ports on each well for flow. Technicians should also observe the flow meters or check the alarm status indicators within the control panel. If the submersible pumps are not operating properly, they may need to be de-energized and removed for service.
    a. To service a submersible pump, shut down the system via the PLC.
    b. De-energize the pump that is to be serviced via the corresponding circuit breaker located in the load center.
    c. De-energize the control panel (and subsequently the level transducer) via the corresponding circuit breaker located in the load center.
    d. Lock-out and Tag-out the load center.
    e. Mobilize to the recovery well and open the roadbox lid.
    f. Remove the level transducer from the well, taking care to note its original depth and to not damage the wire insulation.
    g. Attach the site-dedicated 1-1/4" T-Handle assembly to the pitless adapter and remove the pump from the well.
    h. Clean the pump and observe it for obvious signs of wear. If further maintenance is required, remove the pump assembly and place the pitless adapter, pump piping, and transducer back into the well.

3. Flow Meters – Check the flow meters to ensure that the flow appears to be consistent with system operational parameters. Flow meters should be cleaned on a monthly basis.
    a. To clean the flow meters, shut down the system via the PLC.
    b. De-energize all well pumps via the circuit breakers located in the load center.
    c. De-energize the air stripper blower via the corresponding circuit breaker located in the load center.
    d. Lock-out and Tag-out the load center.
    e. Close the influent valve for the well-specific flow meter that is being cleaned.
    f. Drain the pipe to just below the flow meter via the dedicated sampling ports.

g. Remove the flow meter from the pipe. Take note of the proper orientation of the paddlewheel for re-installation.
h. With a damp cloth and a wire brush, gently remove any scaling or sediment build-up present on the paddlewheel. Make sure the paddlewheel spins with minimal resistance.
i. Clean, then lubricate the O-rings with a non-petroleum O-ring grease.
j. Note the proper orientation of the paddlewheel and insert the meter back into the system piping. Hand-tighten the fitting (WARNING: over-tightening this plastic fitting can cause it to crack/shatter. Use caution when re-installing flow meter).
k. Re-energize each piece of equipment that was de-energized for the purpose of cleaning the flow meter (see item 3-d; 3-c and 3-b).
l. Open the influent valve.
m. Restart the system via the PLC. Observe flow on the display to confirm proper installation of the meter. Check that no leaks are present.

4. Air Stripper – Observe the air stripper unit during system operation and record the pressure. If the pressure exceeds 19 PSI, or a bubbling effect isn't observed in each tray, the air stripper may need to be cleaned.
    a. To clean the air stripper, shut down the system via the PLC.
    b. De-energize the air stripper blower via the corresponding circuit breaker located in the load center.
    c. De-energize all three (3) well pumps via the corresponding circuit breakers located in the load center.
        i. Close the influent valves for all three (3) well pumps.
    d. De-energize the control panel (and subsequently the air stripper pressure transducer and level sensor) via the corresponding circuit breaker located in the load center.
    e. Lock-out and Tag-out the load center.
    f. Allow any water remaining in the trays to gravity-feed to the sump.
    g. Open the air stripper by removing the hand-knobs on the front of the glass door.
    h. Don proper PPE.
    i. Remove each tray individually for cleaning.
        i. Apply a muriatic acid/water solution (or equivalent) to each tray and scrub debris away. Ensure that each hole in the tray is cleared of obstructions caused by scaling. A drill and small bit may be used to clear the holes of debris
    j. Clear the sump of any debris.
        i. Observe the discharge piping to ensure no obstructions will prevent the effluent from discharging from the sump.
    k. Apply a muriatic acid/water solution (or equivalent) to the sight-glass air stripper door. Scrub debris away.
    l. Replace each tray into the air stripper.
    m. Check the integrity of the gaskets on the air stripper door. If they are unsuitable for service, contact the manufacturer for replacements.
    n. Secure the door with the hand knobs. (WARNING: Do not over or under-tighten the hand knobs. Under-tightening will result in leaks and allow process water to bypass trays. Over-tightening will result in leaks, broken glass, or broken hand-knobs.)

o. Re-energize each piece of equipment that was de-energized for the purpose of cleaning the air stripper (see item 4-e; 4-d; 4-c and 4-b).
p. Open the influent valves for each recovery well.
q. Restart the system via the PLC. Observe flow through the air stripper trays and check for proper operation. If air stripper is leaking the hand-knobs on the door may need to be adjusted or the gaskets may need to be replaced.

5. Grounds and Building Maintenance – Inspect the building for signs of wear & tear or vandalism and address appropriately. VFD and building intake air filters should be changed as needed. Inspect and clean the air stripper blower intake cage as needed. Perform grounds maintenance as needed, including (but not limited to) vegetation management, maintaining access to the system, keeping the effluent discharge outfall clear of obstructions, etc. Report major wear & tear, grounds issues, or vandalism to the NYSDEC PM as soon as possible.

Appendix A

Treatment System Operation / Inspection Checklist

BREWSTER Treatment System Operation/Inspection Checklist mo _____ yr _____ p.1/2

Action Required	Req'd Freq	Unit	Date of Inspection				
Sampling Event:							
RW-5 Influent collected	M	Y / N					
RW-6 Influent collected	M	Y / N					
RW-7 Influent collected	M	Y / N					
Combined Influent collected	M	Y / N					
Effluent collected	M	Y / N					
Duplicate? (indicate which)	M	Y / N					
VF Motor Drive Readings:							
<d> = Push "Display" button							
Default display: Output Amp	M	A					
<d> Motor Load	M	%					
<d> Output Voltage	M	V					
<d> DC Bus Voltage	M	V					
<d, d, d> Freq Setpoint	M	Hz					
<d> Output Frequency	M	Hz					
<d> Motor Speed	M	Rpm					
<d,d> return to OutputAmps	M	-					
Air Stripper Needs:							
Magnehelic Reading	M	IWC					
Clean exterior inlet screen	M	Y / N					
Verify HH Float Operation	M	Y / N					
Clean Air Stripper Trays	6M	Y / N					
Clean Air Stripper Window	6M	Y / N					
Flo Element Maintenance:							
(Rmv, clean, lube o-rings)			GPM	Totalizer (ProControl)			
RW-5 pwheel (note:hi wear)	M	Y / N					
RW-6 pwheel (note:hi iron)	M	Y / N					
RW-7 paddlewheel	M	Y / N					
General Maintenance:							
Repl'd Inlet Air Filter Media	M	Y / N					
Replaced VFD Air Filters	M	Y / N					
Swept floor	M	Y / N					
Remv'd Garbage, new bag	As nec	Y / N					
Chk'd cleaning/maint supp's	M	Y / N					
Chk'd 1st Aid, eye wash	M	Y / N					
Prior to Leaving Site:							
Grounds Maintenance	Always	Y / N					
Log Off ProCtrl (pw:012)	Always	Y / N					
Plug in telephone line	Always	Y / N					
Chk/Reset Heat/Cool t-stats	Always	Y / N					

NOTE: DOUBLE-SIDED FORM – DATED COMMENTS SECTION ON REVERSE SIDE

Date _____

Date _____

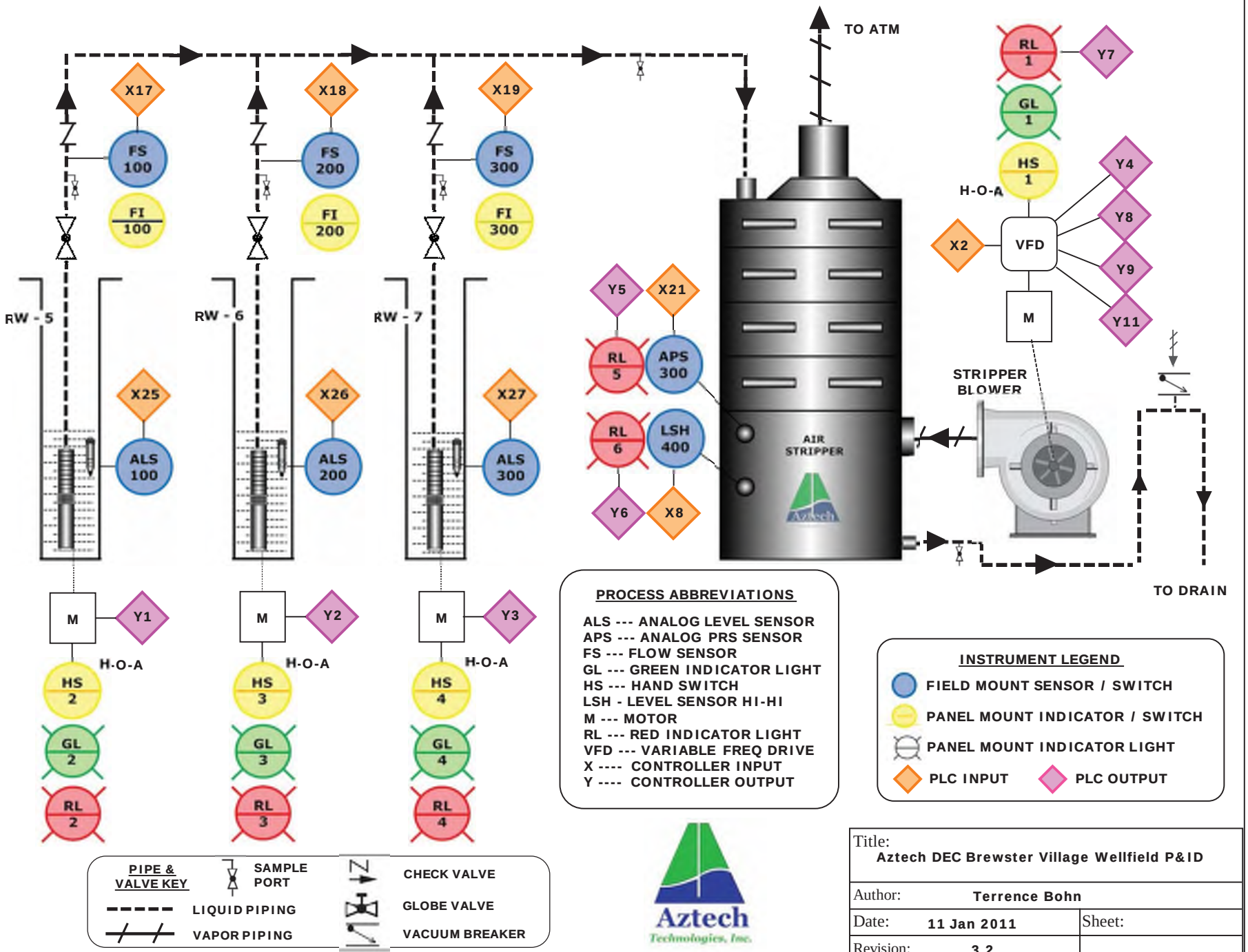
Date _____

Date _____

Date _____

Appendix B

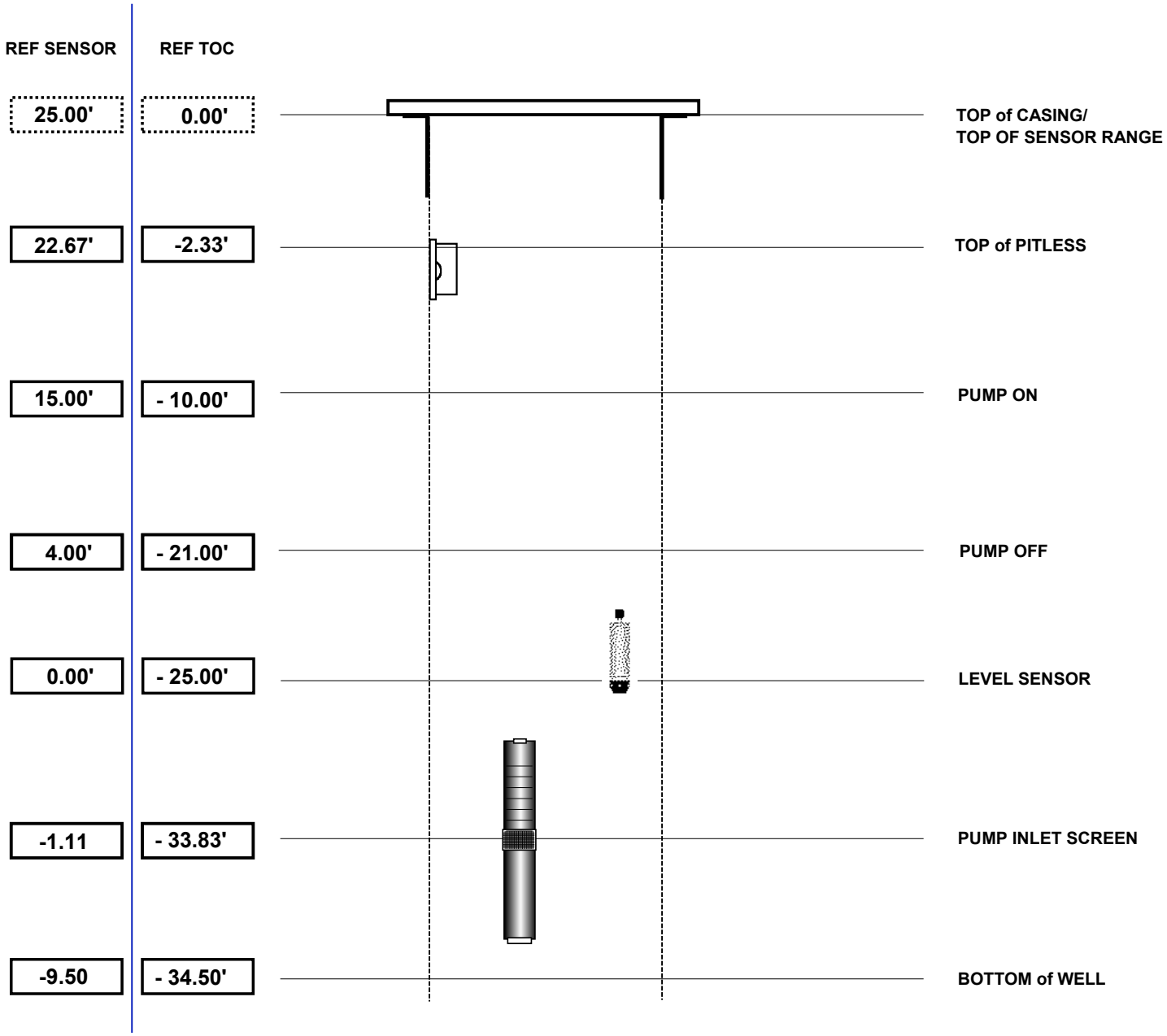
Figures



Title:	Aztech DEC Brewster Village Wellfield P&ID
Author:	Terrence Bohn
Date:	11 Jan 2011
Sheet:	
Revision:	3.2

NYSDEC/Aztech/ CDMSmith/BREWSTER RW - 5

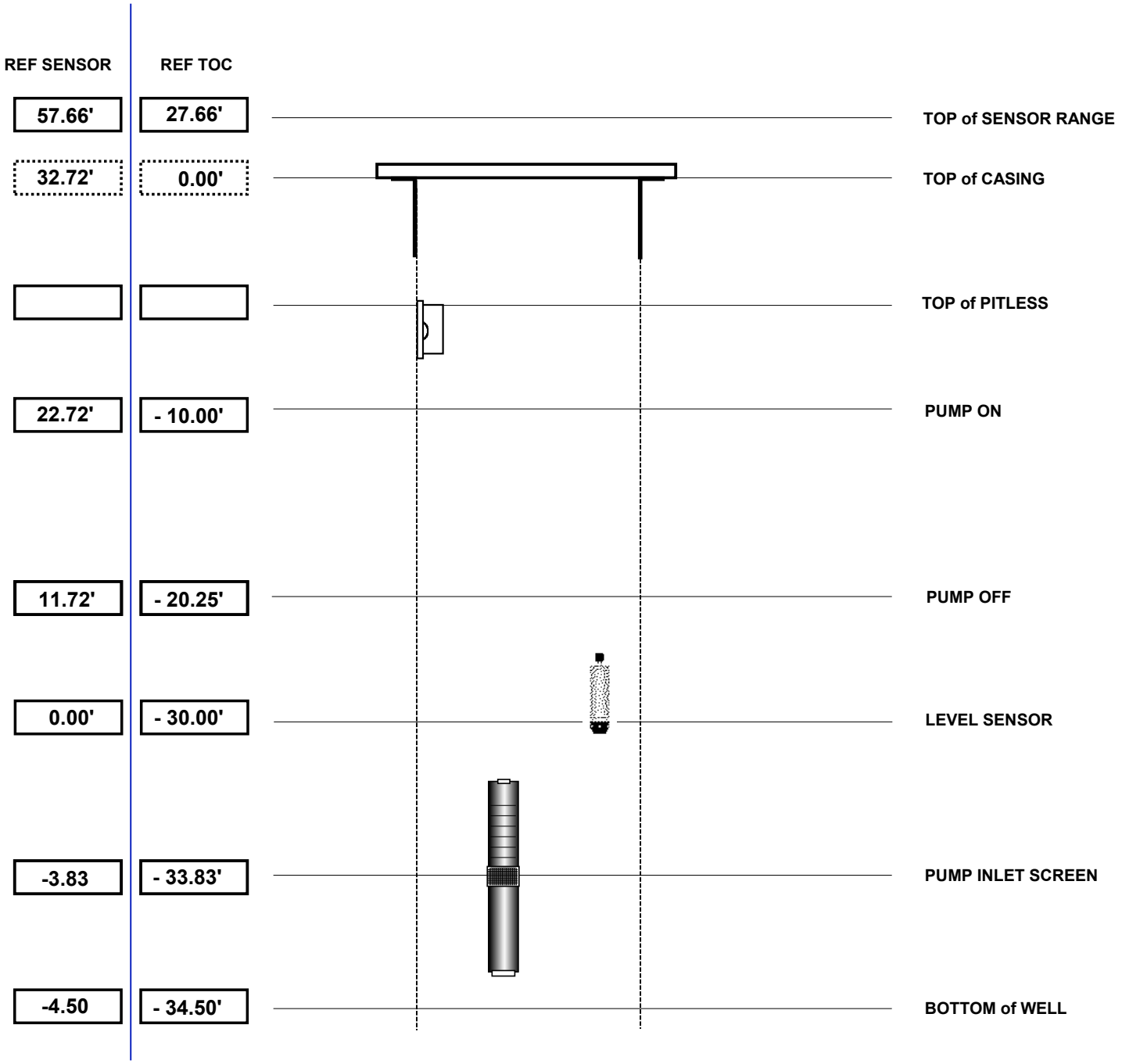
Aztech Technologies, Inc.



Title:	**RW-5 Brewster Village Wellfield**	
Author:	**TB**	
Date:	**1 Feb 2017**	Sheet:
Revision:		**NOT TO SCALE**

NYSDEC/Aztech/ CDMSmith/BREWSTER RW - 6

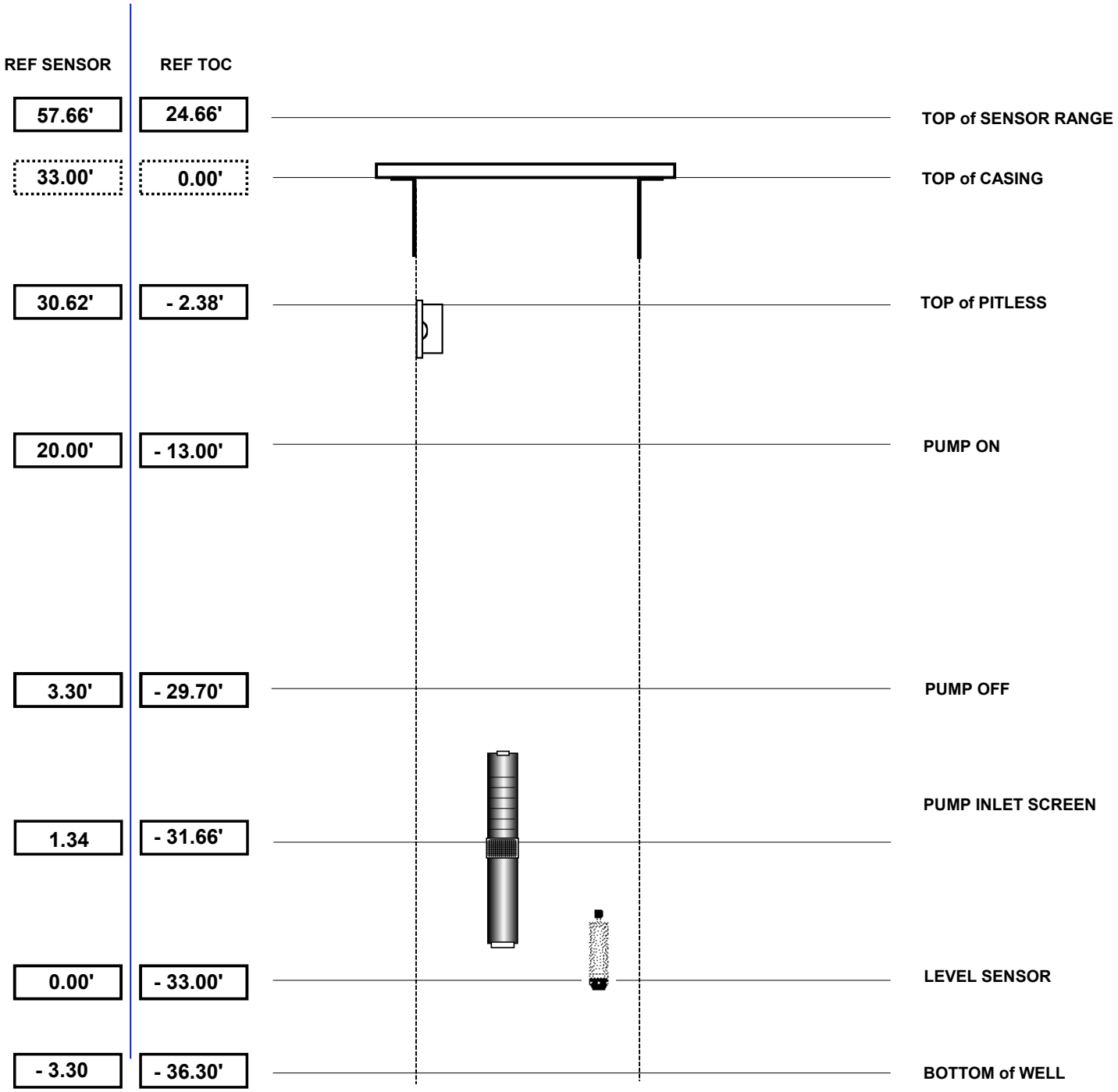
Aztech Technologies, Inc.



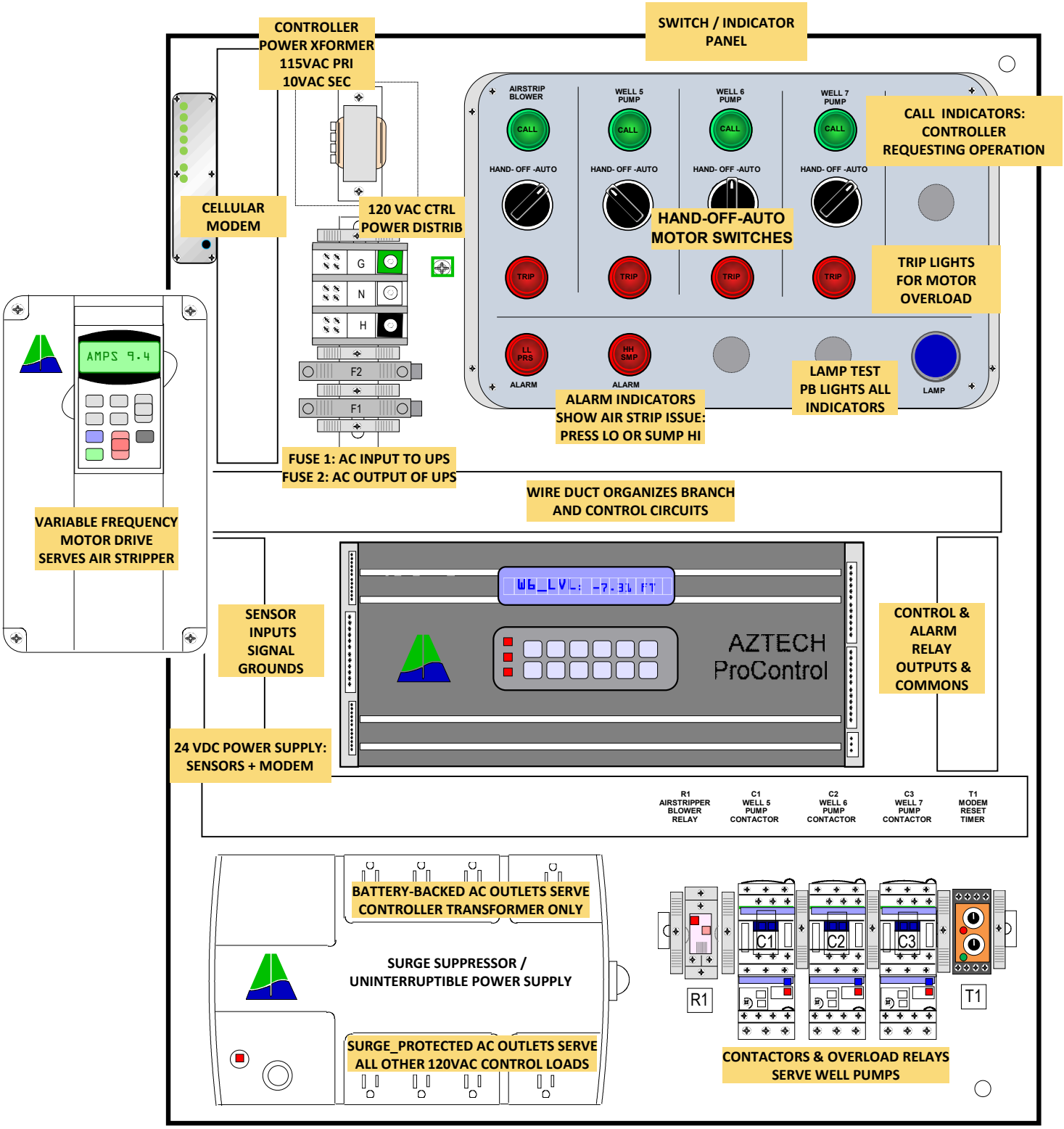
Title:	**RW-6 Brewster Village Wellfield**	
Author:	**TB**	
Date:	**1 Feb 2017**	Sheet:
Revision:		**NOT TO SCALE**

NYSDEC/Aztech/ CDMSmith/BREWSTER RW - 7

Aztech Technologies, Inc.



Title:	RW-7 Brewster Village Wellfield	
Author:	TB	
Date:	1 Feb 2017	Sheet:
Revision:		NOT TO SCALE



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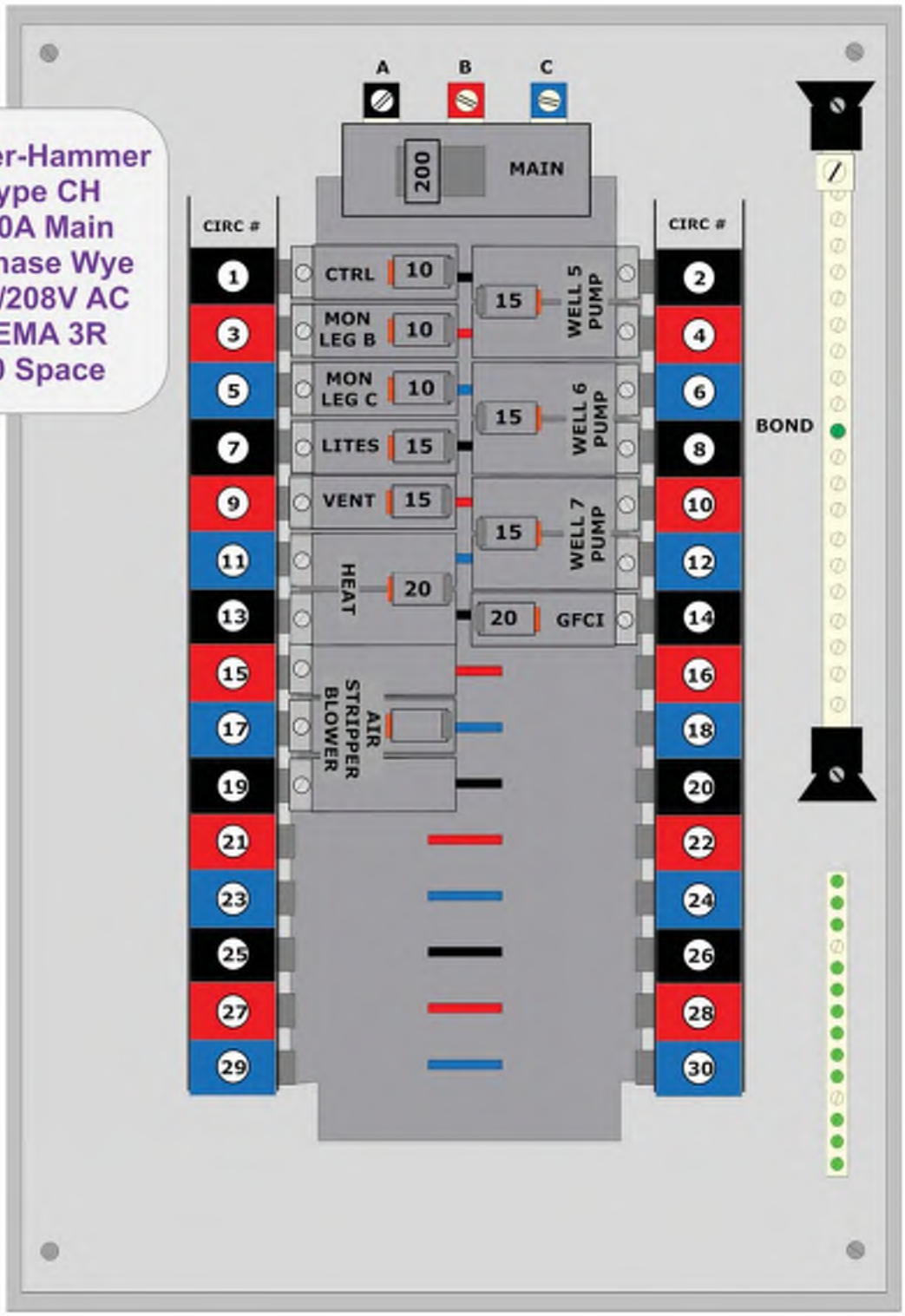
Aztech Technologies, Inc.

5 McCrea Hill Road
Ballston Spa, NY 12020
518-885-5383
www.aztechenv.com

Title:	DEC BREWSTER VILLAGE WELLFIELD CONTROL PANEL UPGRADE	
Author:	Terrence Bohn	
Date:	16 Jan 2016	Sheet:
Revision:	IV	

WELLFIELD

Cutler-Hammer
Type CH
200A Main
3-Phase Wye
120/208V AC
NEMA 3R
30 Space



5 McCrea Hill Road
Ballston Spa, NY 12020
518-885-5383
www.aztechtech.com

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Aztech Technologies, Inc.

NYSDEC/Aztech Brewster Village Wellfield Load Center	
Terrence Bohn	11 Jan 2011

DEC Aztech Brewster Village Wellfield Remediation System Load Center

Cutler-Hammer (type CH .75" breakers), 200A, MB, 3-Phase, 120/208VAC, NEMA 3R, 30 space

CB & Wire Assignments

Color in Circuit Number Box Indicates AC Power Leg: Black = Leg A; Red = Leg B; Blue = Leg C

circ #	destination	wire color/ desig	wire awg size	circuit serves	CB amp	CB amp	circuit serves	wire awg size	wire color/ desig	destination	circ #
1	Control Power Distribution Block	BLK 100	14	Control	10	15	Well #5 Pump	10	BLK 600	Contactor 1 Term L1	2
3	Monitor Relay	RED 100	14	Monitor Leg B	10			10	RED 600	Contactor 1 Term L2	4
5	Monitor Relay	BLU 100	14	Monitor Leg C	10	15	Well #6 Pump	10	BLU 600	Contactor 2 Term L1	6
7	Interior Light Fixtures	BLK 200	14	Interior Lights	15			12	BLK 700	Contactor 2 Term L2	8
9	Interior Ventilation Fan	BLK 200R	14	Vent Fan	15	15	Well #7 Pump	12	RED 700	Contactor 3 Term L1	10
11	T-stat in Heater	BLU 200	12	Interior Heat	20			12	BLU 700	Contactor 3 Term L2	12
13	Heater	BLK 300	12			20	GFCI Outlet	12	BLK 800	GFCI Hot Terminal	14
15	VFD Term L1	RED 300	6	Air Stripper Blower	45						16
17	VFD Term L2	BLU 300	6								18
19	VFD Term L3	BLK 400	6								20
21											22
23											24
25											26
27											28
29											30

Appendix C

ProControl Logic & Reports

EOS RESEARCH LTD.
ProControl Series II+

ProView Configuration File Information

***** FAX Recipient:	TERRY B AND KATELYN R *****
***** Customer:	2_DEC_AZTECH_CDMSMIT *****
***** Site Location:	BREWSTER VIL WEL *****
***** Setup:	1 *****
***** Option:	S2P *****
***** Type:	121 *****
***** Serial Number:	9143 *****
***** Date:	01/26/2017 *****
***** Time:	09:40:41 *****
***** ProView:	Version 2.200 *****

THE INPUTS INCLUDED IN THIS SYSTEM ARE:

#	TAGNAME	TAGNAME DESCRIPTION	SETUP*	RANGE
1	LAMP		NO,ST,LT	
2	VFDRUN		D,NO,ST	
7	PRVAIR		D,NO,ST	
8	SMP_HH		D,NO,AL	
17	W5_FLO		A,EP,ST	0-40 GPM
18	W6_FLO		A,EP,ST	0-40 GPM
19	W7_FLO		A,EP,ST	0-40 GPM
21	AIRPRS		A,EP,ST	0-100 IWC
22	TEMP		A,EP,ST	0-200 DEG
25	W5_LVL		A,EP,ST	-25-0 FT
26	W6_LVL		A,EP,ST	-30-27.66 FT
27	W7_LVL		A,EP,ST	-33-24.66 FT

*INPUT SETUP NOTES

D - This input is a (Discrete) or ON/OFF Input.
A - This input is a (Analog) or Variable Input.
C - This input is a Pulse Flowmeter Input.
P - This input is a Pulse Accumulator Input.
UPP - Units per Pulse. Number of units (i.e. Gallons) to record for each pulse
NO-This input is a (Normally Open) Discrete Input.
NC-This input is a (Normally Closed) Discrete Input.
EP-(Endpoint) This input is "Active" when its value is outside the low to high alarm levels.
WD-(Window) This input is "Active" when its value is between the low and high alarm levels.
ST-(Status) This input shows a green LED in ProView when it is in its Active State.
AL-(Alarm) This input shows a red alarm bell in ProView when it is in its Active State.
SU-(Startup) This is a menu function input. When activated it will run the startup routine.
SD-(Shutdown) This is a menu function input. When activated it will run an emergency shutdown.
MN-(Manual) This is a menu function input. When activated it place the unit in Manual Mode.
AU-(Auto) This is a menu function input. When activated it place the unit in Auto Mode.
SQ-(Square Root) This analog channel's reading is proportional to the square root of the input.
LT-(Lamp Test)This is a Lamp Test input. When activated it will turn on all Alarm Light outputs.

THE DISCRETE OUTPUTS INCLUDED IN THIS SYSTEM ARE:

#	TAGNAME	TAGNAME DESCRIPTION	SETUP*
1	WELL_5		
2	WELL_6		
3	WELL_7		
4	MDMCYC		
5	PRSALM		LT,AI
6	SMPALM		LT,AI
7	VFDALM		LT,AI
8	SPD_B		
9	SPD_C		
11	RSTVFD		
12	RUNVFD		
15			

*OUTPUT SETUP NOTES

G1-(Group 1)- This output will not respond to processes 17-32.
G2-(Group 2)- This output will not respond to processes 01-16.
LT-(Lamp Test) - This output has been declared as an alarm light.
AI-(Alternate Image) - This output is displayed as an icon other than the default switch.

THE ANALOG OUTPUTS INCLUDED IN THIS SYSTEM ARE:

NO ANALOG OUTPUTS ARE USED IN THIS PROGRAM.

*ANALOG OUTPUT SETUP NOTES

PID -This output is involved in a PID (Proportional,Integral,Derivative) control loop.
PRO -This output is involved in an open (Proportional) control loop.
FOR -The PID or PRO loop will run in the (Forward) direction.
REV -The PID or PRO loop will run in the (Reverse) direction.
INPUT-This Tagname will serve as the input to the control loop.

THE PROCESS CONTROL TASKS EXERCISED BY THIS SYSTEM ARE:

Process 03: If W5_LVL is High AND RUNVFD is OFF
            THEN Delay for 1 Second, Switch RSTVFD ON

Process 04: If W6_LVL is High AND RUNVFD is OFF
            THEN Delay for 2 Seconds, Switch RSTVFD ON

Process 05: If W7_LVL is High AND RUNVFD is OFF
            THEN Delay for 3 Seconds, Switch RSTVFD ON

Process 06: If ASCALL is ON
            THEN Delay for 1 Second, Switch RSTVFD ON AND ASCALL OFF

```
Process 07: If RSTVFD is ON
            THEN Delay for 2 Seconds, Switch RSTVFD OFF AND RUNVFD ON

Process 08: If SMP_HH is OFF AND AIRPRS is NOT High or Low AND W5_LVL is High AND
               WELL_5 is OFF AND RUNVFD is ON
            THEN Delay for 2 Seconds, Switch WELL_5 ON

Process 09: If SMP_HH is OFF AND AIRPRS is NOT High or Low AND W6_LVL is High AND
               WELL_6 is OFF AND RUNVFD is ON
            THEN Delay for 3 Seconds, Switch WELL_6 ON

Process 10: If SMP_HH is OFF AND AIRPRS is NOT High or Low AND W7_LVL is High AND
               WELL_7 is OFF AND RUNVFD is ON
            THEN Delay for 5 Seconds, Switch WELL_7 ON

Process 11: If W5_LVL is Low AND WELL_5 is ON
            THEN Delay for 2 Seconds, Switch WELL_5 OFF

Process 12: If W6_LVL is Low AND WELL_6 is ON
            THEN Delay for 2 Seconds, Switch WELL_6 OFF

Process 13: If W7_LVL is Low AND WELL_7 is ON
            THEN Delay for 2 Seconds, Switch WELL_7 OFF

Process 14: If AIRPRS is High or Low AND RUNVFD is ON
            THEN Delay for 35 Seconds, Send Report[Page #1],
            Initiate Shutdown, Switch WELL_5 OFF AND WELL_6 OFF AND WELL_7 OFF AND PRSALM ON
            Page Message: '  '

Process 16: If WELL_5 is OFF AND WELL_6 is OFF AND
               WELL_7 is OFF AND RUNVFD is ON
            THEN Delay for 10 Minutes, Switch RUNVFD OFF

Process 17: If SMP_HH is ON
            THEN Delay for 5 Seconds, Send Report[Page #1],
            Initiate Shutdown, Switch WELL_5 OFF AND WELL_6 OFF AND WELL_7 OFF AND SMPALM ON
            Page Message: '  '
```

```
Process 19: If VFDRUN is OFF AND RUNVFD is ON
            THEN Delay for 5 Seconds, Send Report[Page #1],
            Initiate Shutdown, Switch VFDALM ON
            Page Message: '  '

Process 21: Switch MDMCYC ON in TOD Mode [06:50,06:52]

Startup 01: Delay for 1 Second, Switch PRSALM OFF AND SMPALM OFF AND VFDALM OFF AND RSTVFD ON

Startup 02: Delay for 3 Seconds, Switch RSTVFD OFF

Shutdown 01: Switch WELL_5 OFF AND WELL_6 OFF AND WELL_7 OFF AND MDMCYC OFF AND RUNVFD OFF
```

Email generated from WAN IP address: 166.239.165.108
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.
Status generated at 07:15:00 on 05/19/2015
This system uses ROM version 2.224 and is a MODEL A1.
The system is currently in AUTO mode and the last process to run was AUTO process #10.
This system last shut down at 17:29:08 on 04/30/2015 and the cause was KEYPAD.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
LAMP	OFF	VFDRUN	ON	PRVAIR	OFF	SMP_HH	OFF

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
WELL_5	ON	WELL_6	ON	WELL_7	ON	MDMCYC	OFF
PRSALM	OFF	SMPALM	OFF	VFDALM	OFF	SPD_B	OFF
SPD_C	OFF	RSTVFD	OFF	RUNVFD	ON		OFF

ANALOG INPUT STATUS:

Tagname	*Value*	*Units*	*Totalizer*	*Total Units*	*Alarm Setpoints*			
					Low	*High*	*Low-Low*	*High-High*
W5_FLO	12.65	GPM	2597344	GAL	10.00	20.00	0.00	20.00
W6_FLO	12.19	GPM	942199	GAL	1.00	100.00	0.00	20.00
W7_FLO	19.40	GPM	3266596	GAL	2.00	100.00	0.00	20.00
AIRPRS	18.56	IWC			4.75	28.50	0.00	20.00
TEMP	64.5	DEG			42.0	125.0	0.0	20.0
W5_LVL	-16.21	FT			-31.00	-21.10	0.00	20.00
W6_LVL	-13.24	FT			-20.25	-10.00	0.00	20.00
W7_LVL	-14.94	FT			-29.70	-11.40	0.00	20.00

Appendix D

System Components

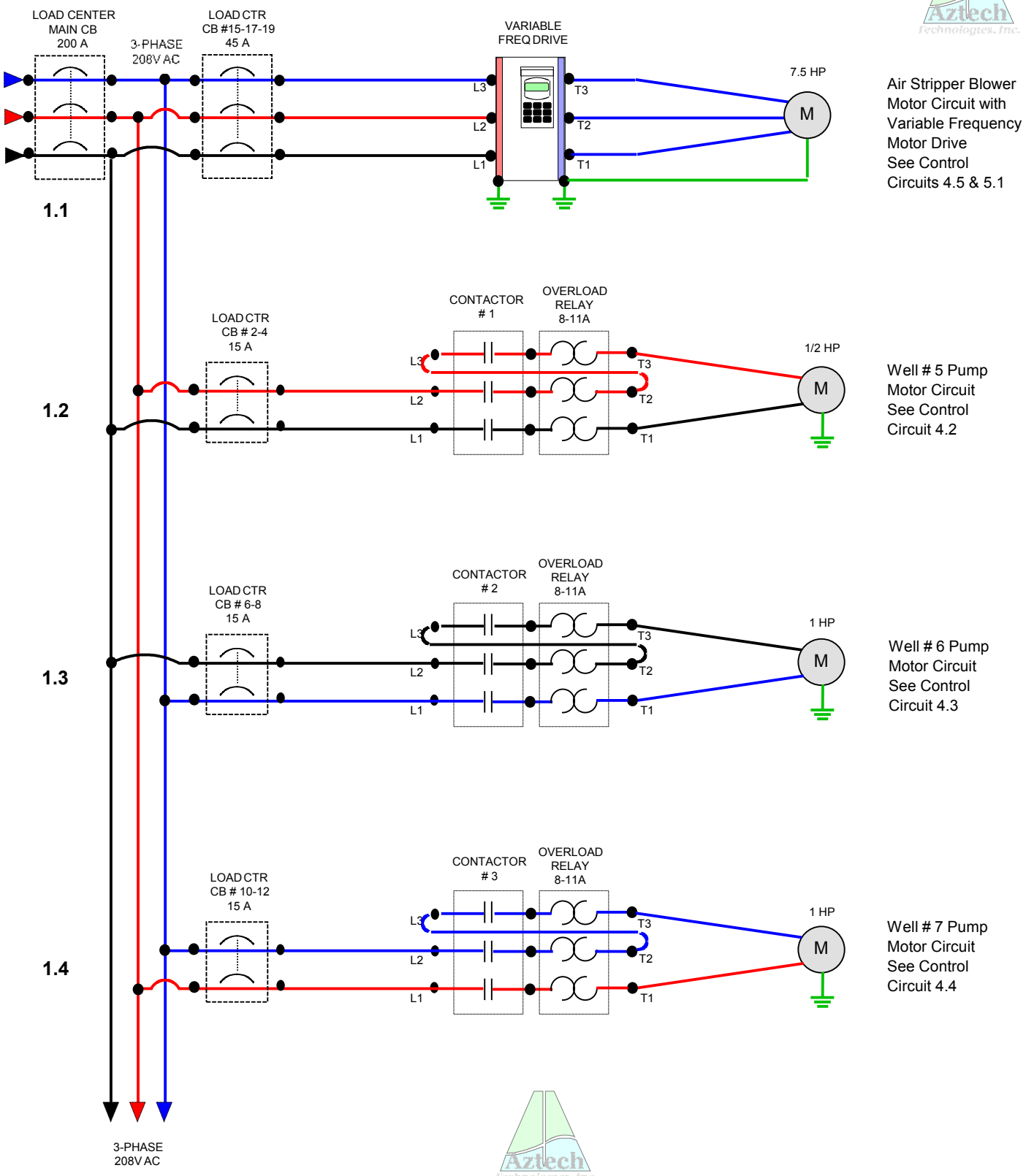
Table of Contents

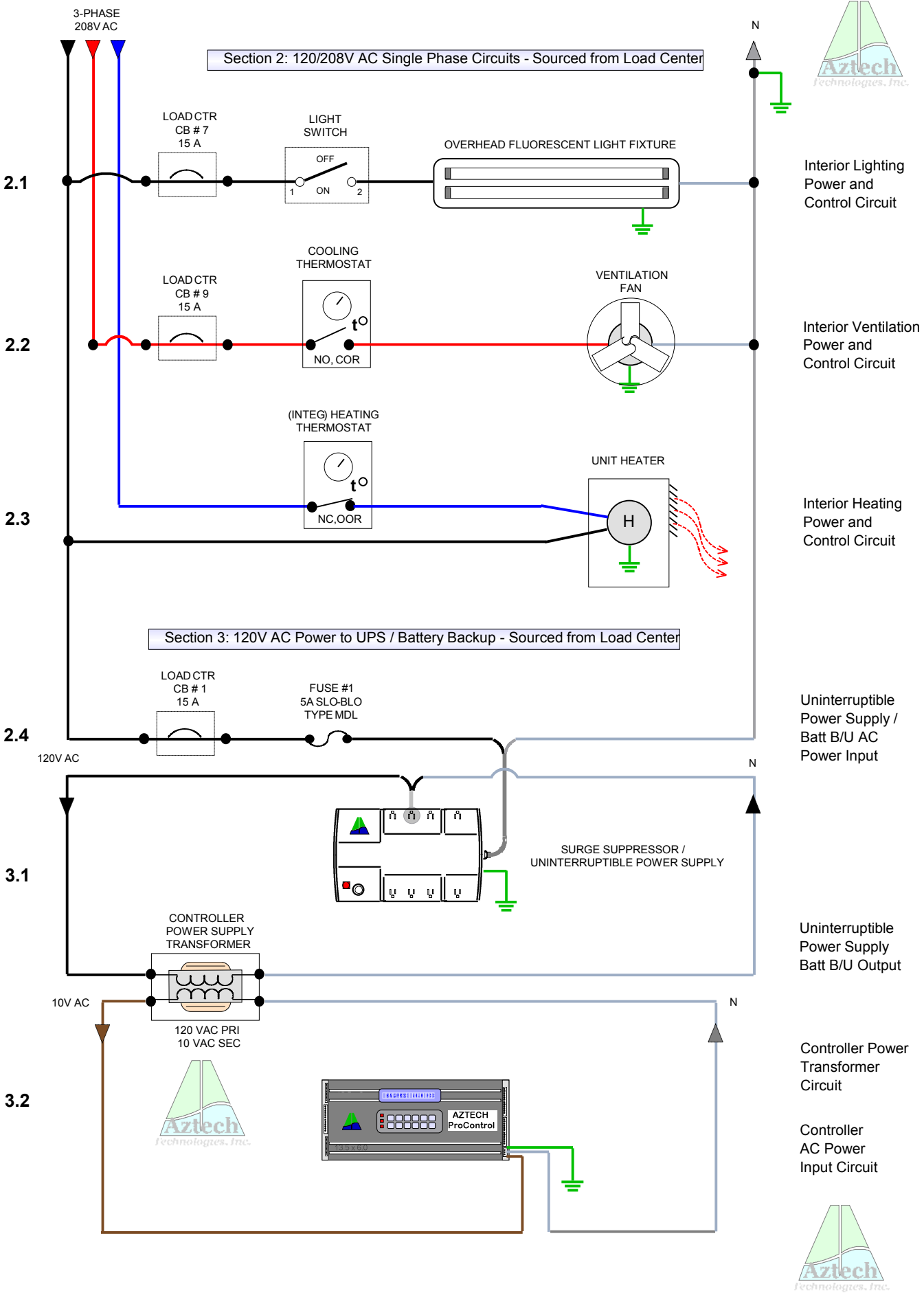
- Power Distribution & Control Wiring Diagram
- Load Centers/Circuit Breakers/Miscellaneous Components
- Variable Frequency Drive
- Programmable Logic Controller – ProControl Series 2^{Plus} Type A
- Sensors and Transmitters
- Submersible Pumps
- Air Stripper Blower
- Air Stripper
- Heater

Power Distribution & Control Wiring Diagram

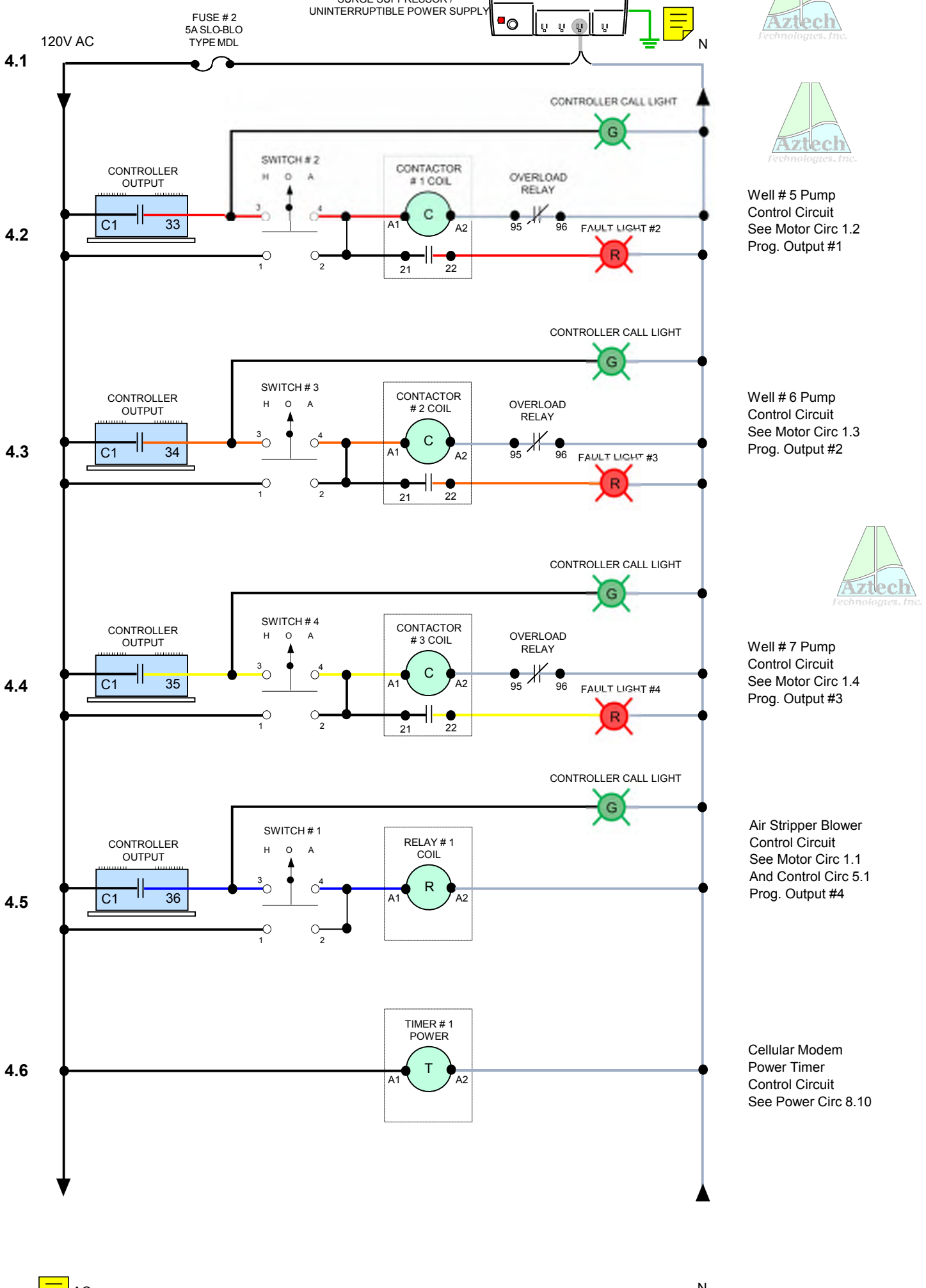
NYSDEC AZTECH CDM SMITH BREWSTER VILLAGE WELLFIELD
P&T SYSTEM: MAIN CONTROL PANEL
Control and Power Circuitry Schematic Line Drawing
AZTECH TECHNOLOGIES INC.

Section 1: 208V 3-Phase AC CIRCUITS - Sourced from Load Center adjacent to Main Control Panel

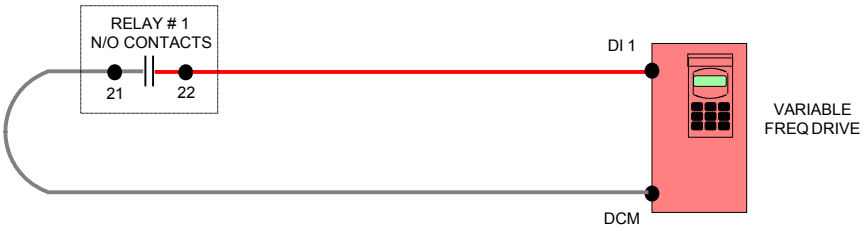




Section 4: 120V AC Powered Circuits - Conditioned by Surge Suppressor

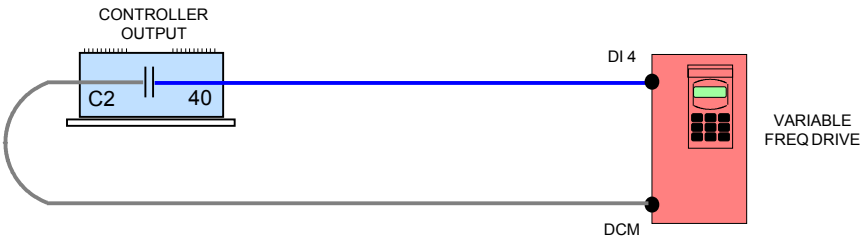

SURGE SUPPRESSOR / UNINTERRUPTIBLE POWER SUPPLY
120V AC
FUSE # 2
5A SLO-BLO
TYPE MDL
N
4.1
CONTROLLER CALL LIGHT
G
SWITCH # 2
H O A
CONTROLLER OUTPUT
C1 33
CONTACTOR # 1 COIL
C
A1 A2
OVERLOAD RELAY
95 96
FAULT LIGHT #2
R
1 2 3 4 21 22
4.2
Well # 5 Pump Control Circuit See Motor Circ 1.2 Prog. Output #1
CONTROLLER CALL LIGHT
G
SWITCH # 3
H O A
CONTROLLER OUTPUT
C1 34
CONTACTOR # 2 COIL
C
A1 A2
OVERLOAD RELAY
95 96
FAULT LIGHT #3
R
1 2 3 4 21 22
4.3
Well # 6 Pump Control Circuit See Motor Circ 1.3 Prog. Output #2
CONTROLLER CALL LIGHT
G
SWITCH # 4
H O A
CONTROLLER OUTPUT
C1 35
CONTACTOR # 3 COIL
C
A1 A2
OVERLOAD RELAY
95 96
FAULT LIGHT #4
R
1 2 3 4 21 22
4.4
Well # 7 Pump Control Circuit See Motor Circ 1.4 Prog. Output #3
CONTROLLER CALL LIGHT
G
SWITCH # 1
H O A
CONTROLLER OUTPUT
C1 36
RELAY # 1 COIL
R
A1 A2
1 2 3 4
4.5
Air Stripper Blower Control Circuit See Motor Circ 1.1 And Control Circ 5.1 Prog. Output #4
TIMER # 1 POWER
T
A1 A2
4.6
Cellular Modem Power Timer Control Circuit See Power Circ 8.10
AC
N

5.1



VFD Run Command
Drive ramps Motor to
Programmed Speed A
See Control Circ 4.5

5.2



VFD Speed Command
Sets Speed Bit 1 ON.
VFD ramps motor to
Programmed Speed B
(Program Output 8)

5.3



VFD Speed Command
Sets Speed Bit 2 ON.
VFD ramps motor to
Programmed Speed C
(Program Output 9)

Note that if DI 4 & DI 5
(Speed Bits 1 & 2) are
BOTH set to ON
VFD ramps motor to
Programmed Speed D

5.4

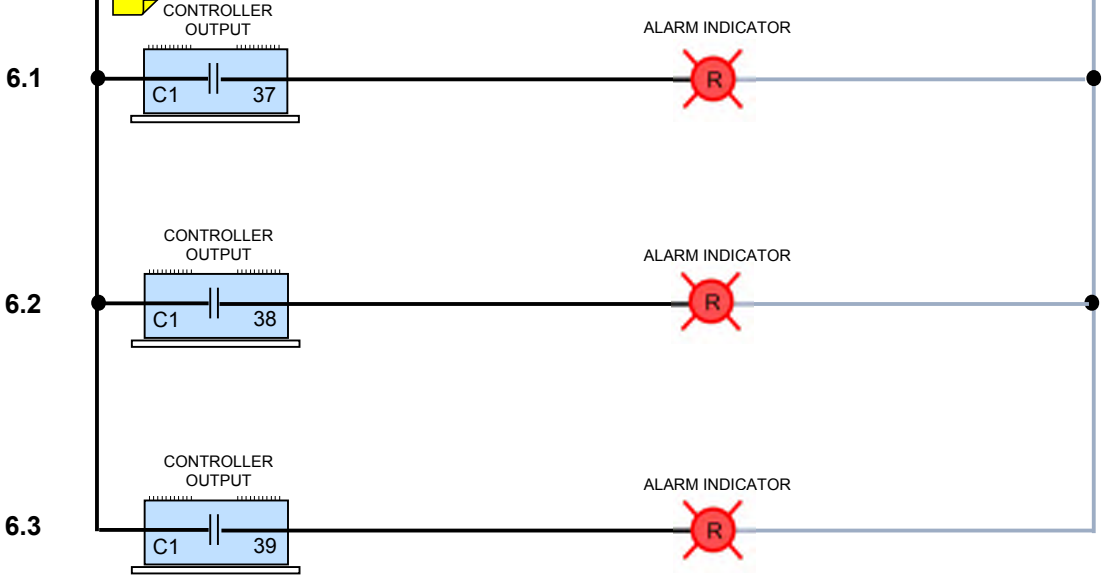


VFD "Fault Reset"
Command Circuit
(Program Output 10)

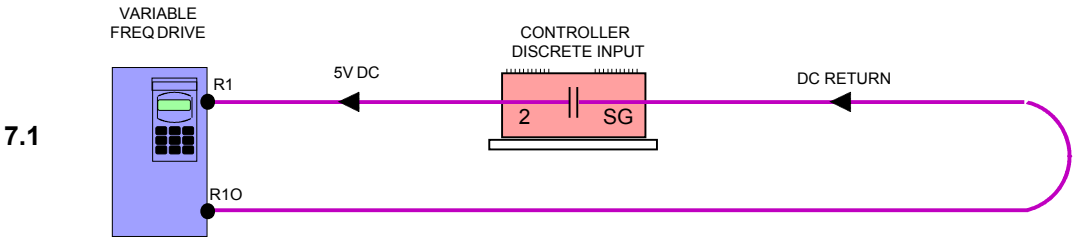
120V AC

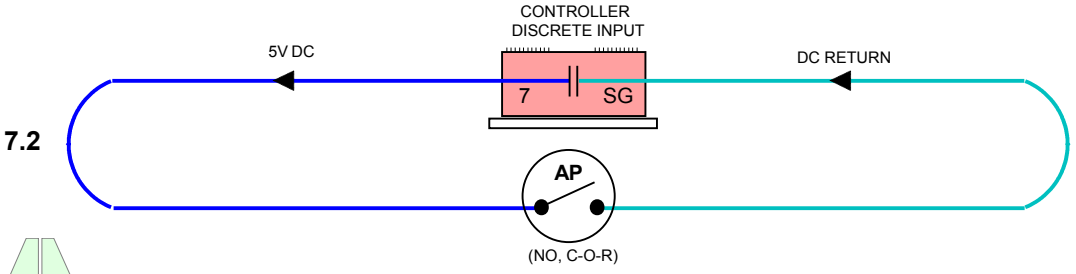
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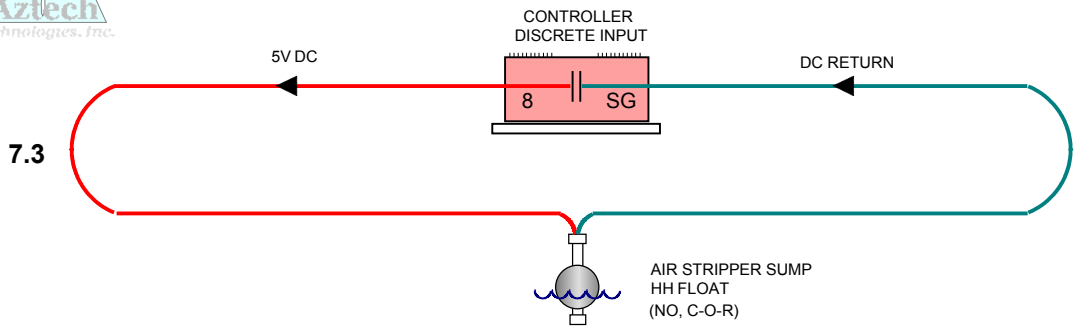
Section 6: Controller Local Alarm Outputs - Also Shown on Fax, PC, or Controller Screen



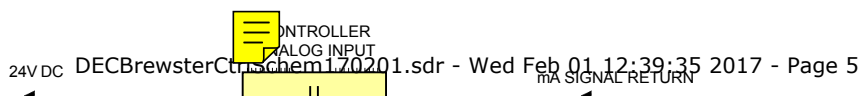
Section 7: Controller-Sourced 5V DC Power: Discrete Inputs / Sensor Signal Circuits

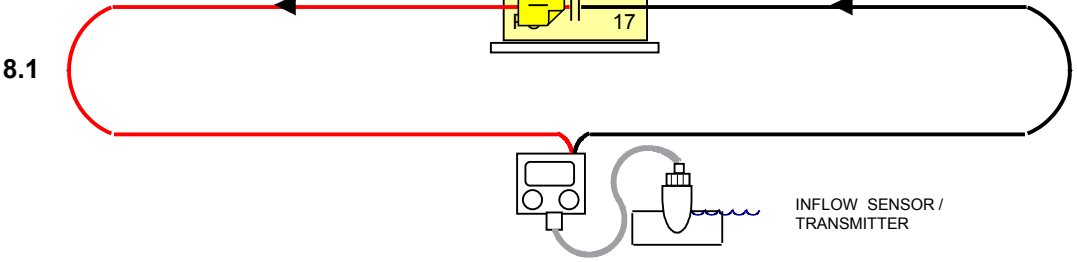






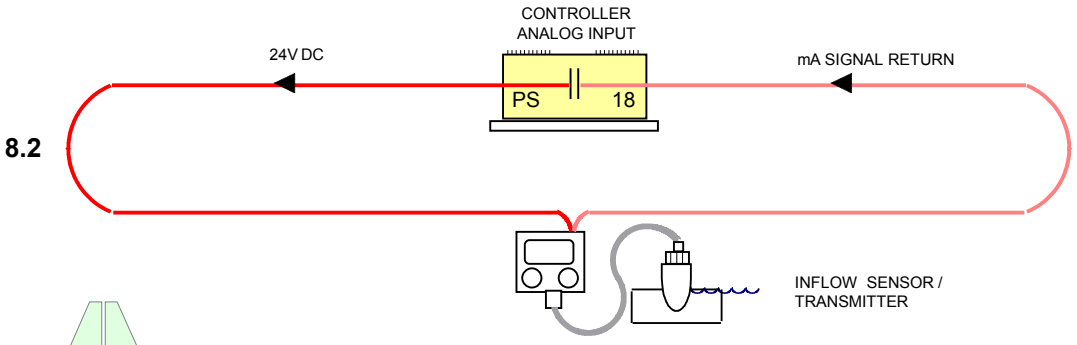
Section 8: Controller-Sourced 24V DC Power: Analog Sensor Signal Input Circuits and Modem Power





8.1

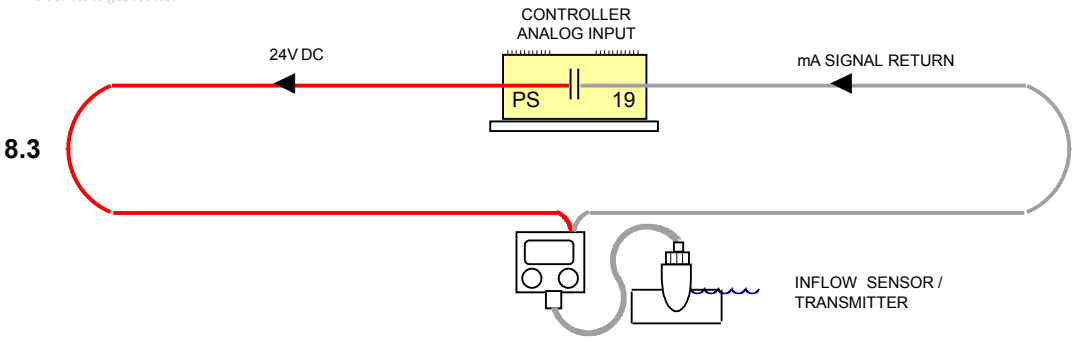
Controller Input #17 Well 5 Flow Sensor / Transmitter



8.2

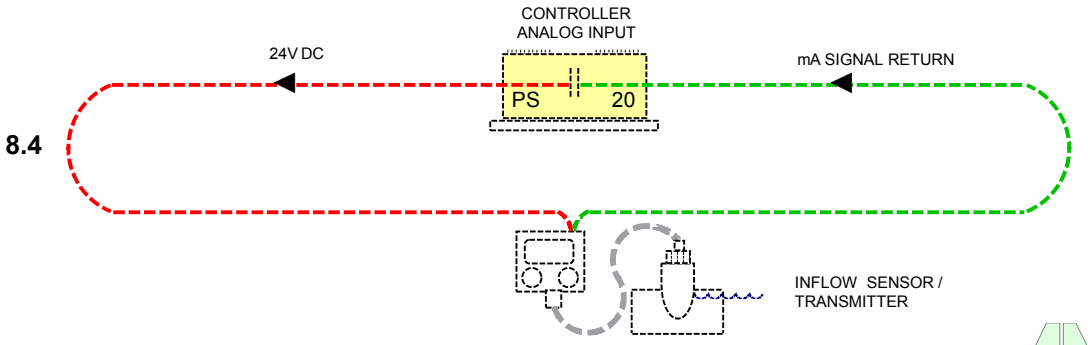
Controller Input #18 Well 6 Flow Sensor / Transmitter

Aztech Technologies, Inc.



8.3

Controller Input #19 Well 7 Flow Sensor / Transmitter

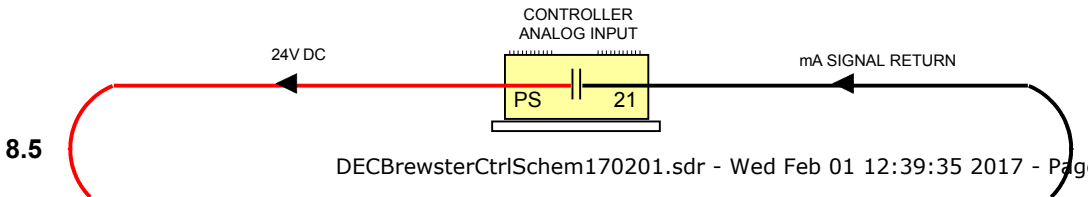


8.4

Controller Input #20 Combined Well Flow Sensor / Transmitter (no longer used)

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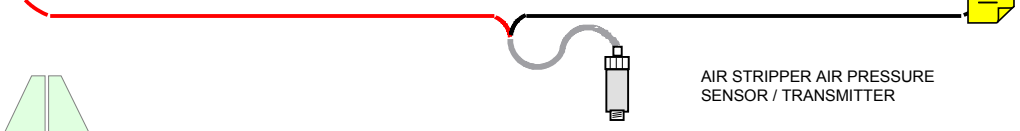
Section 8: Controller-Sourced 24V DC Power: Analog Sensor Signal Input Circuits cont'd



8.5

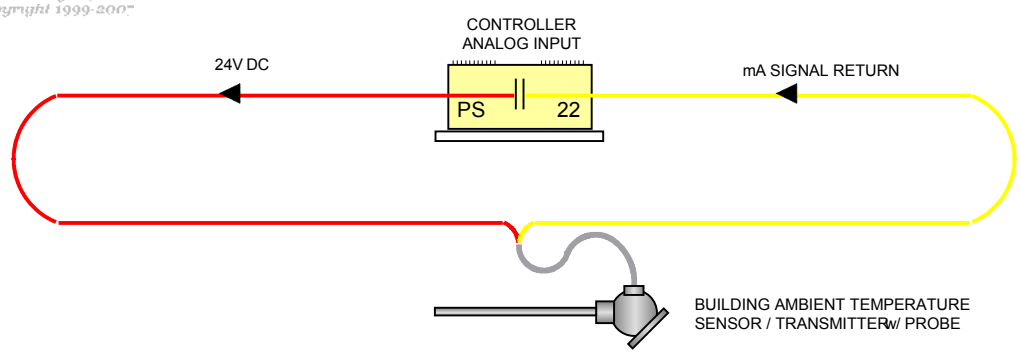
troller
nput #21
Air Stripper
Air Pressure

Sensor /Transmitter



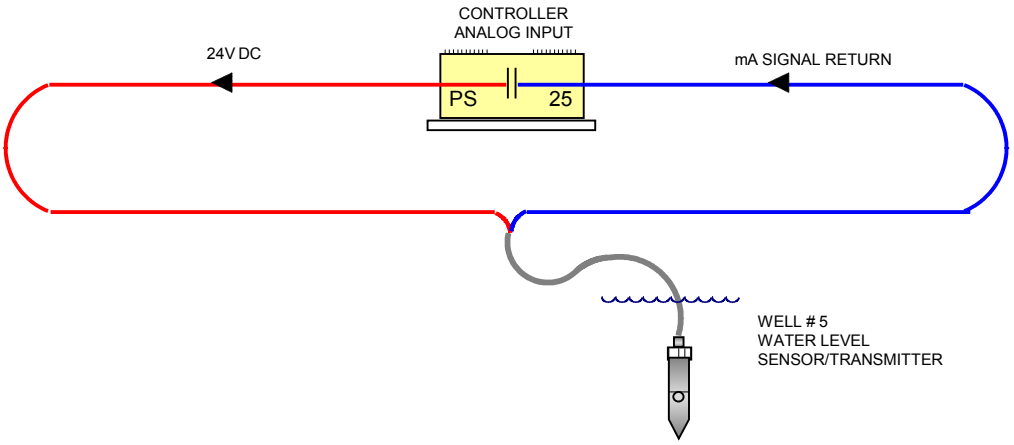
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8.6



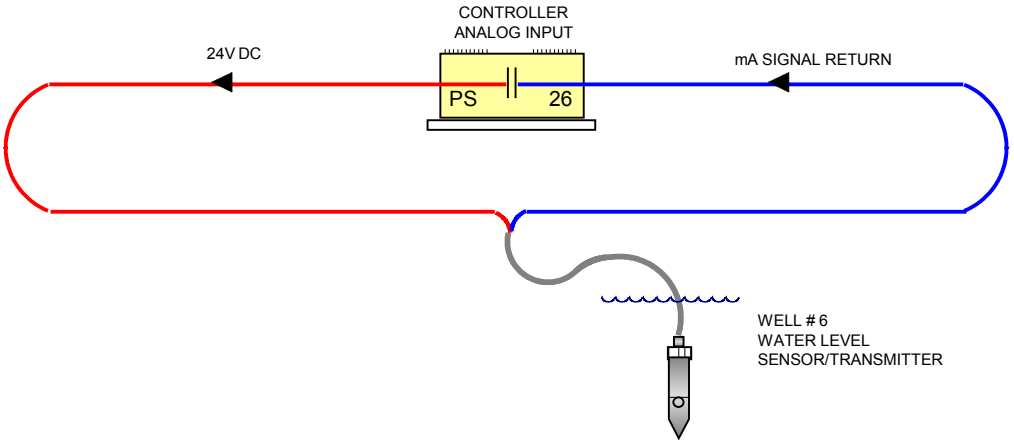
Controller Input #22 Building Ambient Temperature Sensor / Transmitter w/ Moveable Probe

8.7



Controller Input #25 Well 5 Water Level Sensor / Transmitter

8.8

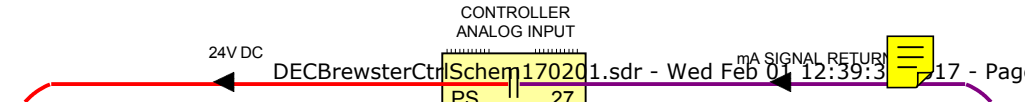


Controller Input #26 Well 6 Water Level Sensor / Transmitter

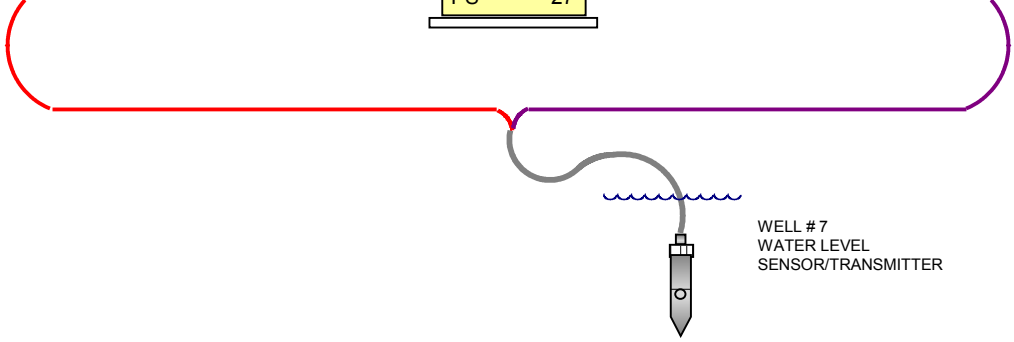
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Section 8: Controller-Sourced 24V DC Power: Analog Sensor Signal Input Circuits contd

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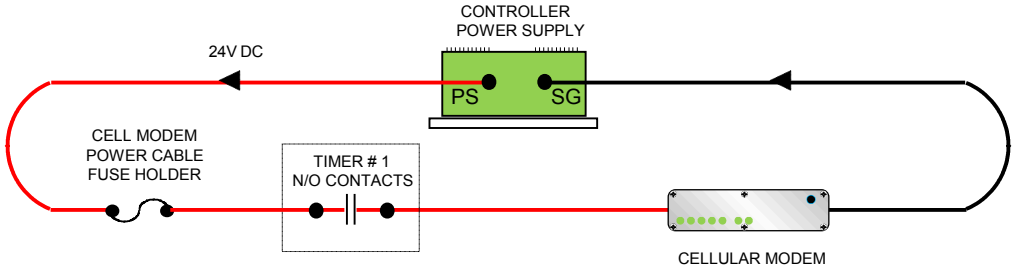


8.9



troller
t #27
Well 7 Water
Level Sensor /
Transmitter

8.10



Cellular Modem
Timed Power
Circuit

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Load Centers/Circuit Breakers/Miscellaneous Components

02 Feb 2017
Aztech Environmental Technologies
NYSDEC/Aztech/CDMSmith
Brewster Village Wellfield Control System
Power Distribution, Control Panel, VFD

Item Type	Manufacturer #	Manufacturer/Description/Specifications	Tag	Cutsheet.	
Load Center	Eaton (Cutler-Hammer) CH30B3200R	Eaton Cutler Hammer (CH) circuit breaker panel 200A Main, 3Phase, 120/208V, 30 space, 3R		CH Load Centers	
Circuit Breaker	CH1P10	Eaton CH, 1 pole, 10 Amp (CTRL, MON B & C)		CH Load Centers	
Circuit Breaker	CH1P15	Eaton CH, 1 pole, 15 Amp (Light, Vent)		CH Load Centers	
Circuit Breaker	CH1P20	Eaton CH, 1 pole, 20 Amp (GFCI Outlet)		CH Load Centers	
Circuit Breaker	CH2P15	Eaton CH, 2 pole, 15 Amp (RW-5, -6,- 7)		CH Load Centers	
Circuit Breaker	CH2P20	Eaton CH, 2 pole, 20 Amp (Heater)		CH Load Centers	
Circuit Breaker	CH3P45	Eaton CH, 3 pole, 45 Amp (VFD - Air Strip Blower)		CH Load Centers	
Variable Freq Drive	GS3-2010	Dura-Pulse 240V 10 HP Drive (Air Stripper blower)		GS3 Drives	
MCP Enclosure	N12302408	Hubbell-Weigmann Enclosure with backplane		HW_NEMA_Encl	
Controller	ProControl A1 (Cellular)	EOS Model A1 with Cellular Modem		2PTYPEA	
UPS/Surge Supp	BN600R	APC UPS/Surge Suppression Unit		APCBack-UPS	
Contactor	GH15CN-3-10A	Auto Dir 12A 45mm non-reversing, 3 pole, IEC		GHSeriesContactors	
Overload Relay	RTD32-1100	Auto Dir 8-11A, 3 pole, Auto-Manual Trip select		GHSeriesContactors	
Relay	781-1C-120A	Auto Dir 15A 120V coil 5-pin Relay (activates VFD)		78relays	
Relay Base	781-1C-SKT	Auto Dir 15A Relay plug-in Base with Retainer		78relays	
Timer	ODR2U	Syrelec 10A, Repeat Cycle, Octal (Modem Power)		Crouzet-ODR2U	
Selector Switch	GCX1320-22	AutoDir 22mm 3 position, maintained (Motors)		Cents22mmselect	
Indicator Light	ECX2051-127L	Monoblock LED panel-mount indicator, red		ECXIndicators	
Indicator Light	ECX2052-127L	Monoblock LED panel-mount indicator, green		ECXIndicators	
Fuse Term. Blocks	DN-F6	DINnectors ¼" UL listed Fuse block/knife switch (3)		Dinfused	
Control Fuse	MDL-5	Cooper-Bussmann 5A Glass Fuse, slow blow		efusemdl	
DIN Rail End Block	DN-EB35	DINnectors End Bracket w/ clamp screw		Dinendbrkts	

78 Series Electromechanical Relay Selection Guide






Specification	781 Series	782 Series	783 Series	784 Series
Coil Voltages	120VAC, 240VAC, 12VAC, 12VDC, 24VAC, 24VDC	120VAC, 240VAC, 12VAC, 12VDC, 24VAC, 24VDC	120VAC, 240VAC, 12VAC, 12VDC, 24VAC, 24VDC	120VAC, 240VAC, 12VAC, 12VDC, 24VAC, 24VDC
Configuration	SPDT	DPDT	3PDT	4PDT
Contact Rating	15A	15A	15A	15A
Base Socket	5 pin spade terminal	8 pin spade terminal	11 pin spade terminal	14 pin spade terminal
Agency Approvals	UL Recognized (E191059), CE, IEC Std 947-4-1 and 947-5-1, CSA 244610	UL Recognized (E191059), CE, IEC Std 947-4-1 and 947-5-1, CSA 244610	UL Recognized (E191059), CE, IEC Std 947-4-1 and 947-5-1, CSA 244610	UL Recognized (E191059), CE, CSA 244610
Prices starting at	$4.50	$5.50	$5.75	$7.25



These ice cube style relays are power relays designed for applications demanding high power control in various factory machines and control panels. They are ideal for electrical control panels requiring stable and reliable relays.

Features

- Small package design
- Silver alloy gold flashed contact
- High open contact dielectric strength (up to 2500V rms)
- High reliability and long life
- High vibration and shock resistance
- LED indicator on all models, so you can easily see if the relay is working properly without using a voltmeter
- Flag indicator shows relay status in manual or powered condition
- A pushbutton allows manual operation of the relay without the need for power to the coil
- Lock-Down door, when activated, holds pushbutton and contacts in the "operate" position, allowing circuits to be analyzed.
- SPDT, DPDT, 3PDT and 4PDT models
- Finger grip cover allows easier removal of relays from sockets than conventional relays
- I.D. tag/write labels for identifying relays in multi-relay circuits

78 Series Relays Selection Guide

NOTE: Not recommended for low current switching. Find contacts' Minimum Switching Requirement on following page. For low current switching, please see the QM4N1 and QM4X1 series.

Part Number	Price	Coil Voltage	Configuration	Dimensions	Relay Socket Part Number	Price	Dimensions
781-1C-12D	$4.75	12VDC	SPDT	Figure 1	781-1C-SKT	$4.00	Figure 5
781-1C-12A	$4.75	12VAC					
781-1C-24D	$4.50	24VDC					
781-1C-24A	$4.75	24VAC					
781-1C-120A	$4.75	120VAC					
781-1C-240A	$5.25	240VAC					
782-2C-12D	$5.50	12VDC	DPDT	Figure 2	782-2C-SKT	$4.00	Figure 6
782-2C-12A	$5.50	12VAC					
782-2C-24D	$5.50	24VDC					
782-2C-24A	$5.75	24VAC					
782-2C-120A	$5.75	120VAC					
782-2C-240A	$6.25	240VAC					
783-3C-12D	$5.75	12VDC	3PDT	Figure 3	783-3C-SKT	$4.50	Figure 7
783-3C-12A	$7.75	12VAC					
783-3C-24D	$8.25	24VDC					
783-3C-24A	$8.25	24VAC					
783-3C-120A	$8.25	120VAC					
783-3C-240A	$8.25	240VAC					
784-4C-12D	$7.25	12VDC	4PDT	Figure 4	784-4C-SKT-1	$4.75	Figure 8
784-4C-12A	$9.50	12VAC					
784-4C-24D	$7.50	24VDC					
784-4C-24A	$7.50	24VAC					
784-4C-120A	$7.50	120VAC					
784-4C-240A	$7.50	240VAC					

78 Series Electromechanical Relay Specifications

78 Series Relay Specification Table												
Part Numbers	781-1C-12D	781-1C-12A	781-1C-24D	781-1C-24A	781-1C-120A	781-1C-240A	782-2C-12D	782-2C-12A	782-2C-24D	782-2C-24A	782-2C-120A	782-2C-240A
General Specifications												
***Service Life: Mechanical / Electrical Operations**	Mechanical: 10,000,000 operations unpowered Electrical: 100,000 operations @ rated resistive load											
Operating Temperature	-40°C to 55°C (-40°F to 131°F)											
Response Time	20ms											
Vibration Resistance	± 1mm (10-35 Hz) and 3gn (35-50Hz)											
Shock Resistance	15gn											
Weight	26g (0.92 oz)						36 g (1.27 oz)					
****Agency Approvals and Standards**	UL Recognized File E191059, CE, CSA											
Environmental Protection	IP40											
NEMA B300 Pilot Duty Rated	Yes											
Coil Specifications												
Standard	Mechanical flag indicator, LED Indicator, lockable push to test button											
Coil Input Voltage	12VDC	12VAC	24VDC	24VAC	120VAC	240VAC	12VDC	12VAC	24VDC	24VAC	120VAC	240VAC
Coil Resistance	115Ω	44Ω	450Ω	177Ω	4.43kΩ	17.72kΩ	177Ω	44Ω	640Ω	177Ω	4.43 kΩ	17.72 kΩ
Power Consumption	1.4 W DC, 1.9 VAC						1.15 W DC, 1.4 VAC					
Dropout Voltage (% of nominal voltage or more)	10%	15%	10%	15%			10%	15%	10%	15%		
Pull-in Voltage (% of nominal voltage or less)	85%	85%	85%	85%			80%	85%	80%	85%		
Max. Voltage (Max. continuous voltage)	110% of the rated coil voltage											
Contact Specifications												
Contact Type	SPDT						DPDT					
Contact Material	Silver alloy, gold flashed											
Minimum Switching Requirement	10mA @ 17VDC											
Max. Contact Rating	Refer to Contact Ratings charts.											
Dielectric Strength Between Contacts	Between coil contact: 2000V rms; Between poles 2000V rms; Between contacts 1500V rms											

Note: These devices are rated for 1,000 cycles when used in a motor application. (Per Table 45.1, UL 508).

****Note: UL listed when used with sockets 781-1C-SKT, 782-2C-SKT, 783-3C-SKT, 784-4C-SKT, or 784-4C-SKT-1. Current limited to rating of relay or socket, whichever is less.***

NEMA Mechanical Switching Ratings and Test Values for AC Control Circuit Contacts												
Contact Rating Designation	**Thermal Continuous Test Current (A)**	**Maximum AC Current, 50/60Hz (A)**								**Voltamperes**	
		120 Volts		**240 Volts**		**480 Volts**		**600 Volts**			
		Make	**Break**	**Make**	**Break**	**Make**	**Break**	**Make**	**Break**	**Make**	**Break**
B300	5	30	3.00	15	1.50	---	---	---	---	3600	360

This chart is provided as a guideline only, and the ratings and values are not guaranteed to be accurate. It is the users' responsibility to properly size their control circuit devices. The chart values are from NEMA Standard ICS 5-2000, Table 1-4-1.

781 Series Contact Ratings (current)				
Resistive				***Motor Load**
Voltage	**Nominal**	**UL**	**CSA**	**UL**
28VDC	15A	15A	12A	---
120VAC	15A	15A	15A	1/2Hp
277VAC	15A	12A	12A	1Hp

782 Series Contact Ratings (current)				
Resistive				***Motor Load**
Voltage	**Nominal**	**UL**	**CSA**	**UL**
28VDC	15A	15A	12A	---
120VAC	15A	15A	15A	1/2Hp
277VAC	15A	12A	12A	1Hp

78 Series Electromechanical Relay Specifications

78 Series Relay Specification Table												
Part Numbers	783-3C-12D	783-3C-12A	783-3C-24D	783-3C-24A	783-3C-120A	783-3C-240A	784-4C-12D	784-4C-12A	784-4C-24D	784-4C-24A	784-4C-120A	784-4C-240A
General Specifications												
***Service Life: Mechanical / Electrical Operations**	Mechanical: 10,000,000 operations unpowered Electrical: 100,000 operations @ rated resistive load											
Operating Temperature	-40°C to 55°C (-40°F to 131°F)											
Response Time	20 ms											
Vibration Resistance	± 1mm (10-35 Hz) and 3gn (35-100 Hz)											
Shock Resistance	15gn											
Weight	60 g. (2.12 oz.)						80 g (2.82 oz)					
****Agency Approvals and Standards**	UL Recognized File E191059, CE, CSA											
Environmental Protection	IP40											
NEMA B300 Pilot Duty Rated	Yes											
Coil Specifications												
Standard	Mechanical flag indicator, LED Indicator, lockable push to test button											
Coil Input Voltage	12VDC	12VAC	24VDC	24VAC	120VAC	240VAC	12VDC	12VAC	24VDC	24VAC	120VAC	240VAC
Coil Resistance	80Ω	30Ω	320Ω	110Ω	2.88 kΩ	11.3 kΩ	76Ω	20Ω	303Ω	80Ω	2.1 kΩ	8kΩ
Power Consumption	1.85 W DC, 2.05 VAC						1.5 W DC, 1.5 VAC					
Dropout Voltage (% of nominal voltage or more)	10%	15%	10%	15%			10%	15%	10%	15%		
Pull-in Voltage (% of nominal voltage or less)	80%	85%	80%	85%			80%	85%	80%	85%		
Max. Voltage (Max. continuous voltage)	110% of the rated coil voltage											
Contact Specifications												
Contact Type	3PDT						4PDT					
Contact Material	Silver alloy, gold flashed											
Minimum Switching Requirement	10mA @ 17VDC											
Max. Contact Rating	Refer to Contact Ratings charts.											
Dielectric Strength Between Contacts	Between coil and contacts: 2000V rms; Between poles: 2000V rms; Between contacts: 1500V rms											

***Note: These devices are rated for 1,000 cycles when used in a motor application. (Per Table 45.1, UL 508).**

****Note: UL listed when used with sockets 781-1C-SKT, 782-2C-SKT, 783-3C-SKT, 784-4C-SKT, or 784-4C-SKT-1. Current limited to rating of relay or socket, whichever is less.**

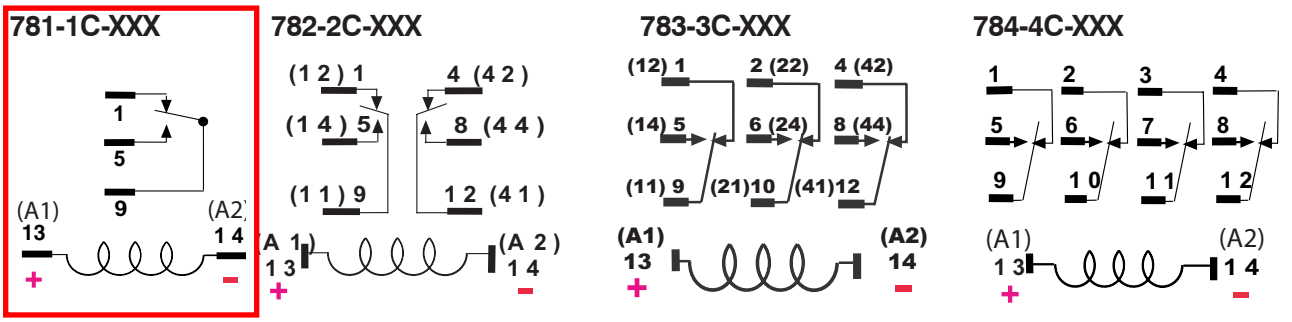
783 Series Contact Ratings (current)				
Resistive				***Motor Load**
Voltage	**Nominal**	**UL**	**CSA**	**UL**
28VDC	15A	15A	15A @ 28VDC 30A max total	–
120VAC	15A	–	15A	1/2 hp
277VAC	15A	15A	15A @ 150VAC 30A max total	1hp 2hp max total

784 Series Contact Ratings (current)				
Resistive				***Motor Load**
Voltage	**Nominal**	**UL**	**CSA**	**UL**
28VDC	15A	15A	15A @ 28VDC 30A max total	–
120VAC	15A	–	15A	1/2Hp
277VAC	15A	15A	15A @ 150VAC 30A max total	1hp 2hp max total

***Note: These devices are rated for 1,000 cycles when applied to a motor application. (Per Table 46.1` UL 508)**

78 Series Wiring Diagrams and Dimensions

Wiring Diagrams (viewed from pin end)



ALTERNATE NEMA OR IEC ( ) NUMBERS, VIEWED FROM PIN SIDE

Dimensions

inches [mm]

Figure 1: 781-1C

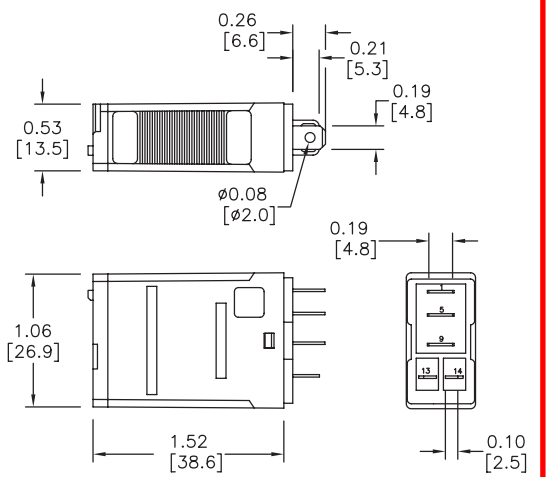


Figure 2: 782-2C

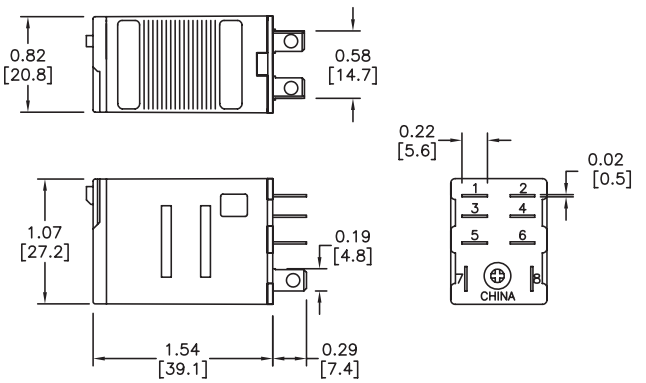


Figure 3: 783-3C

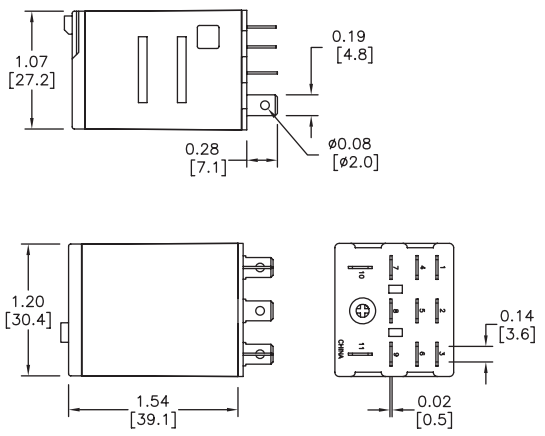
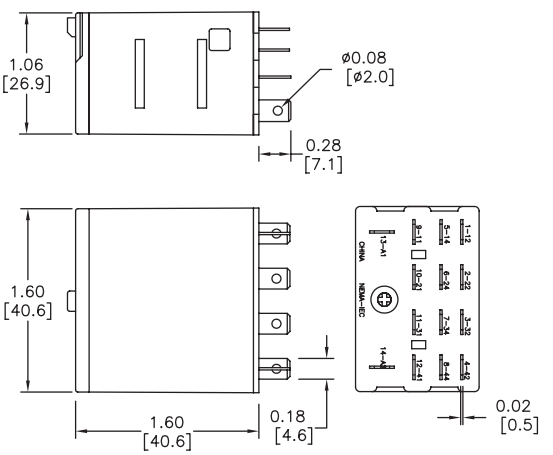


Figure 4: 784-4C



78 Series Relay Socket Dimensions

Dimensions

inches [mm]

Figure 5: 781-1C-SKT

DIN-rail mounting, SPDT, for use with 781 series relays

Note: See Table on next page for maximum screw torques and wire sizes

UL Recognized

file number: E225080

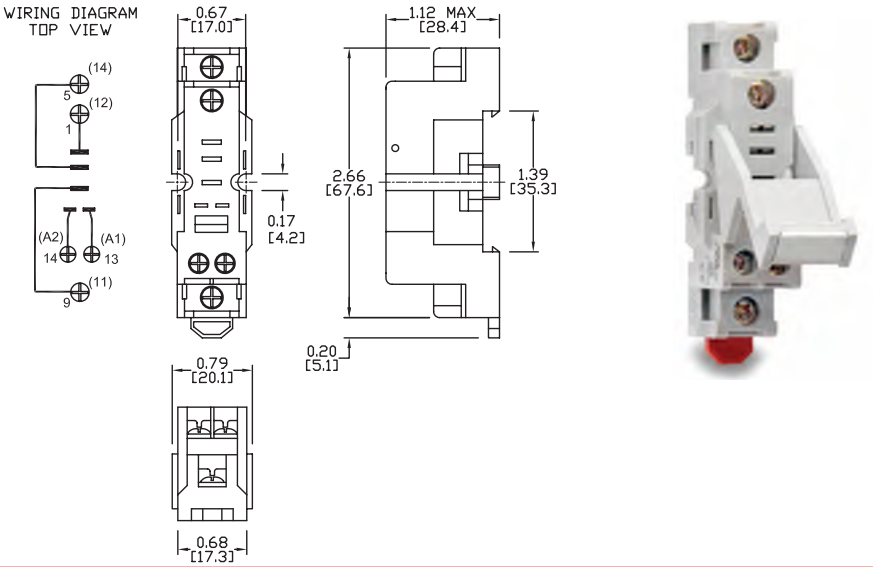


Figure 6: 782-2C-SKT

DIN-rail mounting, DPDT, for use with 782 series and AD-70S2 relays

Note: See Table on next page for maximum screw torques and wire sizes

UL Recognized

file number: E225080

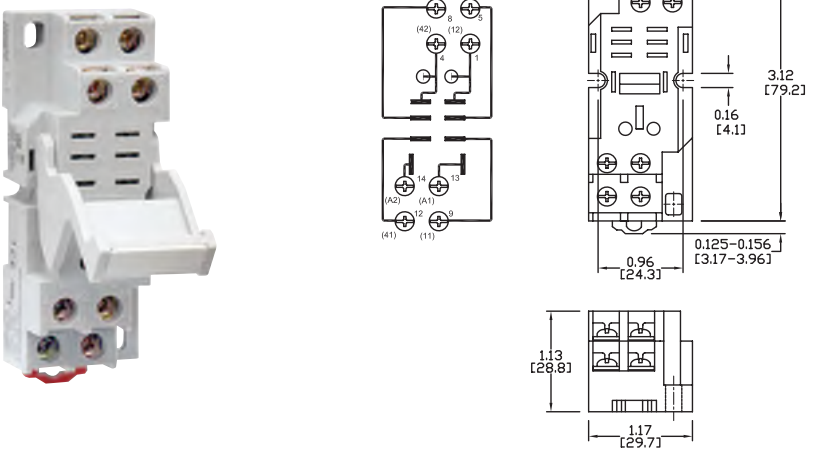


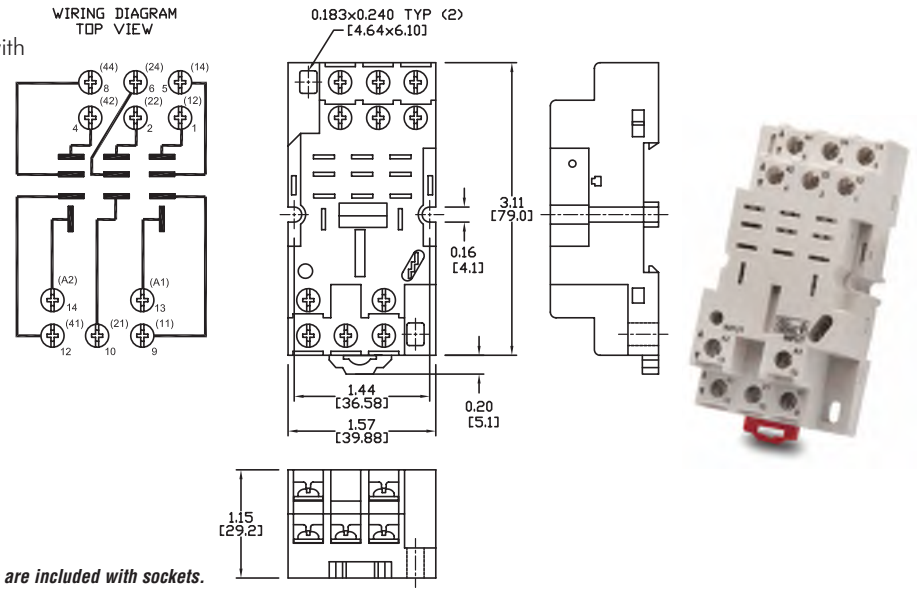
Figure 7: 783-3C-SKT

DIN-rail mounting, 3PDT, for use with 783 series relays.

Note: See Table on next page for maximum screw torques and wire sizes

UL Recognized

file number: E225080



Note: Order sockets separately; holding clips are included with sockets.

78 Series Relay Socket Dimensions



Dimensions

inches [mm]

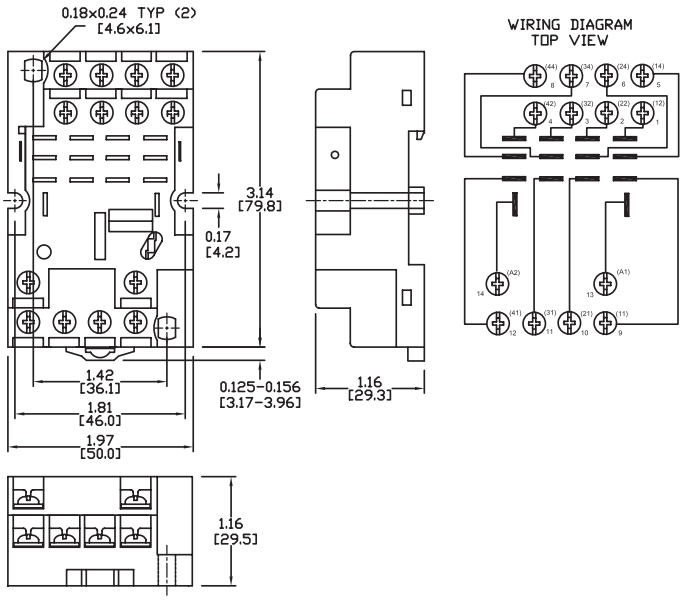


Figure 8: 784-4C-SKT-1

DIN-rail mounting, 4PDT,
for use with 784 series relays.

Note: Order sockets separately; holding clips are included with sockets.

Note: See table below for maximum screw torques and wire sizes

UL Recognized
file number: E225080

Part Number	Price	Maximum Screw Torques	Maximum Wire Sizes
781-1C-SKT	$4.00	Terminals 13, 14: 7 in-lbs/0.8Nm Terminals 1, 5, 9: 9 in-lbs/1.0Nm	Terminals 13, 14: 18 to 20 AWG, solid or stranded, one or two identical wires Terminals 1, 5, 9: 12 to 20 AWG, solid or stranded, one or two identical wires
782-2C-SKT	$4.00	All terminals: 9 in-lbs/1.0Nm	All terminals: 12 to 20 AWG, solid or stranded, one or two identical wires
783-3C-SKT	$4.50		
784-4C-SKT-1	$4.75		

Packaged M.O.V.s and Diodes

Overview

Metal Oxide Varistors (MOV) and Diode circuits are offered as convenient plug-in modules. Plugging a module into the relay socket connects the circuit in parallel with the relay coil. No additional wiring is required.

Modules fit within the maximum dimensions of the relay and socket.

Features

- MOVs protect by shunting potentially damaging electrical spikes away from the relay coil. Ideal for AC and DC applications.
- Diodes protect external drive circuitry from inductive voltages generated when removing coil voltage. Ideal for DC applications. Polarity sensitive.

Application

Many PLC systems control one or more inductive load devices. These inductive loads (devices with a coil) generate transient voltages when they are de-energized with a relay contact. When a relay contact is closed it "bounces", which causes the coil to energize and de-energize until the "bouncing" stops. The transient voltage which is generated is much larger in amplitude than the supply voltage, especially with a DC supply voltage.

When switching a DC-supplied inductive load the full supply voltage is always present when the relay contact opens (or "bounces"). When switching an AC-supplied inductive load, if the voltage is not zero when the relay contact opens, there is energy stored in the inductor that is released when the voltage to the inductor is suddenly removed. This release of energy is what produces transient voltages.



When inductive load devices (motors, motor starters, interposing relays, solenoids, valves, etc.) are controlled with relay contacts, it is recommended that a surge suppression device be connected directly across the coil of the field device. If the inductive device has plug-type connectors, the suppression device can be installed on the terminal block of the relay output.

Metal oxide varistors (MOV) and diodes are devices which provide good surge and transient suppression of AC and DC powered coils.

Protection Device Selection Guide

Part Number	Price	Description	Nominal Input Voltage	Dimensions & Package	Mating Socket
AD-ASMD-250	$9.75	Protection diode module for 784 and 75 series relays. Plug-in modules come in package of 5.	6-250VDC	Figure 1	783-3C-SKT 784-4C-SKT-1 750-2C-SKT 750-3C-SKT
AD-ASMM-24	$8.00	MOV module for 784 and 75 series relays that operate at 24VAC coil voltage. Package includes 5 modules.	24VAC/VDC		
AD-ASMM-120	$8.00	MOV module for 784 and 75 series relays that operate at 120VAC coil voltage. Package includes 5 modules.	120VAC/VDC		
AD-ASMM-240	$8.00	MOV module for 784 and 75 series relays that operate at 240VAC coil voltage. Package includes 5 modules.	240VAC/VDC		
AD-BSMD-250	$8.00	Protection diode module for 782 series relays. Plug-in modules come in package of 5.	6-250VDC	Figure 2	782-2C-SKT
AD-BSMM-24	$8.00	MOV module for 782 series relays that operate at 24VAC coil voltage. Package includes 5 modules.	24VAC/VDC		
AD-BSMM-120	$8.00	MOV module for 782 series relays that operate at 120VAC coil voltage. Package includes 5 modules.	120VAC/VDC		
AD-BSMM-240	$8.00	MOV module for 782 series relays that operate at 240VAC coil voltage. Package includes 5 modules.	240VAC/VDC		

Accessory dimensions

inches [mm]

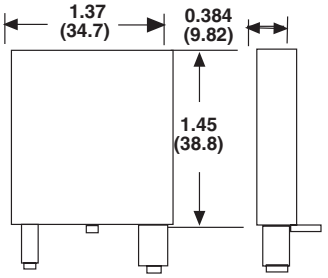
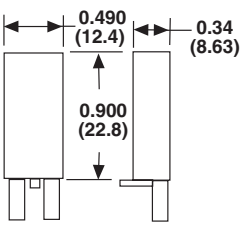
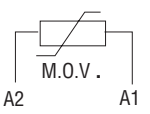


Figure 1





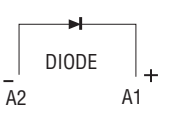


Figure 2

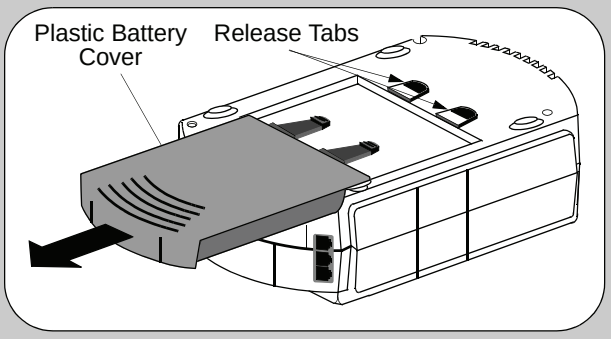
Back-UPS® NS 600
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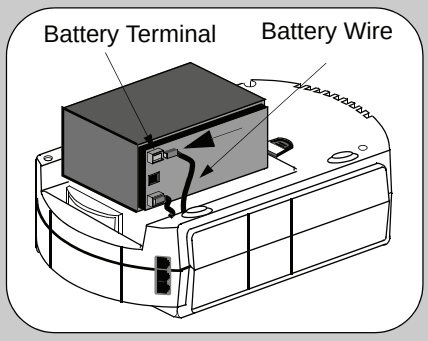
1 Connect Battery

For safety, the Back-UPS NS is shipped with one battery wire disconnected. The UPS will not operate until the wire is connected to the touch-safe battery terminal. NOTE: Small sparks may occur during battery connection. This is normal.

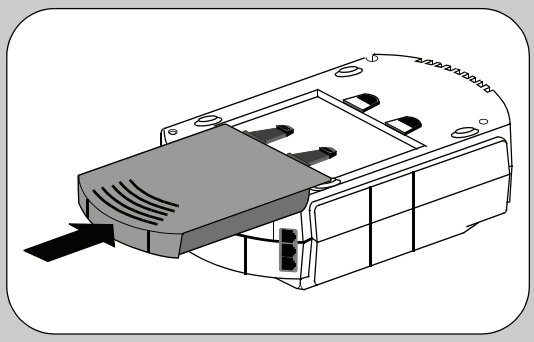
1. Turn the Back-UPS NS over and press in the two release tabs. Slide the plastic battery cover off the unit.



2. Connect the battery wire firmly to the battery terminal.



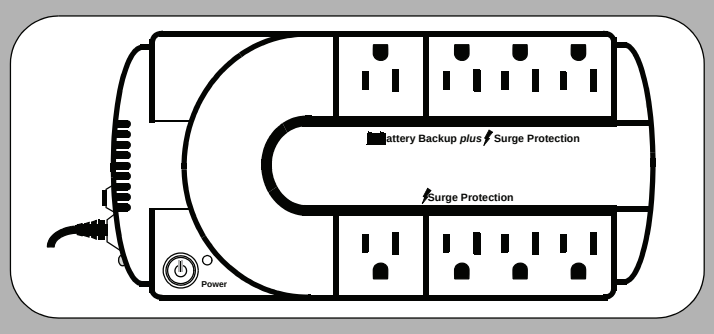
3. Insert the battery back into the compartment. Slide the plastic battery cover in place until the two tabs lock into place.



2 Connect Equipment

Battery Back-up *plus* Surge Protection

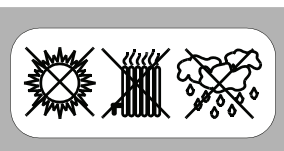
These outlets are powered whenever the Back-UPS NS is switched ON. During a power outage or other utility problems (brownouts, over-voltages), these outlets will be powered for a limited time by the Back-UPS NS. Plug your computer, monitor, CD-ROM drive and one other data-sensitive device such as an external disk or tape drive, or Home Phoneline Networking Association (HPNA) device into these outlets.



Surge Protection

These outlets provide full-time protection from surges even if the Back-UPS NS is switched OFF. Plug your printer, fax machine, scanner, or other peripherals that do not need battery power into these outlets.

Place the Back-UPS NS to avoid:
- Direct sunlight
- Excessive heat
- Excessive humidity or contact with fluids



Plug the Back-UPS NS power cord directly into a wall outlet; not a surge protector or power strip.

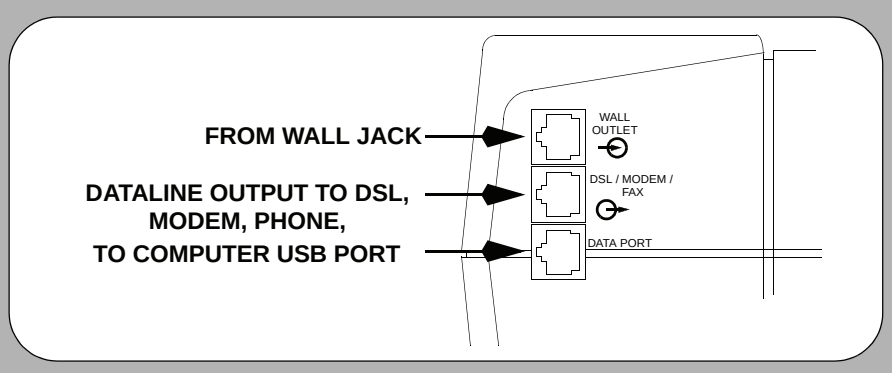
Connect Computer Cable

The supplied cable and software provide automatic file saving and shutdown of the operating system in the case of a sustained power outage.

Connect the cable to the Data Port of the Back-UPS NS. Connect the other end of the cable to the USB port on your computer. The software will automatically find the USB Port of your computer.

Connect Modem / Phone / DSL / Fax / HPNA to Surge Protection

The Back-UPS protects a single line (2-wire) phone (including Digital Subscriber Line - DSL), Home Phoneline Networking Association (HPNA) type equipment, modem, or fax machines from surges when connected through the UPS as shown below.



3 Power On and Install Software

Press the ON/OFF switch to power the unit ON.

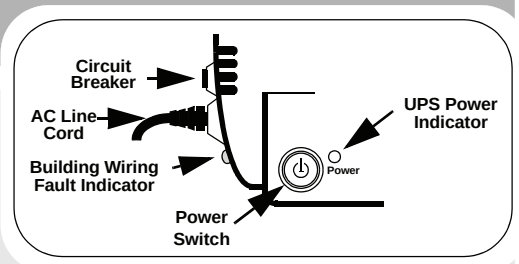
A single short beep and the green "Power" indicator confirms the Back-UPS NS is on and ready to provide protection.

The Back-UPS NS should charge for at least 16 hours to ensure sufficient runtime. The unit is being charged whenever it is connected to utility power, whether the unit is turned ON or OFF.

If the red Building Wiring Fault indicator (located on the end near the power cord) is lit, your building wiring presents a shock hazard that should be corrected by a qualified electrician.

Install the PowerChute® Personal Edition software

Place the PowerChute Personal Edition CD-ROM into your computer and follow the installation instructions on the screen.



Status Indicators

The Back-UPS NS indicates operating status using a combination of visual and audible indicators.

Status	Visual Indicators	Audible Indicators	Alarm Terminates When
On Line - UPS is supplying conditioned utility power to the load.	Power LED - ON	None	n/a
On Battery - UPS is supplying battery power to the load connected to the Battery outlets.	Power LED - ON (off during beep)	Beeping 4 times every 30 seconds	UPS transfers back to On Line operation, or when UPS is turned off.
Low Battery Warning - UPS is supplying battery power to the load connected to the Battery outlets and the battery is near exhaustion.	Power LED - Flashing	Rapid beeping (half-second intervals)	UPS transfers back to On Line operation, or when UPS is turned off.
Replace Battery - Battery needs to be checked and/or replaced, or battery is not connected.	Power LED - Flashing	Constant tone	UPS turned off with the power switch.
Overload Shutdown - During On Battery operation a battery power supplied outlet overload was detected.	Power LED - OFF	Constant tone	UPS turned off with the power switch.
Sleep Mode - During On Battery operation the battery power has been completely exhausted and the UPS is waiting for utility power to return to normal.	Power LED - OFF	Beeping once every 4 seconds	Utility power is restored, or if utility power is not restored within 32 seconds, or the UPS is turned off.
Building Wiring Fault - Your building wiring presents a shock hazard that should be corrected by a licensed electrician.	Building Wiring Fault LED (red) - ON	None	UPS is unplugged, or plugged into a properly wired outlet.

See the Troubleshooting section for additional assistance.

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Troubleshooting

Use the table below to solve minor Back-UPS NS installation or operation problems. Consult APC Online Technical Support or call APC Technical Support for assistance with problems that cannot be resolved using the table below:

Problem	Probable Cause	Solution
Back-UPS NS will not turn on.	Battery is disconnected or utility power is not available at the wall outlet.	Connect the battery (see *Connect Battery*) and ensure power is available at the wall outlet.
No power available at the Surge Protection outlets.	Surge Protection outlets have been overloaded.	Reduce the amount of equipment plugged into Surge Protection outlets.
	Utility power not available at the wall outlet.	Ensure the fuse or circuit breaker for the outlet is not tripped, and that the wall switch controlling the outlet (if any) is in the ON position.
Connected equipment loses power.	Equipment is connected to the “Surge Protection” outlets.	Ensure the equipment you want to stay powered during a power failure is plugged into the “Battery Backup plus Surge Protection” outlets and NOT the “Surge Protection” outlets.
	The Back-UPS NS is overloaded.	Make sure the equipment plugged into the outlets of the unit are not overloading its capacity. Try removing some of the equipment and see if the problem continues.
	PowerChute Personal Edition software has performed a shutdown due to a power failure.	The Back-UPS NS is operating normally.
	The Back-UPS NS has exhausted its available battery power.	The Back-UPS NS can only operate on battery power for a limited amount of time. The unit will eventually turn off when the available battery power has been used. Allow the unit to recharge for 16 hours before expecting maximum runtime.
	Connected equipment does not accept the step-approximated sine waveform the Back-UPS NS.	The output waveform is designed for computers and computer-related equipment. It is not designed for use with motor-type equipment.
	The Back-UPS NS may require service.	Contact APC Technical Support for further troubleshooting.
The Power indicator is lit and the Back-UPS NS is beeping four times every 30 seconds.	The Back-UPS NS is using battery.	The Back-UPS NS is operating normally and using battery power. Once On Battery, you should save your current work, power down your equipment, and turn the unit OFF. Once normal power is restored, you may turn the unit back ON and power your equipment.
The Power indicator flashes and the Back-UPS beeps twice per second at the same time.	Battery capacity is low (about 2 minutes of use remaining).	The Back-UPS NS is about to shut off due to a low battery charge condition! When the unit beeps twice every second, the battery has about 2 minutes of power remaining. Immediately power down your computer and turn the unit OFF. When normal power returns, the unit will recharge the battery.
Building Wiring Fault indicator is lit.	Your building wiring presents a shock hazard. Using the Back-UPS with this condition will void the warranty.	Call a qualified electrician for service.
Inadequate runtime.	The battery is not fully charged.	Allow the unit to charge by leaving it plugged into the wall at least 16 hours.
	Battery is near the end of useful life.	As a battery ages, the amount of runtime available will decrease. You can replace the battery by ordering one at www.apc.com. Batteries also age prematurely if the Back-UPS NS is placed near excessive heat.
No phone/fax/DSL signal from the Back-UPS.	Data line from the ISP or wall outlet is connected to the wrong jack on the Back-UPS.	Make sure the data line from the wall outlet is connected to the jack labeled “Wall Outlet (Phone/Fax/DSL).
Internet connection is lost during power outage.	Modem has lost AC Power.	Plug the AC power cord of the modem into one of the four “Battery Back-up *plus* Surge Protection” outlets.

Specifications

Model		BN600
Input	Voltage	120 Vrms Nominal
	Frequency	50 - 60 Hz (auto-sensing)
	Brownout Transfer	88 Vrms, typical
	Over-voltage Transfer	139 Vrms, typical
Output	UPS Capacity (4 outlets)	600 VA / 360 W
	Total Amperage (8 outlets)	12 Amps (including UPS output)
	Voltage On Battery	115 Vrms ± 8% (step-approximated sine wave)
	Frequency - On Battery	50-60 Hz ± 1 Hz
	Transfer Time	6 ms typical, 10 ms maximum
Protection and Filter	AC Surge Protection	Full time, 375 joules
	Phone/fax/DSL Surge Protection	Single line (2-wire)
	EMI/RFI Filter	Full time
	AC Input	Resettable circuit breaker
Battery	Type	Sealed, maintenance-free lead acid
	Average Life	3 - 5 years depending on the number of discharge cycles and environmental temperature
Physical	Net Weight	16.2 lb. (7.3 kg.)
	Size	4.0” (H) x 11” (W) x 7.1” (D) (10.2 x 27.9 x 18.03 cm)
	Operating Temperature	+32°F to 104°F (0°C to 40°C)
	Storage Temperature	+5°F to 113°F (-15°C to 45°C)
	Operating Relative Humidity	0 to 95% non-condensing
	Operating Elevation	0 to 10,000 ft (0 to 3,000m)
Safety/Regulatory	Safety Approvals	cTUVus, NOM-001
	EMC Compliance	Notice: This device complies with part 68 and part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. On the bottom of this equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company.

Order Replacement Battery

Replace with an APC qualified battery. Replacement batteries can be ordered from www.apc.com (valid credit card required). Have your Back-UPS NS model number available when ordering. Your model number can be found on the bottom of the unit.

Warranty

The standard warranty is 2 years from the date of purchase. APC’s standard procedure is to replace the original unit with a factory reconditioned unit. Customers who must have the original unit back due to assigned asset tags and set depreciation schedules must declare such a need at first contact with APC Technical Support. APC will ship the replacement unit once the defective unit is received by the repair department or cross-ship upon the provision of a valid credit card number. The customer pays for shipping to APC, and APC pays ground freight transportation costs back to the customer.

Service

Please DO NOT RETURN Back-UPS NS to the place of purchase under any circumstances.

1. Consult the Troubleshooting section to eliminate common problems.

2. Verify the battery is connected (see *Connect Battery*) and that the Circuit Breaker is not tripped (see *Troubleshooting* section).

If you still have problems or questions, please contact APC via the internet or at one of the phone numbers listed below.

3. Before contacting APC, please be sure to record the date purchased, UPS model, and serial number (on bottom of unit).

4. Be prepared to troubleshoot the problem over the telephone with a Technical Support Representative. If this is not successful, the representative will issue a Return Material Authorization Number (RMA#) and a shipping address.

5. Pack the unit in its original packaging. If the original packaging is not available, ask APC Technical Support about obtaining a new set. Pack the unit properly to avoid damage in transit. Never use foam beads for packaging. Damage sustained in transit is not covered under warranty (insuring the package for full value is recommended).

6. Write the RMA# on the outside of the package.

7. Return the unit by insured carrier to the address given to you by APC Technical Support.

APC Contact Information

Online Technical Support:	http://support.apc.com http://www.apc.com/support esupport@apcc.com
Web Site:	www.apc.com
USA/Canada:	1.800.800.4272
Mexico:	+52.292.0253 / 52.292.0255
Brazil:	+0800.12.72.1
Worldwide:	+1.401.789.5735

GCX Series 22mm Metal Selector Switches

Two-position selector switches

Part Number	Price	Description - 2-Position Switches
GCX1300	$9.75	22mm metal selector switch, two-position **maintained**, black knob. **One N.O.** contact block
GCX1310	$11.00	22mm metal selector switch, two-position **spring-return from right**, black knob. **One N.O.** contact block
GCX1350	$11.00	22mm metal selector switch, two-position **maintained**, black lever. **One N.O.** contact block
GCX1360	$11.50	22mm metal selector switch, two-position **spring-return from right**, black lever. **One N.O.** contact block

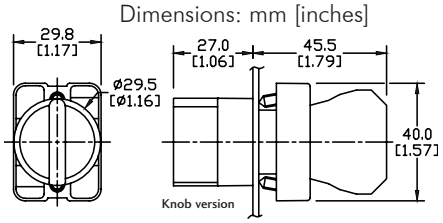


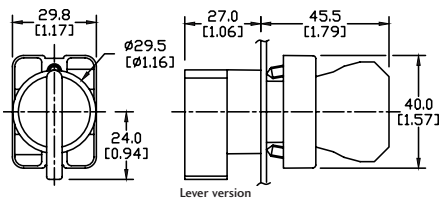
GCX1300 Knob version



GCX1350 Lever version

Dimensions: mm [inches]





Contact Closure Sequence - 2-Position Switch

Contact Blocks	Contact Arrangement (viewed from front)		Switch Position (viewed from front)	
	Left	Right	Left (Note 1)	Right (Note 2)
1 x NC	NC		X	
		NC	X	
1 x NO	NO			X
		NO		X
2 x NC	NC	NC	XX	
2 x NO	NO	NO		XX

Note 1: Left switch position deactivates all contacts.
Note 2: Right switch position activates all contacts.

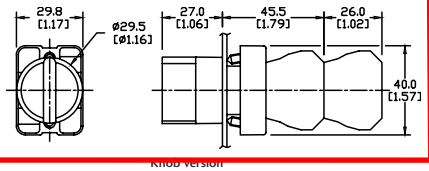
Three-position selector switches

Part Number	Price	Description - 3-Position Switches
GCX1320-22	$19.00	22mm metal selector switch, three-position **maintained**, black knob, **Two N.O.** and **two N.C.** contact blocks
GCX1330-22	$19.50	22mm metal selector switch, three-position **spring-return to center**, black knob, **Two N.O.** and **two N.C.** contact blocks
GCX1370-22	$19.50	22mm metal selector switch, three-position **maintained**. black lever, **Two N.O.** and **two N.C.** contact blocks
GCX1380-22	$20.00	22mm metal selector switch, three-position **spring-return to center**, black lever, **Two N.O.** and **two N.C.** contact blocks



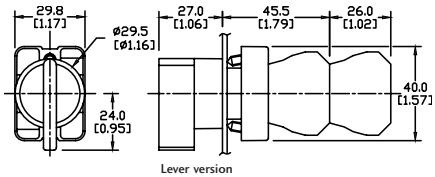
GCX1320-22 Knob version

Dimensions: mm [inches]





GCX1370-22 Lever version



Contact Closure Sequence - 3-Position Switch

Contact Blocks	Contact Arrangement (viewed from front)		Switch Position (viewed from front)		
	Left	Right	Left (Note 1)	Center (Note 2)	Right (Note 3)
1 x NC	NC			X —	— X
		NC	X —	— X	
1 x NO	NO		X		
		NO			X
2 x NC	NC	NC	X —	— XX —	— X
2 x NO	NO	NO	X		X

Note 1: Left switch position activates left side contacts (viewed from front).
Note 2: Center switch position deactivates all contacts.
Note 2: Right switch position activates right side contacts (viewed from front).



Note: When using switches having two-deep contact blocks with the 22mm plastic enclosures, be sure to use enclosures that are 74mm deep; 51mm-deep enclosures are too shallow and the switch body will not fit.

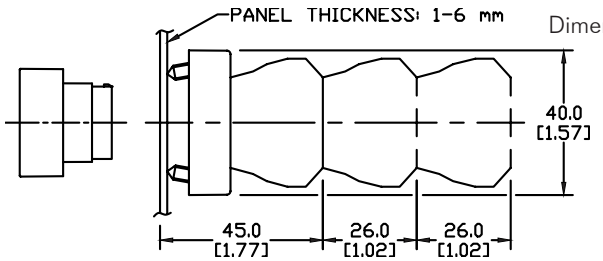
For accessories, see 22mm Metal Pilot Device Accessories in this section.

GCX Series 22mm Metal Pilot Devices Specifications

Assembly information

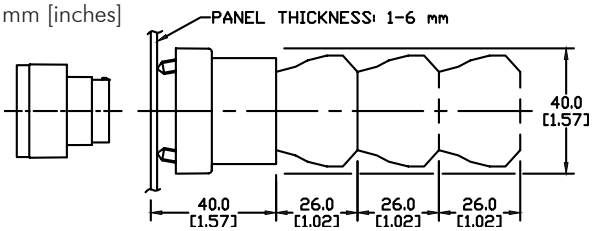
These pushbuttons and indicator lights are supplied with the appropriate contact blocks, unless otherwise indicated. Use these drawings as a guide to make sure there is adequate clearance behind the panel.

Pushbuttons and selector switches

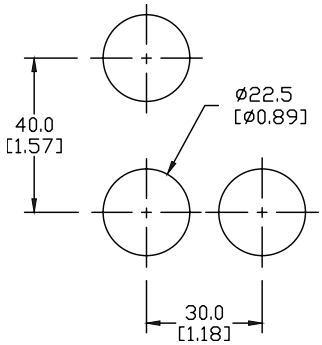


Dimensions: mm [inches]

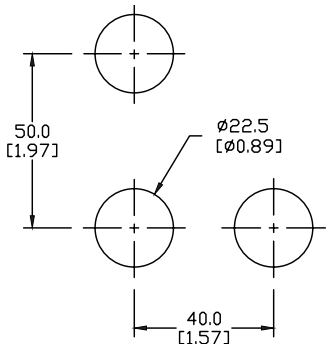
Illuminated pushbuttons and selector switches/pilot lights



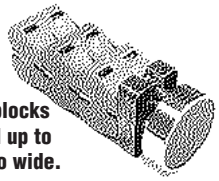
Mounting



This layout is suitable if all switches are 230V or less and the same polarity.

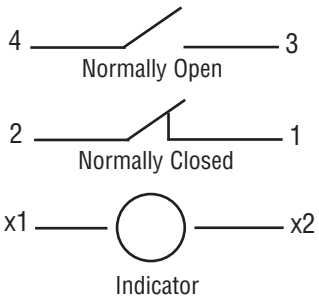


This layout is suitable if all switches are 400V or less and different polarity.



NOTE: Contact blocks can be arranged up to three deep by two wide.

Typical Wiring



Specifications

These specifications apply to all GCX and ECX 22 mm metal pushbuttons and switches.

Physical Specifications	
Standards Reference	CEI EN 60947-5-1, CSA C22-2 n.14
Approvals	CSA, IMQ (where specified), UL File E189258
Enclosure Material	Zn + Al + Mg alloy, chromium plated
Contacts Material	Silver
Protection Degree	IP 40 for GCX3151-24, GCX3151-120, GCX3153-24 and GCX3153-120. IP 65 for all others. (See Appendix of this catalog for explanation of IP ratings according to IEC 144 CEI 70-1.)
Temperature Ratings	Storage: -40° -to 80°C (-40° to 176° F) Operating: -25° to +70°C (-13° to 158° F)
Working Positions	All working positions are allowed
Mechanical Life	Pushbuttons, selector switches: Joy stick switches: 1,000,000 operations Mushroom pushbuttons: 300,000 operations

Electrical Specifications	
Rated Thermal Current (contact block)	A300, Q300 (Refer to E22 Series mounting/contact rating section for details)
Rated Insulation Voltage	Ui 660V according to CEI EN 60947-5-1, 300V according to CSA C22-2 n.14
Dielectric Strength	3kV (1 second)
Insulation Resistance	2MΩ min. (500VDC)
Initial Contact Resistance	≤25mΩ
Short-Circuit Protection*	Cartridge fuses gl 10A - 500V 10,3x38l1 100kA
Terminal Markings	According to CENELEC EN 50013
Connections	Single screw with non-loosening plate clamp,14AWG max.
Contacts Operation	Self-cleaning types EN01 (N.C.) EN 10 (N.O.) slow action, positive opening
Operation Frequency	3600 operations per hour max.
Utilization Category	**AC15** (Control of AC electromagnetic loads) 24 volts AC at 10 amps 130 volts AC at 6.5 amps **DC13** (Control of DC electromagnetic loads) 24 volts DC at 1.5 amps 110 volts DC at 0.5 amps

Note: Recommended, not supplied

22mm Metal Pilot Device Accessories

Replacement incandescent bulbs



ECX1902-5

Replacement Incandescent Bulbs				
Part Number	**Quantity**	**Price**	**Rating**	**Description**
ECX1900-5	Pkg of 5 bulbs	$8.50	6V@ 200mA , 1.2 watts	6V replacement bulb for 22mm switches and indicators. Miniature bayonet base T31/4
ECX1902-5	Pkg of 5 bulbs	$8.50	24V@ 80mA 2 watts	24V replacement bulb for 22mm switches and indicators. Miniature bayonet base T31/4
ECX1904-5	Pkg of 5 bulbs	$17.50	130V@20mA 2.6 watts	120V replacement bulb for 22mm switches and indicators. Miniature bayonet base T31/4

Note: Bulb removal tool available. Order part number HT8LAMPTOOL.

Replacement LED lamps



ECX1915-2

Replacement LED Lamps					
Part Number	**Color**	**Quantity**	**Price**	**Rating**	**Description**
ECX1911-2	Red	Pkg of 2 LED lamps	$15.50	24V@26mA 0.6 watts	LED replacement lamp for miniature bayonet bases Works with 22mm switches and indicators, but illumination will not be as even when used with the ECX 22mm indicators Note: **Will not replace** sealed Cutler-Hammer monoblock LED indicators.
ECX1912-2	Green		$19.50		
ECX1913-2	Yellow		$15.50		
ECX1914-2	Blue		$21.00		
ECX1915-2	White		$25.00		
ECX1921-2	Red		$15.50	120V@5mA 0.6 watts	
ECX1922-2	Green		$19.50		
ECX1923-2	Yellow		$15.50		
ECX1924-2	Blue		$21.00		
ECX1925-2	White		$25.00		

Hole plug



ECX1490

Hole Plug			
Part Number	**Color**	**Price**	**Description**
ECX1490	Black	$2.75	Plastic hole plug for 22.5 mm openings in panels and enclosures; supplied with O-ring and mounting screw. Two plugs per package.

Pilot Light replacement lens



PL1170PR-5

Pilot Light Replacement Lens				
Part Number	**Lamp Color**	**Price**	**Descripton**	**Use with**
PL1170PR-5	Red	$6.00	22mm metallic series pilot light replacement lens, 5/pk	Part numbers starting with GCX123
PL1170PV-5	Green	$6.00	22mm metallic series pilot light replacement lens, 5/pk	
PL1170PG-5	Yellow	$6.00	22mm metallic series pilot light replacement lens, 5/pk	
PL1170PB-5	Blue	$6.00	22mm metallic series pilot light replacement lens, 5/pk	
PL1170PN-5	Clear	$6.00	22mm metallic series pilot light replacement lens, 5/pk	
PL1170PW-5	White	$6.00	22mm metallic series pilot light replacement lens, 5/pk	

22mm Metal Pilot Device Accessories

Protective covers for pushbuttons



ECX1703-5

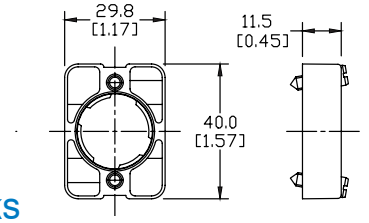
Protective Covers for Pushbuttons				
Part Number	**Color**	**Quantity**	**Price**	**Description**
ECX1700-5	Black	Pkg of 5 Protective caps	$6.50	Silicone protective covers for use with 22mm standard-size flush pushbuttons. **Will not work** with Cutler-Hammer pushbuttons, 22mm plastic illuminated or extended pushbuttons, or 22mm plastic pushbuttons with 40mm actuator face.
ECX1701-5	Red		$6.50	
ECX1702-5	Green		$6.50	
ECX1703-5	Yellow		$6.50	
ECX1704-5	Blue		$6.50	
ECX1705-5	Clear		$6.50	
ECX1706-5	Clear		$11.50	Clear silicone protective covers for use with 2 mm illuminated and **extended pushbuttons only. Will not work** with Cutler-Hammer pushbuttons or 22mm mushroom pushbuttons.

Replacement 22mm support base



ECX1029-2

Replacement 22mm Support Base			
Part Number	**Quantity**	**Price**	**Description**
ECX1029-2	Pkg of 1	$6.00	22mm metal support base Note: This item is supplied as a replacement part and is not required with any switch assembly. **Will not work** with Cutler-Hammer 22mm switches sold by AutomationDirect



Dimensions: mm [inches]

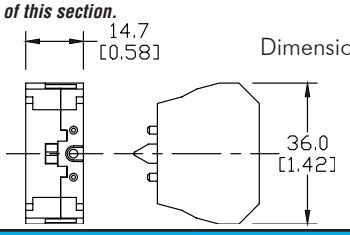
Replacement contact blocks



ECX1030-2

Replacement Contact Blocks				
Part Number	**Quantity**	**Price**	**Contacts**	**Description**
ECX1030-2	Pkg of 2	$6.25	Red, normally-closed (N.C.)	Replacement contact block for 22mm pushbuttons and selector switches. Tightening Torque, terminal screw: 0.8Nm max mounting screw: 0.5Nm max Note: **Will not work** with Cutler-Hammer 22mm switches.
ECX1030-5	Pkg of 5	$15.00		
ECX1040-2	Pkg of 2	$6.25	Green, normally-open (N.O.)	
ECX1040-5	Pkg of 5	$15.00		
ECX1042-2	Pkg of 2	$6.25	Brown, normally-open (N.O.), push-push	Replacement normally open push-push contact blocks for 22mm pushbutton and selector switches, pack of 2. Note: Will not work with Cutler-Hammer 22mm switches.

Note: See electrical specificatons on ECX Series 22mm Metal Pilot Devices Specifications page at beginning of this section.



Dimensions: mm [inches]

Replacement keys



ECX1067-2

Replacement Keys			
Part Number	**Quantity**	**Price**	**Description**
ECX1067-2	Pkg of 2 sets (2 keys per set)	$5.75	Replacement key for GCX series key-actuated selector switches, pack of 2 sets (2 keys each). NOTE: Will not work with Cutler-Hammer 22mm switches.

Note: All key-actuated 22mm metal selector switches are keyed alike.

22mm Metal Pilot Device Accessories

EMERGENCY STOP legend plate



ECX1651

EMERGENCY STOP Legend Plate			
Part Number	**Quantity**	**Price**	**Description**
ECX1651	Pkg of 1	$2.75	Oversize yellow circular EMERGENCY STOP legend plate for 22mm E-stop type mushroom pushbuttons, 60mm outside diameter.

Knockout Punches



109225

Ruko's knockout punch hole-cutting tool includes punch, die and draw bolt (without ball bearing). Use for sheet steel, stainless-steel sheets, non-ferrous and light metals, and plastics up to 0.16" (8 ga.) thick.

Replacement bolts are offered in three of the most popular sizes.

Note: Part number 109225 is recommended when punching holes for 22mm pilot devices.

Two-position short lever operator



GR1172PR-5

Short Lever Replacement Operator				
Part Number	**Lamp Color**	**Price**	**2-Position**	**Use with**
GR1172PR-5	Red	$14.50	22mm 2-position selector switch illuminated short lever replacement operator, 5/pk	Part numbers starting with GCX124, GCX125 GCX324, GCX325
GR1172PV-5	Green	$14.50	22mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
GR1172PG-5	Yellow	$14.50	22mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
GR1172PB-5	Blue	$14.50	22mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
GR1172PN-5	Clear	$14.50	22mm 2-position selector switch illuminated short lever replacement operator, 5/pk	

Three-position short lever operator



GR1288PR-5

Short Lever Replacement Operator				
Part Number	**Lamp Color**	**Price**	**3-Position**	**Use with**
GR1288PR-5	Red	$14.50	22mm 3-position selector switch illuminated short lever replacement operator, 5/pk	Part numbers starting with GCX126, GCX128 GCX326, GCX328
GR1288PV-5	Green	$14.50	22mm 3-position selector switch illuminated short lever replacement operator, 5/pk	
GR1288PG-5	Yellow	$14.50	22mm 3-position selector switch illuminated short lever replacement operator, 5/pk	
GR1288PB-5	Blue	$14.50	22mm 3-position selector switch illuminated short lever replacement operator, 5/pk	
GR1288PN-5	Clear	$14.50	22mm 3-position selector switch illuminated short lever replacement operator, 5/pk	

22mm Metal Pilot Device Accessories

Mushroom switch replacement operator



PL1298P-5

Mushroom Switch Replacement Operator				
Part Number	***Lamp Color***	***Price***	***Description***	***Use with***
PL1171PR-5	Red	$6.25	22mm, illuminated **momentary** Mushroom switch replacement operator, red, 5/pk	Part numbers starting with GCX1221, GCX3221 mushroom-style illuminated pushbuttons
PL1298P-5	Red	$6.25	22mm illuminated **twist-to-release** mushroom switch replacement operator, red, 5/pk	Part numbers starting with GCX1226, GCX3226 mushroom-style illuminated pushbuttons

Flush pushbutton replacement operator



GR1168PR-5

Flush Pushbutton Replacement Operator				
Part Number	***Lamp Color***	***Price***	***Description***	***Use with***
GR1168PR-5	Red	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	Part numbers starting with GCX119, GCX120 GCX319, GCX320
GR1168PV-5	Green	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PG-5	Yellow	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PB-5	Blue	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PN-5	Clear	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PW-5	White	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	

Extended pushbutton replacement operator



PL1308PR-5

Extended Pushbutton Replacement Operator				
Part Number	***Lamp Color***	***Price***	***Description***	***Use with***
PL1308PR-5	Red	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	Part numbers starting with GCX121, GCX321
PL1308PV-5	Green	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PG-5	Yellow	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PB-5	Blue	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PN-5	Clear	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PW-5	White	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	

E22 Series Cross-reference Tables

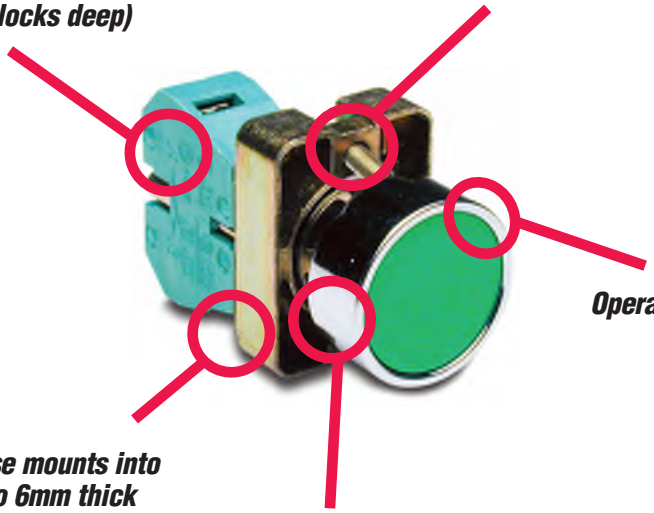
Pushbutton, Indicator Light, and Selector Switch Cross Reference				
Cutler-Hammer	***Allen-Bradley***	***Telemecanique XB2B (chrome bezel) XA2B (black bezel)***	***GE C-2000***	***Siemens***
Non-Illuminated Pushbuttons				
E22PB1A	800EPF2 800E3LX10	ZA2BA2 ZA2BZ101	P9XPNNG10N0	3SB1000-0AB01 3SB02-CBH 3SB1400-0B
E22PB3A	800EPF3 800E3LX10	ZA2BA3 ZA2BZ101	P9XPNVG10N0	3SB1000-0AE01 3SB02-CBH 3SB1400-0B
E22EB2B	800EPE4 800E3LX01	ZA2BL4 ZA2BZ102	P9XPNRS20N0	3SB1000-0LC01 3SB02-CBH 3SB1400-0B
E22ASB204	ENCLSR: 800E-2P 800EP-F3 800E-2LX10 800EP-E4 800E-2LX01 800E-34BE208 800E-34R212	XALB211 Both flush - stop is not extended	P9CPNRSN20NO P9CPNVGN10NO P9EPB02 P9AEPN201 P9AEPN202	3SB02-S21
Illuminated Pushbuttons				
E22TB2X4B	800EPLE4 800E3DL3 800E3X01	ZA2BW14 ZA2BW06224	P9XPLRSDN12NADI	3SB1001-0LC01 3SB02-CBH 3SB1400-0C 3SB1400-2H
E22TB3X4A	800EPLE3 800E3DL3 800E3X10	ZA2B213 AZ2B206124	P9XPLVSDN12NADI	3SB1001-0LE01 3SB02-CBH 3SB1400-0B 3SB1440-2H
E22TB9X4A	800EPLE5 800E3DL3 800E3X10	ZA2BW15 ZA2BW06124	P9XPLASDN12NADI	3SB1001-0LD01 3SB02-CBH 3SB1400-0B 3SB1400-2H
E22TB2X10B	800EPLE4 800E2RL5 800E3X01	ZA2BW14 ZA2BW062120	P9XPLRSB P9PRNVJ P9PDNVD	3SB1001-0LC01 3SB02-CBH 3SB1400-0C
E22TB3X10A	800EPLE3 800E2RL5 800E3X10	ZA2BW13 ZA2BW061120	P9XPLVSD P9PRNVJ P9PDNVD	3SB02-UPR1P 3SB1910-0DE 3SB1400-0B
E22TB9X10A	800DPLE5 800E2RL5 800E3X10	ZA2BW15 ZA2B2061120	P9XPLASD P9PRNVJ P9PDNVD	3SB02-UPR1P 3SB1910-0DD 3SB1400-0B

GCX Series 22mm Metal Pilot Devices

Features

Any combination of contact blocks is allowed, up to a total of six (two blocks wide and three blocks deep)

Secure mounting method eliminates twisting in mounting hole

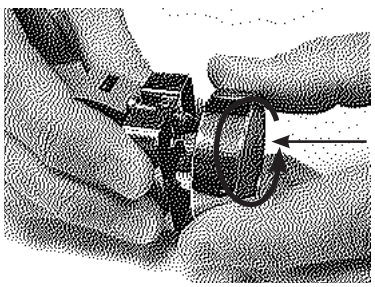


Operators are protected to IP65

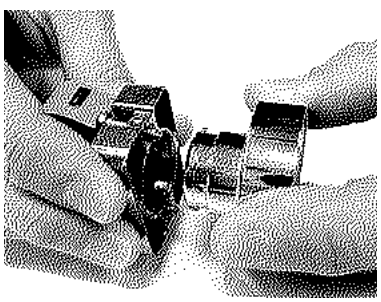
Support base mounts into panels up to 6mm thick

Chrome-plated alloy bezel is not only corrosion-resistant, but also attractive

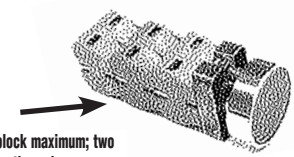
Easy installation



To remove operator, press toward support base and twist counterclockwise.

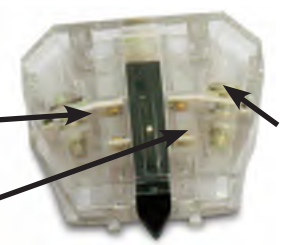


To install switch, place support base against rear of panel (*not shown here*), insert the operator and twist clockwise until it clicks into place. Carefully tighten the securing screws. Do not over-tighten.



Six contact block maximum; two wide by three deep

Self-cleaning silver contacts provide reliable, low-energy switching



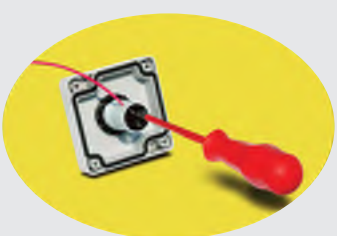
Pressure plate wiring terminals for easy, secure wiring, accepting up to 14 AWG wire

Contacts rated A300
(Refer to E22 Series mounting/contact rating section for details)

Minimum current rating 15mA @ 24vdc

Clear contact block for illustration purposes. Clear contact blocks are not available for sale from AutomationDirect.

All indicators offer side wire entry with back screw terminals for easy wiring



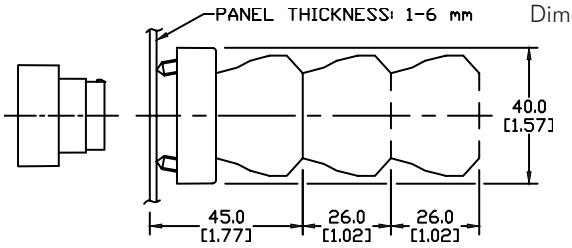
Company Information
Drives
Soft Starters
Motors
Power Transmission
Motion: Servos and Steppers
Motor Controls
Sensors: Proximity
Sensors: Photoelectric
Sensors: Encoders
Sensors: Limit Switches
Sensors: Current
Sensors: Pressure
Sensors: Temperature
Sensors: Level
Sensors: Flow
Pushbuttons and Lights
Stacklights
Signal Devices
Process
Relays and Timers
Pneumatics: Air Prep
Pneumatics: Directional Control Valves
Pneumatics: Cylinders
Pneumatics: Tubing
Pneumatics: Air Fittings
Appendix Book 2
Terms and Conditions

GCX Series 22mm Plastic Pilot Devices Specifications

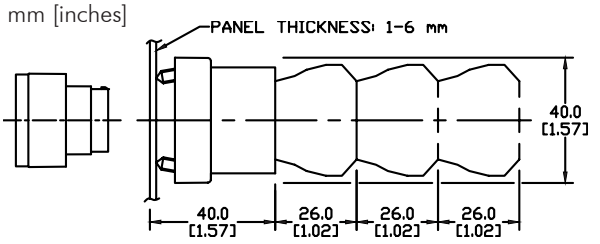
Assembly information

These pushbuttons and indicator lights are supplied with the appropriate contact blocks, unless otherwise indicated. Use these drawings as a guide to make sure there is adequate clearance behind the panel.

Pushbuttons and selector switches

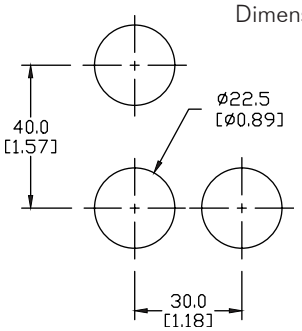


Illuminated pushbuttons and selector switches/indicator lights

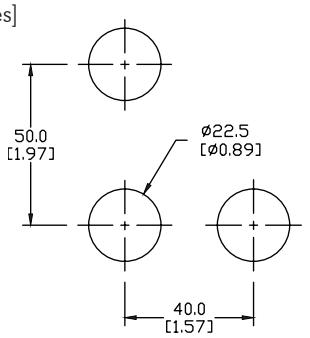


Mounting

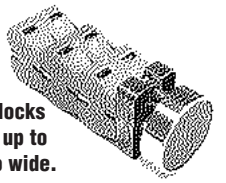
Dimensions: mm [inches]



This layout is suitable if all switches are 230V or less and the same polarity.

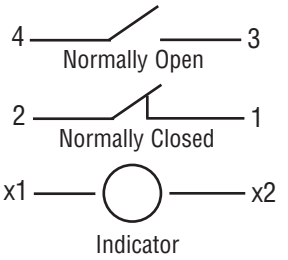


This layout is suitable if all switches are 400V or less and different polarity.



NOTE: Contact blocks can be arranged up to three deep by two wide.

Typical Wiring



Specifications

These specifications apply to all the GCX and ECX 22mm plastic pushbuttons and switches.

Physical Specifications	
Standards Reference	CEI EN 60947-5-1, CSA C22-2 n.14
Approvals	UL File E189258, IMQ (where specified)
Enclosure Material	Fiberglass reinforced thermoplastic
Contacts Material	Silver
Protection Degree	IP 40 for GCX3151-24, GCX3151-120, GCX3153-24 and GCX3153-120. IP 65 for all others.(See Appendix of this catalog for explanation of IP ratings according to IEC 144 CEI 70-1.)
Electric Shock Protection	IEC 536, Class II
Temperature Ratings	Storage: -40° -to 80°C (-40° to 176° F) Operating: -25° to +70°C (-13° to 158° F)
Working Positions	All working positions are allowed
Mechanical Life	Pushbuttons, selector switches, joy stick switches: 1,000,000 operations Emergency mushrooms and push-push pushbuttons: 300,000 operations
Positive Opening Operation	(according to IEC 947-5-1) All functions incorporating an NC contact are positive opening operation

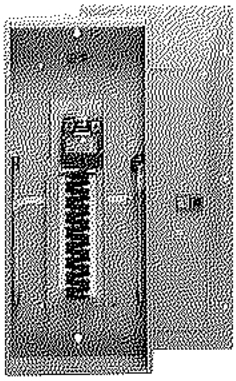
Electrical Specifications	
Rated Thermal Current (contact block)	A300, Q300 (Refer to E22 Series mounting/contact rating section for details)
Rated Insulation Voltage	Ui 660V according to CEI EN 60947-5-1, 300V according to CSA C22-2 n.14 and UL 508
Dielectric Strength	3kV (1 second)
Insulation Resistance	2MΩ min. (500VDC)
Initial Contact Resistance	≤25mΩ
Short-Circuit Protection*	Cartridge fuses gl 10 A-500V 10, 3x38I1 100 KA
Terminal Markings	According to CENELEC EN 50013
Connections	Single screw with non-loosening plate clamp,14AWG max., Tighten to 0.8Nm max
Contacts Operation	Self-cleaning types EN01 (N.C.) EN 10 (N.O.) slow action, positive opening
Operation Frequency	3600 operations per hour max.
Utilization Category	AC15 (Control of AC electromagnetic loads) 24 volts AC at 10 amps 130 volts AC at 6.5 amps DC13 (Control of DC electromagnetic loads) 24 volts DC at 1.5 amps 110 volts DC at 0.5 amps

Note: Recommended, not supplied

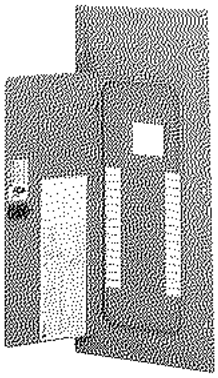
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

CH Type Loadcenters Description

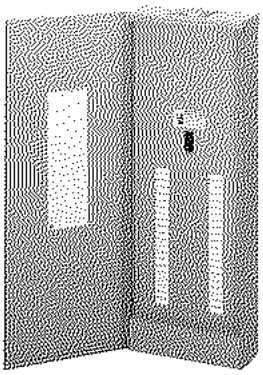
Loadcenters are enclosures and chassis specifically designed to house the branch circuit breakers and wiring required to distribute power to individual circuits. They contain either a main breaker when used at the service entrance point or a main lug when used as a sub-panel to add circuits to existing service. The main breaker protects the main entire panel and can be used as a service disconnect. The branch breakers protect the wires leading to individual electrical loads such as fixtures and outlets.



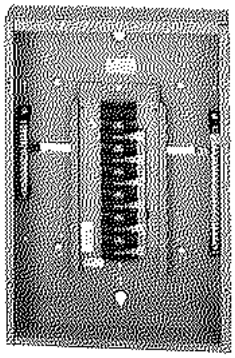
Single-Phase Main Circuit Breaker — Top or Bottom Feed — NEMA 1 Enclosure



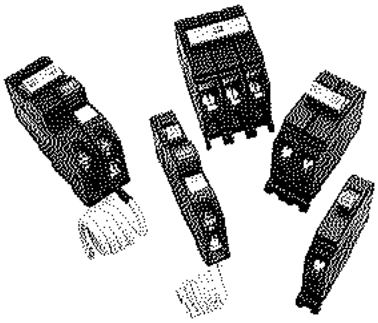
Separately Packaged Covers



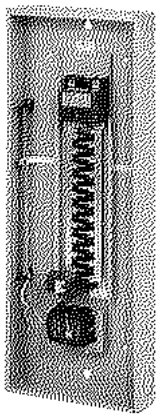
Three-Phase Main Circuit Breaker — NEMA 3R Enclosure



MLO Panel



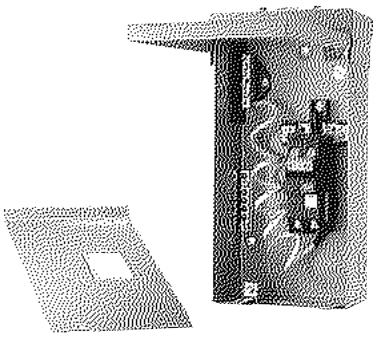
Cutler-Hammer Type CH Breaker Family



Surge Panel



Cutler-Hammer Type CH Convertible Family



Spa Panel or Ground Fault Protection Kit

CH Loadcenters Description

Loadcenter Construction

Cutler-Hammer Type CH loadcenters by Eaton Corporation feature silver flash plated copper bus in all interiors. Fingers are rated 200 amperes throughout the CH line. Therefore, the sum of the handle ratings connected to any one stab is limited to 200 amperes maximum. NEMA 1 boxes are manufactured from cold rolled 16 gauge sheet steel. Raintight boxes are manufactured from galvanized steel. All boxes and trims are finished using an electrostatic powder coat, baked urethane paint process.

Neutrals

Cutler-Hammer Type CH loadcenters feature three types of neutrals:

Factory-Bonded Split Neutral

Single-phase main circuit breaker panels are supplied with a factory-bonded twin neutral. When used as a sub-panel, the bonding strap should be removed, and the bonding screw should be reinstalled. The bonded side is now the ground, and the un-bonded side is the neutral. When used as a service entrance panel, the unused neutral holes on either side may be used for terminating ground wires.

Insulated Split Neutral

Most single-phase main lug panels (12 circuits and greater) are supplied with a twin neutral with an insulated cross strap. These panels are shipped in an un-bonded state. For service entrance applications, the neutral must be bonded utilizing the bonding strap supplied with the panel. For sub-feed applications, the panel may be installed as is. Separate ground bars are provided on these panels.

Insulated/Bondable Single Neutral

When a panel is supplied with a single neutral, it arrives from the factory in an "unbonded" state. All that is required to bond the neutral in a service entrance application is to loosen the bonding screw and the neutral screw directly beside it, insert the bonding strap into the neutral bar, and re-tighten both connections. The single neutral can be moved by the contractor to the other side of the panel, if desired. In a service entrance application, where the neutral is bonded, unused neutral connections may be used for the termination of equipment grounds.

Grounds

In service entrance applications where the neutral is bonded, unused neutral holes may be used for terminating ground conductors. In sub-feed panels, the neutral must be isolated (non-bonded), and ground wires must be terminated on a separate ground bar.

The Factory Bonded Split Neutral panels have sufficient terminations for both ground and neutral conductors. The Insulated Split Neutral panels are supplied with a separate factory-installed ground bar. Insulated/Bondable Single Neutral panels are supplied without a ground bar (unless otherwise noted), and ground bar kits if needed must be purchased separately.

Surge Protectors

The CHSURGE Surge Protector has indicating lights that indicate when the units should be replaced. The CHSA01 and CHSA03 Surge Protectors internally short, causing the circuit breaker feeding the surge protector to trip. All but the CHSURGE Surge Protector should be wired to the load side of 15 or 20 ampere feeder circuit breakers mounted adjacent to the main incoming device.

The CHSPULTRA Cutler-Hammer Home Surge Protector is an externally mounted TVSS unit that provides industrial level surge protection in a residential design.

The CHSPULTRA is also available factory installed in the loadcenter and carries a lifetime warranty.

Standards and Certifications

UL Listings

All Cutler-Hammer Type CH loadcenters by are listed under UL File E8741.

Neutral and Ground Terminals

The standard terminals on grounds and neutrals are rated to accept (3) — #14 – #10 Cu/Al or (1) — #14 – 4 wires. For larger cables, add-on neutral lugs may be ordered from the accessories list.

Note: NEC® allows only one current carrying conductor per hole on neutrals unless otherwise noted.

Bottom-Fed Loadcenters

When the power cable is brought into the loadcenter from below the panel; then the main lug panels, and single-phase, 225 amperes and below, loadcenters can be rotated 180 degrees to allow straight-in wiring of power cables to the main terminals. Because the CSR main circuit breaker handle operates horizontally, the orientation of the main circuit breaker handle is consistent with the requirements of NEC® Article 240-81.

Gutter Splicing

Loadcenters are not UL listed as wiring troughs. Therefore, gutter splicing of riser cables to tap off to the main device is not permitted.

Fire Rating

Due to the numerous openings in both loadcenter boxes and trims, they should not be mounted in firewalls. There is no approval method for sealing the enclosures for this application.

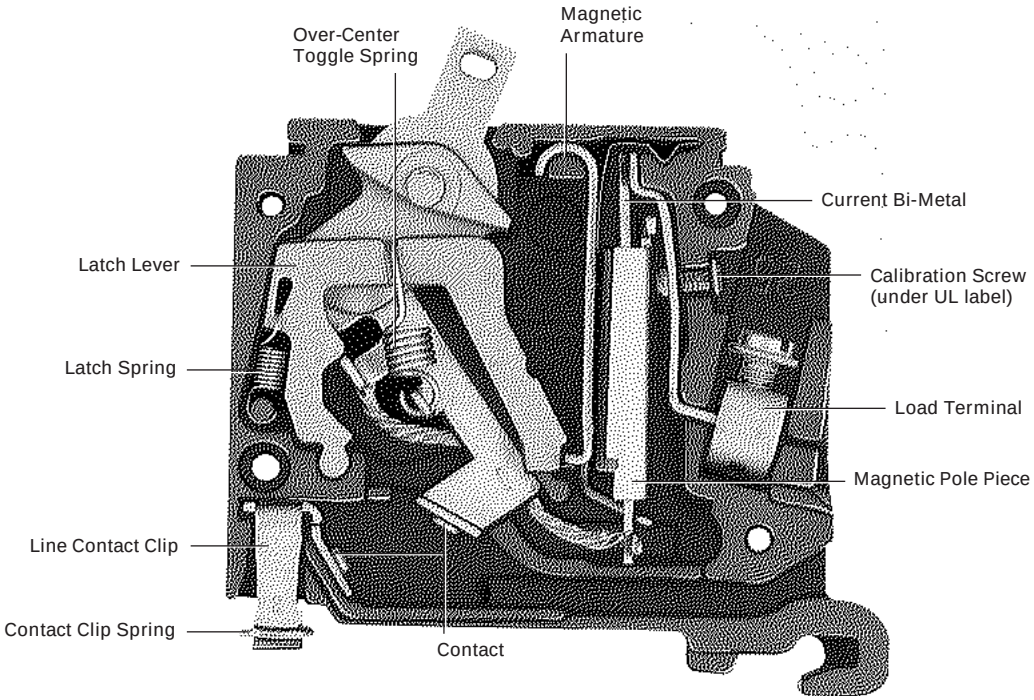
Plug-on Type CH Breakers

Description

Quick-make, quick-break switch mechanism combined with inverse time element tripping operation and trip-free handle design. Type CH circuit breakers trip to the OFF position eliminating nuisance callbacks. The thermal-magnetic trip curve avoids nuisance tripping on mild overloads while reacting almost instantaneously to severe short circuit conditions. Multipole breakers have internal common trip connection to operate all poles simultaneously. Handles are marked with ON-OFF indication and ampere rating of the breaker. Type CH breakers meet UL Standard 489, NEMA standards, and Federal Spec Classification W-C 375 b/Gen. They are UL listed under File Number E11713, E8741, E3624 and E51287: and CSA certified file number LR87196, except Type CHT breakers.

Type CH Circuit Breaker Ratings

Single- and double-pole CH breakers rated 15 and 20 amperes have low instantaneous magnetic trip levels. The 15 and 20 ampere breakers with "HM" suffix have high magnetic trip settings recommended for circuits with inherently high inrush currents. All Type CH breakers are marked for heating, air conditioning and refrigeration (HACR) equipment application. Single-pole 15 – 20 ampere breakers are also suitable for switching duty (SWD). Shunt trip coils operate on 120 Vac and require one additional pole space per breaker.



Plug-on Type CH Breaker

Type CH Loadcenters Features, Functions and Benefits

Extra 1.5-Inch (38.1 mm) Knockout for Bundling

Provides for easier installation, less installation time.

Top or Bottom Feed

- Straight-in wiring saves labor and material.
- Only one panel for either application — no modifications necessary.

Commercial Grade Main Breaker

- 35 kAIC series rated main breaker in 150 and 200 ampere loadcenters.
- 42 and 100 kAIC series ratings available.

Drywall Marking on Enclosure

Indicates proper mounting depth for flush applications.

One-Piece Silver Flash Plated Copper Bus

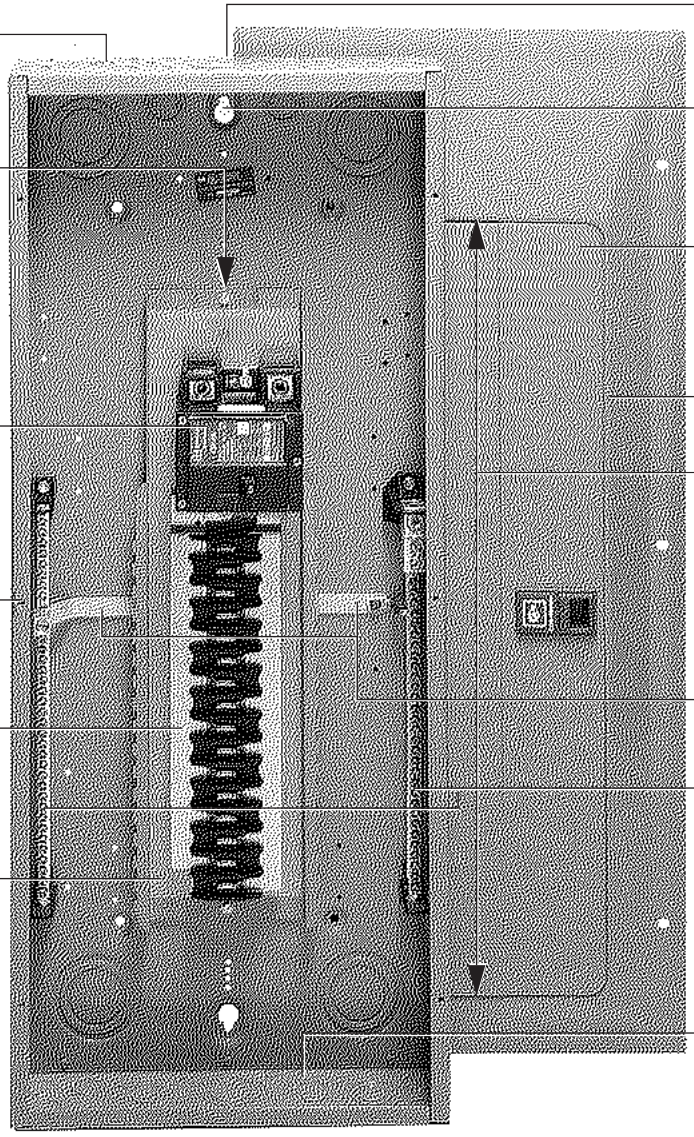
Provides superior conductivity throughout the entire product line.

Steel Backpan

- Provides positive, reliable breaker mounting.
- One-piece designed for stability.

Convertible Styles Available

- Uses field installable main breaker or main lug kits.
- Flexible inventory — same breaker is used in loadcenter and circuit breaker enclosures.



Type CH Loadcenter

"Tangential" Center Knockout

For easier installation

Single Keyhole Mounting

Just one keyhole at top and bottom for easier mounting and leveling.

Unique Sandalwood Finish

Immediately recognizable, esthetically appealing, scratch resistant powder coating.

Separately Packaged Covers

- Full line of "true" surface and combination covers.
- Built-in flush leveling feature.
- Choice of circuit identification by breaker labels or circuit directory.

Neutral Design (For styles as indicated)

- Bonding strap is easily removable for sub-panel applications providing a ground and neutral.
- Factory bonded for service entrance applications providing a split neutral.
- Ample additional 2/0 lugs provided; no kits necessary.
- 200% size neutral.

Improved Endwall Knockouts

Larger KOs are balanced to enhance installed appearance and to ease use of existing wiring.

Type CH Loadcenter — Product Selection

Table 26.2-1. CH Loadcenter Selection Chart

Service	■ Single-phase, three-wire, 120/240 Vac. ■ Three-phase, three-wire, 240 V corner grounded delta.	■ Three-phase, four-wire, 208Y/120 Vac. ■ Three-phase, three-wire, 240 Vac delta.
Short Circuit Current Rating	■ 10,000 AIC: All single- and three-phase loadcenters 40 through 400 amperes, 2 to 42 circuits except when series ratings are applied. ■ 35,000 AIC: All convertible and factory installed main breakers single-phase loadcenters rated 150 through 225 amperes using Type CSH main breakers. ■ 42,000 and 100,000 are available on some styles: single-phase and three-phase.	
Main Breaker/Main Lug Loadcenters	Single-Phase ■ Main Breaker: 100, 125, 150, 200, 225, 400 amperes. ■ Main Lugs: 40, 70, 125, 150, 200, 225, 400 amperes.	Three-Phase ■ Main Breaker: 150, 200, 225, 300, 400 amperes. ■ Main Lugs: 125, 150, 200, 225, 400 amperes.
Convertible Loadcenters	■ Main Breaker or Main Lugs: single-phase up to 225 amperes	
Branch Breakers	■ Type CH: 10 to 150 amperes. One-, two-, and three-pole. Selected amperages available in shunt trip, HACR and switching duty. ■ Ground Fault Breakers: 15 to 60 amperes. ■ Type CH-HID: 15 to 30 amperes. One-, two- and three-poles. ■ PMPCI Breakers. ■ CH-HM High Magnetic. ■ CH-M50 High Ambient.	■ Type CH-AFCI arc fault circuit interrupter. ■ Type CHP: 10 to 125 amperes. One-, two- and three-pole. Three-position commercial trip. Selected amperages available in HACR switching duty. ■ Type CHP-HID: 15 to 30 amperes. One-, two- and three-pole. ■ Type CHP-GFCI: 15 to 30 amperes. One-pole ground fault breakers.
Enclosures	■ NEMA Type 1 indoor. ■ NEMA Type 3R outdoor.	■ Meets or exceeds UL requirements for indoor or outdoor applications.
Loadcenter and Breaker Accessories	■ Branch Circuit Breaker: Auxiliary components Hold down kits Handle ties Lockoffs Lockdogs ■ Complete Line of Ground Bar Kits 5, 10, 14 and 21 circuits, some with additional #2/0 lugs. Each terminal will accommodate: (3) #14 – #10 Cu/Al or (1) #14 – #4 Cu/Al. ■ Sub-feed Lugs 125, 150 amperes — two- and three-pole. ■ Shunt trips.	■ Surge Protection: Single-phase whole home surge protector Single-phase plug-on surge protector Single-phase bottle type surge protector Three-phase bottle type surge protector ■ Universal rainproof conduit hubs Group One: 3/4, 1, 1-1/4, 1-1/2, 2 inches (19.1, 25.4, 31.8, 38.1, 50.8 mm). Group Two: 2, 2-1/2, 3 inches (50.8, 63.5, 76.2 mm). ■ Adapter plate.
Bussing	■ Silver Flash Plated Copper Bus is a standard feature.	

Table 26.2-2. Loadcenters 100 – 225 Amperes and 12 – 42 Circuits Catalog Numbering System

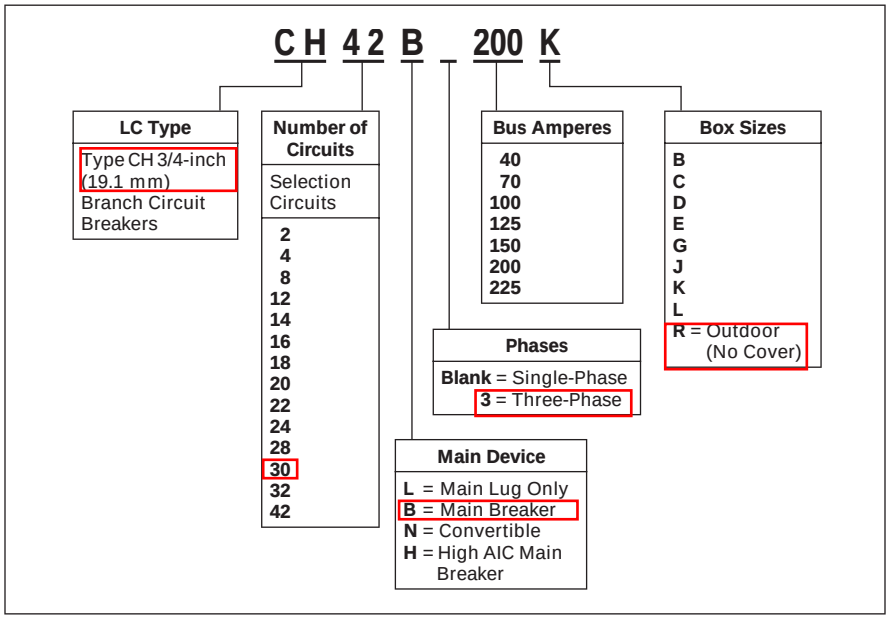
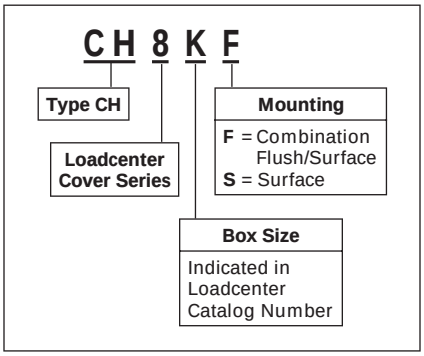


Table 26.2-3. Indoor Covers Ordered Separately



Note: All combinations are not valid, refer to the catalog section.

Single-Phase — Main Lug Loadcenters

Table 26.2-4. Single-Phase 3-Wire — 120/240 Vac — Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm)		Enclosure Type	Type of Trim (Included)	Box Size	Dimensions in Inches			Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number ②
	Space	Poles				Height	Width	Depth		
40	2	4 ①	Indoor	Surface (No Door)	5	9.50	4.50	3.13	#14 – 6	**CH2L40SP** ③
	2	4 ①	Outdoor	—	5R	9.50	4.50	3.13		**CH2L40RP** ③
	2	4 ①	Indoor	Flush (No Door)	5	9.50	4.50	3.13		**CH2L40FP** ③
70	2	4 ①	Indoor	Surface (No Door)	5	9.50	4.50	3.13	#14 – 2	**CH2L70SP** ③
	2	4 ①	Outdoor	—	5R	9.50	4.50	3.13		**CH2L70RP** ③
	2	4 ①	Indoor	Flush (No Door)	5	9.50	4.50	3.13		**CH2L70FP** ③
125	2	4 ①	Indoor	Surface (No Door)	6	11.38	6.88	3.39	#14 – 1/0	**CH2L125SP** ③
	2	4 ①	Outdoor	—	6R	11.75	4.50	4.50		**CH2L125RP** ③
	2	2	Outdoor	—	—	—	—	—		**CH2L125RSE2P**
	2	4 ①	Indoor	Flush (No Door)	6	11.38	6.88	3.39		**CH2L125FP** ③
	4	8 ①	Indoor	Surface (No Door)	7	13.00	11.00	3.69	#14 – 1/0	**CH4L125SP**
	4	8 ①	Outdoor	—	7R	13.00	11.00	3.69		**CH4L125RP**
	4	8 ①	Indoor	Flush (No Door)	7	13.00	11.00	3.69		**CH4L125FP**
	8	16 ①	Indoor	Surface (No Door)	7	13.00	11.00	3.69	#6 – 1/0	**CH8L125SP**
	8	16 ①	Outdoor	—	7R	13.00	11.00	3.69		**CH8L125RP**
	8	16 ①	Indoor	Flush (No Door)	7	13.00	11.00	3.69		**CH8L125FP**

① Requires the use of Type CHNT breakers.

② Ground bar kits ordered separately.
– For 2/4 circuit loadcenters use Type GBK5 or GBK520 ground bar
– For 4/8 and 8/16 circuit loadcenters use Type GBK10 ground bar
– Ground bars mount to the left side wall of the enclosure for the 4/8 and 8/16 circuit loadcenters.

③ Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

Single-Phase — Main Lug Loadcenters

Table 26.2-5. Single-Phase 3-Wire — 120/240 Vac — Twin Neutral — Factory-Installed Ground Bar

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Dimensions			Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number	Loadcenter Cover Catalog Number	
				Height	Width	Depth			Combination	Surface
125	12	Indoor	B	16.75	14.31	3.88	#6 – 2/0	**CH12L125B** ④	**CH8BF**	**CH8BS**
	12	Outdoor	B	16.75	14.31	5.19		**CH12L125R** ④⑤	—	—
	16	Indoor	B	16.75	14.31	3.88		**CH16L125B** ④	**CH8BF**	**CH8BS**
	16	Outdoor	B	16.75	14.31	5.19		**CH16L125R** ④⑤	—	—
	20	Indoor	C	21.00	14.31	3.88		**CH20L125C** ④	**CH8CF**	**CH8CS**
	20	Outdoor	C	21.00	14.31	5.19		**CH20L125R** ④⑤	—	—
	24	Indoor	C	21.00	14.31	3.88		**CH24L125C** ④	**CH8CF**	**CH8CS**
	24	Outdoor	C	21.00	14.31	5.19		**CH24L125R** ④⑤	—	—
150	24	Indoor	D	29.13	14.31	3.88	#4 – 300 kcmil	**CH24L150D** ④	**CH8DF**	**CH8DS**
	24	Outdoor	D	29.13	14.31	5.19		**CH24L150R** ⑤⑥	—	—
	32	Indoor	D	29.13	14.31	3.88		**CH32L150D** ④	**CH8DF**	**CH8DS**
	32	Outdoor	D	29.13	14.31	5.19		**CH32L150R** ⑤⑥	—	—
200	12	Indoor	D	29.13	14.31	3.88	#4 – 300 kcmil	**CH12L200D** ④	**CH8DF**	**CH8DS**
	12	Outdoor	D	29.13	14.31	5.19		**CH12L200R** ⑤⑥	–	—
	16	Indoor	D	29.13	14.31	3.88		**CH16L200D** ④	**CH8DF**	**CH8DS**
	16	Outdoor	D	29.13	14.31	5.19		**CH16L200R** ⑤⑥	—	—
225	24	Indoor	D	29.13	14.31	3.88	#4 – 300 kcmil	**CH24L225D** ④	**CH8DF**	**CH8DS**
	24	Outdoor	D	29.13	14.31	5.19		**CH24L225R** ⑤⑥	—	—
	32	Indoor	D	29.13	14.31	3.88		**CH32L225D** ④	**CH8DF**	**CH8DS**
	32	Outdoor	D	29.13	14.31	5.19		**CH32L225R** ⑤⑥	—	—
	42	Indoor	G	34.13	14.31	3.88		**CH42L225G** ⑥	**CH8GF**	**CH8GS**
	42	Outdoor	G	34.13	14.31	5.19		**CH42L225R** ⑤⑥	—	—
400	42	Indoor	P	54.38	21.00	6.00	(2) 1/0 – 300 kcmil (1) 750 kcmil	**CH42PL400** ⑦	**CH7PF** ⑧	**CH7PS**

④ Suitable for use as service equipment when not more than six disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

⑤ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to accessories.

⑥ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and requires hold-down bracket kit catalog number **CH125RB**.

⑦ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and must be a Type CHB. **The breaker cannot be a Type CH.**

⑧ This cover is for flush application only (not combination).

Single-Phase — Main Circuit Breaker Loadcenters
10,000/35,000 Amperes Interrupting Capacity

Table 26.2-6. Single-Phase 3-Wire — 120/240 Vac — Factory Bonded Split Neutral (Unless Otherwise Noted)

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type ①	Box Size	Dimensions			Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter ②③ Catalog Number	Loadcenter Cover Catalog Number	
					Height	Width	Depth			Combination ④	Surface
CH 10 kAIC	100	14	Indoor	B	16.75	14.31	3.88	#6 – 1/0	**CH14B100B**	**CH8BF**	**CH8BS**
		14	Outdoor	B	16.75	14.31	5.19		**CH14B100R**	—	—
		18	Indoor	C	21.00	14.31	3.88		**CH18B100C**	**CH8CF**	**CH8CS**
		18	Outdoor	C	21.00	14.31	5.19		**CH18B100R**	—	—
		22	Indoor	C	21.00	14.31	3.88		**CH22B100C**	**CH8CF**	**CH8CS**
		22	Outdoor	C	21.00	14.31	5.19		**CH22B100R**	—	—
		30	Indoor	D	29.13	14.31	3.88		**CH30B100D**	**CH8DF**	**CH8DS**
		30	Outdoor	D	29.13	14.31	5.19		**CH30B100R**	—	—
	125	22	Indoor	C	21.00	14.31	3.88	#6 – 1/0	**CH22B125C**	**CH8CF**	**CH8CS**
		22	Outdoor	C	21.00	14.31	5.19		**CH22B125R**	—	—
		30	Indoor	D	29.13	14.31	3.88		**CH30B125D**	**CH8DF**	**CH8DS**
		30	Outdoor	D	29.13	14.31	5.19		**CH30B125R**	—	—
CSH 35 kAIC ⑤	150	8	Outdoor	E	29.13	14.31	5.19	#2 – 300 kcmil	**CH8B150RF**	—	—
		24	Indoor	E	29.13	14.31	3.88		**CH24B150E**	**CH8EF**	**CH8ES**
		24	Outdoor	E	29.13	14.31	5.19		**CH24B150R**	—	—
		32	Indoor	J	34.13	14.31	3.88		**CH32B150J**	**CH8JF**	**CH8JS**
		32	Outdoor	J	34.13	14.31	5.19		**CH32B150R**	—	—
	200	8	Outdoor	E	29.13	14.31	5.19	#2 – 300 kcmil	**CH8B200RF**	—	—
		24	Indoor	E	29.13	14.31	3.88		**CH24B200E**	**CH8EF**	**CH8ES**
		24	Outdoor	E	29.13	14.31	5.19		**CH24B200R**	—	—
		32	Indoor	J	34.13	14.31	3.88		**CH32B200J**	**CH8JF**	**CH8JS**
		32	Outdoor	J	34.13	14.31	5.19		**CH32B200R**	—	—
		42	Indoor	K	37.00	14.31	3.88		**CH42B200K**	**CH8KF**	**CH8KS**
		42	Outdoor	K	37.00	14.31	5.19		**CH42B200R**	—	—
	225	32	Indoor	J	34.13	14.31	3.88	#2 – 300 kcmil	**CH32B225J**	**CH8JF**	**CH8JS**
		32	Outdoor	J	34.13	14.31	5.19		**CH32B225R**	—	—
		42	Indoor	K	37.00	14.31	3.88		**CH42B225K**	**CH8KF**	**CH8KS**
		42	Outdoor	K	37.00	14.31	5.19		**CH42B225R**	—	—
DK 10 kAIC	300	42	Indoor	PM	62.63	21.00	6.00	(2) 3/0 – 250 kcmil	**CH42PM300**	**CH7PMF**	**CH7PMS**
	400	42	Indoor	PM	62.63	21.00	6.00	(2) 3/0 – 250 kcmil	**CH42PM400**	**CH7PMF**	**CH7PMS**

① Outdoor units are furnished with hub closure plates.
② All main circuit breaker loadcenters are listed for use as service entrance equipment.
③ Ground bar kits ordered separately**.**
④ Combination style covers may be used in surface or flush applications.
⑤ CSH Main and Branch Breaker types CH, CHT and CHP results in a 35 kAIC Series Rating.

Single-Phase — High Interrupting Rated Main Circuit Breaker Loadcenters
42,000/100,000 Amperes Interrupting Capacity

Table 26.2-7. Single-Phase 3-Wire — 120/240 Vac — Factory Bonded Split Neutral (Unless Otherwise Noted)

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type ⑥	Box Size	Dimensions			Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter ⑦⑧ Catalog Number	Loadcenter Cover Catalog Number	
					Height	Width	Depth			Combination ⑨	Surface
CHB4 42 kAIC ⑩	100	20	Indoor	C	21.00	14.31	3.88	#6 – 1/0	**CH20H100C**	**CH8CF**	**CH8CS**
		20	Outdoor	C	21.00	14.31	5.19		**CH20H100R**	—	—
		28	Indoor	D	29.13	14.31	3.88		**CH28H100D**	**CH8DF**	**CH8DS**
		28	Outdoor	D	29.13	14.31	5.19		**CH28H100R**	—	—
CHH 100 kAIC ⑪	150	32	Indoor	L	39.00	14.31	3.88	#2/0 – 300 kcmil	**CH32H150L**	**CH8LF**	**CH8LS**
		32	Outdoor	L	39.00	14.31	5.19		**CH32H150R**	—	—
	200	32	Indoor	L	39.00	14.31	3.88	#2/0 – 300 kcmil	**CH32H200L**	**CH8LF**	**CH8LS**
		32	Outdoor	L	39.00	14.31	5.19		**CH32H200R**	—	—
		42	Indoor	L	39.00	14.31	3.88		**CH42H200L**	**CH8LF**	**CH8LS**
		42	Outdoor	L	39.00	14.31	5.19		**CH42H200R**	—	—
	225	42	Indoor	L	39.00	14.31	3.88	#2/0 – 300 kcmil	**CH42H225L**	**CH8LF**	**CH8LS**
		42	Outdoor	L	39.00	14.31	5.19		**CH42H225R**	—	—

⑥ Outdoor units are furnished with hub closure plates.
⑦ All main circuit breaker loadcenters are listed for use as service entrance equipment.
⑧ Ground bar kits ordered separately**.**
⑨ Combination style covers may be used in surface or flush applications.
⑩ CHB4 Main and Branch Breaker types CH, CHT and CHP result in a 42 kAIC Series Rating.
⑪ CHH Main and Branch Breaker types CH, CHT and CHP results in a 100 kAIC Series Rating.

3-Phase — Main Lug Loadcenters

Table 26.2-8. 3-Phase 4-Wire — 208Y/120 Vac or 240 Vac — Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm)		Enclosure Type	Type of Trim Included	Box Size	Dimensions			Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number
	Spaces	Poles				Height	Width	Depth		
125	6	12 ①	Indoor	Surface No Door	7	13.00	11.00	3.69	#14 – 1/0	**CH6L3125SP** ②③
	6	12 ①	Outdoor	—	7R	13.00	11.00	3.69		**CH6L3125RP** ②③④
	6	12 ①	Indoor	Flush No Door	7	13.00	11.00	3.69		**CH6L3125FP** ②③

① Requires the use of CHNT breakers.
② Suitable for use as service equipment when not more than two service disconnecting means are provided or when not more than six service disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
③ Ground bar kits ordered separately.
– Use GBK10 ground bar
– Ground bars mount to the left side wall of the enclosure.
④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page 26.2-25**.

Table 26.2-9. 3-Phase 4-Wire — 208Y/120 Vac or 240 Vac — Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Dimensions			Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number	Loadcenter Cover Catalog Number	
				Height	Width	Depth			Combination	Surface
125	12	Indoor	B	16.75	14.31	3.88	#6 – 2/0	**CH12L3125B** ⑤⑥	**CH8BF**	**CH8BS**
	12	Outdoor	B	16.75	14.31	5.19		**CH12L3125R** ⑤⑥⑦	—	—
	18	Indoor	C	21.00	14.31	3.88		**CH18L3125C** ⑤⑥	**CH8CF**	**CH8CS**
	18	Outdoor	C	21.00	14.31	5.19		**CH18L3125R** ⑤⑥⑨	—	—
	24	Indoor	C	21.00	14.31	3.88		**CH24L3125C** ⑤⑥	**CH8CF**	**CH8CS**
	24	Outdoor	C	21.00	14.31	5.19		**CH24L3125R** ⑤⑥⑨	—	—
150	30	Indoor	D	29.13	14.31	3.88	#4 – 300 kcmil	**CH30L3150D** ⑤⑥	**CH8DF**	**CH8DS**
	30	Outdoor	D	29.13	14.31	5.19		**CH30L3150R** ⑤⑦⑧	—	—
225	24	Indoor	D	29.13	14.31	3.88	#4 – 300 kcmil	**CH24L3225D** ⑤⑥	**CH8DF**	**CH8DS**
	24	Outdoor	D	29.13	14.31	5.19		**CH24L3225R** ⑤⑦⑧	—	—
	30	Indoor	D	29.13	14.31	3.88		**CH30L3225D** ⑤⑥	**CH8DF**	**CH8DS**
	30	Outdoor	D	29.13	14.31	5.19		**CH30L3225R** ⑤⑦⑧	—	—
	42	Indoor	G	34.13	14.31	3.88		**CH42L3225G** ⑧⑨	**CH8GF**	**CH8GS**
	42	Outdoor	G	34.13	14.31	5.19		**CH42L3225R** ⑦⑧⑨	—	—
400	42	Indoor	P	54.38	21.00	6.00	(2) 1/0 – 300 kcmil (1) 750 kcmil	**CH424PL400** ⑩⑪	**CH7PF** ⑫	**CH7PS**

⑤ Ground bar Type GBK14 is installed.
⑥ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and requires hold-down bracket kit catalog number Type **CH125RB**. Suitable for use as service equipment when not more than six service disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
⑦ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to accessories.
⑧ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and requires hold-down kit catalog number Type **CH125RB**.
⑨ Ground bar Type GBK21 is installed.
⑩ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and must be a Type CHB. **The breaker cannot be a Type CH**.
⑪ Ground bar kit ordered separately.
⑫ This cover is for flush application only (not combination).

3-Phase — Main Circuit Breaker Loadcenters 10,000 Amperes Interrupting Capacity

Table 26.2-10. 3-Phase 4-Wire — 208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Dimensions			Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter ①② Catalog Number	Loadcenter Cover Catalog Number	
					Height	Width	Depth			Combination	Surface
CC 10 kAIC	150	30 30	Indoor Outdoor	L L	39.00 39.00	14.31 14.31	3.88 5.19	#1 – 4/0	**CH30B3150L** **CH30B3150R** ③	**CH8LF** —	**CH8LS** —
	200	30	Indoor	L	39.00	14.31	3.88	#2/0 – 300 kcmil	**CH30B3200L**	**CH8LF**	**CH8LS**
		30	Outdoor	L	39.00	14.31	5.19		**CH30B3200R** ③	—	—
		42 42	Indoor Outdoor	L L	39.00 39.00	14.31 14.31	3.88 5.19		**CH42B3200L** **CH42B3200R** ③	**CH8LF** —	**CH8LS** —
	225	30 30 42 42	Indoor Outdoor Indoor Outdoor	L L L L	39.00 39.00 39.00 39.00	14.31 14.31 14.31 14.31	3.88 5.19 3.88 5.19		**CH30B3225L** **CH30B3225R** ③ **CH42B3225L** **CH42B3225R** ③	**CH8LF** — **CH8LF** —	**CH8LS** — **CH8LS** —
	400	42	Indoor	PM	62.63	21.00	6.00	(2) 3/0 – 350 kcmil	**CH424PM400**	**CH7PMF** ④	**CH7PMS**

① All main circuit breaker loadcenters are listed for use as service entrance equipment.
② Ground bar kits ordered separately.
③ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to accessories.
④ This cover for flush application only (not combination).

3-Phase — High Interrupting Rated Main Circuit Breaker Loadcenters — 100,000 Amperes Interrupting Capacity

Table 26.2-11. 3-Phase 4-Wire — 208Y/120 Vac or 240 Vac Insulated/Bondable Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Dimensions			Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter ⑤⑥ Catalog Number	Loadcenter Cover Catalog Number	
					Height	Width	Depth			Combination	Surface
CHH 100 kAIC ⑦	200	30 30 42 42	Indoor Outdoor Indoor Outdoor	L L L L	39.00 39.00 39.00 39.00	14.31 14.31 14.31 14.31	3.88 5.19 3.88 5.19	#2/0 – 300 kcmil	**CH30H3200L** **CH30H3200R** ⑧ **CH42H3200L** **CH42H3200R** ⑧	**CH8LF** — **CH8LF** —	**CH8LS** — **CH8LS** —
	225	42 42	Indoor Outdoor	L L	39.00 39.00	14.31 14.31	3.88 5.19	#2/0 – 300 kcmil	**CH42H3225L** **CH42H3225R** ⑧	**CH8LF** —	**CH8LS** —

⑤ All main circuit breaker loadcenters are listed for use as service entrance equipment.
⑥ Ground bar kits priced separately.
⑦ 100,000 AIC series combination rating is obtained when Types CH and CHP branch breakers are used with CHH main.
⑧ Rainproof loadcenters are furnished with hub closure plates.

Convertible Loadcenters MCB or MLO — Base Units and Main Devices 10,000/35,000 Amperes Interrupting Capacity

Complete assembly consists of: Loadcenter, Cover, and either Main Breaker Kit or Main Lug Kit.

Table 26.2-12. Indoor — Single-Phase — 3-Wire — 120/240 V — Factory Bonded Split Neutral — Top or Bottom Feed

Maximum		Box Size	Dimensions			Loadcenter Box and Panel	Loadcenter Cover Catalog Number		Main Lug Kit		Main Breaker Kit		
Main Ampere Rating	Number of Single Poles		Height	Width	Depth	Catalog Number ①②	Combi-nation	Surface	Wire Size	Catalog Number	kAIC Rating	Wire Size	Catalog Number
125	22	C	21.00 21.00	14.31 14.31	3.88 3.88	**CH22N125C**	**CH8CF**	**CH8CS**	#10 – 1/0	**CHL125N**	10	#10 – 1/0	**CH2100N** ③ **CH2125N** ③
200	32	J	34.13 34.13 34.13 34.13	14.31 14.31 14.31 14.31	3.88 3.88 3.88 3.88	**CH32N200J**	**CH8JF**	**CH8JS**	#4 – 300 kcmil	**CHL225N**	25	#2 – 300 kcmil	**CSH2125N** ④⑤ **CSH2150N** ④⑤ **CSH2175N** ④⑤ **CSH2200N** ④⑤
225	42	K	37.00 37.00 37.00 37.00 37.00	14.31 14.31 14.31 14.31 14.31	3.88 3.88 3.88 3.88 3.88	**CH42N225K**	**CH8KF**	**CH8KS**	#4 – 300 kcmil	**CHL225N**	25	#2 – 300 kcmil	**CSH2125N** ④⑤ **CSH2150N** ④⑤ **CSH2175N** ④⑤ **CSH2200N** ④⑤ **CSH2225N** ④⑤

① Panel does not include main. Order main breaker or main lug kit separately.
② Loadcenters are factory bonded for service entrance applications. Remove bonding strap for separate neutral and ground bars for sub-feed applications.
③ Hold down kit included.
④ 35,000 AIC series combination rating is obtained when Types CH, CHT and CHP branch breakers are used with CSR main.
⑤ CSH breakers include line lugs only as standard.
Note: Interrupting rating depends on main circuit breaker selected.

Table 26.2-13. Outdoor — Single-Phase — 3-Wire — 120/240 V — Insulated/Bondable Neutral

Maximum		Box Size	Dimensions			Loadcenter Box and Panel	Main Lug Kit		Main Breaker Kit		
Main Ampere Rating	Number of Single Poles		Height	Width	Depth	Catalog Number ⑥	Wire Size	Catalog Number	kAIC Rating	Wire Size	Catalog Number
200	8	E	29.13 29.13 29.13 29.13	14.31 14.31 14.31 14.31	5.19 5.19 5.19 5.19	**CH8N200RF** ⑦⑧	#4 – 300 kcmil	**CHL225N**	25	#2 – 300 kcmil	**CSH2125N** **CSH2150N** **CSH2175N** **CSH2200N**
125	2 2	C	21.00 21.00	14.31 14.31	5.19 5.19	**CH22N125R** ⑦	#10 – 1/0	**CHL125N**	10	#10 – 1/0	**CH2100N** ⑨ **CH2125N** ⑨
200	3 2	J	34.13 34.13 34.13 34.13	14.31 14.31 14.31 14.31	5.19 5.19 5.19 5.19	**CH32N200R** ⑦	#4 – 300 kcmil	**CHL225N**	25	#2 – 300 kcmil	**CSH2125N** ⑩⑪ **CSH2150N** ⑩⑪ **CSH2175N** ⑩⑪ **CSH2200N** ⑩⑪
225	4 2	K	37.00 37.00 37.00 37.00 37.00	14.31 14.31 14.31 14.31 14.31	5.19 5.19 5.19 5.19 5.19	**CH42N225R** ⑦	#4 – 300 kcmil	**CHL225N**	25	#2 – 300 kcmil	**CSH2125N** ⑩⑪ **CSH2150N** ⑩⑪ **CSH2175N** ⑩⑪ **CSH2200N** ⑩⑪ **CSH2225N** ⑩⑪

⑥ Panel does not include main. Order main breaker or main lug kit separately.
⑦ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to accessories.
⑧ Includes feed-through lugs for both phase and neutral conductors.
⑨ Hold down kit included.
⑩ 35,000 AIC series combination rating is obtained when Types CH, CHT and CHP branch breakers are used with CSR main.
⑪ CSH breakers include line lugs only as standard.

Spa Panels

Table 26.2-14. Spa Panels Single-Phase 3-Wire — 120/240 Vac Insulated/Bondable Neutral — Factory Installed Ground Bar

Main Ampere Rating	Circuit Breaker Included	Enclosure Type	Type of Trim Included	Box Size	Dimensions			Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Catalog Number
					H	W	D		
30	CH230GF	Outdoor	—	5R	9.50	4.50	3.13	#14 – 1/0	**CH30SPA** ⑫
40	CH240GF	Outdoor	—	5R	9.50	4.50	3.13	#14 – 1/0	**CH40SPA** ⑬
50	CH250GF	Outdoor	—	5R	9.50	4.50	3.13	#14 – 1/0	**CH50SPA** ⑭
60	CH260GF	Outdoor	—	5R	9.50	4.50	3.13	#14 – 1/0	**CH60SPA** ⑮

⑫ Includes a CH230GFI breaker, factory installed, and 2 extra circuits for convenience.
⑬ Includes a CH240GFI breaker, factory installed, and 2 extra circuits for convenience.
⑭ Includes a CH250GFI breaker, factory installed, and 2 extra circuits for convenience.
⑮ Includes a CH260GFI breaker, factory installed, and 2 extra circuits for convenience.



CH Spa Panel

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DR2 U SERIES

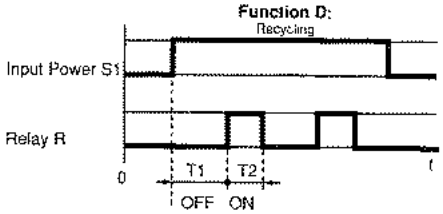
REPEAT CYCLE TIMER

UL-E87133 CSA-LR56339

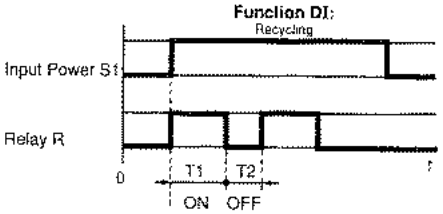
- **Multi Timing Range (.1 sec to 10 hours)**
- **Direct Reading**
- **Dual Voltage (TDR2 only)**
- **LED Power DN Indicator**
- **LED RELAY Indicator**
- **DPDT 10 Amp Dutput**



Function D:
Recycling



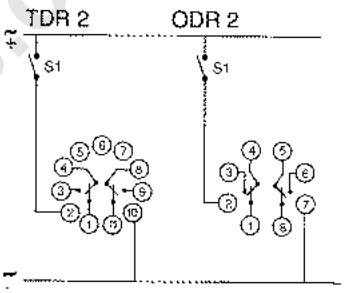
Function DI:
Recycling



SPECIFICATIONS:

InputPower	220VAC/24VAC/DC, 110VAC/24VAC/DC 48VAC/DC/24VAC/DC, 12VDC±15%,50/60Hz	
Maximum power consumption	24 VAC: 1VA 48 VAC: 1.2VA 110 VAC: 3.5VA 220 VAC: 7VA	12VDC: 0.5W 24 VDC: 0.6W 48 VDC: 1.2W
Output Rating	DPDT Relay	
Contact material	Ag Cdo	
Maximum loading	10A AC resistive	8A DC resistive
Maximum switching voltage	240 VAC	250 VDC
Relay maximum power rating	2400 VA	30W
Mechanical life of relay	30 x 10⁶ operations	
Electrical life of relay	2 x 10⁵ at 2400 VA resistive load	
Repetition accuracy	± 0.2% at a constant ambient	
Reset time	100ms after timing 150ms during	
Operating temperature	-4°F to + 140°F	-25°C to +60°C
Weight	2.8 oz. (80 grams)	

WIRING DIAGRAM:



NOTE: The ODR2 U is a single voltage unit. The TDR2 U is dual voltage.Jumper terminals 10 and 7 for 24 VAC/DC.

SWITCH SETTINGS:

SWITCHES 1/4	SWITCHES 2/5	SWITCHES 3/6	TIME RANGE
Down	Down	Down	.1 to 1 second
Down	Down	Up	1 to 10 seconds
Down	Up	Down	.1 to 1 minute
Down	Up	Up	1 to 10 minutes
Up	Down	Down	.1 to 1 hour
Up	Down	Up	1 to 10 hours

NOTE: Switch 1, 2 and 3 set the "OFF" time range
Switches 4, 5, and 6 set the "ON" time range

ORDERING INFORMATION:

O	DR2	U	110A
MOUNTING	SERIES	TIME RANGE	INPUT POWER

MOUNTING
O = 8 pin plug-in
T = 11 pin plug-in

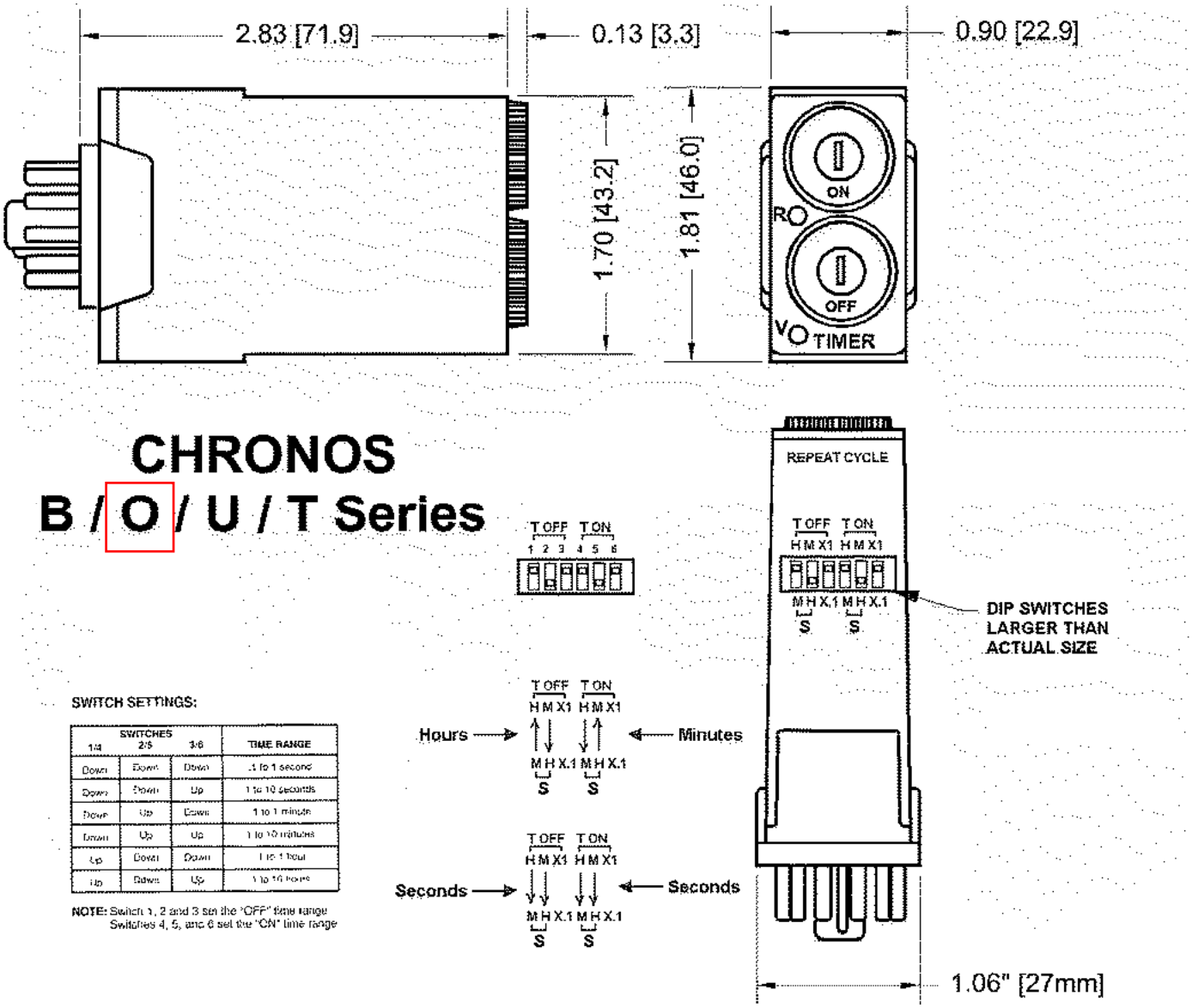
SERIES
DR 2 = Off time first
DRI 2 = On time first

TIME RANGE
U Range
.1 sec to 10 hours

INPUT POWER
12D = 12 VDC
48AD = 48 VAC/DC/24 VAC/DC
110A = 110 VAC/24 VAC/DC
220A = 220 VAC/24 VAC/DC

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SWITCHES 1/4	2/5	3/6	TIME RANGE
Down	Down	Down	.1 to 1 second
Down	Down	Up	1 to 10 seconds
Down	Up	Down	1 to 1 minute
Down	Up	Up	1 to 10 minutes
Up	Down	Down	1 to 1 hour
Up	Down	Up	1 to 10 hours

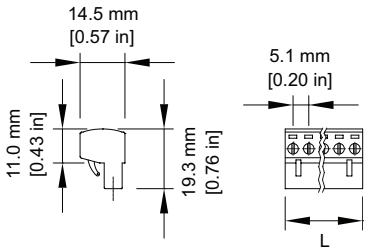
NOTE: Switch 1, 2 and 3 set the "OFF" time range
Switches 4, 5, and 6 set the "ON" time range

DINnectors™ Accessories

Terminal Plugs



DN-xxPLUG / DN-xxPLUGMN



Accessories – Terminal Plugs							
Plugs* Part Number	Pcs/ Pkg	Price/ Pkg	Plugs* Part Number	Pcs/Pkg	Price/ Pkg	Number of Poles	Length mm [in]
DN-2PLUG	200	$67.00	DN-2PLUGMN	10	$4.25	2	10.2 [0.40]
DN-3PLUG	200	$104.00	DN-3PLUGMN	10	$6.25	3	15.2 [0.60]
DN-4PLUG	100	$69.00	DN-4PLUGMN	10	$8.25	4	20.3 [0.80]
DN-5PLUG	100	$70.00	DN-5PLUGMN	10	$10.25	5	25.4 [1.00]
DN-6PLUG	100	$81.00	DN-6PLUGMN	10	$10.25	6	30.5 [1.20]
DN-7PLUG	50	$49.50	DN-7PLUGMN	5	$8.25	7	35.6 [1.40]
DN-8PLUG	50	$68.00	DN-8PLUGMN	5	$8.25	8	40.6 [1.60]
DN-9PLUG	50	$63.25	DN-9PLUGMN	5	$9.00	9	45.7 [1.80]
DN-10PLUG	50	$80.00	DN-10PLUGMN	5	$10.00	10	50.8 [2.00]
DN-11PLUG	50	$77.00	DN-11PLUGMN	5	$11.00	11	55.9 [2.20]
DN-12PLUG	50	$103.00	DN-12PLUGMN	5	$11.75	12	61.0 [2.40]

Terminal Plugs Ratings	
Voltage/Current	300V, 12A
Wire Gauge	14–22 AWG, CU only
Torque	Tightening Torque: 0.51 N·m [4.5 lb·in]
Usage Temperature	Ambient air temperature: -20°C to 105°C [-4°F to 221°F] Relative humidity: 50% max at 40°C [104°F]; 90% max at 20°C [68°F]
Agency Approvals	UL file #: E179129

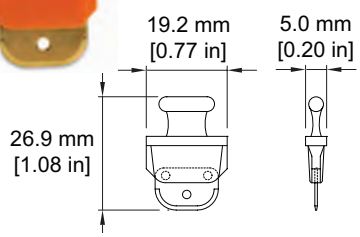
Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

**** DN-xxPLUGs fit all DN-EMXxx & DN-QEMXxx plug-in terminal blocks***

Disconnect Blade



DN-DIS-BLADE
DN-DIS-BMN



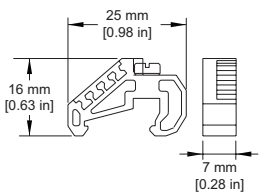
Disconnect Blade			
Part Number	Description	Pcs/Pkg	Price
DN-DIS-BLADE	Terminal block disconnect blade for DN-FE2, DN-FE4, DN-DIS2 and DN-DIS4	50	$21.50
DN-DIS-BMN		10	$5.50

End Brackets

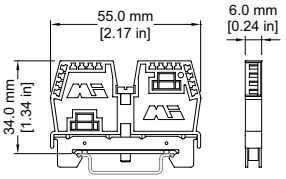


End Brackets			
Part Number	Description	Pcs/ Pkg	Price/ Pkg
DN-EB15	Terminal block end stop 7mm width screw clamping. Gray	100	$64.00
DN-EB15MN		20	$14.00
DN-EB35	Terminal block end stop 9mm width screw clamping. Gray	50	$39.50
DN-EB35MN		20	$18.00
DN-EB35-A	Terminal block end stop 6mm width screw clamping. Black	50	$28.50
DN-EB35-A-10		10	$7.50
DN-QEB35	Terminal block end stop 6mm width screwless clamping. Black	50	$25.50
DN-QEB35-10		10	$7.50

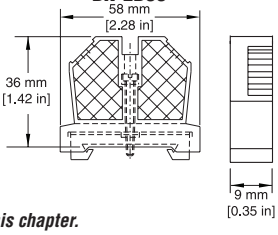
DN-EB15



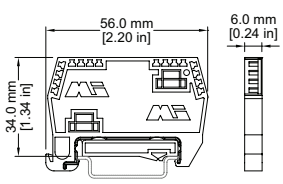
DN-EB35-A



DN-EB35



DN-QEB35



For more information on accessories, see the "DINnectors Accessories" section of this chapter.

DINnectors™ Accessories

End Covers

Certain end covers can be used with multiple terminal block parts to cover and insulate the open side, or to put more space between adjacent blocks.

DIN*nectors* End Covers				
Part Number	**Description**	**For Use With**	**Pcs/Pkg**	**Price**
DN-EC1210	Covers open side of DN-T12-A and DN-T10-A series terminal blocks	DN-T10-A, DN-T12-A	100	$26.00
DN-EC1210MN			25	$8.00
DN-EC86	Covers open side of DN-T8 and DN-T6 series terminal blocks	DN-T8, DN-T6	100	$28.00
DN-EC86MN			25	$8.00
DN-EC4	Covers open side of DN-T4 series terminal blocks	DN-T4	50	$17.00
DN-EC4MN			10	$3.50
DN-EC1/0	Covers open side of DN-T1/0 series terminal blocks	DN-T1/0	50	$19.50
DN-EC1/0MN			10	$4.00
DN-DEC10	Covers open side of DN-D10 series double-level terminal blocks	DN-D10	100	$18.00
DN-DEC10MN			10	$3.75
DN-EC14	Covers open side of DN-TL14-A series terminal blocks	DN-TL14-A	25	$10.00
DN-EC14S	Covers open side of DN-TL14S-A series terminal blocks	DN-TL14S-A	25	$9.00
DN-ECM10	Covers open side of DN-M10-A series terminal blocks	DN-M10-A DN-M10B-A	100	$26.00
DN-ECM10MN			25	$8.00
DN-ECKBD	Covers open side of DN-KBD12 (MN) series disconnect blocks	DN-KBD12 (MN)	100	$26.00
DN-ECKBDMN			10	$3.75
DN-EMXM1EC1	Covers open side of DN-EMXM1 and DN-QEMXM1 terminal blocks	DN-EMXM1 DN-QEMXM1	25	$8.50
DN-EMXM1EC2	Covers closed side of DN-EMXM1 and DN-QEMXM1 terminal blocks		25	$8.50
DN-EMXDVEC1	Covers open side of DN-EMXDV and DN-QEMXDV terminal blocks	DN-EMXDV DN-QEMXDV	25	$8.50
DN-EMXDVEC2	Covers closed side of DN-EMXDV and DN-QEMXDV terminal blocks		25	$8.50
DN-FESEP	Covers closed side of DN-FE sockets and DN-DIS disconnects	DN-FE, DN-DIS	50	$15.00
DN-FESEP-10			10	$3.00
DN-QEC12	Covers open side of DN-Q12-A or DN-QG12 series screwless terminal blocks	DN-Q12-A DN-QG12	50	$12.00
DN-QEC12MN			10	$3.25
DN-QEC10	Covers open side of DN-Q10-A or DN-QG10 series screwless terminal blocks	DN-Q10-A DN-QG10	50	$12.00
DN-QEC10MN			10	$3.25
DN-QEC8	Covers open side of DN-Q8-A or DN-QG8 series screwless terminal blocks	DN-Q8-A DN-QG8	50	$14.00
DN-QEC8MN			10	$3.50
DN-QEC12-1-2	Covers open side of DN-Q12-1-2-A and DN-QKBD12-A series screwless terminal blocks	DN-Q12-1-2-A, DN-QKBD12	25	$8.75
DN-QEC12-2-2	Covers open side of DN-Q12-2-2-A series screwless terminal blocks	DN-Q12-2-2-A	25	$9.75
DN-QDEC12	Covers open side of DN-QD12-A series screwless terminal blocks	DN-QD12-A	25	$9.75

Spacers

Spacers are used to put more space between adjacent blocks.

DIN*nectors* Spacers				
Part Number	**Description**	**For Use with**	**Pcs/Pkg**	**Price**
DN-S1210	Spacer for DN-T12-A and DN-T10-A series terminal blocks	DN-T10-A DN-T12-A	100	$30.50
DN-S1210MN			25	$9.25
DN-S86	Spacer for DN-T8 and DN-T6 series terminal blocks	DN-T8 DN-T6	100	$36.50
DN-S86MN			25	$7.75
DN-EMXM1SPA1	Spacer for single-level plug-in terminal blocks	DN-EMXM1 DN-QEMXM1	25	$7.25
DN-EMXDVSPA1	Spacer for double-level plug-in terminal blocks	DN-EMXDV DN-QEMXDV	25	$8.25
DN-FESPA	Spacer for DN-FE sockets and DN-DIS disconnects	DN-FE DN-DIS	50	$15.00
DN-FESPA-10			10	$3.00

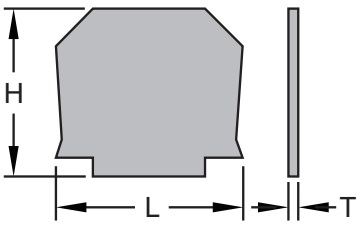
Top Covers

DIN*nectors* Top Covers				
Part Number	**Description**	**For Use with**	**Pcs/Pkg**	**Price**
DN-C12	Top cover, clear, printed electrical symbol.	DN-T12-A	100	$36.50
DN-C12MN			25	$7.75
DN-C10	Top cover, clear, printed electrical symbol.	DN-T10-A	100	$36.50
DN-C10MN			25	$7.75
DN-C86	Top cover, clear, printed electrical symbol.	DN-T8 DN-T6	100	$36.50
DN-C86MN			25	$7.75
DN-DC10	Top cover, clear, printed electrical symbol.	DN-D10	100	$34.50
DN-DC10MN			25	$7.75
DN-MC10	Top cover, clear, printed electrical symbol.	DN-M10	100	$37.50
DN-MC10MN			25	$7.75

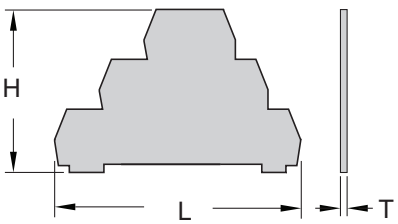
DINnectors™ Accessories

DIN*nector* End Covers and Spacers Dimensions				
Part Number		***Length***	***Height***	***Thickness***
DN-EC1210	***DN-EC1210MN***	44mm [1.73 in]	35mm [1.38 in]	1.5 mm [0.06 in]
DN-S1210	***DN-S1210MN***	55mm [2.17 in]	44mm [1.73 in]	
DN-EC86	***DN-EC86MN***	50mm [1.97 in]	43mm [1.69 in]	
DN-S86	***DN-S86MN***	55mm [2.17 in]	49mm [1.93 in]	
DN-EC4	***DN-EC4MN***	56mm [2.21 in]	48mm [1.89 in]	
DN-EC1/0	***DN-EC1/0MN***	62mm [2.44 in]	60mm [2.36 in]	
DN-DEC10	***DN-DEC10MN***	72mm [2.80 in]	55mm [2.17 in]	
DN-EC14	–	78mm [3.08 in]	55mm [2.17 in]	
DN-EC14S	–	55mm [2.17 in]	50mm [1.97 in]	
DN-ECM10	***DN-ECM10MN***	32mm [1.26 in]	27mm [1.06 in]	
DN-ECKBD	***DN-ECKBDMN***	52mm [2.05 in]	34.5 mm [1.36 in]	
DN-EMXM1EC1	***DN-EMXM1EC2***	as shown on next page		
DN-EMXDVEC1	***DN-EMXDVEC2***			
DN-EMXDVSPA1	***DN-EMXM1SPA1***			
DN-FESPA	***DN-FESPA-10***			
DN-FESEP	***DN-FESEP-10***			
DN-QEC12	***DN-QEC12MN***	50mm [1.97 in]	23mm [0.9 in]	1.5 mm [0.06 in]
DN-QEC10	***DN-QEC10MN***	57.4 mm [2.26 in]	33.6 mm [1.32 in]	
DN-QEC8	***DN-QEC8MN***	63mm [2.48 in]	38.5 mm [1.52 in]	
DN-QEC12-1-2	–	68.5 mm [2.70 in]	28.5 mm [1.12 in]	
DN-QEC12-2-2	–	87.5 mm [3.44 in]	28.5 mm [1.12 in]	
DN-QDEC12	–	98mm [3.86 in]	37mm [1.46 in]	

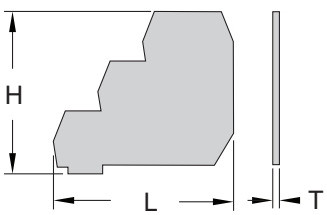
DN-EC1210, DN-EC1210MN DN-EC86, DN-EC86MN DN-EC4 (MN), DN-EC1/0 (MN), DN-ECKBD (MN), DN-S1210, DN-S1210MN, DN-S86 (MN)



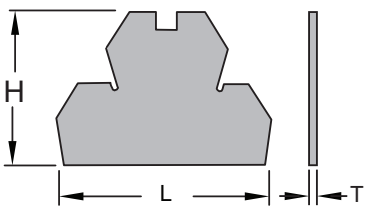
DN-EC14



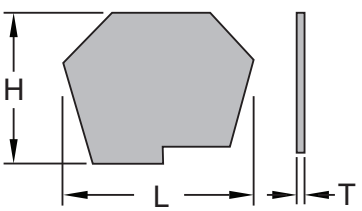
DN-EC14S



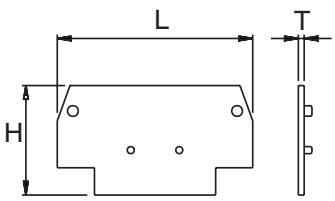
DN-DEC10 / DN-DEC10MN



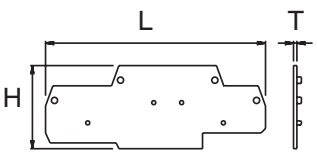
DN-ECM10
DN-ECM10MN



DN-QEC12, DN-QEC12MN, DN-QEC10, DN-QEC10MN, DN-QEC8, DN-QEC8MN, DN-QEC12-1-2, DN-QEC12-2-2



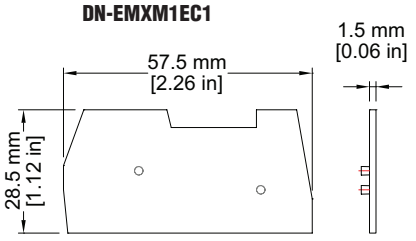
DN-QDEC



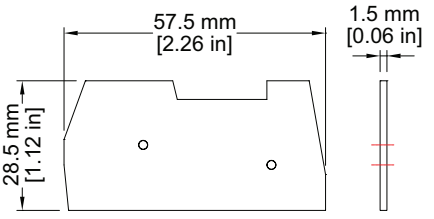
DINnectors™ Accessories

Dimensional Drawings

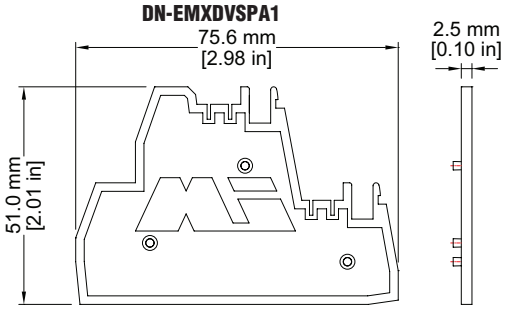
DN-EMXM1EC1



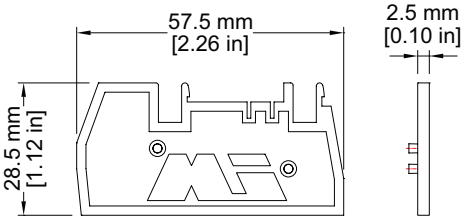
DN-EMXM1EC2



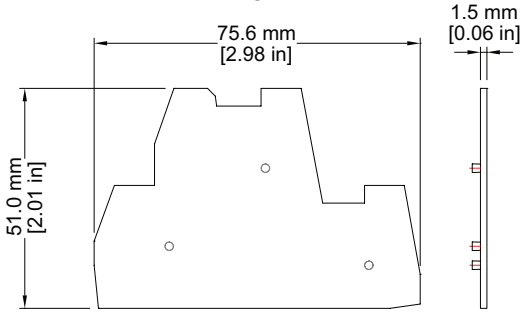
DN-EMXDVSPA1



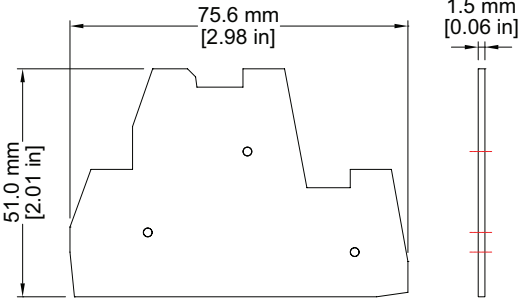
DN-EMXM1SPA1



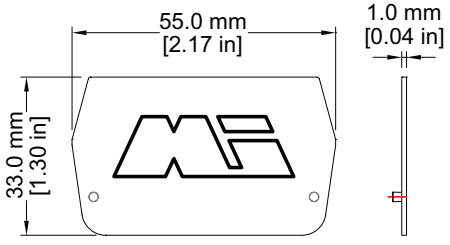
DN-EMXDVEC1



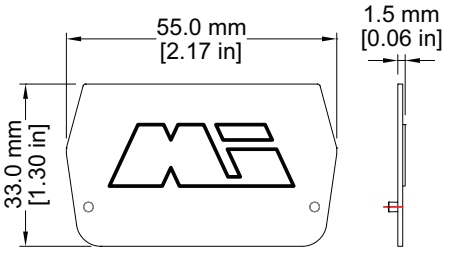
DN-EMXDVEC2



DN-FESEP,
DN-FESEP-10



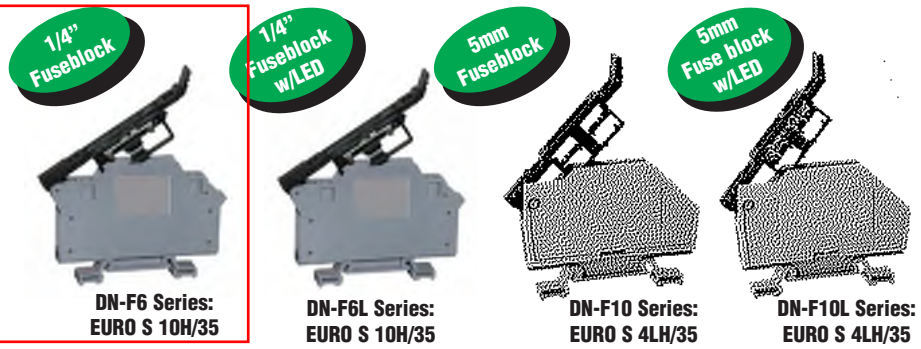
DN-FESPA, DN-FESPA-10



DINnectors™ Fuse Terminal Blocks

Fuse blocks are available for 1/4", 5mm, Class CC and midget size fuses, either with or without a blown fuse LED. LED fuse blocks are polarity sensitive and are 35mm DIN-rail mountable. The hinge side is positive.





DN-F6 Series: EURO S 10H/35 | **DN-F6L Series: EURO S 10H/35** | **DN-F10 Series: EURO S 4LH/35** | **DN-F10L Series: EURO S 4LH/35**

Ordering Information

	DN-F6 Part Number	Pcs/Pkg	Price	DN-F6L Part Number	Pcs/Pkg	Price	DN-F10 Part Number	Pcs/Pkg	Price	DN-F10L Part Number	Pcs/Pkg	Price
Gray Terminal Block	DN-F6	25	$93.00	–			DN-F10	50	$149.00	–		
	DN-F6MN	7	$20.00				DN-F10MN	10	$22.75			
12-24 VAC/DC*	–			DN-F6L24	10	$54.00	–			DN-F10L24	10	$53.00
110 VAC/DC*				DN-F6L110	10	$54.00				DN-F10L110	10	$53.00
220 VAC/DC*				DN-F6L220	10	$54.00				DN-F10L220	10	$53.00

Technical Specifications

Stripping Length	12mm [0.47 in]			12mm [0.47 in]			10mm [0.39 in]			10mm [0.39 in]		
Tightening Torque	2.0 N·m [17.7 lb·in]			2.0 N·m [17.7 lb·in]			0.6 N·m [5.3 lb·in]			0.6 N·m [5.3 lb·in]		
Density	100/m [30 pcs/ft]			100/m [30 pcs/ft]			100/m [30 pcs/ft]			100/m [30 pcs/ft]		
UL Approval**	600V	30A	20-6 AWG	600V	30A	20-6 AWG	300V	15A	24-10 AWG	300V	15A	24-10 AWG
CSA Approval	600V	30A	18-6 AWG	600V	30A	18-6 AWG	300V	8A	18-12 AWG	300V	8A	18-12 AWG
VDE Approval	750V	8A	–	750V	8A	–	500V	8A	4mm²	500V	8A	4mm²
Fuse Size (not supplied)	1 1/4" X 1/4"			1 1/4" X 1/4"			5x20mm-5x25mm			5x20mm-5x25mm		
Indicator Type	Non-indicating			LED blown fuse indicator			Non-indicating			LED blown fuse indicator		
Operating Temperature	Ambient air temperature: -20°C to 85°C [-4°F to 185°F] / Relative humidity: 50% max at 40°C [104°F]; 90% max at 20°C [68°F]											
SCCR Rating	10kA per Table SB4.1, 2009, UL 508A, Maximum short circuit current rating for unmarked components											
CE Conformity	CE (EN 60947-1 / 60947-7-3)											
Agency File #	UL E179129 / LR84816											

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Accessories

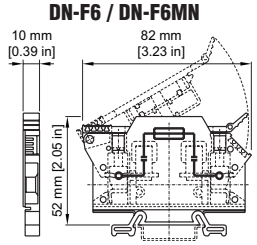
		DN-F6			DN-F6L			DN-F10			DN-F10L		
End Covers		Included			Included			Included			Included		
35mm DIN Rail	7.5 mm high	DN-R35S1	10	$28.00	DN-R35S1	10	$28.00	DN-R35S1	10	$28.00	DN-R35S1	10	$28.00
		DN-R35S1-2	2	$9.00	DN-R35S1-2	2	$9.00	DN-R35S1-2	2	$9.00	DN-R35S1-2	2	$9.00
	15mm high	DN-R35HS1	10	$49.50	DN-R35HS1	10	$49.50	DN-R35HS1	10	$49.50	DN-R35HS1	10	$49.50
		DN-R35HS1-2	2	$12.00	DN-R35HS1-2	2	$12.00	DN-R35HS1-2	2	$12.00	DN-R35HS1-2	2	$12.00
End Brackets		DN-EB35	50	$39.50	DN-EB35	50	$39.50	DN-EB35	50	$39.50	DN-EB35	50	$39.50
		DN-EB35MN	20	$18.00	DN-EB35MN	20	$18.00	DN-EB35MN	20	$18.00	DN-EB35MN	20	$18.00
		DN-EB35-A	50	$28.50	DN-EB35-A	50	$28.50	DN-EB35-A	50	$28.50	DN-EB35-A	50	$28.50
		DN-EB35-A-10	10	$7.50	DN-EB35-A-10	10	$7.50	DN-EB35-A-10	10	$7.50	DN-EB35-A-10	10	$7.50
		DN-QEB35	50	$25.50	DN-QEB35	50	$25.50	DN-QEB35	50	$25.50	DN-QEB35	50	$25.50
		DN-QEB35-10	10	$7.50	DN-QEB35-10	10	$7.50	DN-QEB35-10	10	$7.50	DN-QEB35-10	10	$7.50
Angled Support Bracket		DN-ASB1	50	$49.50	DN-ASB1	50	$49.50	DN-ASB1	50	$49.50	DN-ASB1	50	$49.50
Marking Tags		DN-L*** or DN-LT****	500/100	various	DN-L*** or DN-LT****	500/100	various	DN-L*** or DN-LT****	500/100	various	DN-L*** or DN-LT****	500/100	various

**Working voltage* ***For copper wire only* ****On lever arm* *****On terminal body*

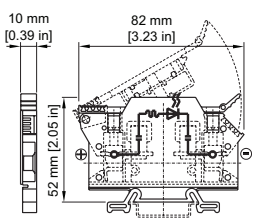
Note: DN-F6 series fuse holders will accommodate the following AutomationDirect fuses: ABC, AGC, MDA and MDL Series.
DN-F10 series fuse holders will accommodate the following AutomationDirect fuses: GMA, GMC, S500, and S506 Series.

For more information on accessories, see the DINnectors Accessories section of this chapter.

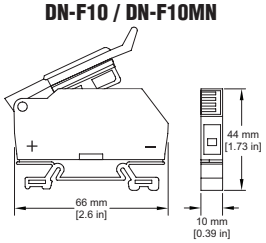
DN-F6 / DN-F6MN



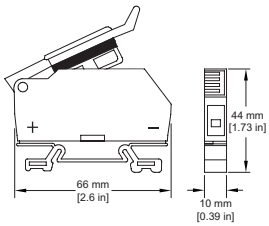
DN-F6L



DN-F10 / DN-F10MN



DN-F10L



DINnectors™ Accessories

DN-LB (blank) shown on left

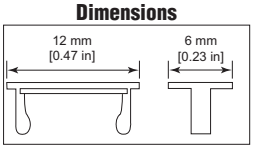


DN-L

- **Fits terminal block types**: All except, Screwless DINnectors , DN-T12-A, DN-M10-A, DN-MG, and DN-TL series
- **Material**: Thermoplastic with heat embossed black print

Note:
1. The marking sequence of 50 tags (i.e. 101-150) is printed 10 times in each package of 500 tags.
2. The DN-L tags fit all DIN*nectors* 6mm wide and wider.
3. The DN-L tags fit all DIN*nectors* 6mm wide and wider but will leave a gap between tags on blocks wider than 6mm.

Dimensions



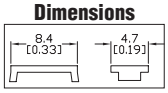
Marking Sequence	Part#	Pcs/ Pkg	Price
1-50	**DN-L50**	500	$32.50
51-100	**DN-L100**	500	$32.50
101-150	**DN-L150**	500	$32.50
151-200	**DN-L200**	500	$32.50
201-250	**DN-L250**	500	$32.50
251-300	**DN-L300**	500	$32.50
301-350	**DN-L350**	500	$32.50
351-400	**DN-L400**	500	$32.50
401-450	**DN-L450**	500	$32.50
Blank	**DN-LB**	500	$22.00
L1, L2, L3, L, N, GND, +, -, COM,COM*	**DN-LS**	500	$32.50

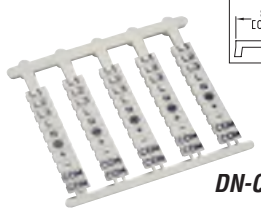
DN-QL

- **Fits terminal block types:** Screwless DN-Q series
- **Material:** Thermoplastic with heat embossed black print. Packaged 100 labels per card, and five cards per box.

Note:
1. The marking sequence (i.e. 1-100) is printed five times in each package of 500 tags.

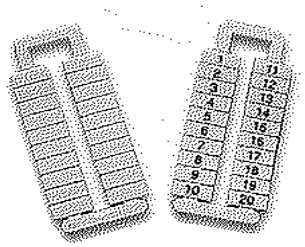
Dimensions





DN-QLS Shown

Marking Sequence	Part #	Pcs/ Pkg	Price
1-100	**DN-QL100**	500	$25.50
101-200	**DN-QL200**	500	$25.50
201-300	**DN-QL300**	500	$25.50
301.400	**DN-QL400**	500	$25.50
401-500	**DN-QL500**	500	$25.50
Blank Tags	**DN-QLB**	500	$21.50
L1, L2, L3, L, N⏚, +,-, COM,COM*	**DN-QLS**	500	$29.00



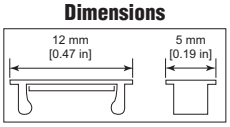
DN-LAB (blank) shown on right; part of DN-LA100 on left

DN-LA

- **Fits terminal block types:** DN-T12-A series
- **Material:** Thermoplastic with heat embossed black print

Note:
1. The marking sequence (i.e. 1-100) is printed five times in each package of 500 tags.
2. The DN-T12-A series is 5mm wide, so the 6mm wide DN-L tags do not fit these blocks.
3. The DN-LA tags fit all DIN*nectors* 5mm wide and wider but will leave a gap between tags on blocks wider than 5mm.

Dimensions



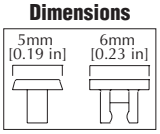
Marking Sequence	Part#	Pcs/ Pkg	Price
1-100	**DN-LA100**	500	$32.50
101-200	**DN-LA200**	500	$32.50
201-300	**DN-LA300**	500	$32.50
301-400	**DN-LA400**	500	$32.50
Blank Tags	**DN-LAB**	500	$32.50
L1, L2, L3, L, N, GND, +, -, COM,COM*	**DN-LAS**	500	$32.50

DN-LAT-A

- **Fits terminal block types:** Triple level DN-TL14
  Material: Thermoplastic with heat embossed black print

Note:
1. The marking sequence (i.e. 1-100) is printed five times in each package of 500 tags.

Dimensions



Marking Sequence	Part #	Pcs/ Pkg	Price
1-100	**DN-LAT100-A**	500	$29.00
101-200	**DN-LAT200-A**	500	$29.00
201-300	**DN-LAT300-A**	500	$29.00
301-400	**DN-LAT400-A**	500	$29.00
401-500	**DN-LAT500-A**	500	$29.00
501-600	**DN-LAT600-A**	500	$29.00
Blank Tags	**DN-LATB-A**	500	$21.00
L1, L2, L3, L, N,⏚ +,-, COM,COM*	**DN-LATS-A**	500	$29.00



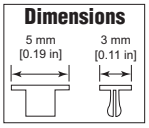
DN-LTA marker shown top; DN-LT60 marker shown middle; DN-LTGND shown bottom

DN-LT

- **Fits terminal block types:** All except **Screwless DIN*nectors*** (see DN-QL series)
- **Material:** Thermoplastic with heat embossed black print

Note:
1. These marking tags allow the flexibility of creating custom marking sequences on site.
2. The DN-M10-A support a maximum of three digits (tags), while other DIN*nectors* support up to four digits (tags)

Dimensions



Marking Sequence	Part#	Pcs/ Pkg	Price
1-5	**DN-LT15**	100	$5.75
6-0	**DN-LT60**	100	$5.75
1	**DN-LT1**	100	$5.75
2	**DN-LT2**	100	$5.75
3	**DN-LT3**	100	$5.75
4	**DN-LT4**	100	$5.75
5	**DN-LT5**	100	$5.75
6	**DN-LT6**	100	$5.75
7	**DN-LT7**	100	$5.75
8	**DN-LT8**	100	$5.75
9	**DN-LT9**	100	$5.75
0	**DN-LT0**	100	$5.75
Unprinted	**DN-LTBLNK**	100	$5.75
A	**DN-LTA**	100	$5.75
B	**DN-LTB**	100	$5.75
C	**DN-LTC**	100	$5.75
D	**DN-LTD**	100	$5.75
E	**DN-LTE**	100	$5.75
F	**DN-LTF**	100	$5.75
G	**DN-LTG**	100	$5.75
H	**DN-LTH**	100	$5.75
I	**DN-LTI**	100	$5.75
J	**DN-LTJ**	100	$5.75
K	**DN-LTK**	100	$5.75
L	**DN-LTL**	100	$5.75
M	**DN-LTM**	100	$5.75
N	**DN-LTN**	100	$5.75
–	**–**	–	–
P	**DN-LTP**	100	$5.75
Q	**DN-LTQ**	100	$5.75
R	**DN-LTR**	100	$5.75
S	**DN-LTS**	100	$5.75
T	**DN-LTT**	100	$5.75
U	**DN-LTU**	100	$5.75
V	**DN-LTV**	100	$5.75
W	**DN-LTW**	100	$5.75
X	**DN-LTX**	100	$5.75
Y	**DN-LTY**	100	$5.75
Z	**DN-LTZ**	100	$5.75
⏚	**DN-LTGND**	100	$5.75
+	**DN-LTPOS**	100	$5.75
-	**DN-LTNEG**	100	$5.75
~	**DN-LTAC**	100	$5.75
=	**DN-LTDC**	100	$5.75

DINnectors™ Accessories

Terminal Marking Accessories



DN-EMLBL1

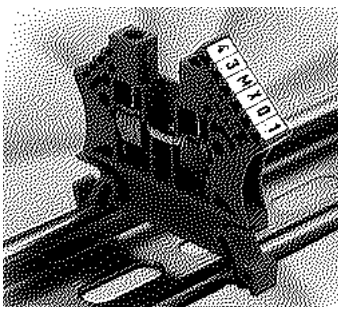


DN-EMLBL2



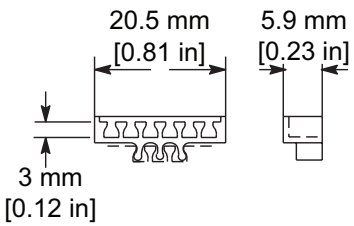
DN-EMLBL3

Part #	Description	For Use With	Pcs/Pkg	Price Each
DN-EMLBL1	Blank labels	DN-EMPEG1 pin protectors for DN-xEMXxx plug-in terminal blocks	100	$5.25
DN-EMLBL2	Labels printed 1 – 12		100	$7.25
DN-EMLBL3	Labels printed 13 – 24		100	$7.25



DN-MTA marking tag adapter

DN-MTA dimensions



Part#	Description	Pcs/Pkg	Price Each
DN-MTA	Marking tag adapter holds up to six DN-LT tags	50	$8.00

Note: DN-MTA adapter does not fit DN-T12-A terminal blocks.

Marking Pen – for terminal and wire marking tags

- Permanent
- Smudge-proof
- Waterproof
- Weatherproof
- Lightfast (won't fade)
- Dries in seconds (excellent for left-handed users)
- Dry-safe (pen can be left uncapped for days without drying out)
- Low odor ink

Part#	Description	Pcs/Pkg	Price Each
DN-MP	Indelible black ink marking pen	1	$3.75



Marking pen

Wire Marking Accessories



DN-WMTAG1 wire tags & DN-WM-x wire tag holders

Part #	Description	For Use With	Pcs/Pkg	Price Each
DN-WMTAG1	Wire tag – blank	all DN-WM-x wire tag holders	525	$34.50
DN-WM-1	Wire tag holder, clear, 12mm length, 0.051–0.118 in diameter; for 22–16 AWG wire	DN-WMTAG1	200	$7.00
DN-WM-2	Wire tag holder, clear, 12mm length, 0.098–0.196 in diameter; for 16-11 AWG wire		200	$7.00
DN-WM-3	Wire tag holder, clear, 12mm length, 0.157–0.393 in diameter; for 13–5 AWG wire		100	$4.75
DN-WM-4	Wire tag holder, clear, 12mm length, 0.314–0.629 in diameter; for 5AWG wire		100	$4.25

ECX Series 22mm Plastic Indicator Lights

Plastic incandescent indicator lights



ECX1051-24

These indicators have a key to prevent rotation when mounted.

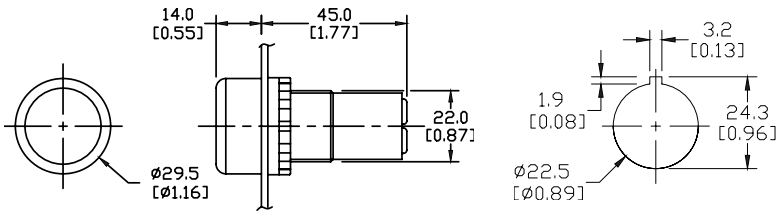
12 models available:

- Available in six colors
- 24V and 120V models
- Incandescent bulbs included
- Accepts LED replacement lamps
- Monoblock design for easy mounting
- Side wire entry with back screw terminals for easy wiring and maintenance
- IP20 rated before installation
- IP65 rated after installation

Note: When using LED replacement lamps with these indicators, it may be necessary to remove the frosted diffuser for enhanced illumination.

Part Number	Lamp Color	Price	Description	Replacement Incandescent Bulb	Replacement Lamp
ECX1051-24	Red	$5.50	22mm monoblock incandescent indicator light, **24VDC/VAC**	**ECX1902-5** 5/pk 80mA	**ECX1911-2** 2/pk 26mA
ECX1051-120	Red	$6.50	22mm monoblock incandescent indicator light, **120VDC/VAC**	**ECX1904-5** 5/pk 20mA	**ECX1921-2** 2/pk 5mA
ECX1052-24	Green	$5.50	22mm monoblock incandescent indicator light, **24VDC/VAC**	**ECX1902-5** 5/pk 80mA	**ECX1912-2** 2/pk 26mA
ECX1052-120	Green	$6.50	22mm monoblock incandescent indicator light, **120VDC/VAC**	**ECX1904-5** 5/pk 20mA	**ECX1922-2** 2/pk 5mA
ECX1053-24	Yellow	$5.50	22mm monoblock incandescent indicator light, **24VDC/VAC**	**ECX1902-5** 5/pk 80mA	**ECX1913-2** 2/pk 26mA
ECX1053-120	Yellow	$6.50	22mm monoblock incandescent indicator light, **120VDC/VAC**	**ECX1904-5** 5/pk 20mA	**ECX1923-2** 2/pk 5mA
ECX1054-24	Blue	$5.50	22mm monoblock incandescent indicator light, **24VDC/VAC**	**ECX1902-5** 5/pk 80mA	**ECX1914-2** 2/pk 26mA
ECX1054-120	Blue	$6.50	22mm monoblock incandescent indicator light, **120VDC/VAC**	**ECX1904-5** 5/pk 20mA	**ECX1924-2** 2/pk 5mA
ECX1055-24	Clear	$5.50	22mm monoblock incandescent indicator light, **24VDC/VAC**	**ECX1902-5** 5/pk 80mA	**ECX1915-2** 2/pk 26mA
ECX1055-120	Clear	$6.50	22mm monoblock incandescent indicator light, **120VDC/VAC**	**ECX1904-5** 5/pk 20mA	**ECX1925-2** 2/pk 5mA
ECX1056-24	White	$5.50	22mm monoblock incandescent indicator light, **24VDC/VAC**	**ECX1902-5** 5/pk 80mA	**ECX1915-2** 2/pk 26mA
ECX1056-120	White	$6.50	22mm monoblock incandescent indicator light, **120VDC/VAC**	**ECX1904-5** 5/pk 20mA	**ECX1925-2** 2/pk 5mA

Dimensions: mm [inches]



Plastic LED indicator lights

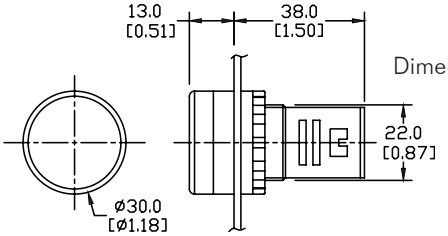


10 models available:

- Available in five colors
- 24V and 120V models
- Non-replaceable LEDs
- Side wire entry with back screw terminals for easy wiring and maintenance
- IP20 rated before installation
- IP65 rated after installation
- 12mA @ 120V, 65mA @ 24V

Part Number	Lamp Color	Price	Description
ECX2051-24L	Red	$5.00	22mm non-metal monoblock LED indicator light, **24VDC/VAC**
ECX2051-127L	Red	$6.00	22mm non-metal monoblock LED indicator light, **120VDC/VAC**
ECX2052-24L	Green	$5.00	22mm non-metal monoblock LED indicator light, **24VDC/VAC**
ECX2052-127L	Green	$6.00	22mm non-metal monoblock LED indicator light, **120VDC/VAC**
ECX2053-24L	Yellow	$5.00	22mm non-metal monoblock LED indicator light, **24VDC/VAC**
ECX2053-127L	Yellow	$6.00	22mm non-metal monoblock LED indicator light, **120VDC/VAC**
ECX2054-24L	Blue	$8.50	22mm non-metal monoblock LED indicator light, **24VDC/VAC**
ECX2054-127L	Blue	$8.50	22mm non-metal monoblock LED indicator light, **120VDC/VAC**
ECX2055-24L	Clear	$8.50	22mm non-metal monoblock LED indicator light, **24VDC/VAC**
ECX2055-127L	Clear	$8.50	22mm non-metal monoblock LED indicator light, **120VDC/VAC**

Dimensions: mm [inches]



For accessories, see 22mm Plastic Pilot Device Accessories in this section.

22mm Plastic Pilot Device Accessories

Replacement incandescent bulbs



ECX1902-5

Replacement Incandescent Bulbs				
Part Number	**Quantity**	**Price**	**Rating**	**Description**
ECX1900-5	Pkg of 5 bulbs	$8.50	6V@ 200mA , 1.2 watts	6V replacement bulb for 22mm switches and indicators. Miniature bayonet base T31/4
ECX1902-5	Pkg of 5 bulbs	$8.50	24V@ 80mA 2 watts	24V replacement bulb for 22mm switches and indicators. Miniature bayonet base T31/4
ECX1904-5	Pkg of 5 bulbs	$17.50	130V@20mA 2.6 watts	120V replacement bulb for 22mm switches and indicators. Miniature bayonet base T31/4

Note: Bulb removal tool available. Order part number HT8LAMPTOOL.

Replacement LED lamps



ECX1915-2

Replacement LED Lamps					
Part Number	**Color**	**Quantity**	**Price**	**Rating**	**Description**
ECX1911-2	Red	Pkg of 2 LED lamps	$15.50	24V@26mA 0.6 watts	LED replacement lamp for miniature bayonet bases Works with 22mm switches and indicators, but illumination will not be as even when used with the ECX 22mm indicators Note: **Will not replace** sealed Cutler-Hammer monoblock LED indicators.
ECX1912-2	Green		$19.50		
ECX1913-2	Yellow		$15.50		
ECX1914-2	Blue		$21.00		
ECX1915-2	White		$25.00		
ECX1921-2	Red		$15.50	120V@5mA 0.6 watts	
ECX1922-2	Green		$19.50		
ECX1923-2	Yellow		$15.50		
ECX1924-2	Blue		$21.00		
ECX1925-2	White		$25.00		

Note: LED modules have very low current draw and should not be used with triac output devices like PLC triac output modules. It is recommended that dry contact outputs be used to switch 120 volt AC LED modules.

Hole plug



ECX1490

Hole Plug			
Part Number	**Color**	**Price**	**Description**
ECX1490	Black	$2.75	Plastic hole plug for 22.5 mm openings in panels and enclosures; supplied with O-ring and mounting screw. Two plugs per package.

Protective covers for pushbuttons



ECX1703-5

Protective Covers for Pushbuttons				
Part Number	**Color**	**Quantity**	**Price**	**Description**
ECX1700-5	Black	Pkg of 5 protective caps	$6.50	Silicone protective covers for use with 22mm standard-size flush pushbuttons. **Will not work** with Cutler-Hammer pushbuttons, 22mm plastic illuminated or extended pushbuttons, or 22mm plastic pushbuttons with 40mm actuator face.
ECX1701-5	Red		$6.50	
ECX1702-5	Green		$6.50	
ECX1703-5	Yellow		$6.50	
ECX1704-5	Blue		$6.50	
ECX1705-5	Clear		$6.50	
ECX1706-5	Clear		$11.50	Clear silicone protective covers for use with 22mm illuminated and **extended pushbuttons only. Will not work** with Cutler-Hammer pushbuttons or 22mm mushroom pushbuttons.

Knockout Punches



109225

Ruko's knockout punch hole-cutting tool includes punch, die and draw bolt (without ball bearing). Use for sheet steel, stainless-steel sheets, non-ferrous and light metals, and plastics up to 0.16" (8 ga.) thick. Replacement bolts are offered in three of the most popular sizes. See the Tools section of the catalog for details.

Note: Part number 109225 is recommended when punching holes for 22mm pilot devices.

Replacement keys



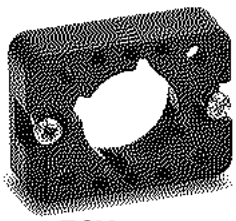
ECX1067-2

Replacement Keys			
Part Number	**Quantity**	**Price**	**Description**
ECX1067-2	Pkg of 2	$5.75	Replacement key for GCX series key-actuated selector switches, pack of 2 sets (2 keys each). NOTE: Will not work with Cutler-Hammer 22mm switches.

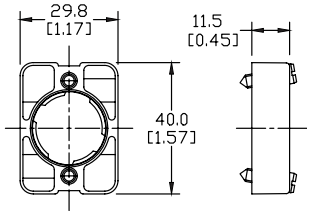
Note: All key-actuated 22mm plastic selector switches are keyed alike.

22mm Plastic Pilot Device Accessories

Replacement 22mm support base



ECX3029-2



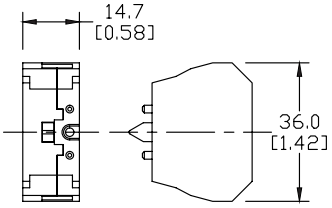
Dimensions: mm [inches]

Replacement 22mm Support Base			
Part Number	**Quantity**	**Price**	**Description**
ECX3029-2	Pkg of 1	$1.75	22mm plastic support base Note: This item is supplied as a replacement part and is not required with any switch assembly. **Will not work** with Cutler-Hammer 22mm switches sold by AUTOMATIONDIRECT

Replacement contact blocks



ECX1030-2



Dimensions: mm [inches]

Replacement Contact Blocks				
Part Number	**Quantity**	**Price**	**Contacts**	**Description**
ECX1030-2	Pkg of 2	$6.25	Red, normally-closed (N.C.)	Replacement contact block for 22mm pushbuttons and selector switches. Tightening Torque, terminal screw: 0.8 N·m max mounting screw: 0.5 N·m max Note: **Will not work** with Cutler-Hammer 22mm switches sold by AUTOMATIONDIRECT
ECX1030-5	Pkg of 5	$15.00		
ECX1040-2	Pkg of 2	$6.25	Green, normally-open (N.O.)	
ECX1040-5	Pkg of 5	$15.00		
ECX1042-2	Pkg of 2	$6.25	Brown, normally-open (N.O.), push-push	Use on lighted Push-push button only

Note: See electricalspecificatons on GCX Series 22mm Plastic Pilot Devices Specifications page at beginning of this section.

EMERGENCY STOP legend plate



ECX1651

EMERGENCY STOP Legend Plate			
Part Number	**Quantity**	**Price**	**Description**
ECX1651	pkg. of 1	$2.75	Oversize yellow circular EMERGENCY STOP legend plate for 22mm E-stop type mushroom pushbuttons, 60mm outside diameter.

Two-position short lever operator



GR1172PR-5

Short Lever Replacement Operator				
Part Number	**Lamp Color**	**Price**	**2-Position**	**Use with**
GR1172PR-5	Red	$14.50	22mm 2-position selector switch illuminated short lever replacement operator, 5/pk	Part numbers starting with GCX124, GCX125 GCX324, GCX325
GR1172PV-5	Green	$14.50	22mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
GR1172PG-5	Yellow	$14.50	22mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
GR1172PB-5	Blue	$14.50	22mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
GR1172PN-5	Clear	$14.50	22mm 2-position selector switch illuminated short lever replacement operator, 5/pk	

22mm Plastic Pilot Device Accessories

Three-position short lever operator



GR1288PR-5

Short Lever Replacement Operator				
Part Number	**Lamp Color**	**Price**	**3-Position**	**Use with**
GR1288PR-5	Red	$14.50	22mm 3-position selector switch illuminated short lever replacement operator, 5/pk	Part numbers starting with GCX126, GCX128 GCX326, GVX328
GR1288PV-5	Green	$14.50	22mm 3-position selector switch illuminated short lever replacement operator, 5/pk	
GR1288PG-5	Yellow	$14.50	22mm 3-position selector switch illuminated short lever replacement operator, 5/pk	
GR1288PB-5	Blue	$14.50	22mm 3-position selector switch illuminated short lever replacement operator, 5/pk	
GR1288PN-5	Clear	$14.50	22mm 3-position selector switch illuminated short lever replacement operator, 5/pk	

Mushroom switch replacement operator



PL1298P-5

Mushroom Switch Replacement Operator				
Part Number	**Lamp Color**	**Price**	**Description**	**Use with**
PL1171PR-5	Red	$6.25	22mm, illuminated **momentary** Mushroom switch replacement operator, red, 5/pk	Part numbers starting with GCX1221, GCX3221 mushroom-style illuminated pushbuttons
PL1298P-5	Red	$6.25	22mm illuminated **twist-to-release** mushroom switch replacement operator, red, 5/pk	Part numbers starting with GCX1226, GCX3226 mushroom-style illuminated pushbuttons

Flush pushbutton replacement operator



GR1168PR-5

Flush Pushbutton Replacement Operator				
Part Number	**Lamp Color**	**Price**	**Description**	**Use with**
GR1168PR-5	Red	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	Part numbers starting with GCX119, GCX120 GCX319, GCX320
GR1168PV-5	Green	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PG-5	Yellow	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PB-5	Blue	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PN-5	Clear	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PW-5	White	$8.00	22mm illuminated flush pushbutton replacement operator, 5/pk	

Extended pushbutton replacement operator



PL1308PR-5

Extended Pushbutton Replacement Operator				
Part Number	**Lamp Color**	**Price**	**Description**	**Use with**
PL1308PR-5	Red	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	Part numbers starting with GCX121, GCX321
PL1308PV-5	Green	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PG-5	Yellow	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PB-5	Blue	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PN-5	Clear	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PW-5	White	$6.00	22mm illuminated extended pushbutton, replacement operator, 5/pk	

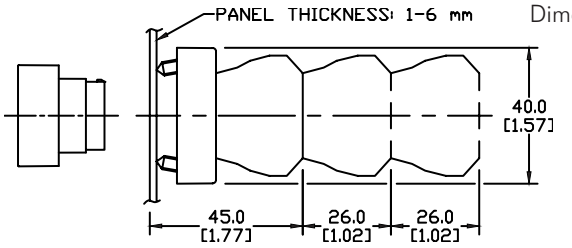
Note: All dimensions are in inches [millimeters].

GCX Series 22mm Plastic Pilot Devices Specifications

Assembly information

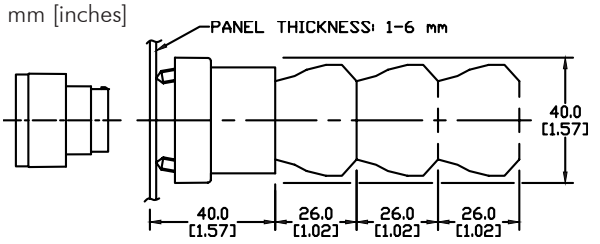
These pushbuttons and indicator lights are supplied with the appropriate contact blocks, unless otherwise indicated. Use these drawings as a guide to make sure there is adequate clearance behind the panel.

Pushbuttons and selector switches



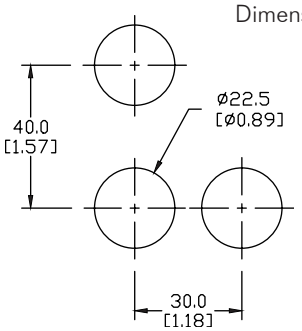
Dimensions: mm [inches]

Illuminated pushbuttons and selector switches/indicator lights

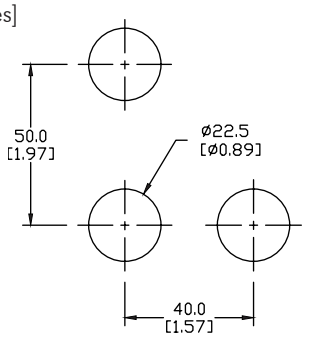


Mounting

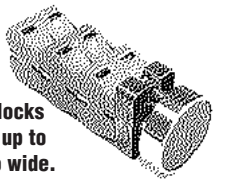
Dimensions: mm [inches]



This layout is suitable if all switches are 230V or less and the same polarity.

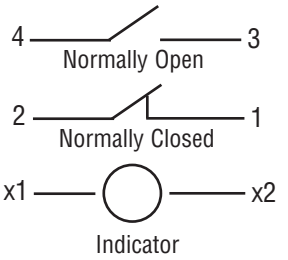


This layout is suitable if all switches are 400V or less and different polarity.



NOTE: Contact blocks can be arranged up to three deep by two wide.

Typical Wiring



Specifications

These specifications apply to all the GCX and ECX 22mm plastic pushbuttons and switches.

Physical Specifications	
Standards Reference	CEI EN 60947-5-1, CSA C22-2 n.14
Approvals	UL File E189258, IMQ (where specified)
Enclosure Material	Fiberglass reinforced thermoplastic
Contacts Material	Silver
Protection Degree	IP 40 for GCX3151-24, GCX3151-120, GCX3153-24 and GCX3153-120. IP 65 for all others.(See Appendix of this catalog for explanation of IP ratings according to IEC 144 CEI 70-1.)
Electric Shock Protection	IEC 536, Class II
Temperature Ratings	Storage: -40° -to 80°C (-40° to 176° F) Operating: -25° to +70°C (-13° to 158° F)
Working Positions	All working positions are allowed
Mechanical Life	Pushbuttons, selector switches, joy stick switches: 1,000,000 operations Emergency mushrooms and push-push pushbuttons: 300,000 operations
Positive Opening Operation	(according to IEC 947-5-1) All functions incorporating an NC contact are positive opening operation

Electrical Specifications	
Rated Thermal Current (contact block)	A300, Q300 (Refer to E22 Series mounting/contact rating section for details)
Rated Insulation Voltage	Ui 660V according to CEI EN 60947-5-1, 300V according to CSA C22-2 n.14 and UL 508
Dielectric Strength	3kV (1 second)
Insulation Resistance	2MΩ min. (500VDC)
Initial Contact Resistance	≤25mΩ
Short-Circuit Protection*	Cartridge fuses gl 10 A-500V 10, 3x38I1 100 KA
Terminal Markings	According to CENELEC EN 50013
Connections	Single screw with non-loosening plate clamp,14AWG max., Tighten to 0.8Nm max
Contacts Operation	Self-cleaning types EN01 (N.C.) EN 10 (N.O.) slow action, positive opening
Operation Frequency	3600 operations per hour max.
Utilization Category	AC15 (Control of AC electromagnetic loads) 24 volts AC at 10 amps 130 volts AC at 6.5 amps DC13 (Control of DC electromagnetic loads) 24 volts DC at 1.5 amps 110 volts DC at 0.5 amps

***Note: Recommended, not supplied**

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Edison Fuses – Small Dimension Time-Delay MDL



Features

- Compact dimensions 1/4" x 1-1/4", (6.3mm x 32mm)
- Glass tube construction with nickel-plated brass end caps
- Time-delay
- RoHS Compliant

Applications

Supplemental protection for electronic applications

MDL Specifications

Voltage Rating: MDL - See table below

Ampere Rating: 0.0625 - 20 Amps

Interrupting Rating: See table below

Environmental Data

Shock: 0.0625A
MIL-STD-202, Method 213, Test Condition I;

1A thru 20A: MIL-STD-202, Method 207, (HI shock)

Vibration: 0.0625A: MIL-STD-202, Method 201;
0.25A thru 20A: MIL-STD-202, Method 204, Test condition C (except 5g, 500 HZ)

Agency Approvals

- UL Listed product meets standard 248-14
- UL Listed Card: MDL 0.0625-8A (Guide JDYX, File E19180)
- UL Recognized Card: MDL 9-20A (Guide JDYX2, File E19180)
- CSA Certification File 053787: MDA 0.25-15A (Class No. 1422-01)
- RoHS

MDL Small Dimension Time-Delay Fuses

Part Number	AMP Rating	Rated Voltage	AC Interrupting Rating*			Melting I^2t**	Voltage Drop mv***	Pcs/ Pkg	Package Weight (lb.)	Price
		AC Max	250V	125V	32V					
MDL-0625	0.0625	250V	35A	10000A	—	0.0046	2.79	5	0.1	$15.50
MDL-25	0.25					0.447	0.965			$8.50
MDL-5	0.5					1.656	1.27			$6.75
MDL1	1					11.498	0.995			$7.25
MDL1-5	1.5		100A			22.7	0.721			$6.25
MDL2	2					62.3	0.644			$6.25
MDL2-5	2.5					63.1	0.410			$6.50
MDL3	3					67.5	0.345			$6.25
MDL4	4		200A			19.3	0.187			$6.25
MDL5	5					32.0	0.160			$6.25
MDL6	6					37.4	0.155			$6.25
MDL6-25	6.25					38.7	0.152			$6.50
MDL7	7					42.7	0.140			$6.50
MDL8	8					47.8	0.119			$6.25
MDL10	10	32V	—	—	1000A	64.4	0.114			$7.25
MDL15	15					354.0	0.130			$8.25
MDL20	20					2914.0	0.530			$8.50

*Note: Interrupting ratings were measured at 70% - 80% power factor on AC, and at a time constant described in UL 198L.
** Typical Melting I^2t (A^2Sec) - measured at listed interrupting rating and rated voltage (at 70% to 80% power factor on AC)
*** Typical Voltage Drop - measured at 25°C ± 3°C ambient temperature at rated current.

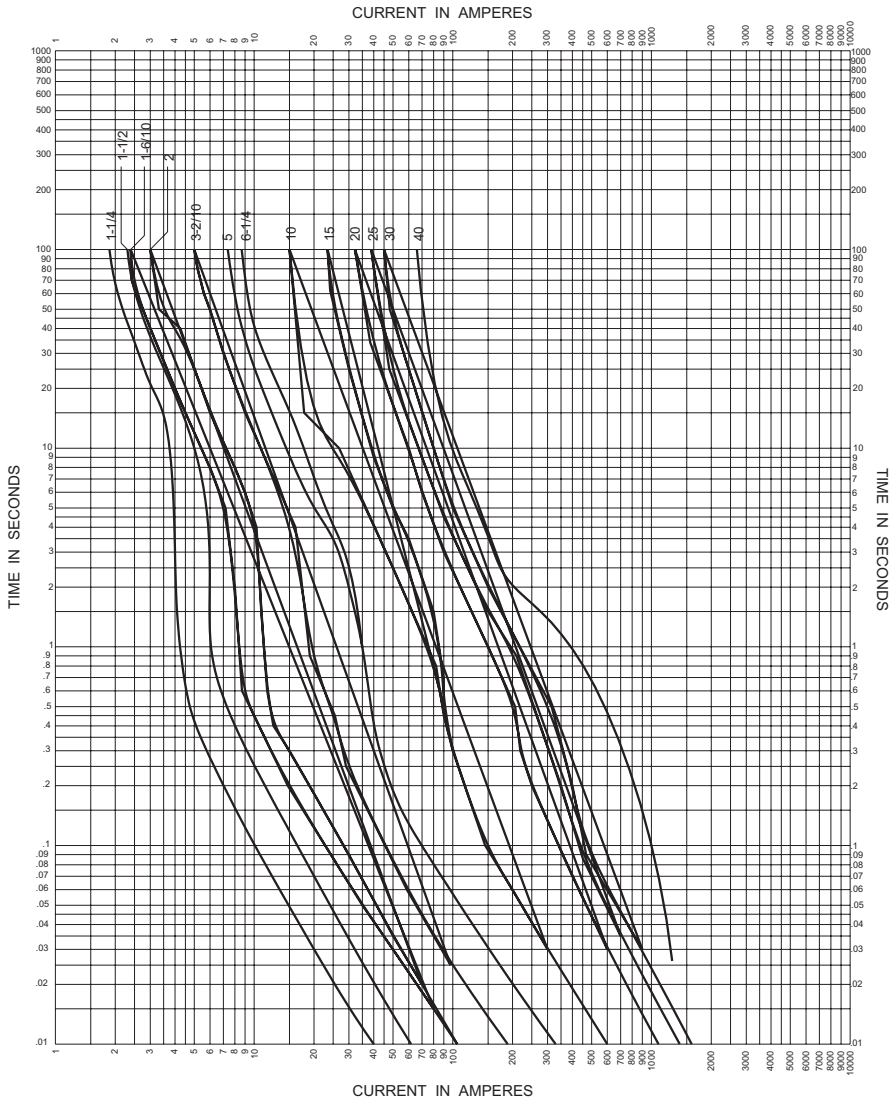
For mounting and wiring MDL fuses, see our DN-F6 Series fuse blocks in the Terminal Blocks and Wiring Solutions section.

CROSS REFERENCE

OLD EDISON	BUSSMANN	MERSEN GOULD	LITTELFUSE
BDL	MDL	GDL	313

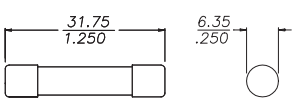
Edison Fuses – Small Dimension Time-Delay MDL

TIME CURRENT CURVE



Dimensions

(mm/inches)



MDL Electrical Characteristics		
Rated Current	***% of Amp Rating***	***Opening Time***
0.0625 to 20 Amps	100	None
	135	60 minutes maximum
	200	120 seconds maximum
0.0625 to 3 Amps	200	5 seconds minimum
4 to 8 Amps	200	12 seconds minimum

Company Information
Terminal Blocks
Power Distribution Blocks
Wiring Accessories
ZIPLink Connection System
Multi-wire Connectors
Sensor Cables and Connectors
M12 Junction Blocks
Panel Interface Connectors
Wiring Duct
Cable Ties
Wire
Flexible Cord
Multi-conductor Flex Cable
Data Cables
Wire Management Products
Power Supplies
DC Converters
Transformers and Filters
Circuit Protection
Tools
Test Equipment
Enclosures
Enclosure Climate Control
Safety: Electrical Components
Safety: Protective Wear
Terms and Conditions

Edison Fuses – Selection Guide

Line Overview

The Edison family of fuses, fuse blocks and fuse holders is divided into two classes:

1. Current Limiting: Class CC, Class J, Class RK, Class T
2. General Purpose: Class M Midget and Small Dimension

The fuse selection guide below is a general summary of the specifications included for each fuse type. This selection guide does not include the many variables that can exist for specific situations such as local codes, unusual temperature, or other operating conditions. When selecting fuses, be sure to comply with any applicable PUBLIC SAFETY standards that apply to Overcurrent Protection Devices (OPD).

Edison Fuses Selection Guide and General Specifications

Description	Current Limiting										
	Class J		Class RK5		Class RK1		Class T		Class CC		
Fuse Type	Fast-Acting	Time-Delay	Time-Delay				Extremely Fast-Acting		Fast-Acting	Time-Delay	
Part Number	JHL	JDL	ECNR	ECSR	LENRK	LESRK	TJN	TJS	HCLR	HCTR	EDCC
Voltage Rating	600 VAC 450 VDC	600 VAC 300 VDC*	250 VAC 125 VDC* (1–200A) 250 VDC* (201–600A)	600 VAC 300 VDC*	250 VAC 125 VDC* (10–60A) 250 VDC* (70–600A)	600 VAC 300 VDC*	300 VAC 160 VDC (15–600A)	600 VAC	600 VAC 300 VDC (15–20A)	600 VAC	600 VAC 300 VDC (0.5–2.25A) (20–30A)
Amp Rating	1 to 600		1 to 600	3 to 600	10 to 600	5 to 600	1 to 600		0.5 to 30	0.25 to 30	0.5 to 30
Interrupting Rating	200,000 RMS Symmetrical Amps										
Current Limiting	Class J		Class RK5		Class RK1		Class T		Class CC		
Agency Approvals	UL Listed Class J Guide JDDZ File E162363 CSA Certified HRCI-J per C22.2, No. 248.8 File 700489 RoHS compliant	UL Listed Class J Guide JDDZ File E162363 CSA Certified HRCI-J per C22.2, No. 248.8 File 700489	UL Listed, Class RK, Guide JDDZ, File E162363 CSA Certified HRCI-R per C22.2, No. 248.12, File 700489 (LENRK CSA File 053787)				UL Listed, Class T, Guide JDDZ, File E162363 CSA Certified HRCI-T per C22.2, No. 248.12, File 53787, Class 1422-02 & 1422-82		UL Listed to 248.4, Class CC, Guide JDDZ, File E162363, CSA certified HRCI-MISC per C22.2 No. 248.4, File 700489		
Dimensions	See product specification pages.								ferrule (in): 13/32, length (in): 1-1/2		

*** Self-certified DC ratings**

Edison Fuses Selection Guide and General Specifications

Description	General Purpose – Midget				General Purpose – Small Dimension Electronic							
Fuse Type	Fast-Acting		Time-Delay		Fast-Acting Ceramic	Fast-Acting Glass		Medium Time-Delay Glass	Time-Delay Ceramic	Time-Delay Glass	Fast-Acting Glass	Time-Delay Glass
Part Number	MCL	MOL	MEQ	MEN	ABC	AGC	GMA	GMC	MDA	MDL	S500	S506
Voltage Rating	600 VAC	250 VAC	500 VAC	250 VAC	250 VAC (0.5 to 30A) 125VDC: (0.5 to 30A)	250VAC: (0.1 to 10A) 32VAC: (15 to 30A)	250VAC (0.063 - 3A) 125VAC (4 - 15A)	250VAC (0.5 - 3A) 125VAC (4 - 10A)	250VAC 125VDC (20A)	250VAC: (0.0625 to 8A) 32VAC: (10 to 20A)	250VAC	250VAC
Amp Rating	0.5 to 50	0.5 to 30	0.25 to 30	0.5 to 30	0.5 to 30	0.10 to 30	0.063 to 15	0.5 to 10	0.5 to 20	0.0625 to 20	0.032 to 10	0.25 to 6.3
Interrupting Rating	100,000 RMS Amps	10,000 RMS Amps			See specifications table on product pages							
Current Limiting	N/A				N/A							
Agency Approvals	UL Listed to 248.14, File E162443 CSA Cert. C22.2 Part 59.2, LR 700489				UL Listed standard 248-14 UL Listed Guide and File nos. (ABC 0.25-20 A): (AGC 1/100-10 A) JDYX and E19180 UL Recognition Guide and File nos. (ABC 20-30A):(AGC 11-30) JDYX2 and E19180 CSA Certification Record No: 053787 C 000 and Class No: 1422 01 and 1422 30	Designed to UL/CSA 248-14 UL Listed, Guide JDYX, File E19180 63mA-6A UL Recognition, Guide JDYX2, File E19180, 7A-15A CSA Certified, File 053787_C_000, 63mA-6A Class 1422-01		UL Listed standard 248-14 UL Listed Card: MDA 2/10-20A , MDL 1/16-8A (Guide JDYX, File E19180 UL Recognized Card: MDA 25-30A MDL 9-30A (Guide JDYX2, File E19180) CSA Certification Card: MDA 2/10-15A (Class No. 1422-01)		UL Recognized Guide JDYX2, File E19180 Semko Approval VDE Approval BSI Approval IMQ Approval RoHS compliant	
					RoHS							
Dimensions	ferrule (in): 13/32 length (in): 1-1/2				1/4" x 1-1/4", (6.3mm x 32mm)	0.197" x 0.788" (5mm x 20mm)			1/4" x 1-1/4", (6.3mm x 32mm)		0.197" x 0.788" (5mm x 20mm)	

DINnectors™ Fuse Terminal Blocks

Fuse blocks are available for 1/4", 5mm, Class CC and midget size fuses, either with or without a blown fuse LED. LED fuse blocks are polarity sensitive and are 35mm DIN-rail mountable. The hinge side is positive.

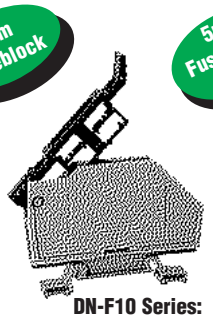




DN-F6 Series: EURO S 10H/35



DN-F6L Series: EURO S 10H/35



DN-F10 Series: EURO S 4LH/35



DN-F10L Series: EURO S 4LH/35

Ordering Information

	Part Number	Pcs/ Pkg	Price	Part Number	Pcs/ Pkg	Price	Part Number	Pcs/ Pkg	Price	Part Number	Pcs/ Pkg	Price
Gray Terminal Block	DN-F6	25	$93.00	–			DN-F10	50	$149.00	–		
	DN-F6MN	7	$20.00				DN-F10MN	10	$22.75			
12-24 VAC/DC*	–			DN-F6L24	10	$54.00	–			DN-F10L24	10	$53.00
110 VAC/DC*				DN-F6L110	10	$54.00				DN-F10L110	10	$53.00
220 VAC/DC*				DN-F6L220	10	$54.00				DN-F10L220	10	$53.00

Technical Specifications

Stripping Length	12mm [0.47 in]			12mm [0.47 in]			10mm [0.39 in]			10mm [0.39 in]		
Tightening Torque	2.0 N·m [17.7 lb·in]			2.0 N·m [17.7 lb·in]			0.6 N·m [5.3 lb·in]			0.6 N·m [5.3 lb·in]		
Density	100/m [30 pcs/ft]			100/m [30 pcs/ft]			100/m [30 pcs/ft]			100/m [30 pcs/ft]		
UL Approval**	600V	30A	20-6 AWG	600V	30A	20-6 AWG	300V	15A	24-10 AWG	300V	15A	24-10 AWG
CSA Approval	600V	30A	18-6 AWG	600V	30A	18-6 AWG	300V	8A	18-12 AWG	300V	8A	18-12 AWG
VDE Approval	750V	8A	–	750V	8A	–	500V	8A	4mm²	500V	8A	4mm²
Fuse Size (not supplied)	1 1/4" X 1/4"			1 1/4" X 1/4"			5x20mm-5x25mm			5x20mm-5x25mm		
Indicator Type	Non-indicating			LED blown fuse indicator			Non-indicating			LED blown fuse indicator		
Operating Temperature	Ambient air temperature: -20°C to 85°C [-4°F to 185°F] / Relative humidity: 50% max at 40°C [104°F]; 90% max at 20°C [68°F]											
SCCR Rating	10kA per Table SB4.1, 2009, UL 508A, Maximum short circuit current rating for unmarked components											
CE Conformity	CE (EN 60947-1 / 60947-7-3)											
Agency File #	UL E179129 / LR84816											

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Accessories

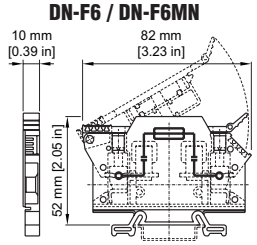
End Covers		Included			Included			Included			Included		
35mm DIN Rail	7.5 mm high	DN-R35S1	10	$28.00	DN-R35S1	10	$28.00	DN-R35S1	10	$28.00	DN-R35S1	10	$28.00
		DN-R35S1-2	2	$9.00	DN-R35S1-2	2	$9.00	DN-R35S1-2	2	$9.00	DN-R35S1-2	2	$9.00
	15mm high	DN-R35HS1	10	$49.50	DN-R35HS1	10	$49.50	DN-R35HS1	10	$49.50	DN-R35HS1	10	$49.50
		DN-R35HS1-2	2	$12.00	DN-R35HS1-2	2	$12.00	DN-R35HS1-2	2	$12.00	DN-R35HS1-2	2	$12.00
End Brackets		DN-EB35	50	$39.50	DN-EB35	50	$39.50	DN-EB35	50	$39.50	DN-EB35	50	$39.50
		DN-EB35MN	20	$18.00	DN-EB35MN	20	$18.00	DN-EB35MN	20	$18.00	DN-EB35MN	20	$18.00
		DN-EB35-A	50	$28.50	DN-EB35-A	50	$28.50	DN-EB35-A	50	$28.50	DN-EB35-A	50	$28.50
		DN-EB35-A-10	10	$7.50	DN-EB35-A-10	10	$7.50	DN-EB35-A-10	10	$7.50	DN-EB35-A-10	10	$7.50
		DN-QEB35	50	$25.50	DN-QEB35	50	$25.50	DN-QEB35	50	$25.50	DN-QEB35	50	$25.50
		DN-QEB35-10	10	$7.50	DN-QEB35-10	10	$7.50	DN-QEB35-10	10	$7.50	DN-QEB35-10	10	$7.50
Angled Support Bracket		DN-ASB1	50	$49.50	DN-ASB1	50	$49.50	DN-ASB1	50	$49.50	DN-ASB1	50	$49.50
Marking Tags		DN-L*** or DN-LT****	500/ 100	various	DN-L*** or DN-LT****	500/ 100	various	DN-L*** or DN-LT****	500/ 100	various	DN-L*** or DN-LT****	500/ 100	various

**Working voltage* ***For copper wire only* ****On lever arm* *****On terminal body*

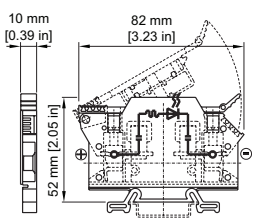
Note: DN-F6 series fuse holders will accommodate the following AutomationDirect fuses: ABC, AGC, MDA and MDL Series.
DN-F10 series fuse holders will accommodate the following AutomationDirect fuses: GMA, GMC, S500, and S506 Series.

For more information on accessories, see the DINnectors Accessories section of this chapter.

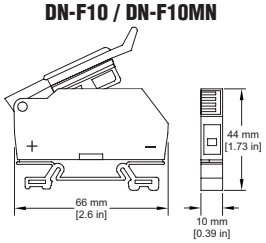
DN-F6 / DN-F6MN



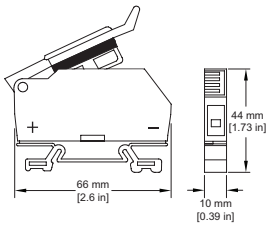
DN-F6L



DN-F10 / DN-F10MN



DN-F10L



Company Information
Terminal Blocks
Power Distribution Blocks
Wiring Accessories
ZIPLink Connection System
Multi-wire Connectors
Sensor Cables and Connectors
M12 Junction Blocks
Panel Interface Connectors
Wiring Duct
Cable Ties
Wire
Flexible Cord
Multi-conductor Flex Cable
Data Cables
Wire Management Products
Power Supplies
DC Converters
Transformers and Filters
Circuit Protection
Tools
Test Equipment
Enclosures
Enclosure Climate Control
Safety: Electrical Components
Safety: Protective Wear
Terms and Conditions

Edison Modular Fuse Holders



Features

- EHCC Series: High SCCR rated, UL Listed CC holder with indicator option for 600VAC/DC
- EHM Series: UL Recognized midget holders
- Minimum 90VAC/DC required for illumination
- Rated for use with 75°C or 90°C wire, fine stranded wire, spade terminals and comb-bus bars. Use any higher temperature rated wire with appropriate derating.
- Complete range of UL Listed and high SCCR rated 1-phase and 3-phase finger-safe comb-bus bars and power feed lugs
- Polyester material is UL 94V0 rated, self extinguishing
- Multi-phase connections available for ganging up to 4 poles*
- Mounts on 35 mm DIN rail
- IP20 rated
- Spade terminals are accepted (Max width-10mm, Min ID of slot 4mm Max ID of slot 5mm)
- Wire ferrules may not be used.

Application

- EHM: Edison MCL, MOL, MEQ, MEN, or midget fuses
- EHCC: Edison HCLR, HCTR, EDCC fuses, or class CC fuses

Agency Approvals/ Standards Class CC

- UL File E300536 Guide IZLT Listed
- CSA File 47235, Class 6225-01
- CE Compliant
- RoHS, Reach

Agency Approvals/ Standards Midget

- UL File E300536 IZLT2 Recognized
- CSA File 47235, Class 6225-30
- IEC 60269-2
- CE Compliant
- RoHS, Reach

Modular Fuse Holder Selection Table

Series Size	Max Voltage & Current	IEC	UL	Phase Configuration	Fuse Holder Without Indication	Box Qty.	Pkg. Wt. (lb.)	Price	Fuse Holder with NEON Indication	Product Weight (lb.)	Box Qty.	Price
EHM Midget Class	UL 600V/30A IEC 690V/32A	•	•	1 pole	EHM1DU	1	0.12	$8.00	EHM1DIU	0.12	1	$10.75
					EHM1DU-12	12	1.42	$75.00	EHM1DIU-12	1.42	12	$101.00
		•	•	2 pole	EHM2DU	1	0.24	$16.50	EHM2DIU	0.24	1	$21.50
					EHM2DU-6	6	1.42	$78.00	EHM2DIU-6	1.42	6	$103.00
		•	•	3 pole	EHM3DU	1	0..36	$25.00	EHM3DIU	0.36	1	$32.50
					EHM3DU-4	4	1.42	$79.00	EHM3DIU-4	1.42	4	$106.00
EHCC Class CC	UL 600V/30A		••	1 pole	EHCC1DU	1	0.12	$9.25	EHCC1DIU	0.12	1	$12.00
					EHCC1DU-12	12	1.42	$88.00	EHCC1DIU-12	1.42	12	$114.00
			••	2 pole	EHCC2DU	1	0.24	$19.00	EHCC2DIU	0.24	1	$24.50
					EHCC2DU-6	6	1.42	$90.00	EHCC2DIU-6	1.42	6	$117.00
			••	3 pole	EHCC3DU	1	0.36	$29.00	EHCC3DIU	0.36	1	$37.00
					EHCC3DU-4	4	1.42	$91.00	EHCC3DIU-4	1.42	4	$119.00

** To add additional poles, see multi-pole connection kit JV-L in accessories. One JV-L kit is sufficient to gang up to 4 poles.*

• UL Recognized, CSA

•• UL Listed, CSA

Edison Fuses – Fuse Blocks

Description

These panel-mount fuse blocks are for use with Class CC Fuses (Edison EDCC, HCTR and HCLR).



Specifications

Terminal type: **Pressure plate with quick connect terminal**

Base: **Thermoplastic**

Clips: **Bright tin-plated bronze**

UL Flammability: **94V-0**

Ratings: **600 VAC, 30 Amps**

Agency Approvals

- **UL listed to 512 , Guide IZLT, File 14853**
- **CSA C22.2 No. 39 Class 6225-01, File LR47235**
- **CE Compliant**

BC Series Fuseblocks						
Part Number	**Amps**	**Poles**	**AWG**	**Pcs/ Pkg**	**Wt. (lbs.)**	**Price**
BC6031PQ	0.1 to 30	1	18 - 8	10	0.1	$62.00
BC6032PQ		2		8	0.16	$77.00
BC6033PQ		3		6	0.22	$72.00

CROSS REFERENCE				
EDISON	**OLD EDISON**	**BUSSMANN**	**GOULD**	**LITTELFUSE**
BC6031PQ	EMR631-77	BC6031PQ	30321R	L60030C-1PQ
BC6032PQ	EMR632-77	BC6032PQ	30322R	L60030C-2PQ
BC6033PQ	EMR633-77	BC6033PQ	30323R	L60030C-3PQ

Description

These panel-mount fuse blocks are for use with any 13/32" x 1-1/2" Class M Fuses (Edison MCL, MEQ, MEN and MOL).



Specifications

Terminal type: **Pressure plate with quick connect terminal**

Base: **Thermoplastic**

Clips: **Bright tin-plated bronze**

UL Flammability: **94V-0**

Ratings: **600 VAC, 30 Amps**

Agency Approvals

- **UL Recognized to 512, Guide IZLT2, File E14853**
- **CSA C22.2, No.39, Class 6225-01, File 47235**

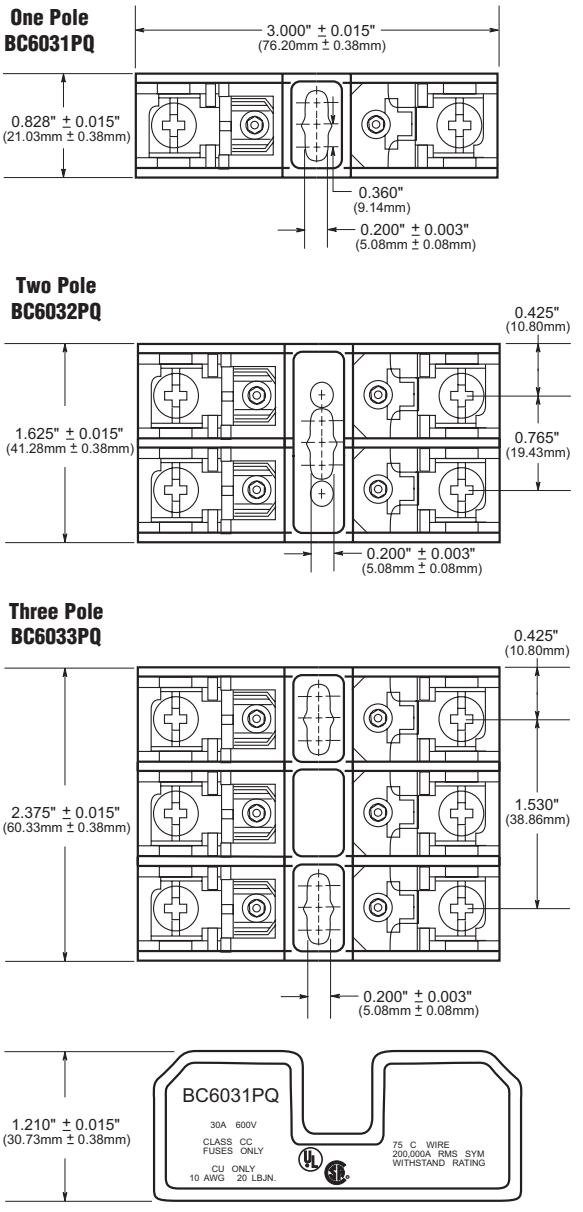
BM Series Fuseblocks						
Part Number	**Amps**	**Poles**	**AWG**	**Pcs/ Pkg**	**Wt. (lbs.)**	**Price**
BM6031PQ	0.1 to 30	1	18 - 8	10	0.1	$45.00
BM6032PQ		2		8	0.16	$64.00
BM6033PQ		3		6	0.22	$59.00

CROSS REFERENCE				
EDISON	**OLD EDISON**	**BUSSMANN**	**GOULD**	**LITTELFUSE**
BM6031PQ	EM631-44	BM6031PQ	30321	L60030M-1PQ
BM6032PQ	EM632-44	BM6032PQ	30322	L60030M-2PQ
BM6033PQ	EM633-44	BM6033PQ	30323	L60030M-3PQ

Edison Fuses – Fuse Block Dimensions

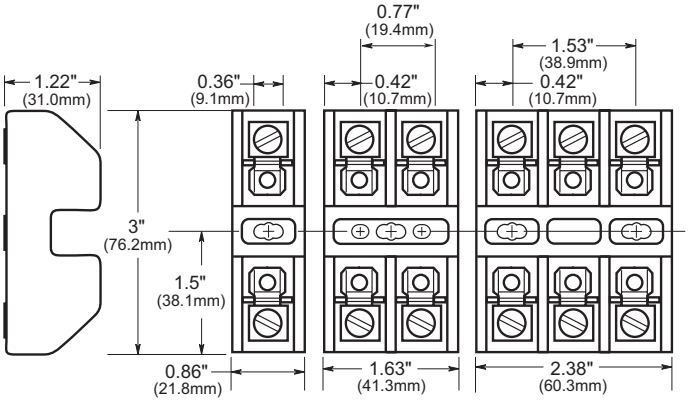
CC Class Dimensions -

inches(mm)



M Class Dimensions

inches(mm)



One Pole BM6031PQ **Two Pole BM6032PQ** **Three Pole BM6033PQ**

Edison Fuses – Accessories



FP2

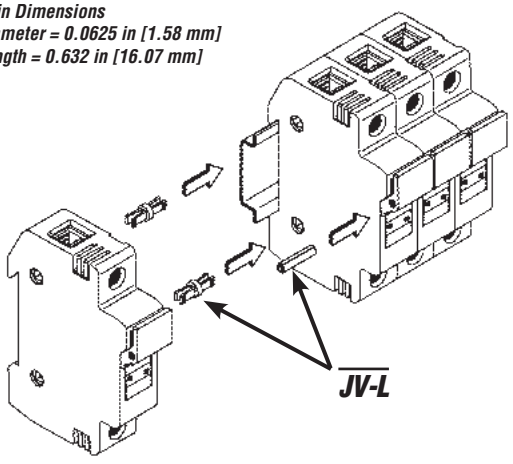


JV-L

Accessories			
Part Number	**Description**	**Pcs/Pkg**	**Price**
FP-2	Fuse puller for fuse dia. 13/32" - 13/16". Fuse type: 0-60A, 250V; 0-30A, 600V	1	$16.00
JV-L * (Not Field Installable)	Multi-pole connection kit to connect new design multiple Class CC and Midget Class fuse holders together. Kit consists of 6 connectors and 3 handle pins to connect up to 4 fuse holders.		$6.25

Note: Will not work with retired design fuse holders shipped before November 1, 2009.
****Roll pin punch or installation tool is required to install handle pins (Tool not sold by Automationdirect.com).***

Handle Pin Dimensions
Diameter = 0.0625 in [1.58 mm]
Length = 0.632 in [16.07 mm]



Edison Cross Reference Guide

CROSS REFERENCE GUIDE By manufacturers type reference or series number. Ampere ratings must be added for ordering purposes.								
FUSE TYPE		**VOLT**	**EDISON**	**BRUSH/ DORMAN**	**BUSSMANN**	**MERSEN / GOULD**	**GEC/CEFCO**	**LITTELFUSE**
UL CLASS CURRENT LIMITING FUSES (CSA CLASS)								
CC (HRCI-CC)	Time-Delay	600	EDCC	–	LP-CC	ATDR	–	CCMR
	Time-Delay	600	HCTR	–	FNQ-R	ATQR	–	KLDR
	Fast-Acting	600	HCLR	HCLR	KTK-R	ATMR	CTK-R	KLKR
RK1	Time-Delay Dual Element	250	LENRK	–	LPN-RK-SP	A2DR	–	LLNRK
		600	LESRK	–	LPS-RK-SP	A6DR	–	LLSRK
RK5	Time-Delay Dual Element	250	ECNR	–	FRN-R	TR	–	FLNR
		600	ECSR	–	FRS-R	TRS	–	FLSR
J	Time-Delay Dual Element	600	JDL	–	LPJ	AJT	–	JTD
	High-Speed AC Drive	600	JHL	–	DFJ	HSJ	–	–
T	Extremely Fast-Acting	300	TJN	–	JJN	A3T	–	JLLN
		600	TJS	–	JJS	A6T	–	JLLS
UL CLASS GENERAL PURPOSE FUSES								
Midget	Fast-Acting	600	MCL	MCL	KTK	ATM	CTK	KLK
		250	MOL	MOL	BAF/BAN	OTM	–	BLF
	Time-Delay	500	MEQ	MEQ	FNQ	ATQ	–	FLQ
		250	MEN	MEN	FNM	TRM	–	FLM
1/4"x1/4" Ceramic	Fast-Acting	250/125	ABC	ABC	ABC	GAB	–	314
1/4"x1/4"Glass		250/32	AGC	AGC	AGC	GGC	–	312
1/4"x1/4" Ceramic	Time-Delay	250	MDA	MDA	MDA	–	–	326
1/4"x1/4"Glass		250/32	MDL	MDL	MDL	GDL	–	313
5x20 mm Glass	Fast-Acting	250/125	GMA	GMA	GMA	GGM	–	235
	Medium Time-Delay	250/125	GMC	GMC	GMC	GSC	–	–
5x20 mm Glass	Fast-Acting	250	S500	BDB	GDB	GSB	–	217
	Time-Delay	250	S506	BDC	GDC	GDG	–	218
Fuse Puller								
Fuse Puller FP-2		–	old - 38072 new - FP-2	–	FP-2	–	–	–

GH15 Series IEC Motor Controls

The GH15 series of IEC contactors and thermal overload relays are manufactured by Europe's leading maritime contactor company. Contactors for ocean-going vessels are built to the most rigid specifications. This same design technology carries over to this line of industrial motor controls.

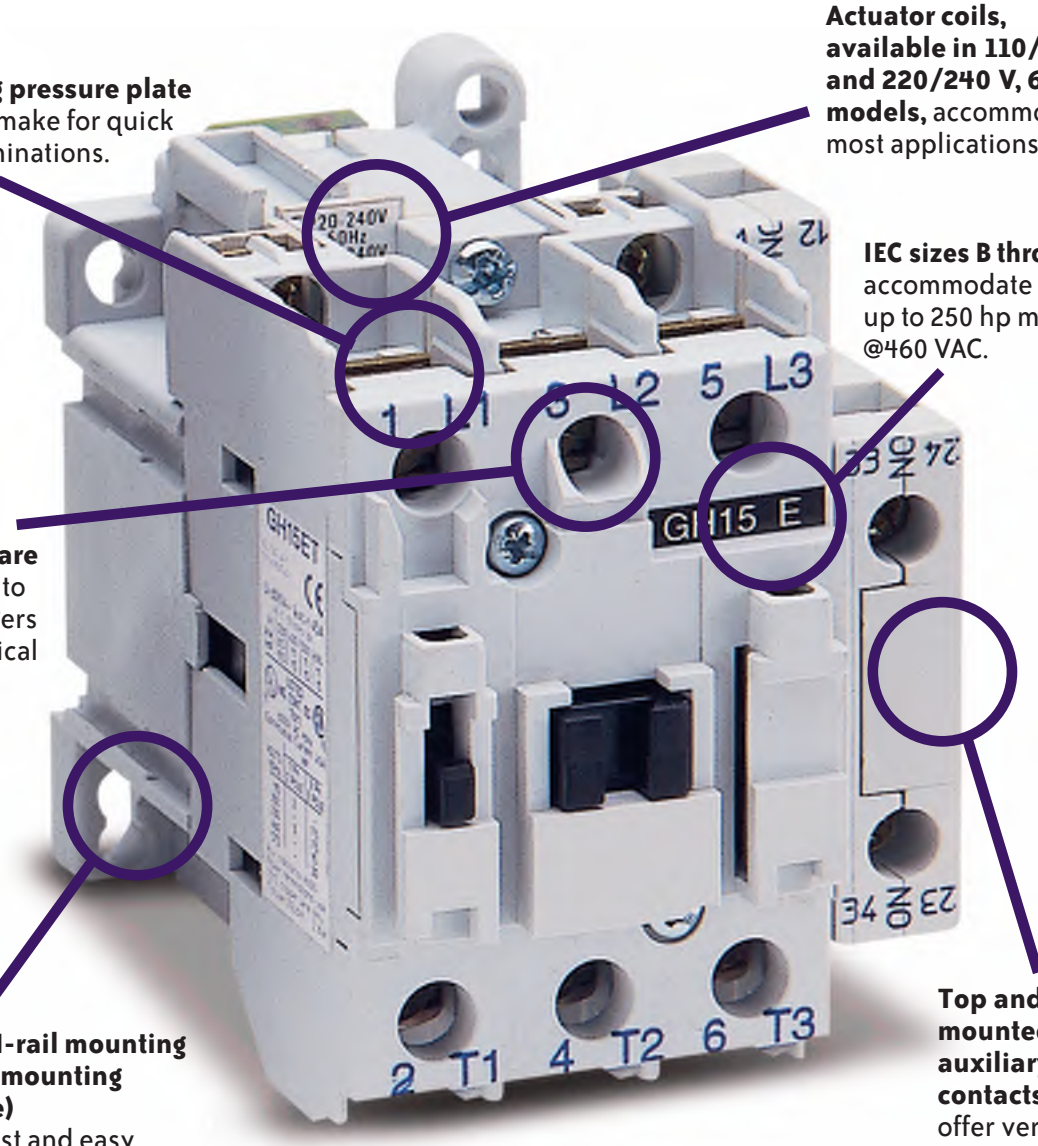
We offer individual components that allow you to use the contactor alone or to assemble your motor starter using our thermal overload relays. You can also combine a manual motor starter/protector for all-in-one protection.

Use contactors wherever you need a heavy-duty switching device with up to three poles. Add up to 2 side-mounted auxiliary blocks (1 per side) plus 1 top-mounted auxiliary contact block per contactor max. This will equal up to 8 possible auxiliary contact configurations. Or use the optional mechanical interlock to create an inexpensive reversing contactor.

Actuator coils, available in 110/120 V and 220/240 V, 60Hz models, accommodate most applications.

Self-lifting pressure plate terminals make for quick wiring terminations.

IEC sizes B through TT accommodate up to 250 hp motors @460 VAC.



Terminals are IP20 rated to protect fingers from electrical shock.

35 mm DIN-rail mounting and panel mounting (larger size) provides fast and easy installation. Panel mounting holes are provided.

Top and side mounted auxiliary contacts offer versatility for space requirements.

Approvals
- cULus listed #E191059
- UL 60947-4-1A

See next page for detailed specifications.

GH15 Series Contactor Configurations

Contactor Configurations							
IEC FRAME SIZE	Contactor Model*	Part Number	Price	Number of Contacts			Coil Voltage and Frequency
				Main	Auxiliary Contacts Included		
					N.O	N.C.	
45 mm	GH15BN	GH15BN-3-10A	$45.50	3	1	–	110-120 VAC 50-60 Hz
		GH15BN-3-01A	$44.50	3	–	1	110-120 VAC 50-60 Hz
		GH15BN-3-10B	$45.50	3	1	–	220-240 VAC 50-60 Hz
		GH15BN-3-01B	$44.50	3	–	1	220-240 VAC 50-60 Hz
	GH15CN	GH15CN-3-10A	$52.00	3	1	–	110-120 VAC 50-60 Hz
		GH15CN-3-01A	$52.00	3	–	1	110-120 VAC 50-60 Hz
		GH15CN-3-10B	$52.00	3	1	–	220-240 VAC 50-60 Hz
		GH15CN-3-01B	$52.00	3	–	1	220-240 VAC 50-60 Hz
	GH15DN	GH15DN-3-10A	$57.00	3	1	–	110-120 VAC 50-60 Hz
		GH15DN-3-01A	$57.00	3	–	1	110-120 VAC 50-60 Hz
		GH15DN-3-10B	$57.00	3	1	–	220-240 VAC 50-60 Hz
		GH15DN-3-01B	$57.00	3	–	1	220-240 VAC 50-60 Hz
	GH15ET	GH15ET-3-00A	$84.75	3	–	–	110-120 VAC 50-60 Hz
		GH15ET-3-00B	$84.75	3	–	–	220-240 VAC 50-60 Hz
	GH15FT	GH15FT-3-00A	$92.75	3	–	–	110-120 VAC 50-60 Hz
		GH15FT-3-00B	$92.75	3	–	–	220-240 VAC 50-60 Hz
60 mm	GH15GT	GH15GT-3-00A	$168.25	3	–	–	120 VAC 60 Hz only
		GH15GT-3-00B	$75.25	3	–	–	240 VAC 60 Hz / 212 VAC 50 Hz
	GH15HT	GH15HT-3-00A	$186.75	3	–	–	120 VAC 60 Hz only
		GH15HT-3-00B	$186.75	3	–	–	240 VAC 60 Hz / 212 VAC 50 Hz
	GH15JT	GH15JT-3-00A	$194.75	3	–	–	120 VAC 60 Hz only
		GH15JT-3-00B	$194.75	3	–	–	240 VAC 60 Hz / 212 VAC 50 Hz
79 mm	GH15KT	GH15KT-3-00A	$240.75	3	–	–	120 VAC 60 Hz only
		GH15KT-3-00B	$240.75	3	–	–	240 VAC 60 Hz / 212 VAC 50 Hz
	GH15LT	GH15LT-3-00A	$284.50	3	–	–	120 VAC 60 Hz only
		GH15LT-3-00B	$284.50	3	–	–	240 VAC 60 Hz / 212 VAC 50 Hz
	GH15MT	GH15MT-3-00A	$317.25	3	–	–	110-120 VAC 50-60 Hz / 110 VDC
		GH15MT-3-00B	$317.25	3	–	–	220-240 VAC 50-60 Hz
110 mm	GH15NT	GH15NT-3-00A	$419.25	3	–	–	110-120 VAC 50-60 Hz / 110 VDC
		GH15NT-3-00B	$419.25	3	–	–	220-240 VAC 50-60 Hz / 220 VDC
	GH15PT	GH15PT-3-00A	$507.00	3	–	–	110-120 VAC 50-60 Hz / 110 VDC
		GH15PT-3-00B	$507.00	3	–	–	220-240 VAC 50-60 Hz / 220 VDC
145 mm	GH15RT	GH15RT-3-00A	$633.50	3	–	–	110-120 VAC 50-60 Hz / 110 VDC
		GH15RT-3-00B	$633.50	3	–	–	220-240 VAC 50-60 Hz / 220 VDC
	GH15ST	GH15ST-3-00A	$674.25	3	–	–	110-120 VAC 50-60 Hz / 110 VDC
		GH15ST-3-00B	$674.25	3	–	–	220-240 VAC 50-60 Hz / 220 VDC
	GH15TT	GH15TT-3-00A	$869.00	3	–	–	110-120 VAC 50-60 Hz / 110 VDC
		GH15TT-3-00B	$869.00	3	–	–	220-240 VAC 50-60 Hz / 220 VDC

** Up to 2 auxiliary contact blocks may be added to the contactor by utilizing the side mount and top mount contact block assemblies. Though referred to as a top mount assembly, the GH15T mounts to the front of the contactor.*

***Note:** If using the BM0H or BM3H-AD mechanical interlock, the use of auxiliary contacts is prohibited on the side of each contactor where the interlock is mounted. This does not pertain to the auxilliary contact built into the GH15BN, GH15CN and GH15DN contactors.*

GH15 Series 45 mm Contactor Specifications

45 mm Contactor Specifications							
Contactor Model			**GH15BN**	**GH15CN**	**GH15DN**	**GH15ET**	**GH15FT**
Insulation Voltage	AC	(V)	600 Volts AC				
Ampere Rating UL 508	Max. UL Continuous Current	(A)	11	14	19	32	32
	Max. UL General Use Current note 2	(A)	20	20	25	40	45
Maximum Power (hp) of Three-Phase Motors	200V	(hp)	2	3	3	7.5	7.5
	230/240V	(hp)	3	3	5	7.5	10
	460/480V	(hp)	5	7.5	10	15	20
	575V	(hp)	7.5	10	15	20	25
Maximum Power (hp) of Single-Phase Motors	115V	(hp)	0.5	0.5	1	2	2
	230/240V	(hp)	1	2	3	3	5
Insulation Voltage	AC	(V)			690 Volts AC		
Ampere Rating EN/IEC 60947	AC-3 Ie (ambient Temp = 55°C @ 440V)	(A)	9	12	16	25	32
	AC-1 Ie (ambient Temp = 40°C @ 690V)	(A)	30	30	30	45	50
Maximum Power (kW) of Three-Phase Motors AC3 Category note 1	230/240V	(kW)	2.2	3	4	6.5	7.5
	400V	(kW)	4	5.5	7.5	11	15
	440/480V	(kW)	4.7	6.4	9	12.5	16.5
	500V	(kW)	5.5	7.5	10	11	15
	690V	(kW)	5.5	7.5	7.5	11	15
Max Short Circuit Protection Fuses Class RK5 UL Rated Fuses	Type 2 Coordination note 3	(A)	25	30	50	60	70
SCCR Rating (kA)		kA	5	5	5	5	5
Auxiliary Contacts Electrical Capacity			A600 note 4				
Coil Voltage Operating Limits			AC Pick-up 85-110% rated control voltage / AC Drop-out 20-75% rated control voltage				
Average Coil Power Requirements / Coil current (A) = VA/Coil Voltage			AC Pick-Up (VA) 80-100 / AC Sealed (VA) 9-12				
Power Factor			Pick-up 0.65 / Sealed 0.35				
Coil Operating Time at Rated Coil Voltage			Pick-up (ms) 10-25 / Drop-out (ms) 6-18				
Maximum Operating Frequency (No-Load Operation)			3000 operations / hour				
Mechanical Durability			10,000,000 operations				
Operating Ambient Temperature			-25 to +70C (-13 to +158F)				
Electrical Protection Degree			IP20 (IP10 for power entry cables)				
Mounting			Screw (panel mount) or 35mm DIN rail				
Main Circuit Connections	Wire Size		14-10 AWG Stranded			14-8 AWG Stranded	
	Tightening Torque		1.4 N·m (12 lb·in)			2.3 N·m (20 lb·in)	
Auxilliary Circuit Connections	Wire Size		16-12 AWG Stranded / 14-12 AWG Solid				
	Tightening Torque		0.8 N·m (7 lb·in)				

Notes

1. AC3 type loads consist of squirrel cage three phase motors.

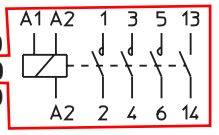
2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)

3. Type 2 coordination is a protection category for IEC 60947-4-1. Section 8.2.5.1 specifies that Type 2 coordination requires that, under short circuit conditions, the contactor or starter shall cause no danger to persons or installations, and shall be suitable for further use. The risk of minor contact welding is possible.

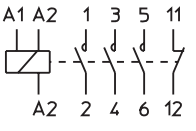
4. NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings.

Contactor Diagram

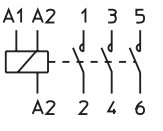
GH15BN3-10
GH15CN3-10
GH15DN3-10



GH15BN3-01
GH15CN3-01
GH15DN3-01



GH15ET3-00
GH15FT3-00



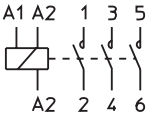
GH15 Series 60 mm Contactor Specifications

60 mm Contactor Specifications					
Contactor Model			***GH15GT***	***GH15HT***	***GH15JT***
Insulation Voltage	AC	(V)	600 Volts AC		
Ampere Rating UL 508	Max. UL Continuous Current	(A)	42	52	65
	Max. UL General Use Current note 2	(A)	60	70	80
Maximum Power (hp) of Three-Phase Motors	200V	(hp)	10	15	15
	230/240V	(hp)	10	15	20
	460/480V	(hp)	25	30	40
	575V	(hp)	30	40	50
Maximum Power (hp) of Single-Phase Motors	115V	(hp)	3	3	5
	230/240V	(hp)	5	7.5	10
Insulation Voltage	AC	(V)	690 Volts AC		
Ampere Rating EN/IEC 60947	AC-3 Ie (ambient Temp = 55°C @440V)	(A)	40	50	63
	AC-1 Ie (ambient Temp = 40°C @690V)	(A)	63	80	100
Maximum Power (kW) of Three-Phase Motors AC3 Category *note 1*	230/240V	(kW)	11	12.5	18.5
	400V	(kW)	18.5	22	30
	440/480V	(kW)	21	25	33
	500V	(kW)	18.5	22	30
	690V	(kW)	18.5	22	30
Max Short Circuit Protection Circuit Breaker UL Rated MCCB	Type 2 Coordination note 3	(A)	150	175	200
SCCR Rating (kA)		(kA)	5	5	5
Auxiliary Contacts Electrical Capacity			A600 *note 4*		
Coil Voltage Operating Limits			AC Pick-up 85-110% rated control voltage AC Drop-Out 20-75% rated control voltage		
Average Coil Power Requirements / Coil current (A) = VA/Coil Voltage			AC Pick-up (VA) 250 / AC Sealed (VA) 18		
Power Factor			Pick-up 0.54 / Sealed 0.35		
Coil Operating Time at Rated Coil Voltage			Pick-up (ms) 12-30 / Drop-out (ms) 6-15		
Maximum Operating Frequency (No-Load Operation)			3000 operations / hour		
Mechanical Durability			10,000,000 operations		
Operating Ambient Temperature			-25 to +70C (- 13 to +158F)		
Electrical Protection Degree			IP20 (IP10 for power entry cables)		
Mounting			Screw (panel mount) or 35mm DIN rail		
Main Circuit Connections	Wire Size		12-3 AWG stranded		
	Tightening Torque		5.0 N·m (45 lb·in)		
Auxilliary Circuit Connections	Wire Size		16-12 AWG (stranded recommended)		
	Tightening Torque		0.8 N·m (7 lb·in)		

Notes
1. AC3 type loads consist of squirrel cage three phase motors.
2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)
3. Type 2 coordination is a protection category for IEC 60947-4-1. Section 8.2.5.1 specifies that Type 2 coordination requires that, under short circuit conditions, the contactor or starter shall cause no danger to persons or installations, and shall be suitable for further use. The risk of minor contact welding is possible.
4. NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings.

Contactor Diagram

GH15GT3-00 (1)
GH15HT3-00 (1)
GH15JT3-00 (1)



GH15 Series 79 mm Contactor Specifications

79 mm Contactor Specifications					
Contactor Model			***GH15KT***	***GH15LT***	***GH15MT***
Insulation Voltage	AC	(V)	600 Volts AC		
Ampere Rating UL 508	Max. UL Continuous Current	(A)	90	90	120
	Max. UL General Use Current note 2	(A)	90	100	120
Maximum Power (hp) of Three-Phase Motors	200V	(hp)	20	25	30
	230/240V	(hp)	25	30	40
	460/480V	(hp)	50	60	75
	575V	(hp)	60	75	100
Maximum Power (hp) of Single-Phase Motors	115V	(hp)	5	7.5	10
	230/240V	(hp)	15	15	20
Insulation Voltage	AC	(V)	1000 Volts AC		
Ampere Rating EN/IEC 60947	AC-3 Ie (ambient Temp = 55°C @440V)	(A)	80	95	110
	AC-1 Ie (ambient Temp = 40°C @690V)	(A)	125	125	135
Maximum Power (kW) of Three-Phase Motors AC3 Category note 1	230/240V	(kW)	22	25	30
	400V	(kW)	37	45	55
	440/480V	(kW)	45	51	63
	500V	(kW)	45	51	55
	690V	(kW)	45	51	55
Max Short Circuit Protection Fuses Class RK5 UL Rated Fuses	Type 2 Coordination note 3	(A)	250	250	225
SCCR Rating (kA)		(kA)	10	10	10
Auxiliary Contacts Electrical Capacity			A600 note 4		
Coil Voltage Operating Limits			AC Pick-up 85-110% rated control voltage AC Drop-Out 20-75% rated control voltage		
Average Coil Power Requirements / Coil current (A) = VA/Coil Voltage			AC Pick-up (VA) 250 / AC Sealed (VA) 18		AC Pick-up (VA) 250 AC Sealed 24-125V (VA) 4 AC Sealed 220-600V (VA) 19
Power Factor			Pick-up 0.54 / Sealed 0.35		Pick-up 0.98 Sealed 24-125V 0.98 Sealed 220-600V 0.2
Coil Operating Time at Rated Coil Voltage			Pick-up (ms) 12-30 / Drop-out (ms) 6-15		Pick-up (ms) 15-50 Drop-out (ms) 30-80
Maximum Operating Frequency (No-Load Operation)			3000 operations / hour		
Mechanical Durability			10,000,000 operations		
Operating Ambient Temperature			-25 to +70C (- 13 to +158F)		
Electrical Protection Degree			IP20 (Front)		
Mounting			Screw (panel mount)		
Main Circuit Connections	Wire Size		10-2 AWG Stranded (1 or 2 wires)		
	Tightening Torque		8.0 N·m (70 lb·in)		
Auxilliary Circuit Connections	Wire Size		2 x 16-12 AWG Stranded / 2 x 14-12 AWG Solid		
	Tightening Torque		0.8 N·m (7 lb·in)		

Notes

1. AC3 type loads consist of squirrel cage three phase motors.

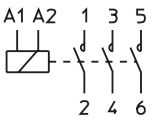
2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)

3. Type 2 coordination is a protection category for IEC 60947-4-1. Section 8.2.5.1 specifies that Type 2 coordination requires that, under short circuit conditions, the contactor or starter shall cause no danger to persons or installations, and shall be suitable for further use. The risk of minor contact welding is possible.

4. NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings.

Contactor Diagram

GH15KT-3-00
GH15LT-3-00



GH15 Series 110 mm Contactor Specifications

110 mm Contactor Specifications				
Contactor Model			***GH15NT***	***GH15PT***
Insulation Voltage	AC	(V)	600 Volts AC	
Ampere Rating UL 508	Max. UL Continuous Current	(A)	180	180
	Max. UL General Use Current note 2	(A)	180	220
Maximum Power (hp) of Three-Phase Motors	200V	(hp)	40	50
	230/240V	(hp)	50	60
	460/480V	(hp)	100	125
	575V	(hp)	125	150
Maximum Power (hp) of Single-Phase Motors	115V	(hp)	15	15
	230/240V	(hp)	25	30
Insulation Voltage	AC	(V)	1000 Volts AC	
Ampere Rating EN/IEC 60947	AC-3 Ie (ambient Temp = 55°C @440V)	(A)	150	175
	AC-1 Ie (ambient Temp = 40°C @690V)	(A)	230	250
Maximum Power (kW) of Three-Phase Motors AC3 Category note 1	230/240V	(kW)	40	50
	400V	(kW)	75	90
	440/480V	(kW)	85	100
	500V	(kW)	90	110
	690V	(kW)	110	132
Max Short Circuit Protection Fuses Class RK5 UL Rated Fuses	Type 2 Coordination note 3	(A)	300	350
SCCR Rating (kA)		(kA)	10	10
Auxiliary Contacts Electrical Capacity			A600 note 4	
Coil Voltage Operating Limits			AC Pick-up 85-110% rated control voltage AC Drop-Out 20-75%rated control voltage	
Average Coil Power Requirements / Coil current (A) = VA/Coil Voltage			AC Pick-up (VA) 350 / AC Sealed (VA) 5	
Power Factor			Pick-up 0.98 / Sealed 0.98	
Coil Operating Time at Rated Coil Voltage			Pick-up (ms) 30-60 / Drop-out (ms) 30-80	
Maximum Operating Frequency (No-Load Operation)			1200 operations / hour	
Mechanical Durability			10,000,000 operations	
Operating Ambient Temperature			-25 to +70C (- 13 to +158F)	
Electrical Protection Degree			IP00 - IP20	
Mounting			Screw (panel mount)	
Main Circuit Connections with Terminal Kit MR3-AD	Wire Size		2 x 4/0 AWG Stranded / 1 x 4/0 AWG Solid	
	Tightening Torque		17 N·m (150 lb·in)	
Auxilliary Circuit Connections	Wire Size		2 X 5-4/0 AWG Stranded	
	Tightening Torque		0.8 N·m (7 lb·in)	

Notes

1. AC3 type loads consist of squirrel cage three phase motors.

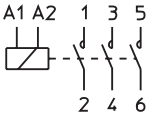
2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)

3. Type 2 coordination is a protection category for IEC 60947-4-1. Section 8.2.5.1 specifies that Type 2 coordination requires that, under short circuit conditions, the contactor or starter shall cause no danger to persons or installations, and shall be suitable for further use. The risk of minor contact welding is possible.

4. NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings.

Contactor Diagram

GH15NT-3-00
GH15PT-3-00



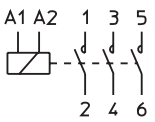
GH15 Series 145 mm Contactor Specifications

145 mm Contactor Specifications					
Contactor Model			***GH15RT***	***GH15ST***	***GH15TT***
Insulation Voltage	AC	(V)	600 Volts AC		
Ampere Rating UL 508	Max. UL Continuous Current	(A)	250	300	360
	Max. UL General Use Current note 2	(A)	250	300	360
Maximum Power (hp) of Three-Phase Motors	200V	(hp)	60	75	100
	230/240V	(hp)	75	100	125
	460/480V	(hp)	150	200	250
	575V	(hp)	200	250	300
Maximum Power (hp) of Single-Phase Motors	230/240V	(hp)	40	50	50
Insulation Voltage	AC	(V)	1000 Volts AC		
Ampere Rating EN/IEC 60947	AC-3 Ie (ambient Temp = 55°C @440V)	(A)	210	260	315
	AC-1 Ie (ambient Temp = 40°C @690V)	(A)	350	450	500
Maximum Power (kW) of Three-Phase Motors AC3 Category *note 1*	230/240V	(kW)	60	75	90
	400V	(kW)	110	132	160
	440/480V	(kW)	125	150	190
	500V	(kW)	132	160	210
	690V	(kW)	132	160	210
Max Short Circuit Protection Fuses Class RK5 UL Rated Fuses	Type 2 Coordination note 3	(A)	400	450	500
SCCR Rating (kA)		(kA)	18	18	18
Auxiliary Contacts Electrical Capacity			A600 *note 4*		
Coil Voltage Operating Limits			AC Pick-up 85-110% rated control voltage AC Drop-Out 20-75%rated control voltage		
Average Coil Power Requirements / Coil current (A) = VA/Coil Voltage			AC Pick-up (VA) 360 / AC Sealed (VA) 5		
Power Factor			Pick-up 0.98 / Sealed 0.98		
Coil Operating Time at Rated Coil Voltage			Pick-up (ms) 40-60 / Drop-out (ms) 40-60		
Maximum Operating Frequency (No-Load Operation)			1200 operations / hour		
Mechanical Durability			8,000,000 operations		
Operating Ambient Temperature			-25 to +70C (- 13 to +158F)		
Electrical Protection Degree			IP20 (Front)		
Mounting			Screw (panel mount)		
Main Circuit Connections with Terminal Kit KAL-4	Wire size		2 x 6-300 MCM (75° copper wire only)		
	Tightening Torque		31 N·m (275 lb·in)		
Auxilliary Circuit Connections	Wire Size		16-12 AWG Stranded / 14-12 AWG Solid		
	Tightening Torque		0.8 N·m (7 lb·in)		

Notes
1. AC3 type loads consist of squirrel cage three phase motors.
2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)
3. Type 2 coordination is a protection category for IEC 60947-4-1. Section 8.2.5.1 specifies that Type 2 coordination requires that, under short circuit conditions, the contactor or starter shall cause no danger to persons or installations, and shall be suitable for further use. The risk of minor contact welding is possible.
4. NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings.

Contactor Diagram

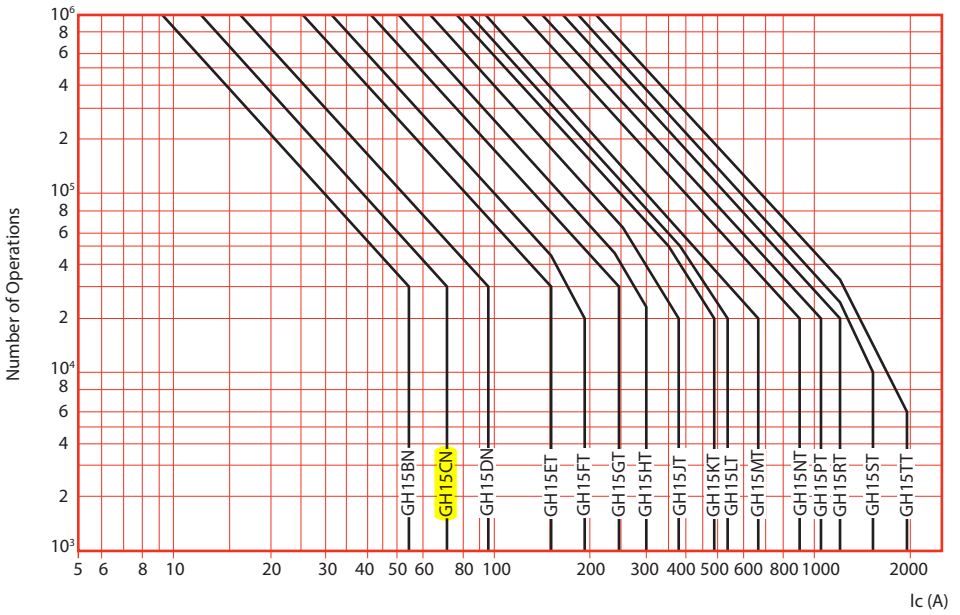
GH15RT-3-00
GH15ST-3-00
GH15TT-3-00



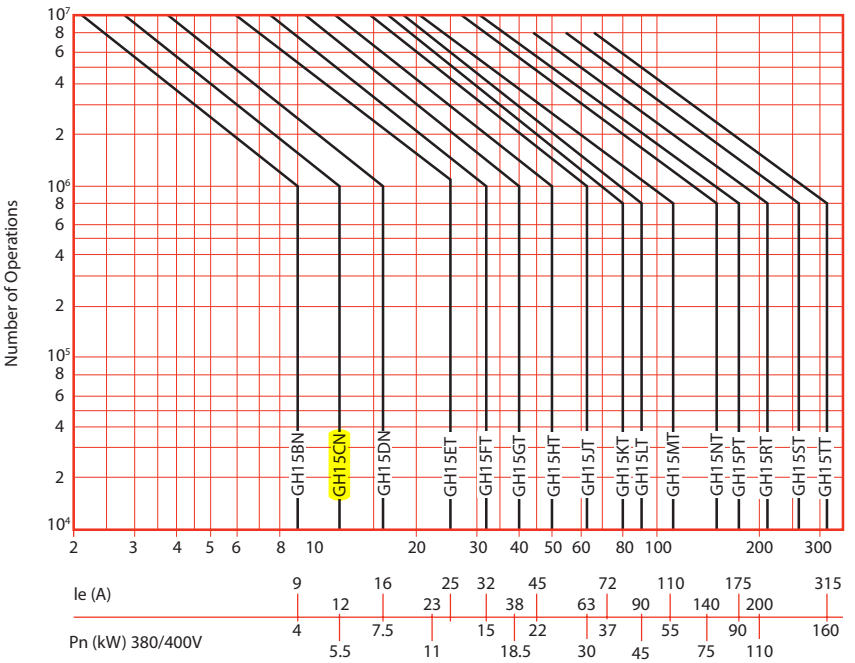
GH15 Series Contactor Electrical Durability of Main Contacts

Main contacts have a conductor material support, on which a silver alloy tip is welded. This tip makes, carries and breaks the load currents. The contact durability is represented by the average number of operations which the contact can carry out without maintenance and before the contact requires replacement. Every operation involves mechanical stresses when the contactor closes and thermal stress during load current conduction. However, the main stress that affects contact durability is due to the electric arc betweeen contacts during making and breaking operations. The electric arc causes the erosion of the contact active material; such erosion will increase according to the intensity of the current and the arcing time. Therefore the contact durability is strictly dependent on the type of load, i.e. on the utilization category, rated operational current and rated voltage. The following diagrams give curves of contact durability for each contactor for use in category AC-1, AC-3 and AC-4.

AC-1/400V
AC-4/400V



AC-3/400V



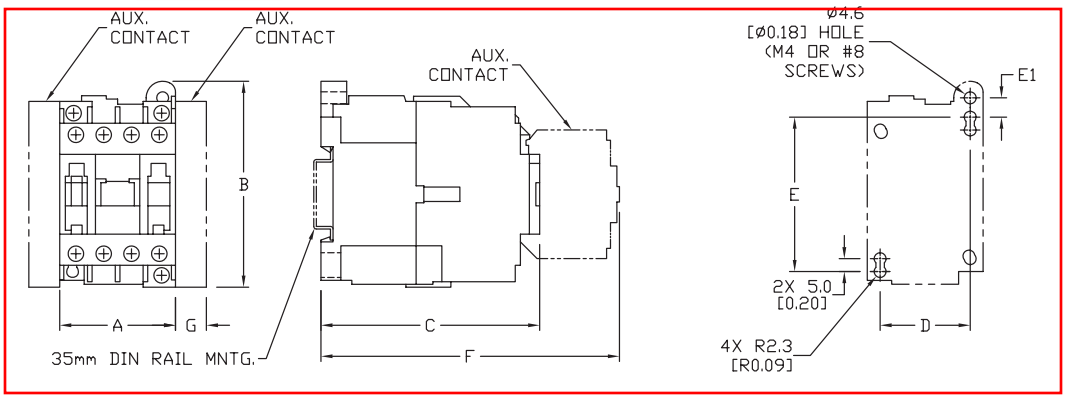
Note: Average durability curves are at 400V. For higher operational voltages, reduce the durabilty according following table.

Electrical Durability Curve Adjustment for Voltages Over 400V		
	AC-1 / AC-4	***AC-3***
400V	0%	0%
440V	10%	5%
500V	20%	10%
690V	40%	20%

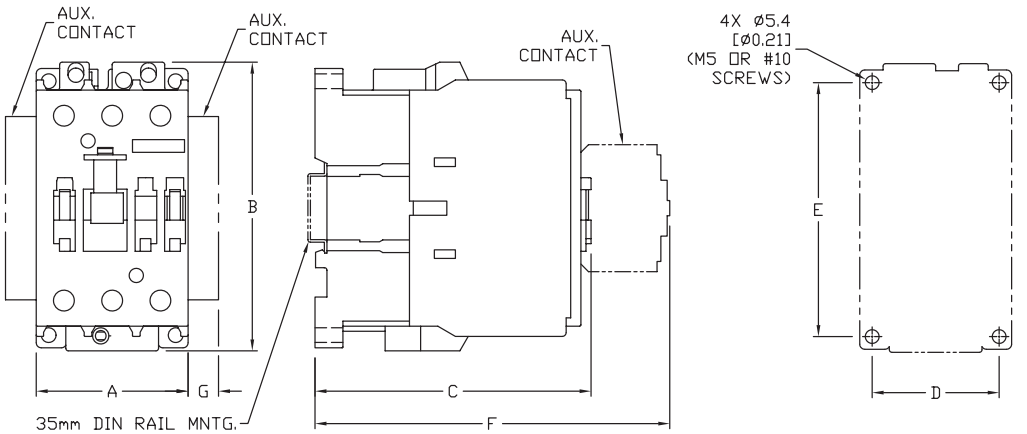
GH15 Series Contactor Dimensions

Dimensions mm [inches]									
Contactor Model	Wide	High	Deep	Mounting					Product Weight kg [lb.]
	A	B	C	D	E	E1	F	G	
GH15BN GH15CN GH15DN	45.0 [1.77]	80.0 [3.15]	85.0 [3.35]	35.0 [1.38]	60.0 [2.36]	7.5 [0.30]	116.0 [4.57]	12.0 [0.47]	0.41 [0.90]
GH15ET GH15FT	45.0 [1.77]	80.0 [3.15]	91.0 [3.58]	35.0 [1.38]	60.0 [2.36]	7.5 [0.30]	122.0 [4.80]	12.0 [0.47]	0.47 [1.04]
GH15GT GH15HT GH15JT	60.0 [2.36]	114.0 [4.49]	109.0 [4.29]	50.0 [1.97]	100.0 [3.94]	—	140.0 [5.51]	12.0 [0.47]	1.12 [2.47]
GH15KT GH15LT	79.0 [3.11]	137.0 [5.39]	130.0 [5.12]	70.0 [2.76]	100.0 [3.94]	—	161.0 [6.34]	12.0 [0.47]	1.80 [3.97]
GH15MT	79.0 [3.11]	162.0 [6.38]	130.0 [5.12]	70.0 [2.76]	100.0 [3.94]	—	161.0 [6.34]	12.0 [0.47]	2.20 [4.85]
GH15NT GH15PT	110.0 [4.33]	170.0 [6.69]	162.0 [6.38]	100.0 [3.94]	130.0 [5.12]	—	193.0 [7.59]	12.0 [0.47]	4.00 [8.82]
GH15RT GH15ST GH15TT	145.0 [5.71]	200.0 [7.87]	208.0 [8.19]	120.0 [4.72]	160.0 [6.30]	—	239.0 [9.41]	12.0 [0.47]	7.50 [16.53]

GH15BN, GH15CN, GH15DN, GH15ET, GH15FT



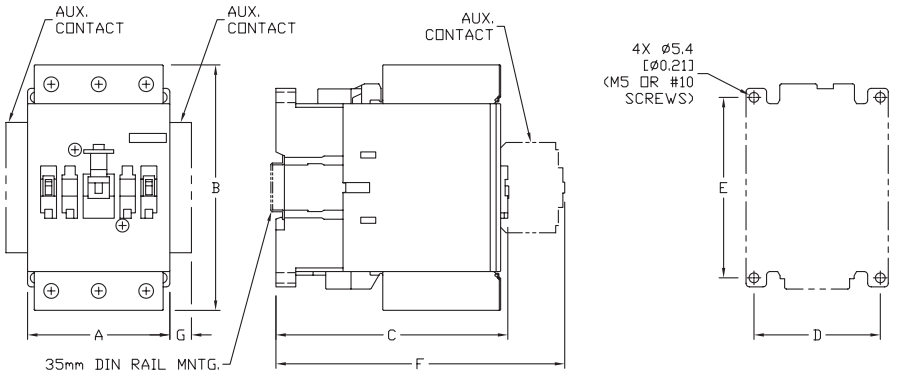
GH15GT, GH15HT, GH15JT



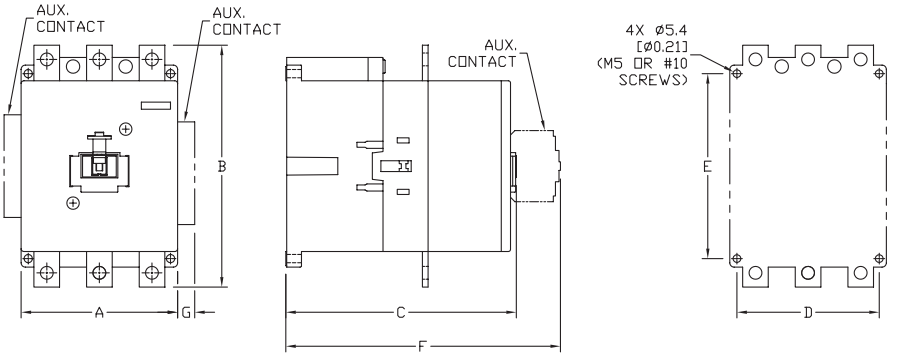
GH15 Series Contactor Dimensions

Dimensions mm [inches]

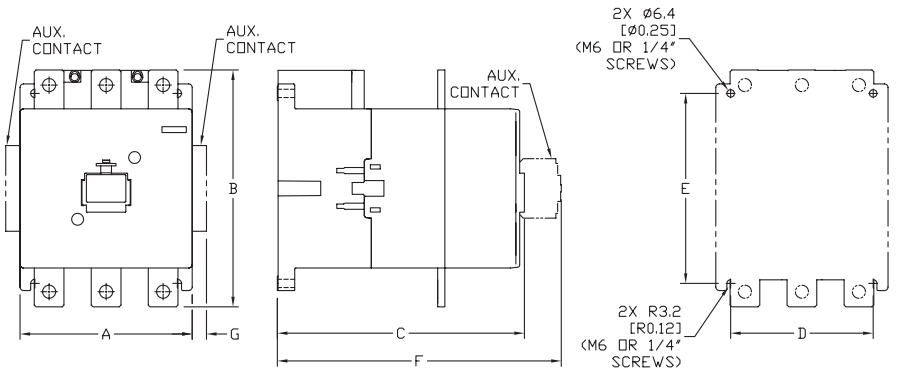
GH15KT, GH15LT, GH15MT



GH15NT and GH15PT

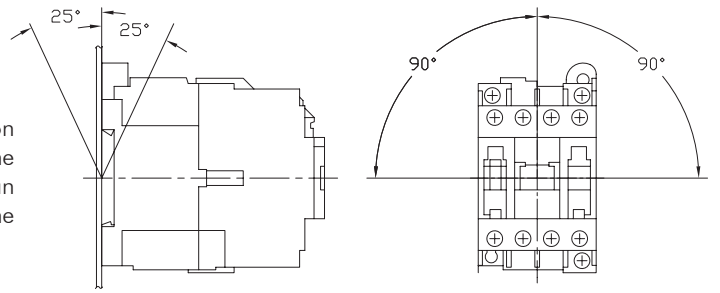


GH15RT, GH15ST, GH15TT



GH15 Series Mounting Positions

The correct mounting poistion is with the base plate in the vertical plane. The device can be mounted up to 25° from the vertical position.



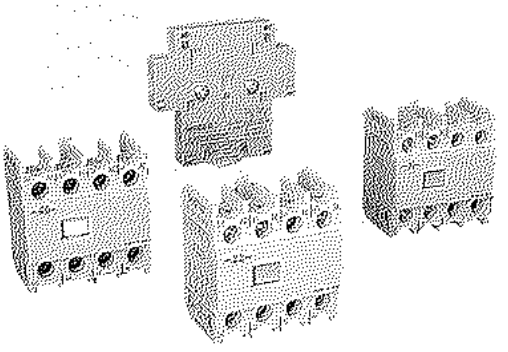
GH15 Series Contactor Accessories

Auxiliary contacts

Auxiliary contacts are designed for installation on all the GH15 series contactors. The snap-on design makes them quick and easy to install. The bifurcated contact blocks feature silver nickel alloy contacts.

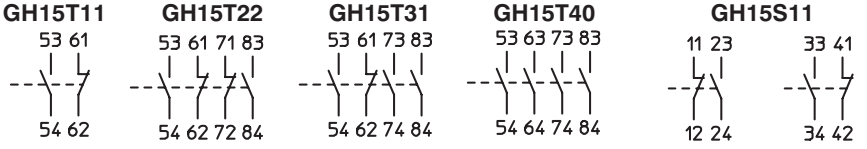
Add up to 2 side-mounted auxiliary blocks (1 per side) plus 1 top-mounted auxiliary contact block per contactor max. This will equal up to 8 possible auxiliary contact configurations.

Auxiliary Contacts			
Part Number	***Price***	***Description***	***Mounting***
GH15T11	$17.75	1 NO 1 NC	Top
GH15T22	$26.00	2 NO 2 NC	Top
GH15T31	$26.00	3 NO 1 NC	Top
GH15T40	$30.00	4 NO	Top
GH15S11	$22.50	1 NO 1 NC	Side
Contacts rated A600 per NEMA ICS 5-2000. For more info, refer to Control Circuit Contact Electrical Ratings.			



Note: See contactor drawings page for dimensions

Auxiliary Contact Blocks



Replacement coils

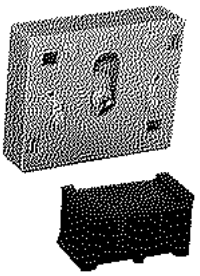
Replacement Coils			
Part Number	***Price***	***Description***	***Use With***
B01-A-120	$21.50	110-120VAC 50-60Hz	GH15BN, GH15CN, GH15DN, GH15ET, GH15FT
B01-B-240	$21.50	220-240VAC 50-60Hz	
B02-A-120	$21.50	120VAC 60Hz	GH15GT, GH15HT, GH15JT, GH15KT, GH15LT
B02-B-240	$15.25	240VAC 60Hz / 212VAC 50Hz	
B022-A-120	$67.25	110-120VAC 50-60Hz, 110VDC	GH15MT
B022-B-240	$67.25	220-240VAC 50-60Hz	
B031-A-120	$94.75	110-120VAC 50-60Hz, 110VDC	GH15NT, GH15PT
B031-B-240	$94.75	220-240VAC 50-60Hz, 220VDC	
B041-A-120	$270.25	110-120VAC 50-60Hz, 110VDC	GH15RT, GH15ST, GH15TT
B041-B-240	$270.25	220-240VAC 50-60Hz, 220VDC	

GH15 Series Contactor Accessories

Mechanical Interlock

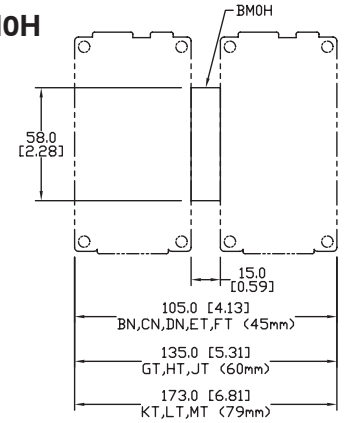
Mechanical interlocks connect two contactors horizontally. When one contactor is energized, the other contactor is mechanically prohibited from making, even though it may be energized. The mechanical interlocks work with 45, 60, 79, 110 and 145 mm contactors.

BMOH / BM3H-AD

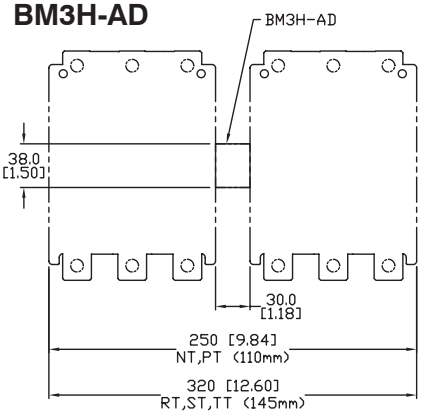


Mechanical Interlock			
Part Number	**Price**	**Description**	**Mounting**
BM0H	$16.25	Mechanical interlock, for use with GH15BN, GH15CN, GH15DN, GH15ET, GH15FT, GH15GT, GH15HT, GH15JT, GH15KT, GH15LT, or GH15MT series contactors.	Side
BM3H-AD	$25.50	Mechanical interlock, for use with GH15NT, GH15PT, GH15RT, GH15ST or GH15TT series contactors.	Side

BM0H



BM3H-AD



Terminal Screens

Terminal screens are for use with contactors and thermal overload relays to protect against accidental contact with live components.

PRT3-AD



PR37-AD

Terminal Screens*				
Part Number	**Price**	**Quantity**	**Description**	**Use With**
PR37-AD	$25.50	1 screen	Terminal screen, top or bottom, covers 3 poles. Use on line or load side. Mounting hardware included.	GH15NT GH15PT
PRT3-AD	$25.00	1 screen	Terminal screen, top or bottom, covers 3 poles. Use on line or load side. Mounting hardware included.	GH15RT GH15ST GH15TT

**** No additional protecting device is required for contactors up to IEC Size 79mm since the equipment by itself ensures IP20 frontal protection.***

MR3-AD



KAL-4



Terminal Lug				
Part Number	**Price**	**Quantity**	**Description**	**Use With**
MR3-AD	$13.00	1	Terminal lug, 1-pole, can hold (2) wires 6 AWG - 4/0 AWG.	GH15NT GH15PT RTD180
KAL-4	$30.00	1	Terminal lug, 1-pole, can hold (1) wire 6 AWG - 300 MCM. Mounting hardware included.	GH15RT GH15ST GH15TT RTD320

Adjustable Overloads for GH15 Series Contactors

The RTD series adjustable motor overload relays are designed for use with the GH15 Series 45 mm, 60 mm, 79 mm, 110 mm, and 145 mm contactors.

By combining the contactor with an overload relay, you have a reliable motor starter solution.



RTD32 overload relays for 45 mm contactors

- 16 sizes for motor currents from 0.4 to 32 amps
- Units come with (1) N.O. and (1) N.C. auxiliary contacts
- Mount directly to 45 mm contactors
- Class 10A trip class
- cULus listed, CE

RTD65 overload relays for 60 mm contactors

- Four sizes for motor currents from 20 to 65 amps
- Units come with (1) N.O. and (1) N.C. auxiliary contacts
- Mount directly to 60 mm contactors
- Class 10A trip class
- cULus listed, CE

RTD180 overload relays for 79 mm and 110 mm contactors

- 3 sizes for motor currents from 60 to 180 amps
- Units come with (1) N.O. and (1) N.C. auxiliary contacts
- Mount directly to 110 mm contactors with connection links (included)
- Hard-wire connection to 79 mm contactors (No connection links available)
- Class 10A trip class
- cULus listed, CE

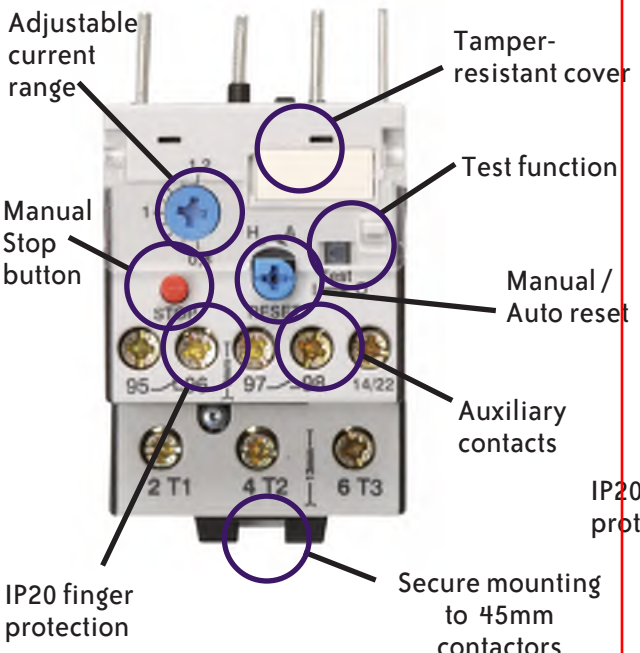
RTD320 overload relays for 145 mm contactors

- 2 sizes for motor currents from 144 to 320 amps
- Units come with (1) N.O. and (1) N.C. auxiliary contacts
- Mount directly to 145 mm contactors with connection links (included)
- Class 10A trip class
- cULus listed, CE



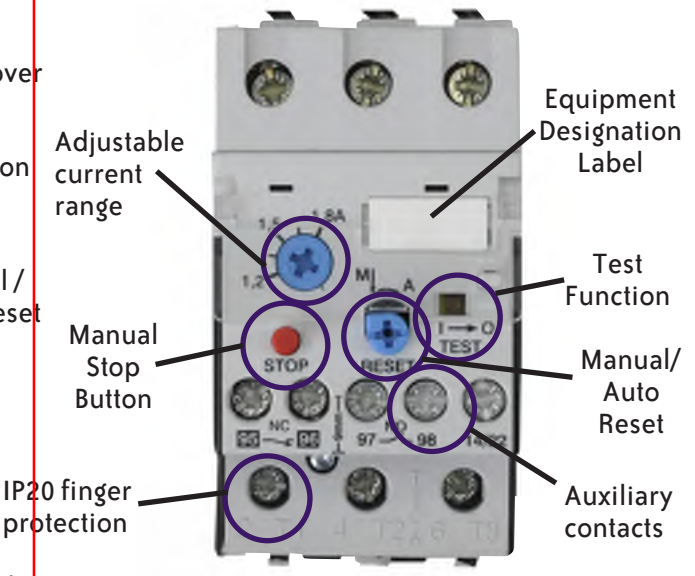
GH15 Series Adjustable Overload Relay Features

RTD32 for 45 mm Contactors



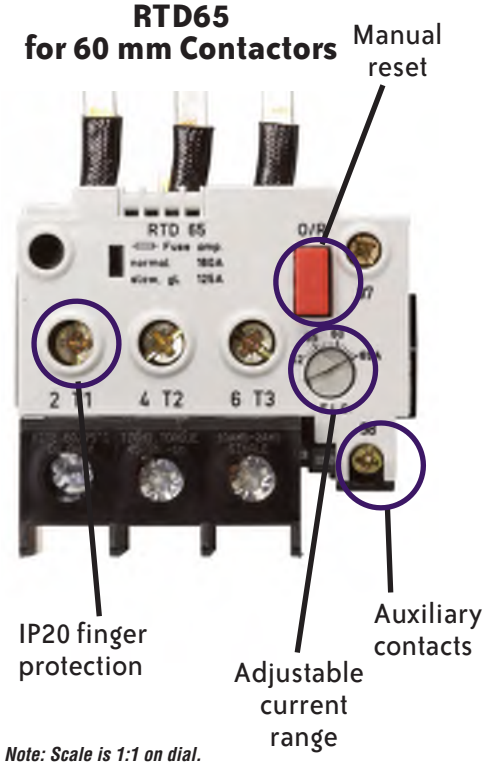
Note: Scale is 1:1 on dial.

RTD180 for 79 mm and 110 mm Contactors



Note: The secondary current for the dial adjustment of the relay is 100x the dial current. For example, for a rated load current of 120A, the relay setting should be 1.2A.

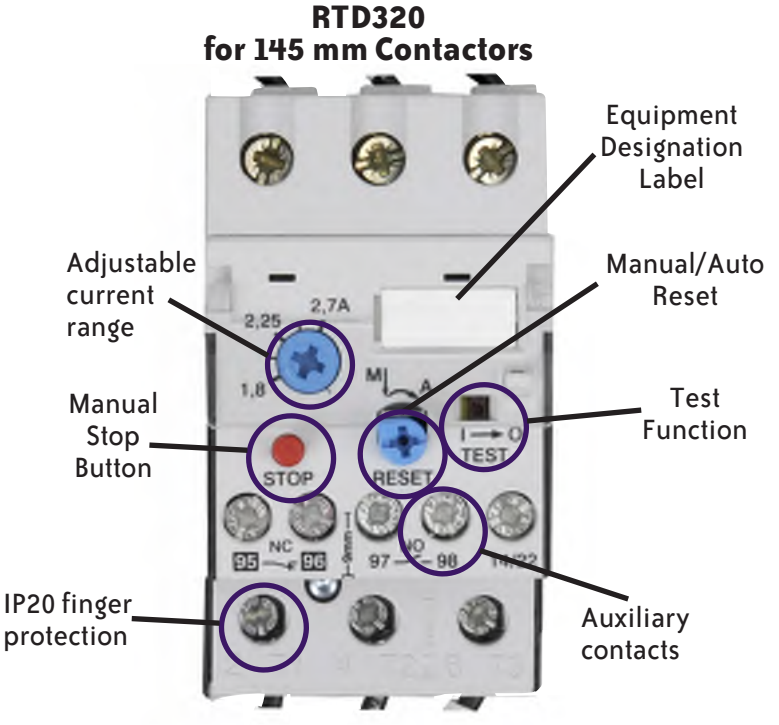
RTD65 for 60 mm Contactors



Note: Scale is 1:1 on dial.

Note: Additional Black Loadside Terminal Block is available on RTD65-5200 and RTD65-6500 only.

RTD320 for 145 mm Contactors



Note: The secondary current for the dial adjustment of the relay is 80x the dial current. For example, for a rated load current of 216A, the relay setting should be 2.7A.

GH15 Series Overload Relay Selection Guide

Step 1 Determine the motor FLA and service factor listed on the motor name plate. Next, calculate the size overload protection required based on 2005 NEC 430.32. Select your motor's FLA (Full Load Amperage) from Column A. Tripping current occurs at 125% of FLA in column A.

Step 2 Follow across to Column B to find your contactor size. Check the maximum amperage rating for that contactor. Ranges overlap and you may have to go to the next larger size.

Step 3 After selecting your contactor, follow across to Column C to find your overload relay model number.

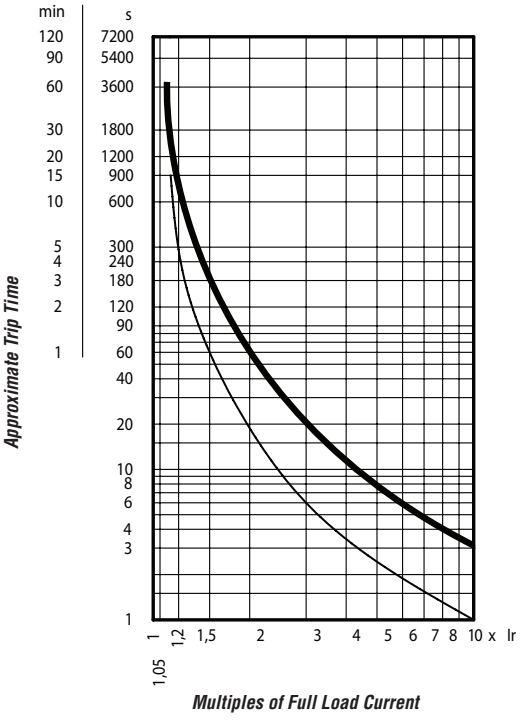
Step 4 Order the contactor and overload relay, any desired auxiliary contacts, then assemble and install your motor starter.

Motor Contactor and Overload Relay Selection Guide (When Motor FLA is Known)				
A	***B***	***C***	***Price***	***IEC Contactor Frame Size***
Current Range Motor FLA	***Contactor Model***	***Overload Relay***		
0.4 to 0.6A	GH15BN up to maximum FLA of 9A	***RTD32-60***	$62.25	45 mm
0.6 to 0.9A		***RTD32-90***	$62.25	
0.8 to 1.2A		***RTD32-120***	$62.25	
1.2 to 1.8A		***RTD32-180***	$62.25	
1.8 to 2.7A		***RTD32-270***	$62.25	
2.7 to 4.0A		***RTD32-400***	$62.25	
4.0 to 6.0A		***RTD32-600***	$62.25	
6.0 to 9.0A		***RTD32-900***	$62.25	
8.0 to 11.0A	GH15CN up to 12A FLA	***RTD32-1100***	$62.25	
10.0 to 14.0A		***RTD32-1400***	$67.25	
10.0 to 14.0A	GH15DN up to 16A FLA	***RTD32-1400***	$67.25	
13.0 to 18.0A		***RTD32-1800***	$67.25	
13.0 to 18.0A	GH15ET up to 25A FLA	***RTD32-1800***	$67.25	
17.0 to 24.0A		***RTD32-2400***	$67.25	
22.0 to 32.0A		***RTD32-3200***	$79.50	
22.0 to 32.0A	GH15FT up to 32A FLA	***RTD32-3200***	$79.50	
20.0 to 28.0A	GH15GT up to 40A FLA	***RTD65-2800***	$116.25	60 mm
28.0 to 42.0A		***RTD65-4200***	$116.25	
28.0 to 42.0A	GH15HT up to 50A FLA	***RTD65-4200***	$116.25	
40.0 to 52.0A		***RTD65-5200***	$144.75	
40.0 to 52.0A	GH15JT up to 63A FLA	***RTD65-5200***	$144.75	
52.0 to 65.0A		***RTD65-6500***	$144.75	
60.0 to 90.0A	GH15KT up to 80A FLA	***RTD180-9000***	$203.00	79 mm
60.0 to 90.0A	GH15LT up to 95A FLA	***RTD180-9000***	$203.00	
80.0 to 120.0A	GH15MT up to 110A FLA	***RTD180-12000***	$257.25	
120.0 to 180.0A	GH15NT up to 150A FLA	***RTD180-18000***	$277.50	110 mm
120.0 to 180.0A	GH15PT up to 175A FLA	***RTD180-18000***	$277.50	
144.0 to 216.0A	GH15RT up to 210A FLA	***RTD320-21600***	$321.25	145 mm
144.0 to 216.0A	GH15ST up to 260A FLA	***RTD320-21600***	$321.25	
216.0 to 320.0A		***RTD320-32000***	$321.25	
144.0 to 216.0A	GH15TT up to 315A FLA	***RTD320-21600***	$321.25	
216.0 to 320.0A		***RTD320-32000***	$321.25	

GH15 Series Contactors Overload Technical Characteristics

Typical Trip Curves

45 and 60 mm Overloads

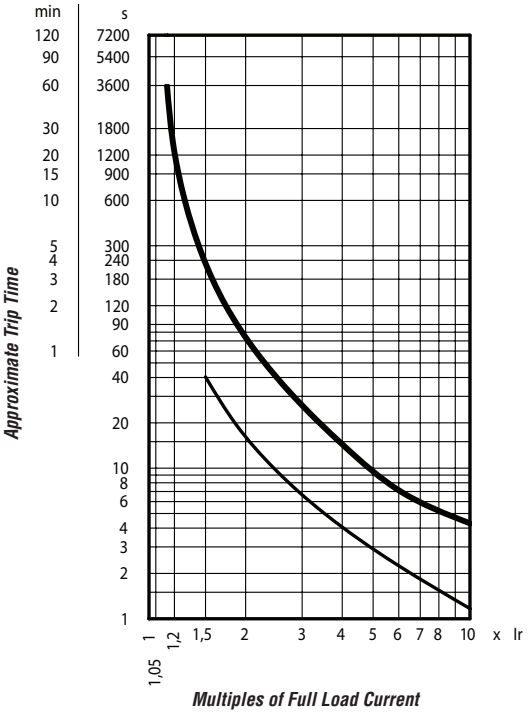


Note: Curves show tripping time (average value) versus multiples of setting current Ir.

Tripping starting from cold

Tripping starting from hot

79 mm, 110 mm, and 145 mm Overloads

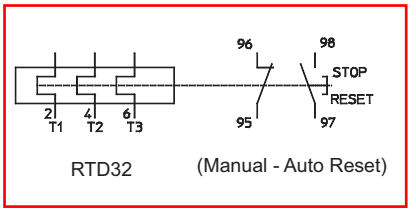


GH15 Series Contactors Overload Technical Characteristics

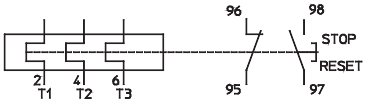
Thermal Overload Relays Specifications					
	RTD32	***RTD65***	***RTD180***	***RTD180-18000***	***RTD320***
Storage temperature	-40 to +70°C (-40°F to 158°F)				
Operating temperature	-25 to +55°C (-13°F to 131°F)				
Tripping class IEC 60947-4-1	10A				
Phase loss sensitive	Yes				
Connection to contactor	Built-in links		Pass through wire	Links for direct	Links for direct
Frequency limits	0-400 Hz		50-60 Hz		
Power dissipation per phase	2.3 Watts	3.7 Watts (52-65 A) setting range: 4.5 W	3 Watts		5 Watts
Short circuit current rating 600V	5kA rms				
Aux contacts wire range	14-10 AWG				
Aux contacts tightening torque	8.1 lb·in				

Overload Aux Contact Ratings					
Contact Rating Code Designation	***Thermal Continuous Current (Amps)***	***Maximum Current (Amps)***			
		120 Volt	***240 Volt***	***480 Volt***	***600 Volt***
		Make / Break	***Make / Break***	***Make / Break***	***Make / Break***
95-96 (NC) B600	5	30 / 3	15 / 1.5	7.5 / 0.75	6 / 0.6
97-98 (NO) C600	2.5	15 / 1.5	7.5 / 0.75	3.75 / 0.375	3 / 0.3

IEC terminal designations



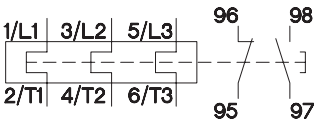
RTD32 (Manual - Auto Reset)



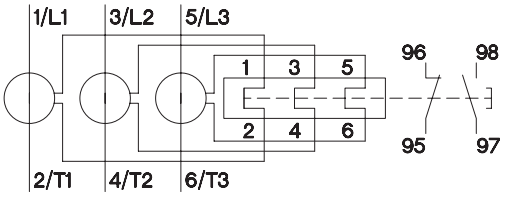
RTD65 (Manual - Auto Reset)

Wiring Diagrams

RTD32 / RTD65

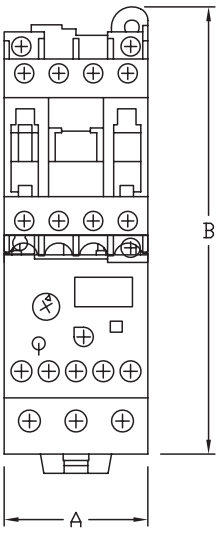


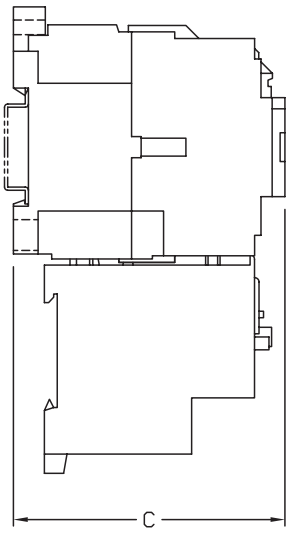
RTD180 / RTD320

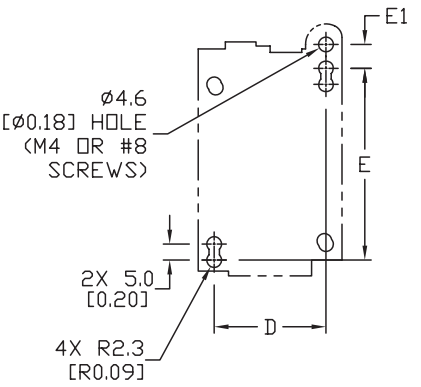


GH15 Series Overload Relay Dimensions

45 mm contactor and overload dimensions





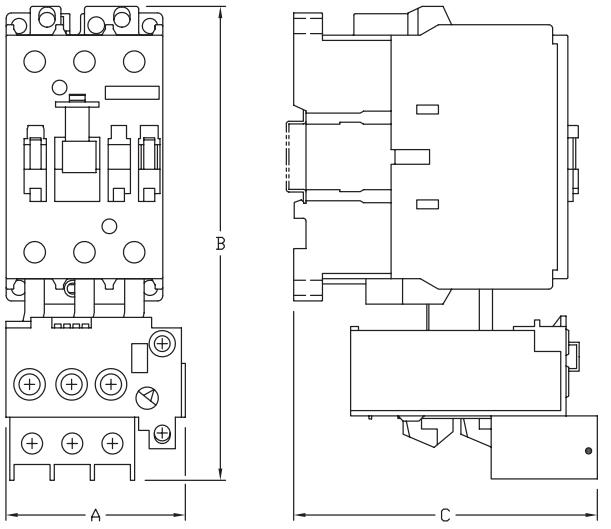


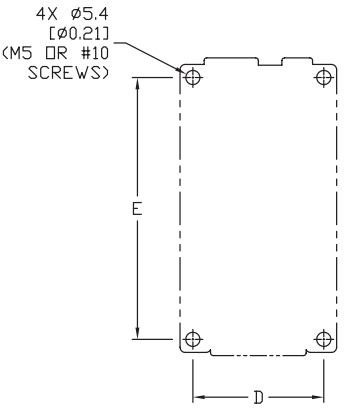
GH15BN, -CN, -DN, -ET, -FT + RTD32

Overload Dimensions mm [inches]													
Contactor Model	Overload Model	Width	Height			Depth	D	E	E1	F	G	H	I
		A	B	B1	B2	C							
GH15BN GH15CN GH15DN GH15ET GH15FT	RTD32	45.0 [1.77]	146.0 [5.75]	–	–	85.0 [3.35]	35.0 [1.38]	60.0 [2.36]	7.5 [0.30]	–	–	–	–
GH15GT GH15HT GH15JT	RTD65	68.5 [2.70]	169.0 [6.65]	–	–	109.0 [4.29]	50.0 [1.97]	100.0 [3.94]	–	–	–	–	–
GH15KT GH15LT GH15MT	RTD180	128.0 [5.04]	contactor and overloads do not have a link connector	137.0 [5.39] 162.0 [6.38]	81.0 [3.19] 81.0 [3.19]	130.0 [5.12]	70.0 [2.76]	100.0 [3.94]	–	–	68.0 [2.68]	40.0 [1.57]	–
GH15NT GH15PT	RTD180-18000		290.0 [11.42]	–	–	145.0 [5.71]	100.0 [3.94]	130.0 [5.12]	–	42.5 [1.67]	68.0 [2.68]	40.0 [1.57]	–
GH15RT GH15ST GH15TT	RTD320	145.0 [5.71]	361.0 [14.21]	–		208.0 [8.19]	120.0 [4.72]	160.0 [6.30]	–	80.0 [3.15]	68.0 [2.68]	40.0 [1.57]	96.0 [3.78]

GH15 Series Overload Relay Dimensions

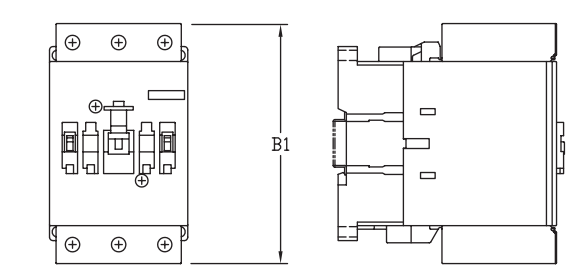
60 mm contactor and overload dimensions

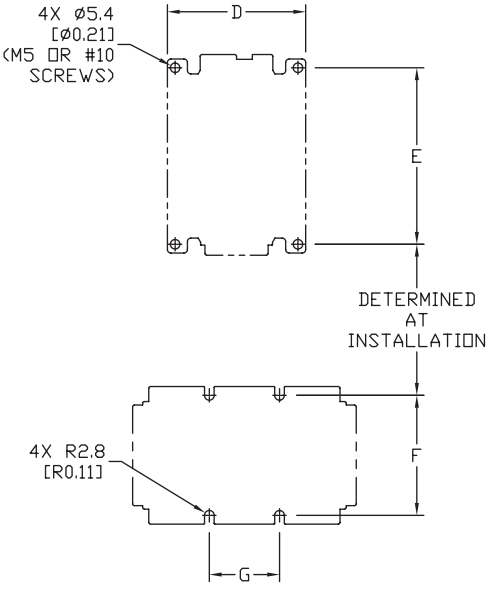


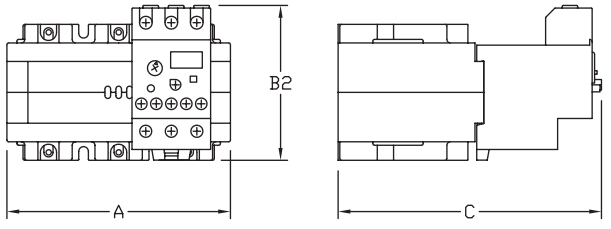


GH15GT, -HT, -JT + RTD65

79 mm contactor and overload dimensions





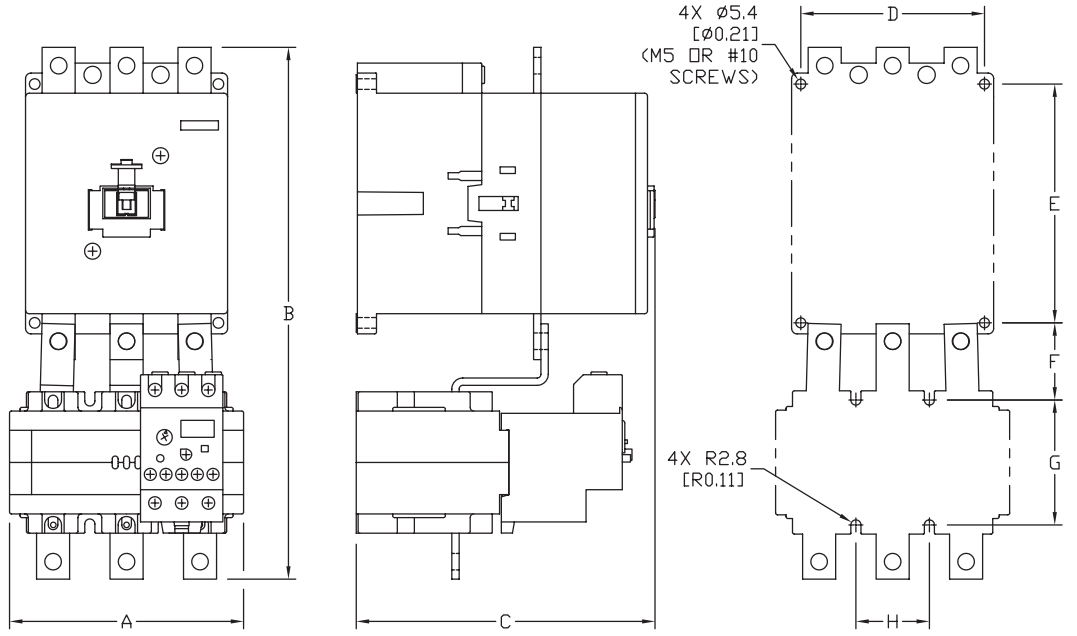


GH15KT, -LT, -MT + RTD180

Note: See our website www.automationdirect.com for complete engineering drawings

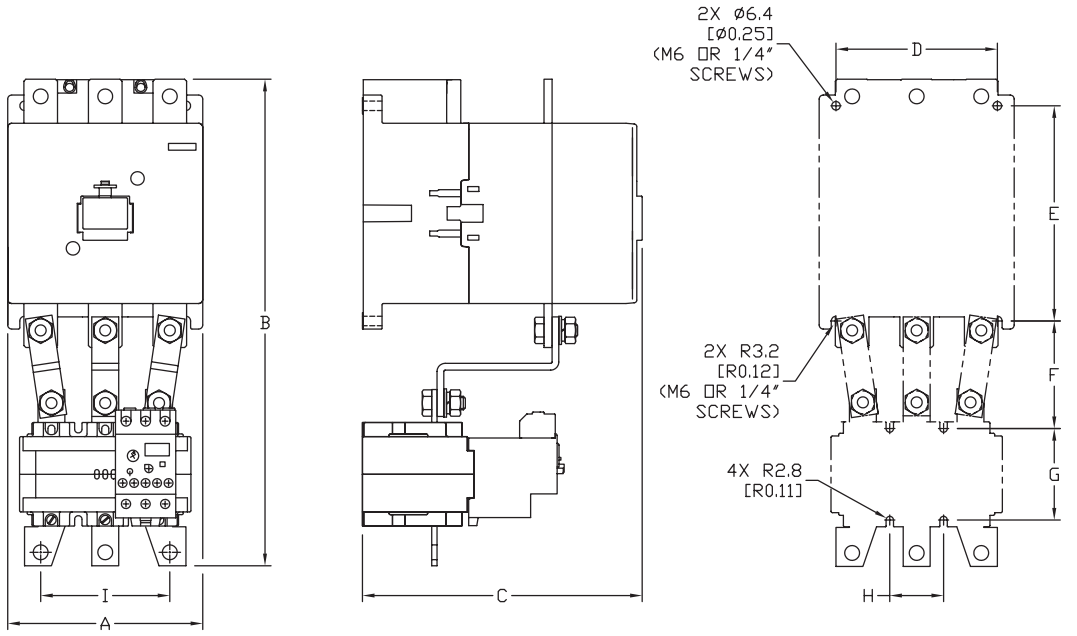
GH15 Series Overload Relay Dimensions

110 mm contactor and overload dimensions



GH15NT, -PT + RTD180-18000

145 mm contactor and overload dimensions

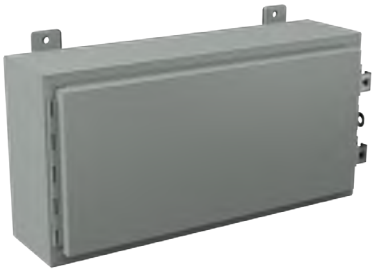


GH15RT, -ST, -TT + RTD320

Note: See our website www.automationdirect.com for complete engineering drawings

NEMA 12 and 13 Single-Door Wall Mount

WIEGMANN



Application

Designed to house electrical and electronic controls, instruments, components and associated wiring. Hinged doors provide easy access. Designed for indoor use in protecting components from dust, dirt, oil and water.

Construction

- Bodies and doors fabricated from 14 gauge steel
- Continuously plasma welded seams
- Rolled lip on three sides of door and all sides of enclosure opening is provided to exclude liquids and contaminants
- Quick and easy-to-operate door clamps are provided
- Doors removable by pulling heavy gauge continuous hinge pin
- Hasp and staple for padlocking
- Doors are sealed with poured in place polyurethane gasket
- Collar studs provided for mounting optional subpanels
- External mounting feet
- Grounding provisions provided
- Optional subpanels must be ordered separately

Finish

- ANSI-61 gray polyester powder light texture inside and outside over phosphatized surfaces.

Listings

- UL 508, Types 12 and 13 [UL file E64791]
- CSA Certified, Type 12 [CSA file LL66078]
- Meets NEMA/EEMAC Types 12 and 13 requirements
- JIC EL-1-71

Enclosure Shipping Schedule		
Same day	1 - 7 days	1 -10 days
Color indicates shipping lead time in business days.		

NOTE: Do NOT use NPxxxxC subpanels in NEMA 1, NEMA 4 and 4X, and NEMA 12 enclosures. For example: Subpanel NP1612C will not fit enclosure WA161206FM [NP1612 is the correct subpanel]. Only use NPxxxx subpanels in NEMA 1, NEMA 4 and 4X, and NEMA 12 enclosures.

NEMA 12 and 13 Single-Door Wall Mount							
Part Number	Price	Enclosure Size HxWxD	No. of Clamps	Painted Steel Subpanel	Stainless Steel Subpanel	Galvanized Steel Subpanel	Perforated Subpanel
N12122406	$254.00	12x24x6 [305x610x152]	2	NP1224	–	NP1224G	–
N12122408	$268.00	12x24x8 [305x610x203]	2	NP1224	–	NP1224G	–
N12161206	$204.00	16x12x6 [406x305x152]	2	NP1612	NP1612SS	NP1612G	NP1612PP
N12161208	$196.00	16x12x8 [406x305x203]	2	NP1612	NP1612SS	NP1612G	NP1612PP
N12161210	$247.00	16x12x10 [406x305x254]	2	NP1612	NP1612SS	NP1612G	NP1612PP
N12161606	$243.00	16x16x6 [406x406x152]	2	NP1616	NP1616SS	NP1616G	NP1616PP
N12161608	$256.00	16x16x8 [406x406x203]	2	NP1616	NP1616SS	NP1616G	NP1616PP
N12162006	$260.00	16x20x6 [406x508x152]	2	NP2016	NP2016SS	NP2016G	NP2016PP
N12162008	$274.00	16x20x8 [406x508x203]	2	NP2016	NP2016SS	NP2016G	NP2016PP
N12201206	$239.00	20x12x6 [508x305x152]	2	NP2012	–	NP2012G	–
N12201208	$252.00	20x12x8 [508x305x203]	2	NP2012	–	NP2012G	–
N12201606	$216.00	20x16x6 [508x406x152]	2	NP2016	NP2016SS	NP2016G	NP2016PP
N12201608	$248.00	20x16x8 [508x406x203]	2	NP2016	NP2016SS	NP2016G	NP2016PP
N12201610	$289.00	20x16x10 [508x406x254]	2	NP2016	NP2016SS	NP2016G	NP2016PP
N12201612	$303.00	20x16x12 [508x406x305]	2	NP2016	NP2016SS	NP2016G	NP2016PP
N12202006	$253.00	20x20x6 [508x508x152]	2	NP2020	NP2020SS	NP2020G	NP2020PP
N12202008	$297.00	20x20x8 [508x508x203]	2	NP2020	NP2020SS	NP2020G	NP2020PP

Note: Subpanels must be ordered separately. Dimensions in inches [millimeters]; letters in table correspond to letters on dimensional drawings.

NEMA 12 and 13 Single-Door Wall Mount

NEMA 12 and 13 Single-Door Wall Mount [cont.]							
Part Number	Price	Enclosure Size HxWxD	No. of Clamps	Painted Steel Subpanel	Stainless Steel Subpanel	Galvanized Steel Subpanel	Perforated Subpanel
N12202010	$313.00	20x20x10 [508x508x254]	2	NP2020	NP2020SS	NP2020G	NP2020PP
N12202406	$301.00	20x24x6 [508x610x152]	2	NP2420	NP2420SS	NP2420G	NP2420PP
N12202408	$319.00	20x24x8 [508x610x203]	2	NP2420	NP2420SS	NP2420G	NP2420PP
N12241206	$254.00	24x12x6 [610x305x152]	2	NP1224	–	NP1224G	–
N12241208	$268.00	24x12x8 [610x305x203]	2	NP1224	–	NP1224G	–
N12241210	$282.00	24x12x10 [610x305x254]	2	NP1224	–	NP1224G	–
N12241606	$278.00	24x16x6 [610x406x152]	2	NP2416	NP2416SS	NP2416G	–
N12241608	$294.00	24x16x8 [610x406x203]	2	NP2416	NP2416SS	NP2416G	–
N12242006	$272.00	24x20x6 [610x508x152]	2	NP2420	NP2420SS	NP2420G	NP2420PP
N12242008	$288.00	24x20x8 [610x508x203]	2	NP2420	NP2420SS	NP2420G	NP2420PP
N12242010	$336.00	24x20x10 [610x508x254]	2	NP2420	NP2420SS	NP2420G	NP2420PP
N12242012	$354.00	24x20x12 [610x508x305]	2	NP2420	NP2420SS	NP2420G	NP2420PP
N12242016	$389.00	24x20x16 [610x508x406]	2	NP2420	NP2420SS	NP2420G	NP2420PP
N12242406	$325.00	24x24x6 [610x610x152]	2	NP2424	NP2424SS	NP2424G	NP2424PP
N12242408	$285.00	24x24x8 [610x610x203]	2	NP2424	NP2424SS	NP2424G	NP2424PP
N12242410	$363.00	24x24x10 [610x610x254]	2	NP2424	NP2424SS	NP2424G	NP2424PP
N12242412	$382.00	24x24x12 [610x610x305]	2	NP2424	NP2424SS	NP2424G	NP2424PP
N12242416	$420.00	24x24x16 [610x610x406]	2	NP2424	NP2424SS	NP2424G	NP2424PP
N12243008	$382.00	24x30x8 [610x762x203]	2	NP3024	NP3024SS	NP3024G	NP3024PP
N12301606	$304.00	30x16x6 [762x406x152]	2	NP3016	–	NP3016G	–
N12302006	$332.00	30x20x6 [762x508x152]	2	NP3020	NP3020SS	NP3020G	–
N12302008	$352.00	30x20x8 [762x508x203]	2	NP3020	NP3020SS	NP3020G	–
N12302010	$372.00	30x20x10 [762x508x254]	2	NP3020	NP3020SS	NP3020G	–
N12302406	$361.00	30x24x6 [762x610x152]	2	NP3024	NP3024SS	NP3024G	NP3024PP
N12302408	$345.00	30x24x8 [762x610x203]	2	NP3024	NP3024SS	NP3024G	NP3024PP
N12302410	$335.00	30x24x10 [762x610x254]	2	NP3024	NP3024SS	NP3024G	NP3024PP
N12302412	$425.00	30x24x12 [762x610x305]	2	NP3024	NP3024SS	NP3024G	NP3024PP
N12302416	$468.00	30x24x16 [762x610x406]	2	NP3024	NP3024SS	NP3024G	NP3024PP
N12302420	$510.00	30x24x20 [762x610x508]	2	NP3024	NP3024SS	NP3024G	NP3024PP
N12302424	$553.00	30x24x24 [762x610x610]	2	NP3024	NP3024SS	NP3024G	NP3024PP

Note: Subpanels must be ordered separately. Dimensions in inches [millimeters]; letters in table correspond to letters on dimensional drawings.

NEMA 12 and 13 Single-Door Wall Mount

NEMA 12 and 13 Single-Door Wall Mount [cont.]							
Part Number	Price	Enclosure Size HxWxD	No. of Clamps	Painted Steel Subpanel	Stainless Steel Subpanel	Galvanized Steel Subpanel	Perforated Subpanel
N12303008	$427.00	30x30x8 [762x762x203]	2	NP3030	NP3030SS	NP3030G	NP3030PP
N12303012	$475.00	30x30x12 [762x762x305]	2	NP3030	NP3030SS	NP3030G	NP3030PP
N12303608	$472.00	30x36x8 [762x914x203]	2	NP3630	NP3630SS	NP3630G	NP3630PP
N12362406	$396.00	36x24x6 [914x610x152]	2	NP3624	NP3624SS	NP3624G	NP3624PP
N12362408	$379.00	36x24x8 [914x610x203]	2	NP3624	NP3624SS	NP3624G	NP3624PP
N12362410	$444.00	36x24x10 [914x610x254]	2	NP3624	NP3624SS	NP3624G	NP3624PP
N12362412	$468.00	36x24x12 [914x610x305]	2	NP3624	NP3624SS	NP3624G	NP3624PP
N12363006	$403.00	36x30x6 [914x762x152]	2	NP3630	NP3630SS	NP3630G	NP3630PP
N12363008	$472.00	36x30x8 [914x762x203]	2	NP3630	NP3630SS	NP3630G	NP3630PP
N12363010	$450.00	36x30x10 [914x762x254]	2	NP3630	NP3630SS	NP3630G	NP3630PP
N12363012	$525.00	36x30x12 [914x762x305]	2	NP3630	NP3630SS	NP3630G	NP3630PP
N12363016	$578.00	36x30x16 [914x762x406]	2	NP3630	NP3630SS	NP3630G	NP3630PP
N12363020	$629.00	36x30x20 [914x762x508]	2	NP3630	NP3630SS	NP3630G	NP3630PP
N12363608	$525.00	36x36x8 [914x914x203]	2	NP3636	NP3636SS	NP3636G	NP3636PP
N12363612	$525.00	36x36x12 [914x914x305]	2	NP3636	NP3636SS	NP3636G	NP3636PP
N12422408	$458.00	42x24x8 [1067x610x203]	3	NP4224	–	NP4224G	–
N12423008	$517.00	42x30x8 [1067x762x203]	3	NP4230	NP4230SS	NP4230G	NP4230PP
N12423010	$546.00	42x30x10 [1067x762x254]	3	NP4230	NP4230SS	NP4230G	NP4230PP
N12423012	$574.00	42x30x12 [1067x762x305]	3	NP4230	NP4230SS	NP4230G	NP4230PP
N12423608	$577.00	42x36x8 [1067x914x203]	3	NP4236	NP4236SS	NP4236G	NP4236PP
N12423610	$607.00	42x36x10 [1067x914x254]	3	NP4236	NP4236SS	NP4236G	NP4236PP
N12423612	$639.00	42x36x12 [1067x914x305]	3	NP4236	NP4236SS	NP4236G	NP4236PP
N12423616	$662.00	42x36x16 [1067x914x406]	3	NP4236	NP4236SS	NP4236G	NP4236PP
N12482408	$489.00	48x24x8 [1219x610x203]	3	NP4824	–	NP4824G	–
N12483008	$554.00	48x30x8 [1219x762x203]	3	NP4830	–	NP4830G	–
N12483010	$585.00	48x30x10 [1219x762x254]	3	NP4830	–	NP4830G	–
N12483608	$620.00	48x36x8 [1219x914x203]	3	NP4836	NP4836SS	NP4836G	NP4836PP
N12483610	$653.00	48x36x10 [1219x914x254]	3	NP4836	NP4836SS	NP4836G	NP4836PP
N12483612	$685.00	48x36x12 [1219x914x305]	3	NP4836	NP4836SS	NP4836G	NP4836PP
N12483616	$751.00	48x36x16 [1219x914x406]	3	NP4836	NP4836SS	NP4836G	NP4836PP

Note: Subpanels must be ordered separately. Dimensions in inches [millimeters]; letters in table correspond to letters on dimensional drawings.

NEMA 12 and 13 Single-Door Wall Mount

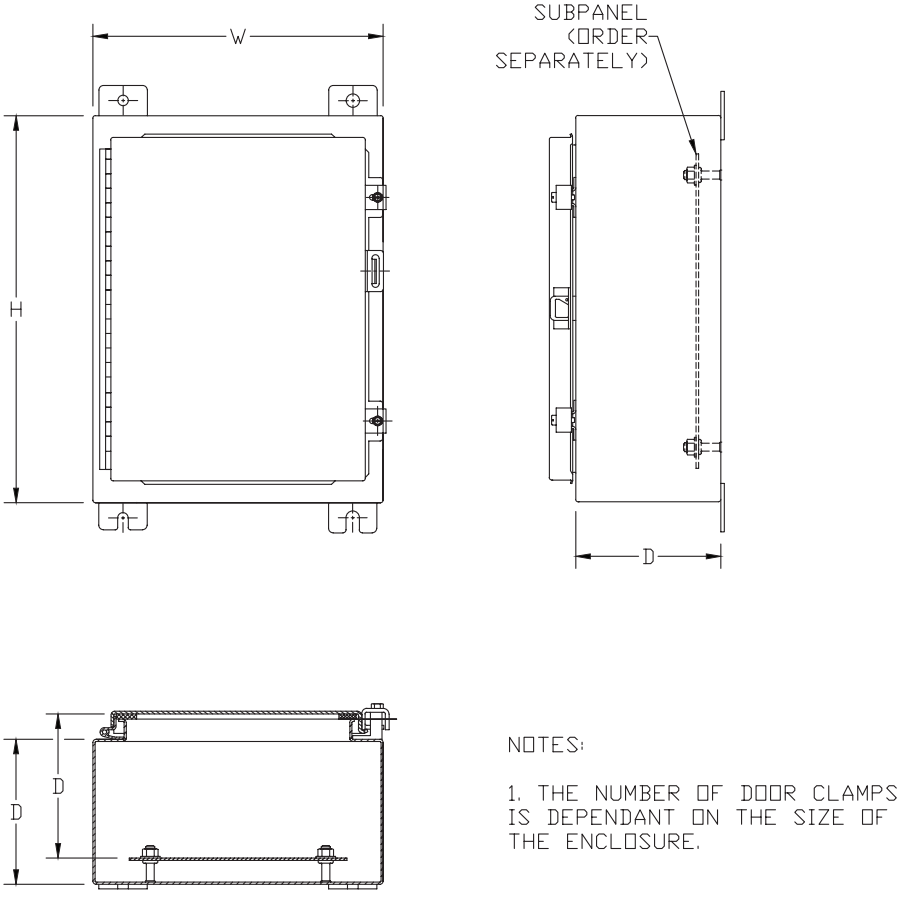
NEMA 12 and 13 Single-Door Wall Mount [cont.]							
Part Number	Price	Enclosure Size HxWxD	No. of Clamps	Painted Steel Subpanel	Stainless Steel Subpanel	Galvanized Steel Subpanel	Perforated Subpanel
N12483620	$817.00	48x36x20 [1219x914x508]	3	NP4836	NP4836SS	NP4836G	NP4836PP
N12603608	$723.00	60x36x8 [1524x914x203]	3	NP6036	NP6036SS	NP6036G	NP6036PP
N12603610	$761.00	60x36x10 [1524x914x254]	3	NP6036	NP6036SS	NP6036G	NP6036PP
N12603612	$798.00	60x36x12 [1524x914x305]	3	NP6036	NP6036SS	NP6036G	NP6036PP
N12603616	$872.00	60x36x16 [1524x914x406]	3	NP6036	NP6036SS	NP6036G	NP6036PP
N12603620	$948.00	60x36x20 [1524x914x508]	3	NP6036	NP6036SS	NP6036G	NP6036PP
N12723012	$838.00	72x30x12 [1829x762x305]	4	NP7230	–	NP7230G	–
N12723016	$873.00	72x30x16 [1829x762x406]	4	NP7230	–	NP7230G	–
N12723612	$911.00	72x36x12 [1829x914x305]	4	NP7236	–	NP7236G	–

Note: Subpanels must be ordered separately. Dimensions in inches [millimeters]; letters in table correspond to letters on dimensional drawings.

Enclosure Shipping Schedule		
Same day	1 - 7 days	1 -10 days
Color indicates shipping lead time in business days.		

Dimensions

in [mm]



See our website: www.AutomationDirect.com for complete engineering drawings.

Variable Frequency Drive

DURAPULSE AC Drives – Introduction



DURApulse Drives																
Motor Rating	Hp	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100
	kW	.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75
Three-Phase 230 Volt Class		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔			
Three-Phase 460 Volt Class		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

Note: Please review the AutomationDirect Terms and Conditions for this product. There is no 30-day money-back guarantee on any drive over 10HP.

Overview

The *DURAPULSE* series of AC drives offers all of the features of our GS2 series of drives including dynamic braking, PID, removable keypad and RS-485 Modbus communication. The *DURAPULSE* AC drive also offers sensorless vector control with the option of encoder feedback for enhanced speed control. The standard **smart** keypad (aka HIM or Human Interface Module) is designed with defaults for the North American customer and allows you to configure the drive, set the speed, start and stop the drive, and monitor critical parameters for your application. In addition, this keypad has internal memory that allows **four** complete programs to be stored and transferred to any *DURAPULSE* drive. The *DURAPULSE* series offers three analog inputs, eleven digital inputs, and one SPDT relay output.

Features

- Simple Volts/Hertz control
- Sensorless vector control with autotune
- Sensorless vector control with optional encoder feedback card, for better speed control
- Sinusoidal pulse width modulation (PWM)
- Variable carrier frequency, depending on model
- IGBT technology
- Starting torque: 125% @ 0.5 Hz/150% @ 1Hz
- 150% rated current for one minute
- Electronic overload protection
- Stall prevention
- Adjustable accel and decel ramps with linear and S-curve settings
- Automatic torque and slip compensation
- Internal dynamic braking circuit for models under 20 hp; optional baking units available for models 20 hp and above
- DC braking
- Five skip frequencies
- Trip history
- Programmable jog speed
- Integral PID control
- Removable **smart** keypad with parameter upload/download
- **HIM** Keypad with memory to store up to four programs of any *DURAPULSE* drive
- Eleven programmable digital inputs
- Three programmable analog inputs
- Three digital and one SPDT relay programmable outputs
- One programmable analog output
- One digital frequency output
- RS-485 Modbus communications
- Ethernet communication optional
- UL/cUL/CE listed

Accessories

- AC line reactors
- EMI filters
- RF filters
- Braking resistors
- Braking units (for models 20 hp and above)
- Fuse kits and replacement fuses
- Ethernet interface
- Replacement keypad
- Remote panel adapter
- Keypad cables in 1, 3, and 5 meter lengths
- Four and eight port RS-485 multi-drop termination boards
- KEP***Direct*** I/O Server
- GSoft drive configuration software
- GS3-FB feedback card

Detailed descriptions and specifications for the accessories are available in the "GS/DURAPULSE Accessories" section.

DURAPULSE part numbering system

GS3 - 2 020

Applicable Motor Capacity

1P0: 1HP	2P0: 2HP
3P0: 3HP	5P0: 5HP
7P5: 7.5HP	010: 10HP
015: 15HP	020: 20HP
025: 25HP	030: 30HP
040: 40HP	050: 50HP
060: 60HP*	075: 75HP*
100: 100HP*	

* 60, 75 and 100HP models available in GS3-4xxx only

Input Voltage

2: 200-240VAC
4: 380-480VAC

Series Name

Typical Applications

- Conveyors
- Fans
- Pumps
- Compressors
- HVAC
- Material handling
- Mixing
- Shop tools
- Extruding
- Grinding

DURAPULSE AC Drives Specifications

230V Class - Three-Phase													
Model Name: GS3-xxx			21P0	22P0	23P0	25P0	27P5	2010	2015	2020	2025	2030	2040	2050
Price			<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Output Rating	**Maximum Motor Output**	**HP**	1.0	2.0	3.0	5.0	7.5	10	15	20	25	30	40	50
		kW	.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37
	Rated Output Current (A)		5	7	11	17	25	33	49	65	75	90	120	145
	Maximum Output Voltage		Three-phase 200 to 240V (proportional to input voltage)											
	Rated Frequency		0.1 to 400 Hz											
Input Rating	**Rated Voltage/Frequency**		Three-phase, 200/208/220/230/240 VAC, 50/60Hz											
	Rated Input Current (A)		5.7	7.6	15.5	20.6	26	34	50	60	75	90	110	142
Voltage/Frequency Tolerance			Voltage: ± 10% Frequency: ± 5%											
Watt Loss 100%			60	82	130	194	301	380	660	750	920	1300	1340	1430
Weight, lb. (kg)			4.5 (2.034)	4.5 (2.034)	9.4 (4.24)	9.4 (4.24)	13.3 (6.031)	13.3 (6.031)	14.3 (6.487)	26.5 12	26.5 12	26.5 12	77.2 (35)	77.2 (35)

Note: Please review the AutomationDirect Terms and Conditions for this product. There is no 30-day money-back guarantee on any drive over 10 hp.

460V Class - Three-Phase																
Model Name: GS3-xxx			41P0	42P0	43P0	45P0	47P5	4010	4015	4020	4025	4030	4040	4050	4060	4075	4100
Price			<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Output Rating	**Maximum Motor Output**	**HP**	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100
		kW	.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75
	Rated Output Current (A)		2.7	4.2	5.5	8.5	13	18	24	32	38	45	60	73	91	110	150
	Maximum Output Voltage		Three-phase 380 to 480V (proportional to input voltage)														
	Rated Frequency		0.1 to 400 Hz														
Input Rating	**Rated Voltage/Frequency**		Three-phase, 380/400/415/440/460/480VAC, 50/60Hz														
	Rated Input Current (A)		3.2	4.3	5.9	11.2	14	19	25	32	39	49	60	63	90	130	160
Voltage/Frequency Tolerance			Voltage: ± 10% Frequency: ± 5%														
Watt Loss 100%			70	102	132	176	250	345	445	620	788	1290	1420	1680	2020	2910	3840
Weight, lb. (kg)			3.9 (1.759)	4.4 (1.994)	4.1 (1.857)	9.4 (4.24)	13.2 (6.002)	13.5 (6.106)	14.4 (6.525)	26.5 (12)	26.5 (12)	26.5 (12)	77.2 (35)	77.2 (35)	77.2 (35)	116.8 (53)	116.8 (53)

Note: Please review the AutomationDirect Terms and Conditions for this product. There is no 30-day money-back guarantee on any drive over 10 hp.

DURAPULSE AC Drives General Specifications

General Specifications			
Control Characteristics			
Control System			Pulse Width Modulation, Carrier frequency adjustable from 1k - 15kHz depending on the model. This system determines the control methods of the AC drive. 00: V/Hz open loop control 01: V/Hz closed loop control 02: Sensorless Vector 03: Sensorless Vector with external feedback
Rated Output Frequency			0.1 to 400.0 Hz
Output Frequency Resolution			0.1 Hz
Overload Capacity			150% of rated current for 1 minute
Torque Characteristics			Includes auto-torque boost, auto-slip compensation, starting torque 125% @ 0.5 Hz / 150% @ 1.0 Hz
Braking Torque			20% without braking resistor, 125% with optional braking resistor (braking circuit built-in only for units under 20 hp)
DC Braking			Operation frequency 60-0 Hz, 0 - 100% rated current, Start time 0.0 - 5.0 seconds, Stop time 0.0 - 25.0 seconds
Acceleration/Deceleration Time			0.1 to 600 seconds (linear or non-linear acceleration/deceleration), second acceleration/deceleration available
Voltage/Frequency Pattern			Settings available for Constant Torque - low & high starting torque, Variable Torque - low & high starting torque, and user configured
Stall Prevention Level			20 to 200% of rated current
Operation Specification			
Inputs	***Frequency Setting***	***Keypad***	Setting by <UP> or <DOWN> buttons
		External Signal	Potentiometer - 3 to 5 kΩ, 0 to 10 VDC (input impedance 10 kΩ), -10 to +10 VDC, 4 to 20 mA (input impedance 250Ω), 0 to 20 mA; Multi-Speed Inputs 1 to 4, RS-232C/RS-485 communication interface
	Operation Setting	***Keypad***	Setting by <RUN>, <STOP>, <JOG> , <FWD>, <REV> buttons
		External Signal	Forward/Stop, Reverse/Stop (run/stop, fwd/rev), 3-wire control, Serial Communication RS-232C & RS-485 (Modbus RTU)
	Input Terminals	***Digital Sink/Source Selectable***	11 user-programmable: FWD/STOP, REV/STOP, RUN/STOP, REV/FWD, RUN momentary (N.O.), STOP momentary (N.C.), External Fault (N.O./N.C.), External Reset, Multi-Speed Bit (1-4), Manual Keyboard Control, Jog, External Base Block (N.O./N.C.), Second Accel/Decel Time, Speed Hold, Increase Speed, Decrease Speed, Reset Speed to Zero, PID Disable (N.O.), PID Disable (N.C.), Input Disable
		Analog	3 user-configurable, 0 to 10V (input impedance 10 kΩ), 0 to 20 mA, 4 to 20 mA (input impedance 250Ω), 10 bit resolution -10V to +10V, 10 bit resolution
Outputs	***Output Terminals***	***Digital 3 transistors 1 relay***	4 user-programmable: Inverter Running, Inverter Fault, At Speed, Zero Speed, Above Desired Frequency, Below Desired Frequency, At Maximum Speed, Over Torque Detected, Above Desired Current, Below Desired Current, PID Deviation Alarm, Heatsink Overheat Warning (OH), Soft Braking Signal, Above desired Frequency 2, Below desired Frequency 2, Encoder Loss
		Digital Square Wave	One digital square wave output representing drive frequency
		Analog	1 user-programmable, 0 to 10V, 8 bit resolution frequency, current, process variable PV
Operating Functions			Automatic voltage regulation, voltage/frequency characteristics selection, non-linear acceleration/deceleration, upper and lower frequency limiters, 15-stage speed operation, adjustable carrier frequency (1 to 15 kHz), PID control, 5 skip frequencies, analog gain & bias adjustment, jog, electronic thermal relay, automatic torque boost, trip history, software protection
Protective Functions			Electronic Thermal, Overload Relay, Auto Restart after Fault, Momentary Power Loss, Reverse Operation Inhibit, Auto Voltage Regulation, Over-Voltage Stall Prevention, Auto Adjustable Accel/Decel, Over-Torque Detection Mode, Over-Torque Detection Level, Over-Torque Detection Time, Over-Current Stall Prevention during Acceleration, Over-Current Stall Prevention during Operation
Operator Interface	***Operator Devices***		9-key, 2 line x 16 character LCD display, 5 status LEDs
	Programming		Parameter values for setup and review, fault codes
	Status Display		Output Frequency, Motor Speed, Scaled Frequency, Output Current, Motor Load, Output Voltage, DC Bus Voltage, PID Setpoint, PID Feedback, Frequency Setpoint
	Key Functions		RUN, STOP/RESET, FWD/REV, PROGRAM, DISPLAY, <UP>, <DOWN>, ENTER
Environment	***Enclosure Rating***		Protected Chassis, IP20
	Ambient Temperature		-10°C to 40°C (14°F to 104°F)
	Storage Temperature		-20°C to 60°C (-4°F to 140°F) – during short term transportation period
	Ambient Humidity		20 to 90% RH (non-condensing)
	Vibration		9.8 m/s^2 (1G) less than 10 Hz, 5.9 m/s^2 (0.6G) 10 to 60 Hz
	Installation Location		Altitude 1000m or lower above sea level, keep from corrosive gas, liquid and dust
Options			Noise filter, input AC reactor, output AC reactor, cable for remote operator, programming software, dynamic braking resistor, dynamic braking unit; RF filter; remote panel adapter; Ethernet interface; four and eight port RS-485 multi-drop termination boards, replacement keypads, fuse kits and replacement fuses

DURAPULSE Drives Specifications – Installation

Understanding the installation requirements for your *DURAPULSE* AC drive will help to ensure that it operates within its environmental and electrical limits.

Note: Never use only this catalog for installation instructions or operation of equipment; refer to the user manual, GS3-M.

Environmental Specifications	
Protective Structure [1]	IP20
Ambient Operating Temperature [2]	-10 to 40°C (14°F to 104°F) f
Storage Temperature [3]	-20 to 60°C (-4°F to 140°F)
Humidity	To 90% (no condensation)
Vibration [4]	9.8 m/S^2 (1G), less than 10 Hz 5.9 m/S^2 (0.6G),10 to 60 Hz
Location	Altitude 1,000 m or less, indoors (no corrosive gases, liquids or dust)

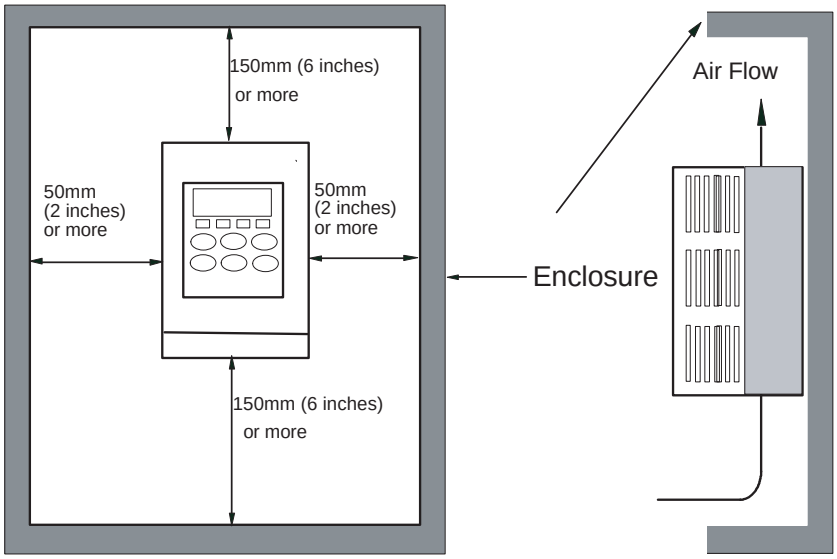
1: Protective structure is based upon EN60529

2: The ambient temperature must be in the range of -10° to 40°C. If the range will be up to 50°C, you will need to set the carrier frequency to 2.1 kHz or less and derate the output current to 80% or less.

3: The storage temperature refers to the short-term temperature during transport.

4: Conforms to the test method specified in JIS CO911 (1984)

Watt-loss Chart	
GS3 Drive Model	***At full load***
GS3-21P0	60
GS3-22P0	82
GS3-23P0	130
GS3-25P0	194
GS3-27P5	301
GS3-2010	380
GS3-2015	660
GS3-2020	750
GS3-2025	920
GS3-2030	1300
GS3-2040	1340
GS3-2050	1430
GS3-41P0	70
GS3-42P0	102
GS3-43P0	132
GS3-45P0	176
GS3-47P5	250
GS3-4010	345
GS3-4015	445
GS3-4020	620
GS3-4025	788
GS3-4030	1290
GS3-4040	1420
GS3-4050	1680
GS3-4060	2020
GS3-4075	2910
GS3-4100	3840



Minimum Clearances and Air Flow

Warning: AC drives generate a large amount of heat which may damage the AC drive. Auxiliary cooling methods are typically required in order not to exceed maximum ambient temperatures.

Warning: Maximum ambient temperatures must not exceed 50°C (122°F), or 40°C (104°F) for models 7.5 hp (5.5 kW) and higher!

DURAPULSE AC Drives Specifications — Terminals

Main Circuit Terminals	
Terminal	Description
L1, L2, L3	Input Power
T1, T2, T3	AC Drive Output
B1, B2	Braking Resistor Connection (Under 20HP)
+2, – (negative)	External Dynamic Brake Unit (20HP & Over)
⏚	Ground



GS3-4030 shown

Control Circuit Terminals		
Terminal Symbol	***Description***	***Remarks***
+24V	DC Voltage Source	(+24V, 20mA), used only for AC drive digital inputs wired for source mode operation
DI1	Digital Input 1	Input Voltage: Internally Supplied (see Warning below) Sink Mode: Low active, VinL Min = 0V, VinL Max = 15V, Iin Min = 2.1mA, Iin Max = 7.0mA Source Mode: High active, VinH Min = 8.5V, VinH Max = 24V, Iin Min = 2.1mA, Iin Max = 7.0mA Input response: 12 - 15 msec Also see "Basic Wiring Diagram" on the next pages.
DI2	Digital Input 2	
DI3	Digital Input 3	
DI4	Digital Input 4	
DI5	Digital Input 5	
DI6	Digital Input 6	
DI7	Digital Input 7	
DI8	Digital Input 8	
DI9	Digital Input 9	
DI10	Digital Input 10	
DI11	Digital Input 11	
DCM	Digital Common	
+10V	Internal Power Supply	+10VDC (10mA maximum load)
AI1	Analog Input	0 to +10 V input only
AI2	Analog Input	0 to 20mA / 4 to 20mA input
AI3	Analog Input	-10 to +10 V input only
ACM	Analog Common	
R1O	Relay Output 1 Normally Open	Resistor Load: 240VAC - 5A (N.O) / 3A (N.C.) 24VDC - 5A (N.O.) / 3A (N.C.) Inductive Load: 240VAC - 1.5A (N.O) / 0.5A (N.C) 24VDC - 1.5A (N.O) / 0.5A (N.C) See P 3.01 to P 3.03
R1C	Relay Output 1 Normally Closed	
R1	Relay Output 1 Common	
DO1	Photocoupled digital output	Maximum 48VDC, 50mA
DO2	Photocoupled digital output	
DO3	Photocoupled digital output	
DOC	Digital Output Common	
AO	Analog Output	0 to +10 V 2mA Output
FO	Digital Frequency Output	Square wave pulse train output

WARNING: Do NOT connect external voltage sources to the digital inputs. Permanent damage may result.

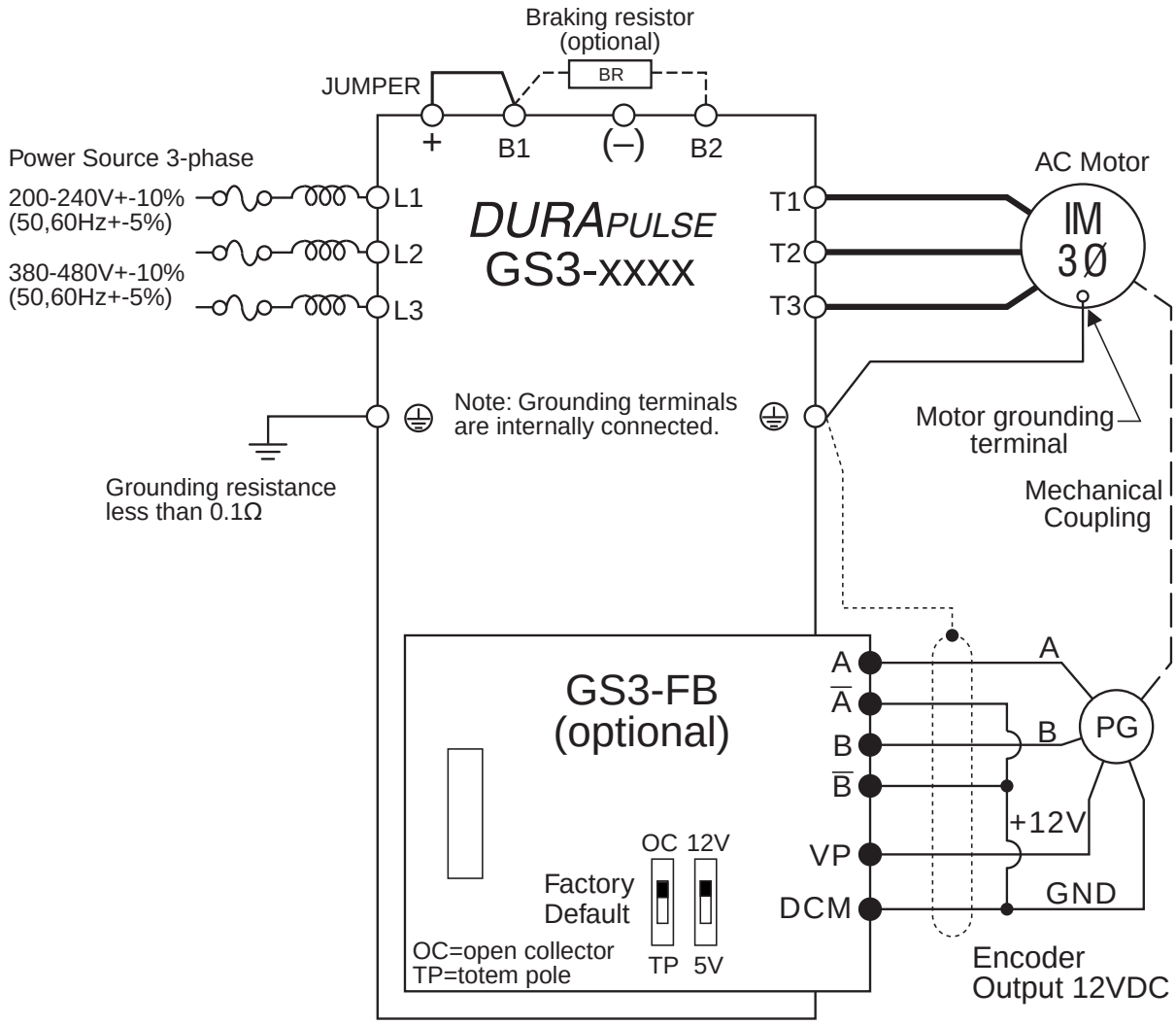
NOTE: USE TWISTED-SHIELDED, TWISTED-PAIR OR SHIELDED-LEAD WIRES FOR THE CONTROL SIGNAL WIRING. IT IS RECOMMENDED TO RUN ALL SIGNAL WIRING IN A SEPARATE STEEL CONDUIT. THE SHIELD WIRE SHOULD ONLY BE CONNECTED AT THE AC DRIVE. DO NOT CONNECT SHIELD WIRE ON BOTH ENDS.

DURAPULSE AC Drives – Basic Wiring Diagram

Power Wiring Diagram - drives under 20 hp

***Note:** Users MUST connect wiring according to the circuit diagram shown below. (Refer to user manual GS3-M for additional specific wiring information.)*

***Note:** Refer to the following pages for explanations and information regarding feedback cards, line reactors, braking resistors, EMI and RF filters, and fuses:*
12–48, 12–50, 12–56, 12–61, 12–67, 12–68.



○ Main circuit (power) terminals ● Control circuit terminal ⫩ Shielded leads

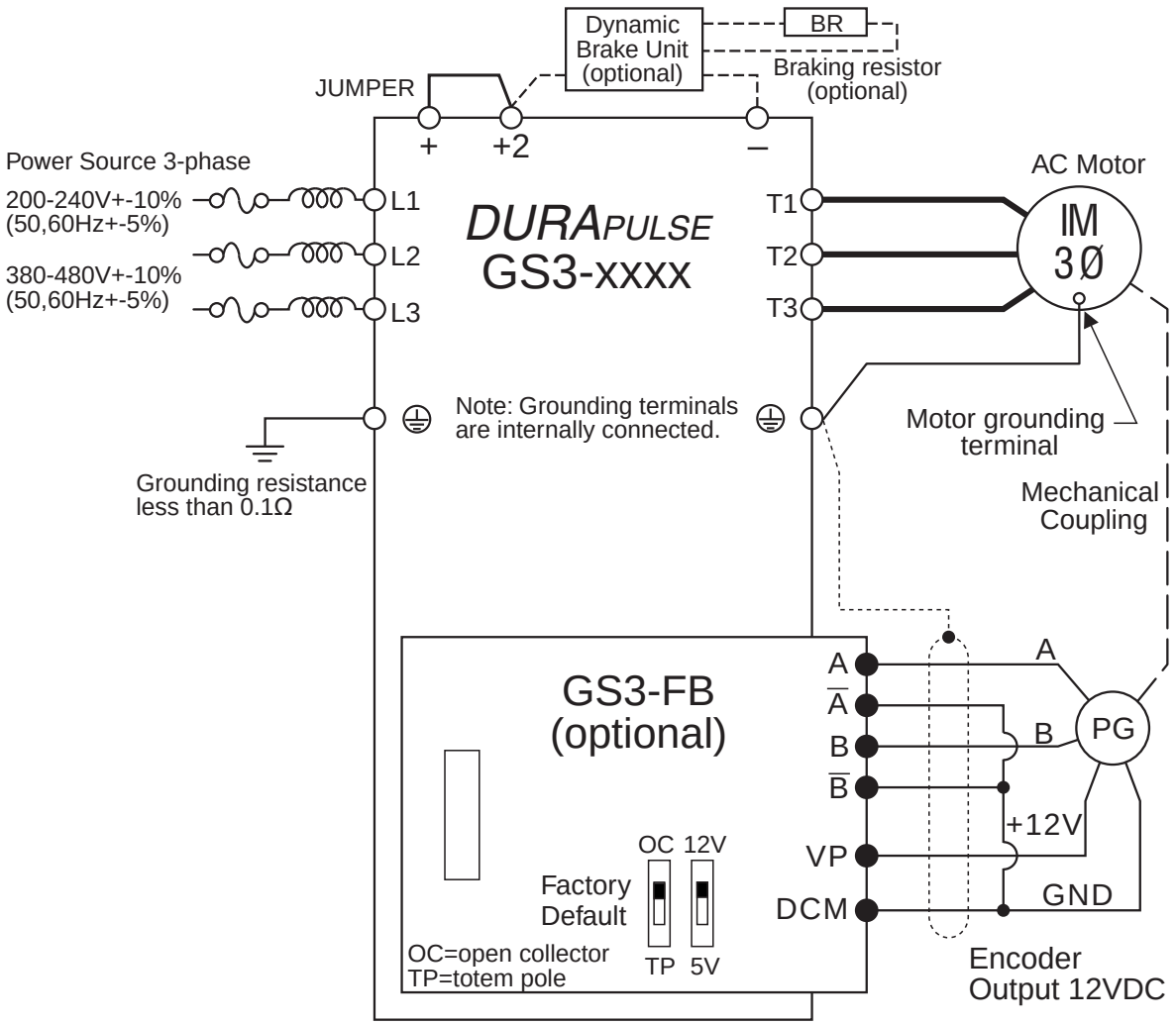
WARNING: Do not plug a modem or telephone into the GS3/*DURAPULSE* RJ-12 Serial Comm Port, or permanent damage may result. Terminals 2 and 5 should not be used as a power source for your communication connection.

DURAPULSE AC Drives – Basic Wiring Diagram

Power Wiring Diagram – 20 to 30 hp (230 VAC) & 20 to 60 hp (460 VAC)

Note: Users MUST connect wiring according to the circuit diagram shown below. (Refer to user manual GS3-M for additional specific wiring information.)

Note: Refer to the following pages for explanations and information regarding feedback cards, line reactors, braking units and resistors, EMI and RF filters, and fuses: 12–48, 12–50, 12–54, 12–56, 12–61, 12–67, 12–68.



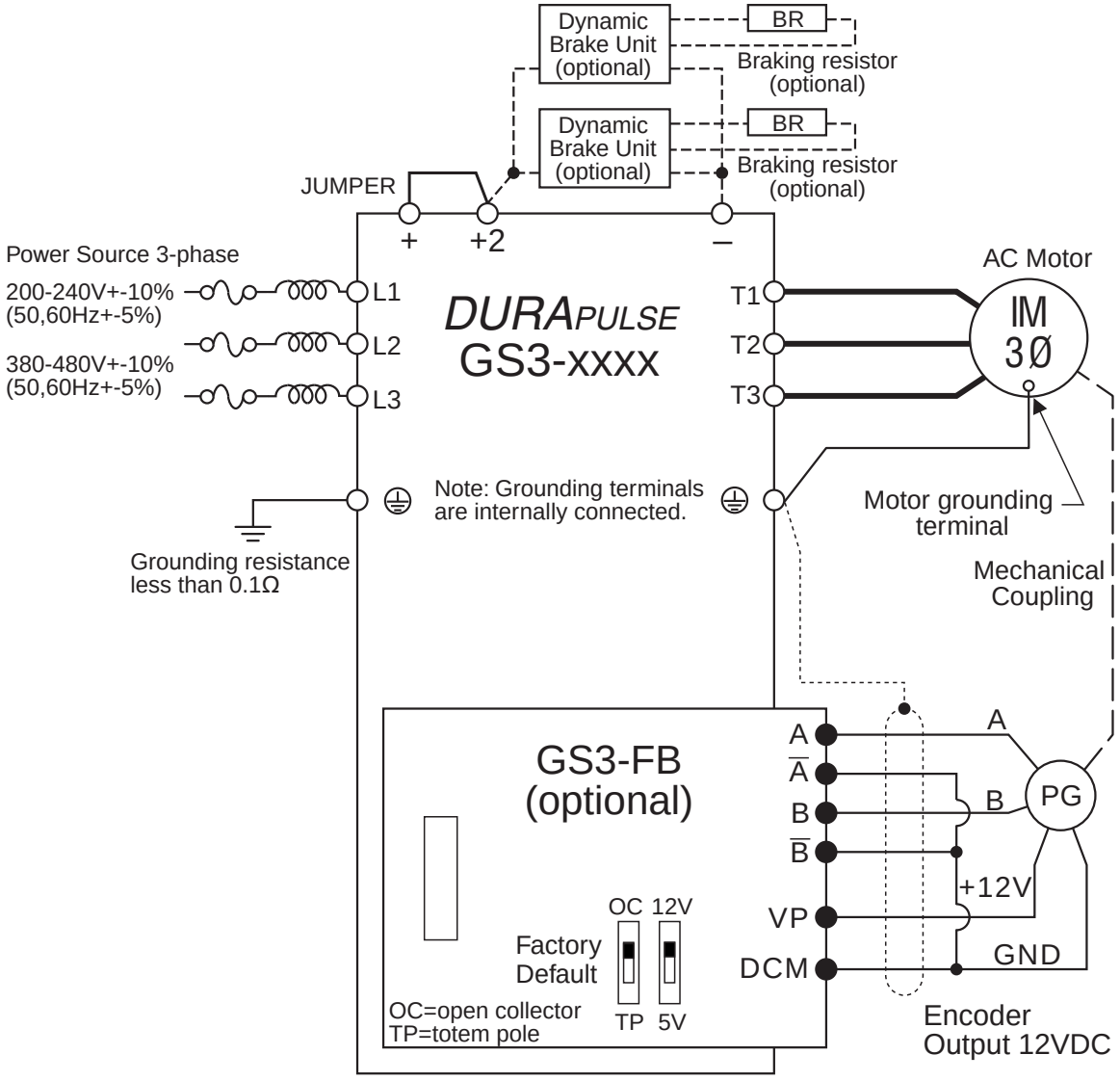
WARNING: Do not plug a modem or telephone into the GS3/*DURAPULSE* RJ-12 Serial Comm Port, or permanent damage may result. Terminals 2 and 5 should not be used as a power source for your communication connection.

DURAPULSE AC Drives – Basic Wiring Diagram

Power Wiring Diagram - 40 to 50 hp (230 VAC) & 75 to 100 hp (460 VAC)

Note: Users MUST connect wiring according to the circuit diagram shown below. (Refer to user manual GS3-M for additional specific wiring information.)

Note: Refer to the following pages for explanations and information regarding feedback cards, line reactors, braking units and resistors, EMI and RF filters, and fuses: 12–48, 12–50, 12–54, 12–56, 12–61, 12–67, 12–68.



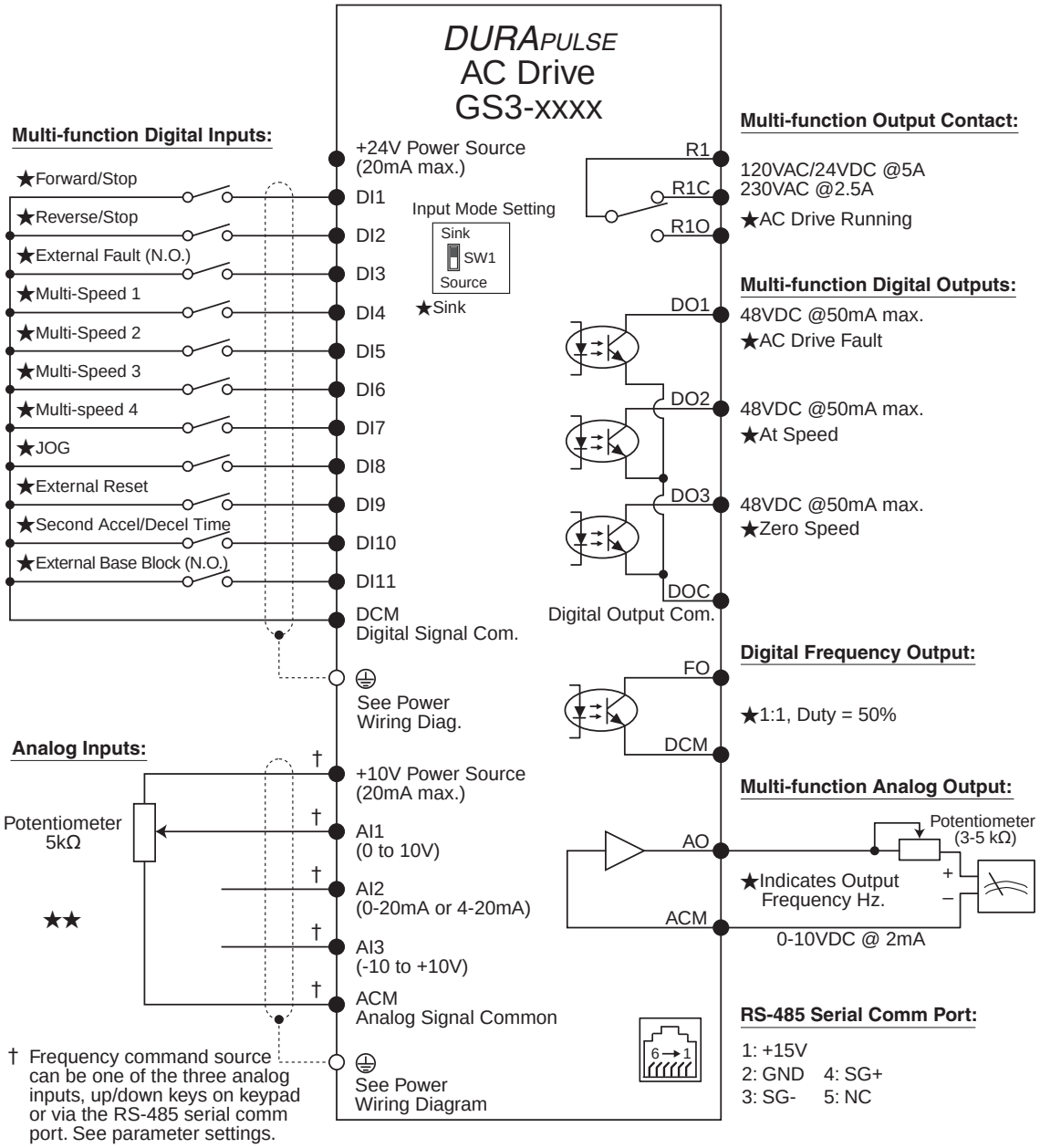
○ Main circuit (power) terminals ● Control circuit terminal ⫩ Shielded leads

WARNING: Do not plug a modem or telephone into the GS3/*DURAPULSE* RJ-12 Serial Comm Port, or permanent damage may result. Terminals 2 and 5 should not be used as a power source for your communication connection.

DURAPULSE AC Drives – Control Wiring Diagram – DI Connection to Sinking Outputs

Control Wiring Diagram - Digital Input Connections to Sinking Output Devices

NOTE: USERS MUST CONNECT WIRING ACCORDING TO THE CIRCUIT DIAGRAM SHOWN BELOW.



★Factory default setting

★★Factory default source of frequency command is via the keypad up/down keys

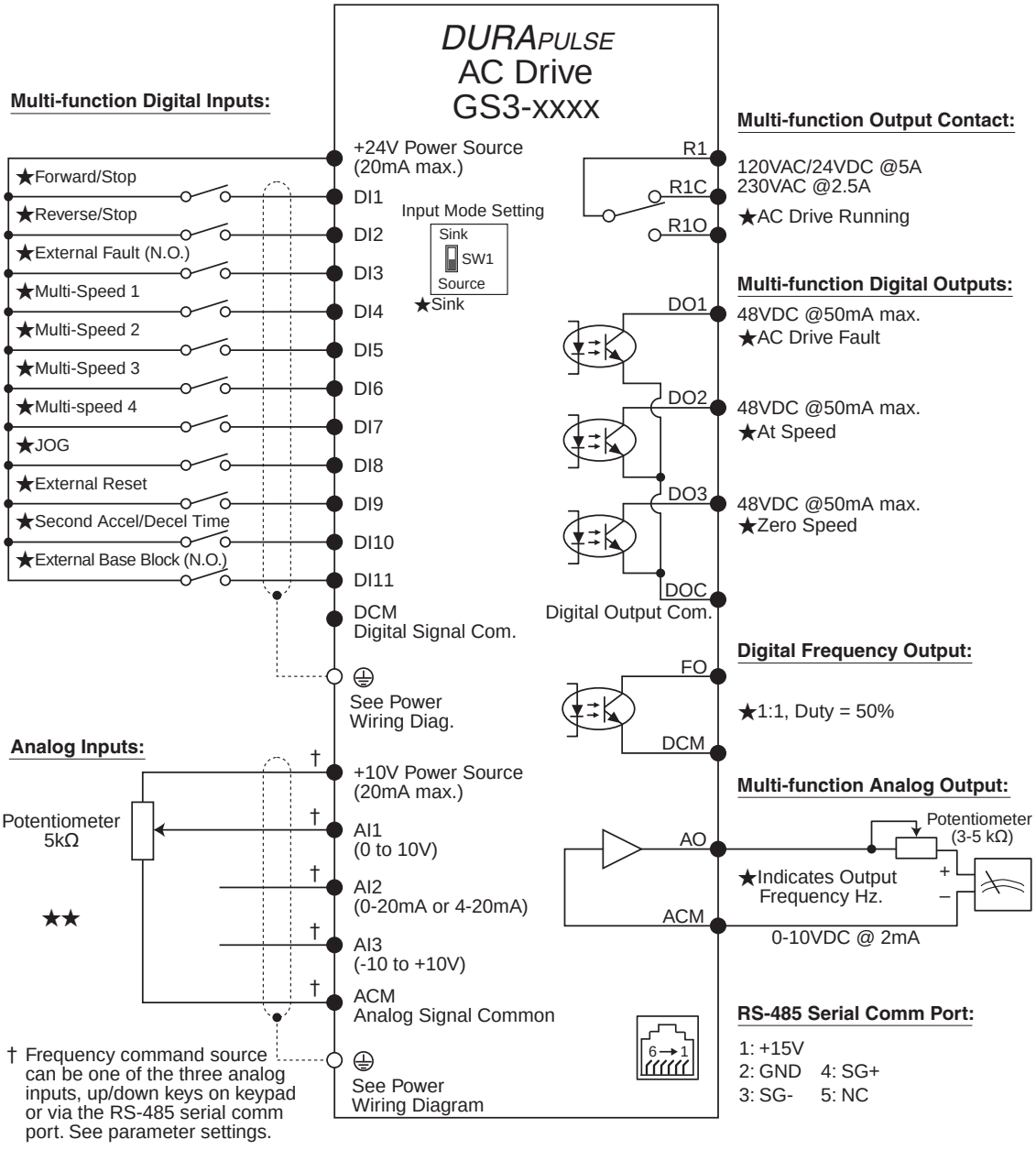
○ Main circuit (power) terminals ● Control circuit terminal ⫩ Shielded leads

WARNING: Do not plug a modem or telephone into the *DURAPULSE* RJ-12 Serial Comm Port, or permanent damage may result.

*DURA*PULSE AC Drives – Control Wiring Diagram – DI Connections to Sourcing Outputs

Control Wiring Diagram - Digital Input Connections to Sourcing Output Devices

NOTE: USERS MUST CONNECT WIRING ACCORDING TO THE CIRCUIT DIAGRAM SHOWN BELOW.



★Factory default setting

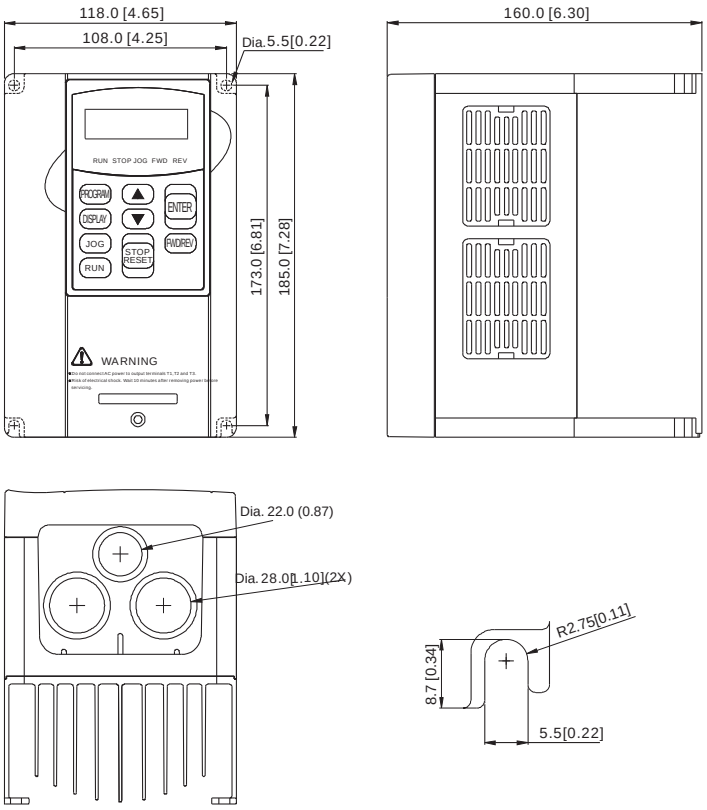
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○ Main circuit (power) terminals ● Control circuit terminal ⫩ Shielded leads

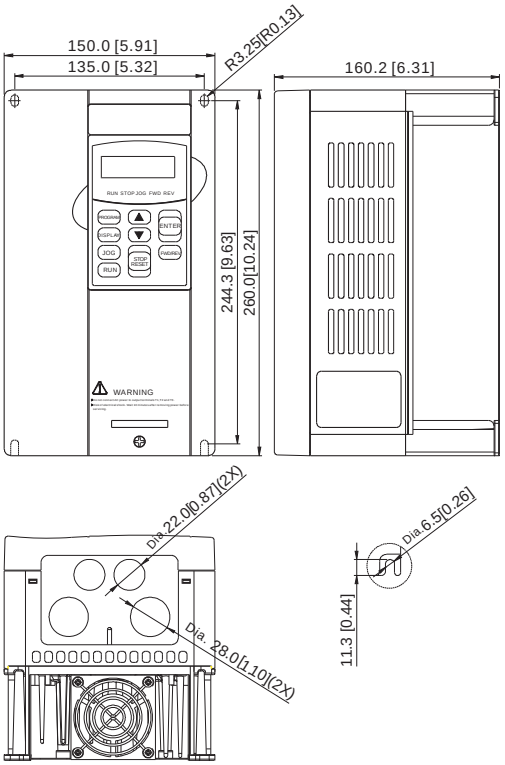
WARNING: Do not plug a modem or telephone into the *DURA*PULSE RJ-12 Serial Comm Port, or permanent damage may result.

DURAPULSE AC Drives — Dimensions

GS3-21P0, GS3-22P0, GS3-41P0, GS3-42P0



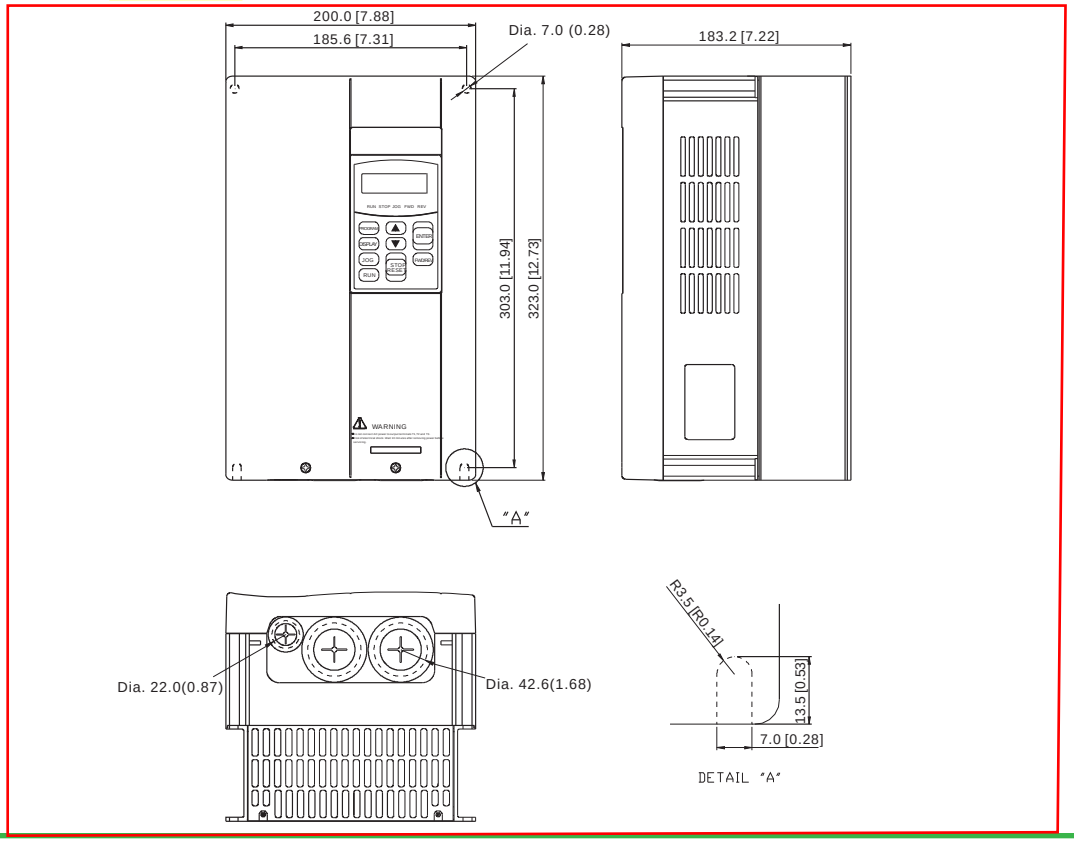
GS3-23P0, GS3-25P0, GS3-45P0



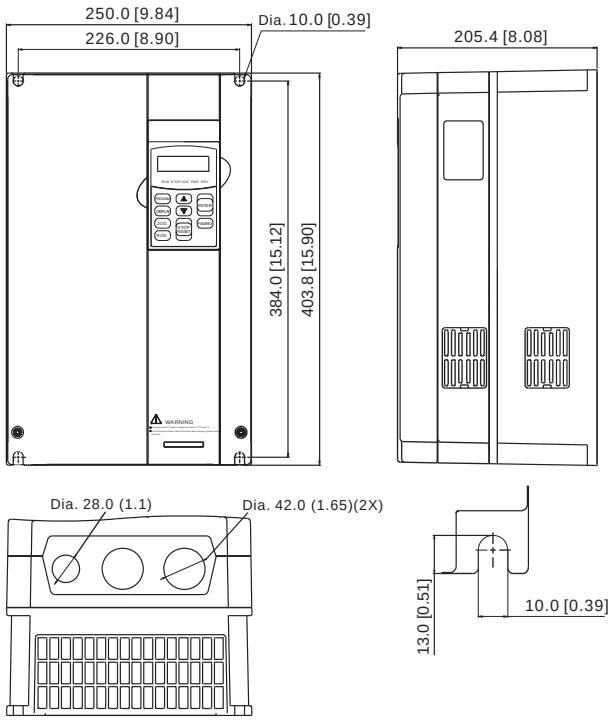
unit: mm(in)

DURAPULSE AC Drives — Dimensions

GS3-27P5, GS3-2010, GS3-2015, GS3-47P5, GS3-4010, GS3-4015



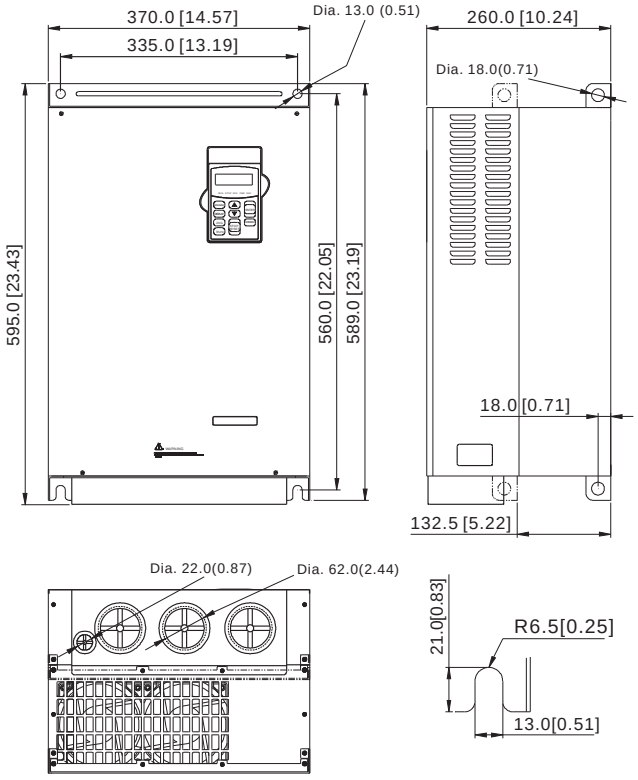
GS3-2020, GS3-2025, GS3-2030, GS3-4020, GS3-4025, GS3-4030



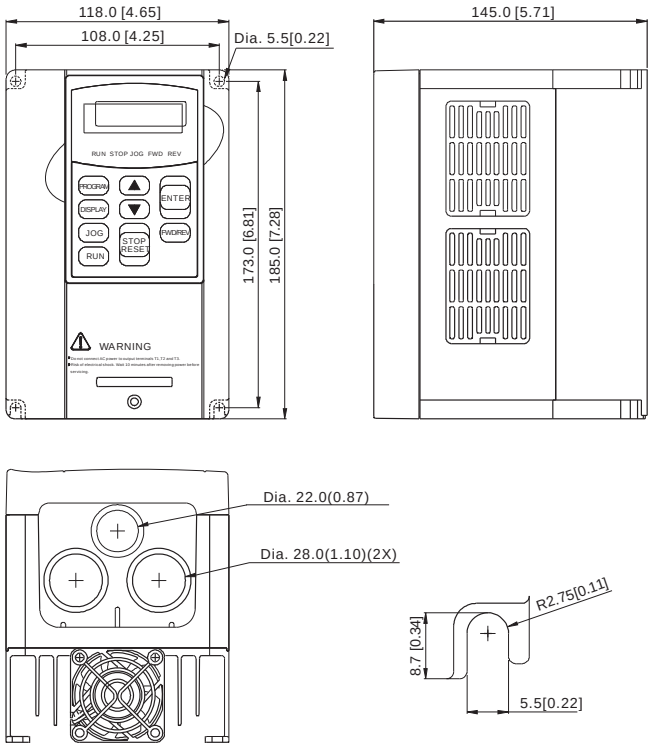
unit: mm(in)

DURAPULSE AC Drives — Dimensions

GS3-2040, GS3-2050, GS3-4040, GS3-4050, GS3-4060



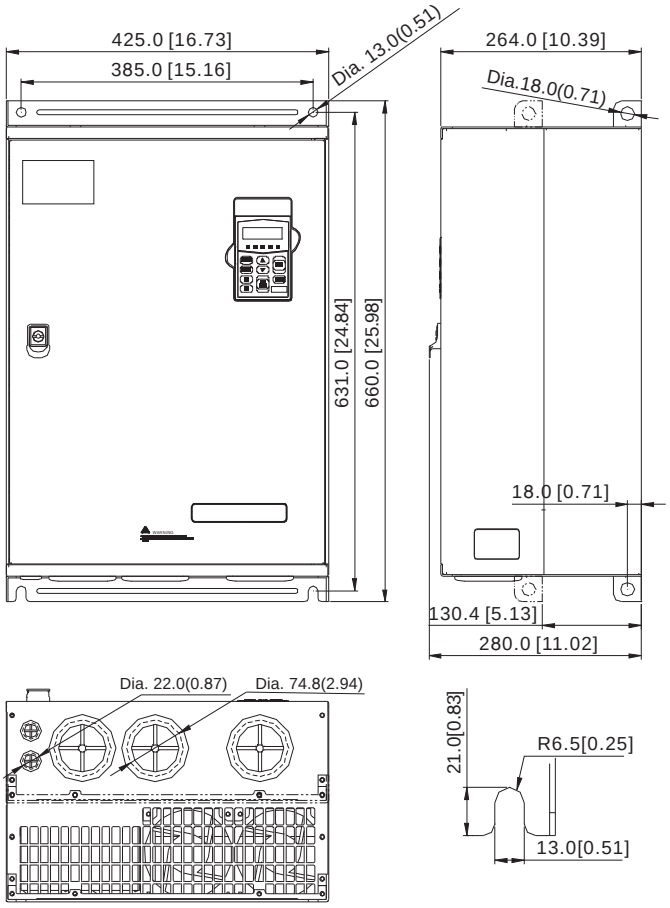
GS3-43P0



unit: mm(in)

DURAPULSE AC Drives — Dimensions

GS3-4075, GS3-4100



unit: mm(in)

GS/*DURAPULSE* Accessories – Overview

Accessories part numbering system

Note: With the exception of the EMI filters and RF filters, each accessory part number begins with GS, followed by the AC Drive rating, and then the relevant accessory code. Following the accessory code, you will find a description code when applicable. The diagram at right shows the accessory part numbering system.

GS - 23P0 - LR - 3PH

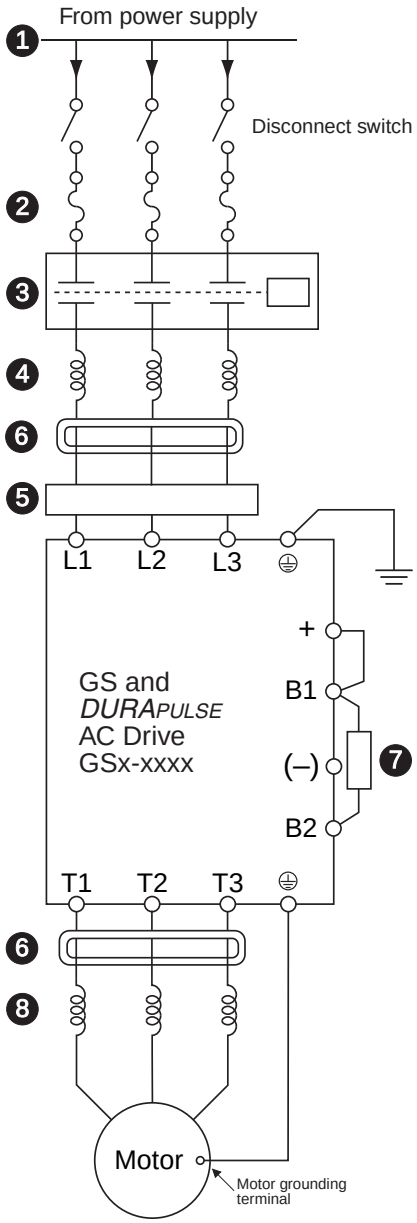
Description Code (optional)
1PH: Single-phase **3PH**: Three-phase **ENC**: Enclosure
Blank: For reactor, check specific part # to determine phase

Accessory Code
BR: Braking resistor **FKIT**: Fuse Kit
FUSE: Replacement fuses for FKIT **LR**: Line reactor

Drive Rating (See Drive P/N description)
BZL: Bezel **CBL**: Cable **DBU**: Dynamic Brake Unit
EDRV: Ethernet board **FB**: Feedback board
KPD: Keypad **RS**: Recommended Standard

Drive Series
GS: All GS and DURApulse Series Drives
GS1: GS1 Series **GS2**: GS2 Series
GS3: DURApulse Series

Under 20hp



❶ Power Supply

Please follow the specific power supply requirements shown in Chapter 1 and the Warning section of the applicable GS or *DURAPULSE* AC Drives User Manual.

❷ Fuses (Refer to page 12–68.)

Input fuses protect the AC drive from excessive input current due to line surges, short circuits, and ground faults. They are recommended for all installations and may be required for UL-listed installations. *(AutomationDirect fuses are not available for GS1 drives.)*

❸ Contactor (Optional) (Refer to the Motor Controls section.)

Do not use a contactor or disconnect switch for run/stop control of the AC drive and motor. This will reduce the operating life cycle of the AC drive. Cycling a power circuit switching device while the AC drive is in run mode should be done only in emergency situations.

❹ Input Line Reactor (Optional) (Refer to page 12–50.)

Input line reactors protect the AC drive from transient overvoltage conditions, typically caused by utility capacitor switching. The input line reactor also reduces the harmonics associated with AC drives. Input line reactors are recommended for all installations.

❺ EMI filter (Optional) (Refer to page 12–61.)

Input EMI filters reduce electromagnetic interference or noise on the input side of the AC drive. They are required for CE compliance and recommended for installations prone to or sensitive to electromagnetic interference. *(Separate EMI filters are not neccessary for GS1 drives.)*

❻ RF filter (Optional) (Refer to page 12–67.)

RF filters reduce the radio frequency interference or noise on the input or output side of the inverter.

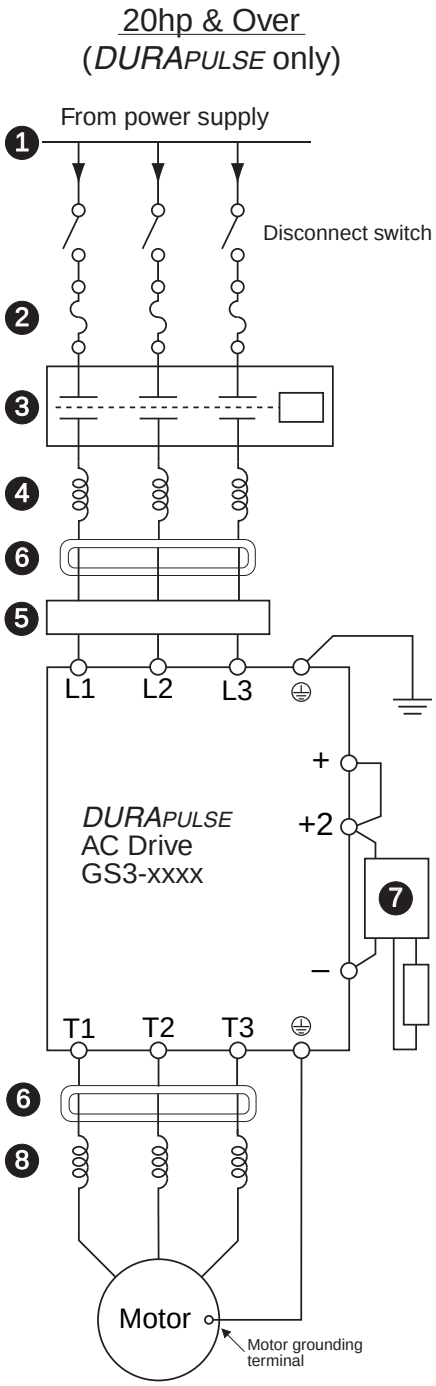
❼ Braking Resistor (Optional) (Refer to page 12–56.)

Dynamic braking allows the AC drive to produce additional braking (stopping) torque. AC drives can typically produce between 15% & 20% braking torque without the addition of any external components. The addition of optional braking may be required for applications that require rapid deceleration or high inertia loads. *(Braking resistors are not available for GS1 drives.)*

❽ Output Line Reactor (Optional) (Refer to page 12–50.)

Output line reactors protect the motor insulation against AC drive short circuits and IGBT reflective wave damage, and also "smooth" the motor current waveform, allowing the motor to run cooler. They are **recommended for operating "non-inverter-duty" motors** and when the **length of wiring between the AC drive and motor exceeds 75 feet**.

GS/*DURAPULSE* Accessories – Overview



❶ Power Supply

Please follow the specific power supply requirements shown in Chapter 1 of the *DURAPULSE* AC Drives User Manual.

❷ Fuses (Refer to page 12–68.)

Input fuses protect the AC drive from excessive input current due to line surges, short circuits, and ground faults. They are recommended for all installations and may be required for UL-listed installations.

❸ Contactor (Optional) (Refer to the Motor Controls section.)

Do not use a contactor or disconnect switch for run/stop control of the AC drive and motor. This will reduce the operating life cycle of the AC drive. Cycling a power circuit switching device while the AC drive is in run mode should be done only in emergency situations.

❹ Input Line Reactor (Optional) (Refer to page 12–50.)

Input line reactors protect the AC drive from transient overvoltage conditions, typically caused by utility capacitor switching. The input line reactor also reduces the harmonics associated with AC drives. Input line reactors are recommended for all installations.

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Input EMI filters reduce electromagnetic interference or noise on the input side of the AC drive. They are required for CE compliance and recommended for installations prone to or sensitive to electromagnetic interference.

❻ RF filter (Optional) (Refer to page 12–67.)

RF filters reduce the radio frequency interference or noise on the input or output side of the inverter.

❼ Braking Unit & Braking Resistor (Optional) (pg 12–54)

Dynamic braking allows the AC drive to produce additional braking (stopping) torque. AC drives can typically produce between 15% & 20% braking torque without the addition of any external components. The addition of optional braking may be required for applications that require rapid deceleration or high inertia loads.

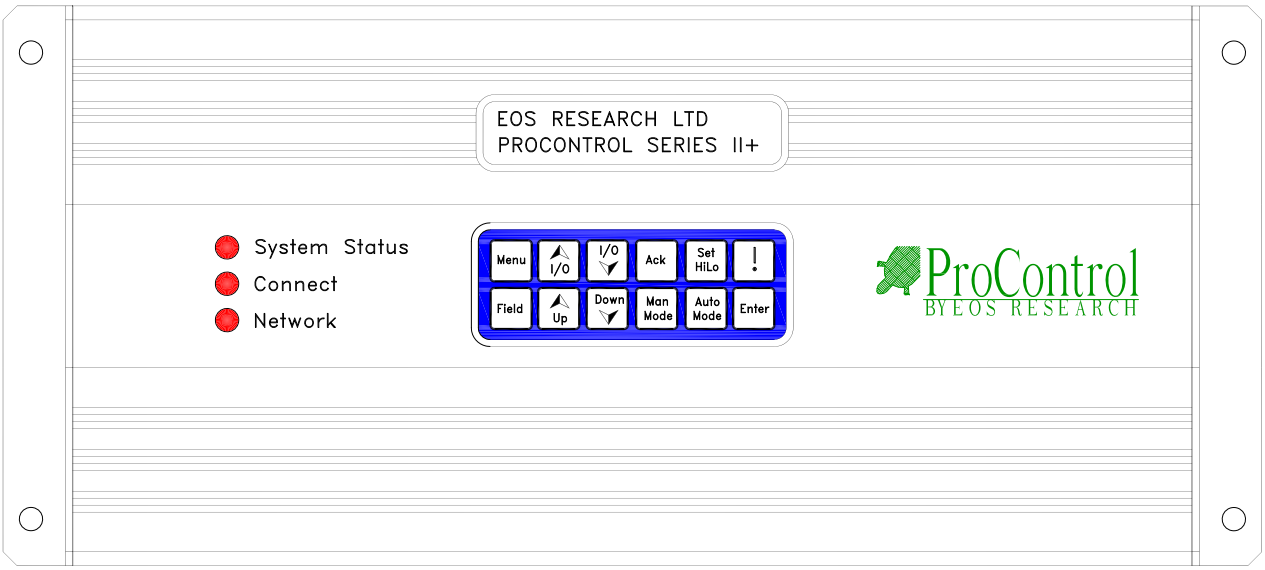
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Programmable Logic Controller – ProControl Series 2^{Plus} Type A

PROCONTROL series 2 plus

TYPE A
Product Specification



The next generation **Type A** ProControl features a capacity of up to 78 industrially-hardened inputs and outputs in a small and easy-to-use package. The **Series 2**^{plus} contains everything you need for the core of your control/monitoring system, including the ability to drive motor starters, solenoids and other devices directly from built-in relay outputs. The **Series 2**^{plus} includes expanded datalogging and reporting capability, a built-in power supply for your instruments and transducers, as well as pluggable connectors for all I/O. The **Type A** features higher I/O counts, large datalog memory, greater process control capacity, and a vacuum fluorescent display. Available with Ethernet, cellular data modem and analog phone modem communication options.

	Model A1	Model A2
INPUTS		
Discrete	Sixteen (16) protected discrete inputs. Support for 4 flowmeters or pulse accumulators with rates to 500Hz.	Twenty-Four (24) protected discrete inputs (eight of these are status inputs). Support for 4 flowmeters or pulse accumulators with rates to 500Hz.
Analog	Sixteen (16) 4-20ma inputs with built-in 24Vdc supply. Inputs are surge and short-circuit protected and may also be used as discrete inputs	Sixteen (16) 4-20ma inputs with built-in 24Vdc supply. Inputs are surge and short-circuit protected and may also be used as discrete inputs
OUTPUTS		
Discrete	Twenty-two (22) relay outputs - 14 rated @ 1A, remainder @ 0.5A, 120V	Thirty (30) relay outputs - 14 rated @ 1A, remainder @ 0.5A, 120V
Analog		Eight (8) 4-20ma outputs. PID loop control.

Specifications subject to change without notice.

	Model A1	Model A2
DATALOGGING		
Discrete	30,000 points standard. All logging occurs on change of state.	30,000 points standard. All logging occurs on change of state.
Analog	80,000 points standard (5000 per channel)	80,000 points standard (5000 per channel)
Event	10,000 points standard.	10,000 points standard.
Totalizer	50 points per channel	50 points per channel
COMMUNICATIONS		
Ethernet, cellular IP:	ProView™ Software, real-time monitoring from any broadband connection. Alarm and Status Emails, text messaging on alarm	
Analog phone modem:	ProView™ Software, real-time monitoring from any phone line. Alarm and Status fax reports, text/pager messages (email optional)	
ProControl Network:	Optional, can be linked via RS-485 for distributed control or higher I/O counts	
USER INTERFACE		
Display	VFD (Vacuum Fluorescent Display) 2 x 20 character display	
Keypad	2 x 6 membrane keypad.	
LEDs	LEDs: System Status, Communications Link, Networking	
PROCESS CONTROL		
System	Up to 64 regular system processes total with 16 startup and 16 shutdown processes, specified by easy-to-understand Boolean (IF...THEN) logic	
Alarms	Generate shutdowns, emails, FAX reports and/or text messages.	
Loops	PID loop control with user control of setpoint, proportional, integral and derivative gains and max change per calculation. Also open loop proportional algorithm.	
POWER		
System	10VAC, 50VA, external transformer provided	
I/O Supply	24 VDC, 15V and 9V available for powering sensors/instruments.	
ENVIRONMENTAL		
Dimensions	13.5" long x 6" wide x 3.5" high.	
Weight	7 lbs.	
Power Dissipation	30W max.	
Operating Temperature	-20C to +50C	
Humidity	95% R.H. non-condensing	

Crafted in the USA by people who know how to build something to last.

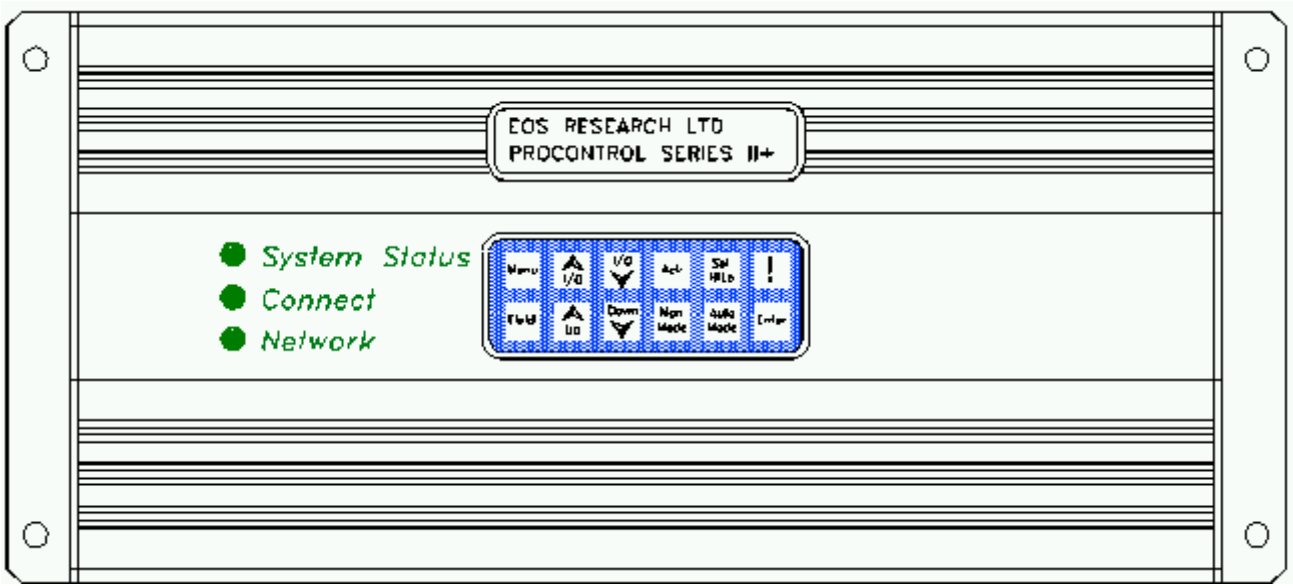
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PROCONTROL

SERIES 2*plus* USER MANUAL



Version 2.X

LIMITED WARRANTY

EOS Research Ltd. (EOS) warrants its products to be free from defects in materials and workmanship for a period of one year from the date of purchase. Its obligation under this warranty is limited to repairing or replacing, at its sole option, any such defective products. This warranty includes parts and labor. This warranty does not apply to equipment which has been damaged by accident, negligence or misapplication or has been altered or modified in any way.

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This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

IMPORTANT SAFETY PRECAUTIONS

Any complex hardware or software may be difficult to document, explain or understand. It is important to consider the consequences or unexpected or abnormal behavior which may be caused by a defect or human failure to comprehend. In order to protect people and property from damage, a thorough safety analysis should always be performed. When the consequences of a failure are serious, it is essential to protect life and property against such a failure with redundant backup systems or safety devices. It is agreed between the purchaser and EOS Research Ltd. that protection against and the consequences of any such failure are entirely the purchaser's responsibility.

This device is not approved for use in life support or medical systems.

As installed, this product may be part of a system which is required to meet various electrical, fire, safety or other codes and regulations. Compliance with these codes is the purchaser's responsibility.

Specifications subject to change without notice.

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APPENDIX A - Typical ProControl Wiring

Please see the ProView manual for operation of the remote access software which is supplied with the ProControl Series **2*plus***.

1.0 SYSTEM OVERVIEW

1.1 General

The *ProControl Series* **2**^{plus} is a small but powerful microprocessor based control/ telemonitoring system. By combining a control panel and remote monitor in one unit, the Series **2**^{plus} can act as a central supervisory and data management tool for any stand-alone operation. The *ProControl Series* **2**^{plus} can perform multiple tasks:

- **Stand-Alone Control:** The *ProControl Series* **2**^{plus} is a sophisticated programmable logic controller that will efficiently supervise and control your operation. It can interface with up to 70 electrical devices (float switches, pressure transducers, pH transmitters, flow meters, pumps, blowers, etc.), and execute numerous control functions simultaneously. Automatic shutdown routines can be programmed in to protect you operation during alarm conditions. It is extremely versatile in terms of the control algorithms it can execute.

- **Remote Control and Monitoring:** The *ProControl Series* **2**^{plus} gives you a window into your operation from any remote location, using the easy-to-use Windows-based software supplied with the system. You communicate with the ProControl over a modem link, which allows you to view all of your system's operating conditions, while also providing the same access to control functions that you would have if you were at the site (e.g., turning pumps on and off, adjusting alarm setpoints, etc.). No other telemonitoring device gives you the ProControl's level of remote control capability.

- **Reporting:** The *ProControl Series* **2**^{plus} will keep you informed. It will send you periodic fax status reports of your project operations on a schedule specified by you, and will alert you immediately either by fax or by numeric or alpha-numeric pager if an alarm condition warrants attention. No longer do you have to assume what's happening at your remote operation.....the ProControl will tell you exactly.

- **Datalogging:** The *ProControl Series* **2**^{plus} is your information manager. It is a powerful datalogger that automatically records all operating conditions in its battery-backed memory. You can access your logged data remotely at any time, and download it to your office computer for further processing. The datalogging capability is an invaluable tool for reporting purposes, troubleshooting, and trend graphing.

One or more of these features can be used in your installation; they are standard in every ProControl unit.

1.2 Key Concepts

The following are the building blocks of any Series **2**^{plus} monitoring and control system.

Inputs and Outputs (I/O's)

No system can be effective in the real world without communication and one of the principal ways the ProControl communicates is by responding to information collected by sensors and by issuing "commands" to other electronic or electrical devices. Sensor information constitutes an *Input* while a "command" to another device constitutes an *Output*. The Series **2**^{plus} works with all of the more important types of I/O devices in general use. Appendix A demonstrates how a variety of I/O devices are connected to the ProControl.

Digital Inputs

These inputs are designed to detect the closure of switch contacts such as those found on float switches or overpressure sensors. They can respond to any normally open or normally closed dry contact. The Series **2**^{plus} provides its own wetting (supply) voltage of 5 volts DC for each digital input circuit. The Series **2**^{plus} can respond to changes in state as fast as 4 Hz or 3 Hz (cycles per second) depending on the model purchased. Digital inputs are "debounced" for 125 or 150 milliseconds, respectively. This means that a switch or other input that changes state (becomes open or closed) must stay in that state for 125 or 150 milliseconds before the Series **2**^{plus} will respond to the change.

Eight high-speed digital inputs can also be used for traditional digital (pulse-output) flow meters. These inputs can detect signal changes at up to a 200/500 Hz rate. All high-speed digital inputs are "debounced" for 1250/500 microseconds. The faster rate applies only to those systems containing the 18.432 MHz processor.

Analog Inputs

These inputs are compatible with sensors which send out a 4 - 20 milliamp (mA) signal. Most analog sensors are available with this type of signal, examples being pressure transducers, pH transmitters, and many flow meters. These inputs allow the operator to read the actual "value" of a parameter, such as pressure, instead of an on/off signal.

Digital Outputs

Digital outputs turn things like pumps, solenoid valves, and alarm lights on and off. The Series **2**^{plus} digital outputs are relay outputs designed to switch small loads directly, such as motor starters, lamps, and solenoid valves.

Analog Outputs

Analog outputs are typically used in process control schemes where a controlled piece of equipment can accept a signal which is variable over a range. This output is expressed as a percentage (0 - 100%) and is used to control pump speeds, chemical dosing rates, etc., instead of conventional on/off operation. The equipment that the ProControl sends the analog output to must accept a 4 - 20 mA signal. Often, an analog output is used in conjunction with an analog input such as a pH transmitter to form a control scheme known as *feedback control*. In essence, the input and output will work together to maintain a user set input level. This concept is described further in the next section under *Analog Output Processes*.

Tagnames

Each input and output is given a descriptive *Tagname* by the user that uniquely identifies it to the system operator. For instance, a digital input could be called "TANKHI", an analog input could be called "AIRFLO" and a digital output could be called "PUMP_1". This tagname is used by the local LCD display, the FAX report and by the ProView software. The analog inputs are also given a *Units Tagname* which identifies the unit of measure associated with the input sensor. Each tagname can be up to six characters long and each units tagname can be up to three characters long ("PSI", for instance). The tagnames can include the uppercase letters A-Z, the numbers 0-9, a blank space, and the underscore (_) character.

1.3 Control Basics

The status of all inputs or outputs can easily be monitored both locally and remotely. What gives the Series **2*plus*** its real power, however, is the ability to automatically initiate actions based on the status of the inputs and your pre-programmed instructions (this is often called *Process Control*). These actions can include switching certain outputs, faxing back a report, sending an alphanumeric or numeric page, shutting down the entire system or sounding the local alarm. Process control functions are programmed into your ProControl by EOS Research or one of our technology partners according to your specifications.

Active State

Central to the use of control on the Series **2**^{plus} is the concept of *Active State*. Each input on the ProControl receives certain signals from a sensor which constitute "normal" operation and other signals which constitute an exception to normal operation.

A digital input can monitor only two states, ON or OFF (alternatively, CLOSED or OPEN). The *Active State* would be the state in which the controller would respond to the digital input, and perform certain actions or generate an alarm. For example, if a high level float switch in a tank is tripped (turned ON) by rising fluid level, we can say that its *Active State* correlates to a situation in which the fluid level is high. The active state of the float switch could cause the Series **2**^{plus} to trigger an alarm, turn off a pump, or initiate some other action. The Series **2**^{plus} can be set up so that either ON or OFF is the active state.

An analog input sensor can take on many states (or values) between the minimum and maximum of its measurement range. The ProControl operator, however, can set two threshold values which divide the total input span into two functional regions. These threshold values are more commonly called the *Low Alarm Limit* and the *High Alarm Limit*, although on the Series **2**^{plus} these thresholds are somewhat more flexible in use than those names imply. An analog input which has transcended either its Low Alarm Limit or High Alarm Limit is said to be in its active state.

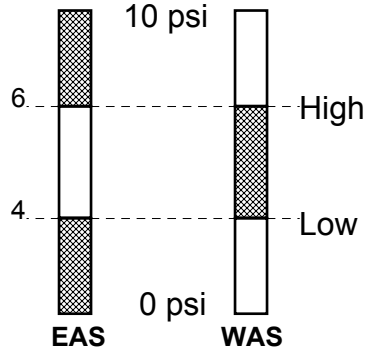


Figure 1. Active State

For instance, consider an analog input sensor which measures pressure from 0 to 10 PSI. The system operator could set the low limit to 4 PSI and the high limit to 6 PSI. In this case the *Active State* would usually be considered as the input state greater than 6 PSI or less than 4 PSI. This interpretation is called *Endpoint Active State* (EAS) on the Series **2**^{plus} because the endpoints of the range are the areas which need to trigger action or generate alarms. The opposite interpretation is also possible and is called *Window Active State* (WAS). Any input values between 4 PSI and 6 PSI would trigger action or generate alarms.

If the ProControl has *Alarms Set*, when any input enters its active state, a local beeper will sound on the ProControl. The word *Alarm* here applies only to the sounding of a local beeper and is not associated with any process control. The active state condition is indicated on the LCD display and can be acknowledged by the operator. The beeper is silenced when it has been acknowledged or after 30 seconds have elapsed. The beeper only operates when the system is operating in Manual mode.

Startup Sequence

The *Startup Sequence* is a series of control algorithms or steps which run in succession and which are designed to place the system in its normal operating mode. It can be as simple as turning all the outputs on simultaneously, or as complex as a multi-stage delay with many conditions. Up to 8 or 16 individual startup steps can be declared depending on the model of the controller. The ProControl can be configured to automatically run this sequence when the unit is powered up.

Process Tasks

A *Process Task* is an ongoing control algorithm which runs continuously. Think of each process task as an IF-THEN statement, in which an action is initiated if a certain condition or combination of conditions exists. Some examples are:

- IF Tank Level Sensor 2 is on, THEN turn Pump 2 off
- IF Air Flow Rate < 10 cfm AND Reactor Temperature > 250^{O}, THEN open Bleed Valve 2

Up to 16 or 64 separate process tasks can be run simultaneously depending on the model of the controller. Process tasks can trigger FAX reports, pager alerts, and system shutdowns.

Shutdown Sequence

The *Shutdown Sequence* is a series of control steps which run in succession and which are designed to shut your system down in a manner which is best for the equipment or treatment processes involved. The shutdown sequence can be activated manually or automatically due to an alarm condition. Here is a typical shutdown sequence:

- Turn off Well Pumps 1 and 2
- Wait 5 minutes, then turn off Stripper Blower
- Open Bleed Valve 2
- When Oxidizer Temperature < 150^{O}, turn off SVE Blower

Automatic Operation

The use of the startup sequence, process tasks, and the shutdown sequence constitutes *Automatic Operation* of your system with the ProControl Series $\mathbf{2}^{plus}$ (otherwise known as *Auto Mode*). The Series $\mathbf{2}^{plus}$ will be placed into auto mode (automatically) when your system has been started up using the programmed startup sequence. If one condition of the programmed startup sequence is not met during the startup process, your system will be completely shut down by the ProControl as a safety measure. Once the startup sequence has been successfully completed, the ProControl begins running the process tasks continuously. **PROCESS TASKS WILL RUN ONLY WHEN IN AUTO MODE**. Please note that the audible beeper will not sound even if the ProControl has *Alarms Set* when it is in Auto Mode, since the process tasks will control these situations as the user has specified.

Manual Operation

You can override the Series **2**^{plus} programmed control functions by operating in *Manual Mode*. In manual mode, your process will respond only to operator input from the keypad of the ProControl, or to commands issued from the ProView software. **PLEASE NOTE THAT PROCESS TASKS AND THEIR ERROR-CHECKING MECHANISMS DO NOT RUN DURING MANUAL MODE!** Manual mode is useful when you wish to troubleshoot your system, but none of the system safeguards built into auto mode are available. You can place your operation into auto mode any time by issuing the command from the keypad.

Analog Output Processes

In some cases, you may want to use an analog output to control equipment that maintains an analog input at a certain constant level. For example, you may wish to automatically maintain a pH of 8.5 in a reaction tank by varying the dosing rate of a chemical feed pump. The pH you wish to maintain (8.5) is called the *SetPoint* of the analog output process. An analog input to the ProControl (in this case, a pH transmitter) is said to provide *feedback* to the unit, and combined with an analog output, constitute *feedback control*.

PID Loops

A reliable type of feedback control can be obtained through a *PID Loop*. PID stands for *Proportional-Integral-Derivative*, and is a commonly-used process control technique. We'll skip the details of the mathematics involved, but suffice it to say that a PID loop is the favored control technique for most analog output processes. With only a *Proportional* term applied in the equation, the analog output is controlled based on an error signal generated from the difference between the SetPoint and the actual analog input. The PID loop can also improve its performance as it continues to run if an *Integral* term is used and can respond to quick changes in the controlling analog input if a *Derivative* term is used. EOS Research will configure your PID loops for you and can provide further information if necessary.

Proportional Outputs

In some cases, it may be desirable to base an analog output signal on an analog input value. In this situation, no specific SetPoint is used because there is a direct relationship between the output and input values. For example, if you wanted to base the output of a metering pump on some flow rate, you might use a proportional output to relate the amount of chemical metered to the flow rate.

2.0 ON-SITE OPERATION

2.1 LCD Display

If your unit did not come with an LCD display, the following sections *do not* apply.

The 2 line x 20 character LCD display is used to display and control system operations. The display is divided into separate areas or fields, as outlined below.

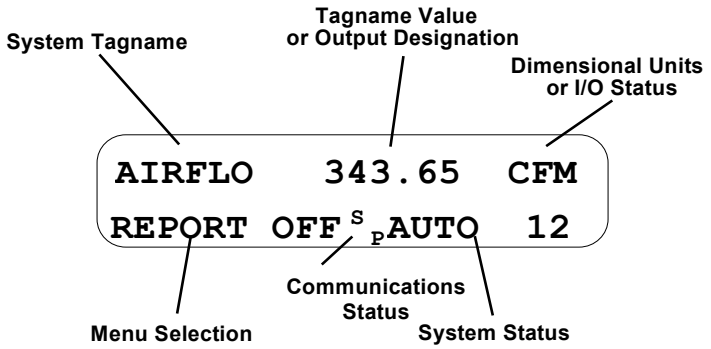


Figure 2. Display Fields

System Tagname This six-character field is used to identify the I/O point displayed. Descriptive names such as WELL1 or BLOWER are used.

Tagname Value For analog inputs, this field displays the value of the input, the high alarm limit, or the low alarm limit. For digital outputs, OUTPUT is displayed. For digital inputs, this field is unused. For analog outputs, this field displays the output percentage, the output level, or the associated input setpoint.

Dimensional Units or I/O Status For analog inputs, this three-character field displays the dimensional units associated with the input sensor, such as GPM or PSI. For digital inputs and outputs, this field displays either ON or OFF. For analog outputs, this field abbreviates percent with PCT. In the case of digital outputs, if the particular output displayed has been designated a lamp output (*see ProView manual*), and a lamp test is currently running, an asterisk (*) will appear before ON or OFF to indicate the lamp is illuminated despite the indicated output status (the output will return to this indicated status once the lamp test has been completed).

Menu Selection This field displays the current menu selection.

Communications Status This field displays one of five different descriptors which indicate any of several special functions of the ProControl. If no communications action is being taken, ">" will appear. Communications messages include: **SP** (Sending Page) - indicates that the unit is attempting to send either an alphanumeric or numeric page; **EF** (Encoding Fax) - indicates that the unit is presently encoding a facsimile report as a result of a request by either the operator or the unit itself; **SF** (Sending Fax) - indicates that the unit is attempting to send a fax report; and **DC** (Data Communications) - indicates that the unit is presently interfaced with ProView.

System Status This area displays the current system status: AUTO, MANUAL, START, or SHUTD and an associated process task number indicating the last successfully completed Auto process, current Startup process, or current Shutdown process.

2.2 Keypad

The Series 2^{plus} keypad contains 12 buttons which are used along with the LCD Display to control the operations of the system.

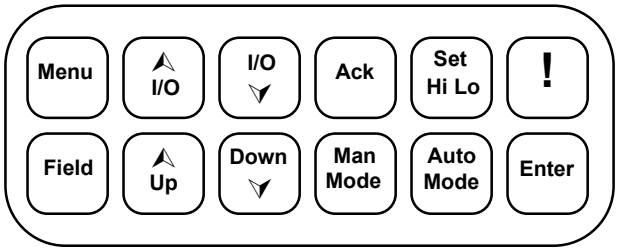
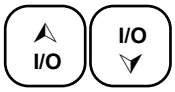


Figure 3. Series 2^{plus} Keypad



This key is used to scroll through a series of options which are displayed on the LCD screen, and which allow the user to configure various aspects of system behavior.



These keys are used to display information about particular I/O points on the LCD Screen. The keys allow the user to scroll through all of the system I/O points either forward or backward.



The Acknowledge key is used to silence the audible beeper or to acknowledge a memo sent from a remote ProView user.



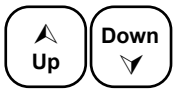
The Set Hi Lo key allows the user to change the high and low alarm limits for analog inputs or to toggle the display in the I/O Summary.



The Emergency Shutdown key is used to turn off all outputs and return the system to manual mode. The programmed shutdown sequence is <u>not</u> executed using this key.



The Field key is used to select a character position to be edited. It is used in conjunction with any direct alphanumeric entry.



These keys are used to toggle system variables from one state to the next or to scroll through possible character entries when used in conjunction with the Field key.



This key is used to place the system in manual mode.



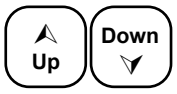
This key is used to place the system in auto mode.



The Enter key is used to initiate certain actions selected by other keys or to confirm alphanumeric editing done using other keys.

2.3 Password

When the system is first turned on the password screen is displayed and the user is prompted to enter the password to gain access to the system. "EOS" is the default password. The password on the Series **2**^{plus} was designed as a *low-level* security feature. It is not sufficient in and of itself to withstand a determined effort at system entry. The ProControl unit can be configured to bypass the password screen when the unit is powered up.




```
CUSTOMER ID TAGNAME
ENTER PASSWORD: BAA
```

Use the Up and Down keys to change the character displayed above the cursor.




```
CUSTOMER ID TAGNAME
ENTER PASSWORD: BAA
```

The Field key is used to move the cursor to the next character to be edited.




```
CUSTOMER ID TAGNAME
ENTER PASSWORD: EOS
```

The enter key submits the password for approval.

If the password was entered correctly, the following screen will be displayed for about a second before the operations screen is displayed:

```
Password Accepted
VER 2.XXX    : 1
```

ROM Version # — User Setup Version #

Otherwise, the following message will be displayed for a second and the user will be returned to the password menu:

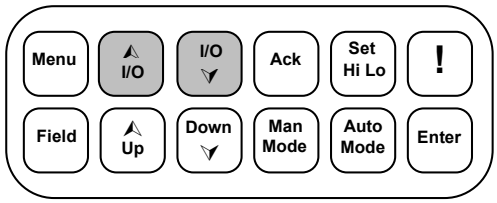
```
Incorrect Password
```

2.4 Operations Screen

After the password has been entered correctly, the operations screen is displayed. The operations screen allows the user to set system parameters and to review the status of all system inputs and outputs.

```
WELL1              OFF
ALARMS SET >MANUAL
```

2.5 I/O Keys



Pressing the I/O Up or I/O Down keys will scroll through the operational I/O points in the system. Data relevant to a particular I/O point will be displayed to right of the point's Tagname.

I/O

```
WELL2                ON
ALARMS SET >MANUAL
```

Forward scroll through I/O points

I/O

```
WELL3                OFF
ALARMS SET >MANUAL
```

Forward scroll through I/O points

I/O

```
WELL2                ON
ALARMS SET >MANUAL
```

Backward scroll through I/O points

2.6 Digital Input Menu

Input Tagname — Input Status

```
WELL2                ON
ALARMS SET >MANUAL
```

A digital input displayed in the operations screen will be displayed as shown. When the input is in its Active State "ON" will be displayed in the Input Status area. Otherwise, "OFF" will be displayed.

2.7 Digital Output Menu

Output Tagname — Lamp Status — Output Status

```
PUMP1     OUTPUT *OFF
ALARMS SET >MANUAL
```

A digital output displayed in the operations screen will appear as shown. When the output has been turned on, "ON" will be displayed in the Output Status area. Otherwise, "OFF" will be displayed. The cursor is displayed under the first character in the status field to indicate that it can be changed. The Lamp Status character (*) will be shown for a lamp output if a *lamp test* is running regardless of the output's true state.

Up Down

```
PUMP1     OUTPUT  ON
ALARMS SET >MANUAL
```

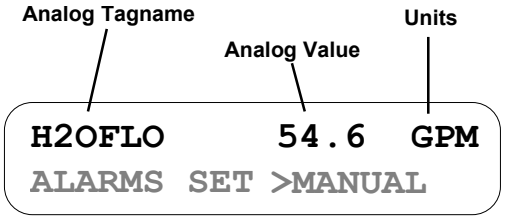
Pressing the Up or Down key will toggle the digital output state and turn the corresponding relay OFF or ON.

Field

```
PUMP1     OUTPUT  ON
ALARMS SET >MANUAL
```

Pressing the Field key will move the cursor to the Menu selection field.

2.8 Analog Input Menu



An analog input displayed in the operations screen will be displayed as shown to the left. The value of the analog input will be shown along with the dimensional units. In the case of a pulse accumulator (totalizer only), you will see only TOT where units is normally displayed.

Set Hi Lo



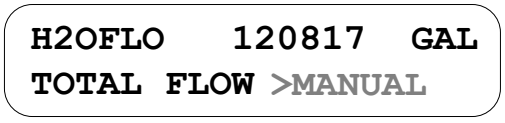
Use the Set Hi Lo key to set the low alarm limit.

Set Hi Lo



Press the Set Hi Lo key again to set the high alarm limit.

Set Hi Lo



Press the Set Hi Lo key again to see the total flow on a flow type input, and once more to return.

Up Down



The Up and Down keys are used to change the value of the current character, as denoted by the cursor.

Field



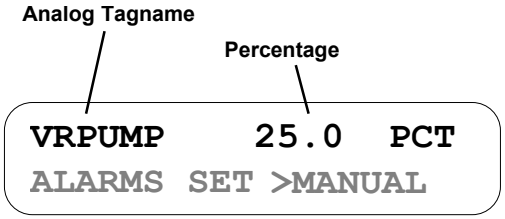
The Field key is used to move to the next character to be edited.

Enter



To save the low alarm limit changes, press the enter key.

2.9 Analog Output Menu



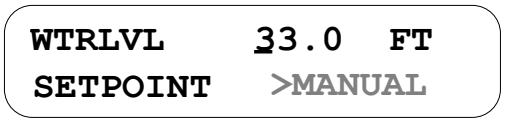
An analog output displayed in the operations screen will be displayed as shown to the left. The percentage of full scale output will be displayed as well.

Set Hi Lo



The Set Hi Lo key can be used to set the output percentage.

Set Hi Lo



Press the Set Hi Lo key again to declare the SetPoint of an associated analog input. The SetPoint is used only if a PID control loop is in use as an analog output process.

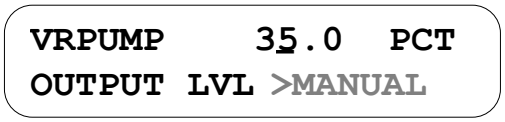
Pressing Set Hi Lo again returns to the original menu.

Up Down



The Up and Down keys are used to change the value of the current character, as denoted by the cursor.

Field



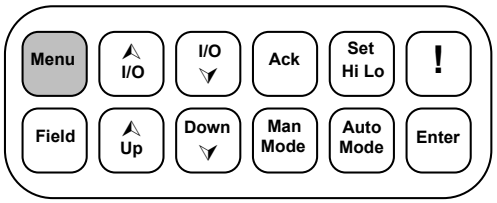
The Field key is used to move to the next character to be edited.

Enter



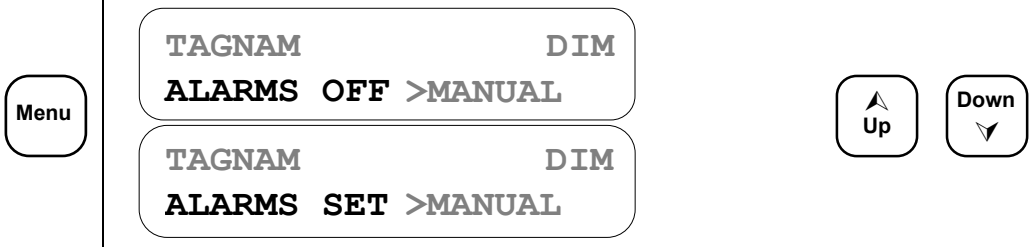
To save the output level changes, press the enter key.

2.10 Menu Key

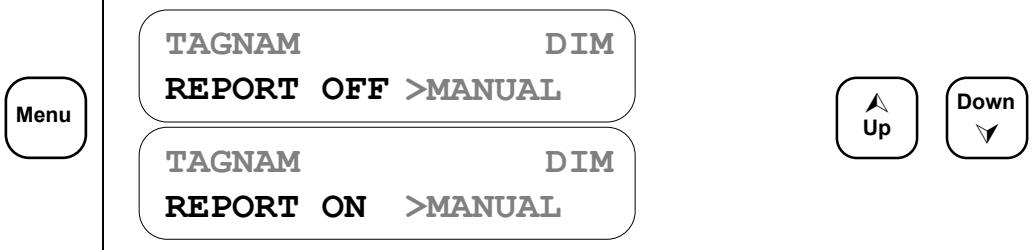


When pressed, the Menu key will scroll through a series of items which allow the user to configure various aspects of system behavior. A description of these items appear in a 10 character field at the bottom left of the display. Either the Up and Down keys or the Enter key is used to change the item.

ALARMS Use the Up and Down keys to enable or disable Alarms.



REPORT Use the Up and Down keys to enable or disable the unit's reporting capabilities (fax or page).



FAX NOW Use the Enter key to send a FAX report immediately.



STARTUP Use the Enter key to run the Startup Sequence.



SHUTDOWN Use the Enter key to run the Shutdown Sequence.



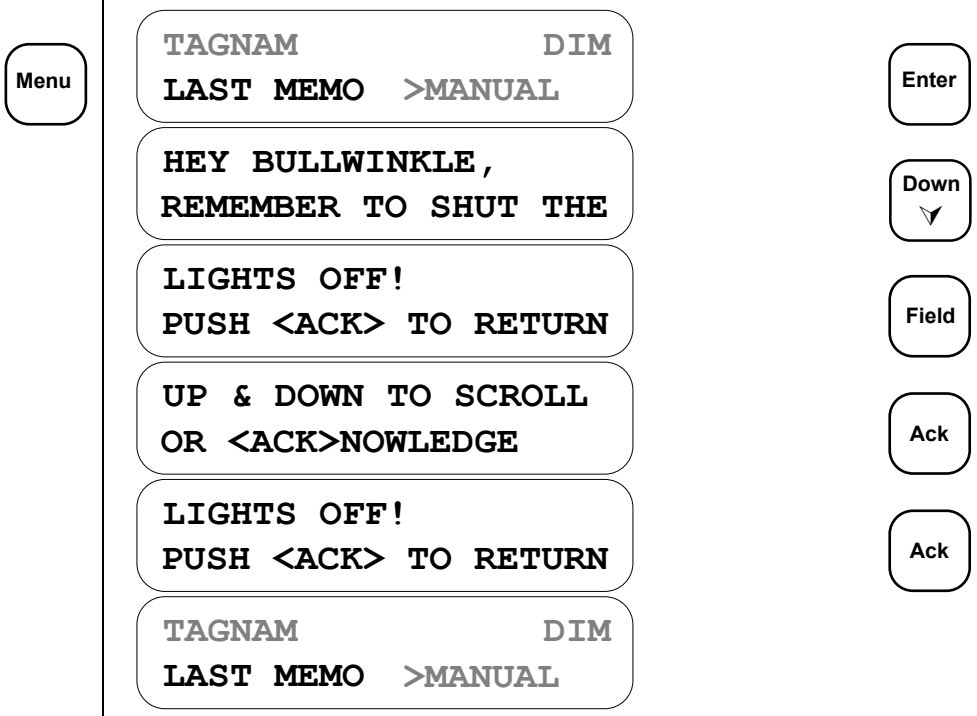
LAST SHUTDOWN This display item shows what input or output caused the last shutdown.



LOG OFF Use the Enter key to Log Off the system and return to the password menu.

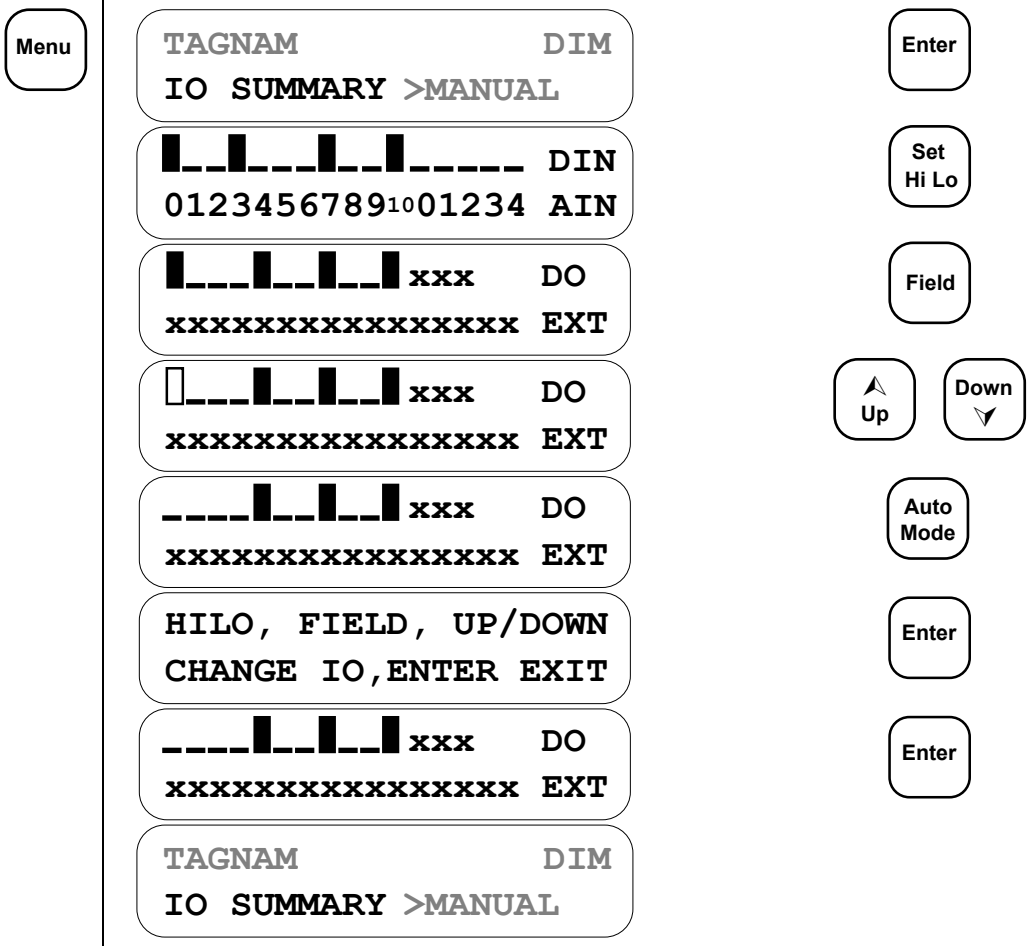


LAST MEMO Use the Enter key to see the last memo sent from the remote ProView user. Up and Down are used to scroll through the message, and Ack is used to return to the ProControl menus. If you hit any other key you will see an informative message telling you which keys are valid. The message will be displayed for 3 seconds if no keys are pressed, but can be acknowledged before the 3-second period by pressing either the Ack or Enter keys.

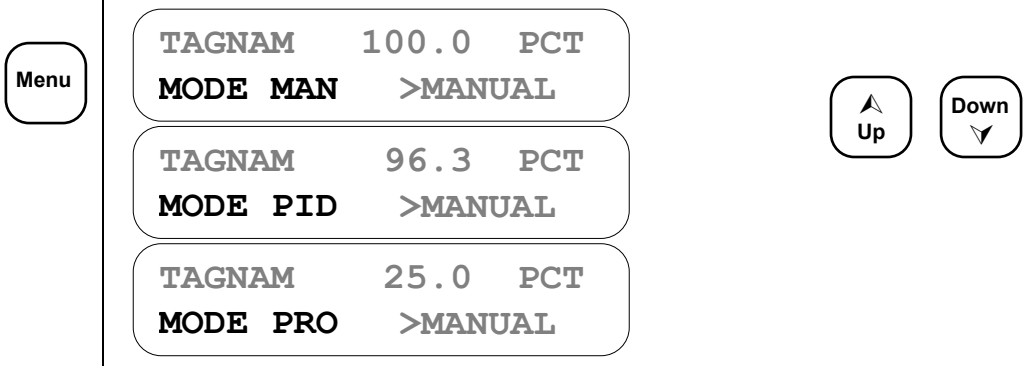


IO SUMMARY

Use the Enter key to enter the I/O summary. The analog input values 0-10 represent a percentage of full scale (i.e. 0 ≅ 4 mA, 5 ≅ 12 mA). Set HiLo is used to toggle between input/output summaries. An underscore represents an open input or an unswitched output. A block indicates a closed input or a switched output. An **x** or **X** is displayed when an output is not enabled and is unswitched or switched, respectively. An asterisk (*****) will be displayed if an output is declared as a lamp and a lamp test is currently being performed. The Field key can be used to move the blinking cursor through the outputs. The Up/Down keys can be used to toggle the state of the output whose position is covered by the blinking cursor. The Enter key will return the ProControl back to its standard menus. If you press any other keys you will see an informative message telling you which keys are valid. The message will be displayed for 3 seconds if no keys are pressed, but can be interrupted before the 3-second period by pressing the Enter key.

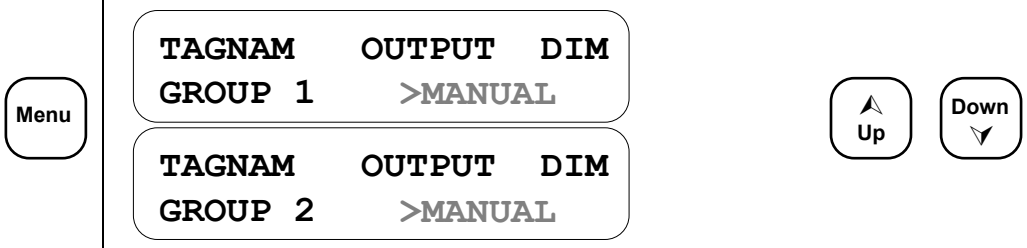


MODES Use the Up and Down keys to toggle an Analog Output from Manual control to PID control or Proportional control, depending on which analog output process is being used. This selection will only appear if an analog output tagname is displayed and the analog output is part of an analog output process.



GROUP The ProControl allows outputs to be assigned to different *Groups* to allow greater process control flexibility. In some cases, you may wish to be able to specify alternate process tasks for a given output. For instance, you can have the operation of a pump be controlled by a series of level switches in a tank, or alternately, the pump can be run on a timed cycle. By selecting the appropriate process Group, you can change the control strategy for that piece of equipment. EOS Research will configure the groups for you according to your specifications

Use the Up and Down keys to select a Group for the displayed output. This menu item is displayed only for outputs that have been configured by EOS to have alternate process Groups.



2.11 LED Indicators

Your ProControl unit has three status LEDs to the left of the keypad, which are used to indicate the following:

System Status: Normally ON when unit is powered.
One blink - The system has internally reset.
Two blinks - An internal error has occurred.

Connect: ON if user is remotely or locally connected.
ON if system is faxing or paging.
Slow blink - last fax or page failed, press ACK to clear.
Fast blink - local connect cable inadvertantly left plugged in, press ACK to clear.

Network: Rapid blinking indicates an active network connection.

3.0 REPORTING FEATURES

3.1 Fax Report

The ProControl unit will keep you informed of your system's operations with facsimile status reports. With the supplied ProView software you can configure the unit to send fax reports to up to two different numbers. You can also have these reports sent on a daily basis, at regular intervals during the day, or when triggered by specific process tasks. You can send one at any time by using the *Fax Now* option either from the menu on the ProControl's display, or through the ProView software.

The fax report you receive will contain several fields, each denoted by a shadow box. The number of fields will depend on the configuration of your system. For instance, you would not see a field indicating *Analog Outputs* if your system does not contain any of these.

The fields as you will see them are shown below. All information enclosed in brackets is variable and depends on your particular system configuration.

To:

```
<FAX RECIPIENT>
```

will indicate the intended fax recipient's name.

From:

```
THE <SYSTEM NAME>          SYSTEM IN <SITE LOCATION>    AT <TIME> ON <DATE>
SETUP VERSION X       :    ROM VERSION 2.x          :   MODEL B1
```

will indicate the name and location of your system, the date and time at which the fax report was initiated, your current ProView setup version, and the current on-board software version 2.X.




```
<MODE><PXX>  :   LAST SHUTDOWN AT <TIME> ON <DATE> BY <SHUTDOWN CAUSE>
                 FAX REPORT INITIATED BY <FAX CAUSE>
```

will indicate the current <MODE> of the controller and associated process. For example, if the controller is running the startup or shutdown sequence, you would see either START or SHUTD followed by the current algorithm. Similarly, in auto mode, you would see AUTO followed by the last successfully completed process task.

The LAST SHUTDOWN indicates when the system last initiated the shutdown sequence and what caused it to happen. For example, if the shutdown sequence were initiated by a key press, the cause you would see would be KEYPAD. Similarly, if the shutdown sequence were caused by a process task such as a high pressure sensor whose tagname was HIPRES, you would see HIPRES as the <SHUTDOWN CAUSE>. If multiple inputs or outputs caused the shutdown (i.e. a process task was dependent on more than one input being in the active state and/or multiple outputs being ON), the most recent one which changed will appear as the cause.

Similarly, the FAX REPORT INITIATED BY line will indicate the tagname of the I/O point which caused the fax to be sent, provided there was only one I/O point responsible. If multiple I/O points were responsible, the process itself will be indicated. Consider, for example, a process task where a shutdown was caused by HIPRES and BLOWER, and a fax was also generated. The <FAX CAUSE> would be PROCESS XX, where *XX* is the number from 1 - 64 of this process task. In the case where *Fax Now* was selected from the menu option on the LCD, the <FAX CAUSE> would be KEYPAD. The <FAX CAUSE> from a ProView generated *Fax Now* command would be REMOTE. This line will <u>not</u> appear on daily or interval scheduled fax reports.

Discrete Inputs:

```
<TAGNAME> is <STATE>   <TAGNAME> is <STATE> ...
```

will indicate the status of all of the digital inputs in four columns. Inputs which are in the active state will appear as ON and those which are in their normal state will appear as OFF.

Discrete Outputs:

```
<TAGNAME> is <STATE>   <TAGNAME> is <STATE> ...
```

will indicate the status of all of the digital outputs in four columns.

Analog Inputs:

```
<TAGNAME> is <VALUE> <DIM> LIMITS are L: <LO-LIM> <DIM> H: <HI-LIM> <DIM>
<TAGNAME> is <VALUE> <DIM> TOTAL FLOW is <FLOW>   <DIM>
<TAGNAME>                  TOTAL FLOW is <FLOW>   <DIM>
...
```

will indicate the current value, dimensional units, low alarm limit, and high alarm limit for all analog inputs which are not flow-type inputs. The precision of the values displayed can be selected through ProView. Any flow-type analog input which is responsible for maintaining a total flow will display that flow in place of the alarm limits. Any pulse-type digital input used for a digital flow meter will appear here since the information being obtained by that type of flow meter is analog in nature. In addition, pulse accumulators (volume totalizers) will appear here.

Analog Outputs:

```
<TAGNAME>   <PCT>  PCT  <MODE>      <TAGNAME>   <PCT>  PCT  <MODE>
...
```

will indicate the output percentage and mode of operation of all analog outputs. The precision is fixed to one decimal place and will range from 0.0 to 100.0, expressed as a percentage. The <MODE> of operation will be PID if the analog output is currently being used in a PID loop, or PRO if the analog output is currently being used in a Proportional scheme, otherwise it will be MAN indicating that the analog output is under manual control.

The next two pages contain examples of scheduled and alarm fax reports.



ProControl Series II+

EOS Research Ltd.

Fax Report

To:

BULLWINKLE J MOOSE

From:

THE NORTH WATER SUPPLY SYSTEM IN HAYBERRY USA @ 09:44:00 ON 12/10/1999
SETUP VERSION 1 : ROM VERSION 2.156 : MODEL B2

System Status:

AUTO P04 : NO PREVIOUS SHUTDOWN

Discrete Inputs:

WEL1LO is OFF	WEL2LO is OFF	TWR_HH is OFF	TNK_HH is OFF
RESET is OFF			

Discrete Outputs:

WLPMP1 is ON	WLPMP2 is ON	FINPMP is ON	CHLMET is ON
NAOMET is ON	PH_ALM is ON	CL_ALM is ON	TWRALM is OFF
WL1ALM is OFF	WL2ALM is OFF	TNKALM is OFF	

Analog Inputs:

TWRLVL is 59.2	FT	LIMITS are	L: 8.0	FT	H: 70.0	FT
TNKLVL is 0.00	FT	LIMITS are	L: 8.00	FT	H: 12.00	FT
FINFLO is 501.3	GPM	TOTAL FLOW is	14794	GAL		
FLOW_2 is 399.3	GPM	TOTAL FLOW is	12561	GAL		
FLOW_1 is 0.0	GPM	TOTAL FLOW is	0	GAL		
FIN_PH is 0.00	PH	LIMITS are	L: 6.00	PH	H: 8.00	PH
FIN_CL is 0.00	PPM	LIMITS are	L: 0.75	PPM	H: 2.00	PPM

Analog Outputs:

VSPMP1	86.8 PCT	PID	VSPMP2	100.0 PCT	PID
NAOMFD	100.0 PCT	PID	CNLRFD	20.0 PCT	PRO



ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

BULLWINKLE J MOOSE

From:

THE NORTH WATER SUPPLY SYSTEM IN MAYBERRY USA @ 09:34:12 ON 12/10/1999
SETUP VERSION 1 : ROM VERSION 2.156 : MODEL B2

System Status:

AUTO P04 : NO PREVIOUS SHUTDOWN
FAX REPORT INITIATED BY REMOTE

Discrete Inputs:

WEL1LO is OFF	WEL2LO is OFF	TWR_HH is OFF	TNK_HH is OFF
RESET is OFF			

Discrete Outputs:

WLPMP1 is ON	WLPMP2 is OH	FIHPMP is OH	CHLMET is ON
NAOMET is ON	PH_ALM is ON	CL_ALM is ON	TWRALM is OFF
WL1ALM is OFF	WL2ALM is OFF	TNKALM is OFF	

Analog Inputs:

TWRLVL is 59.1	FT	LIMITS are	L: 8.0	FT	H: 70.0	FT
TNKLVL is 0.00	FT	LIMITS are	L: 8.00	FT	H: 12.00	FT
FINFLO is 203.5	GPM	TOTAL FLOW is	11348	GAL		
FLOW_2 is 399.6	GPM	TOTAL FLOW is	8671	GAL		
FLOW_1 is 0.0	GPM	TOTAL FLOW is	0	GAL		
FIN_PH is 0.00	PH	LIMITS are	L: 6.00	PH	H: 8.00	PH
FIN_CL is 0.00	PPM	LIMITS are	L: 0.75	PPM	H: 2.00	PPM

Analog Outputs:

VSPMP1	37.4 PCT	PID	VSPMP2	100.0 PCT	PID
NAOHFD	100.0 PCT	PID	CHLRFD	20.0 PCT	PRO

3.2 Page Alerts

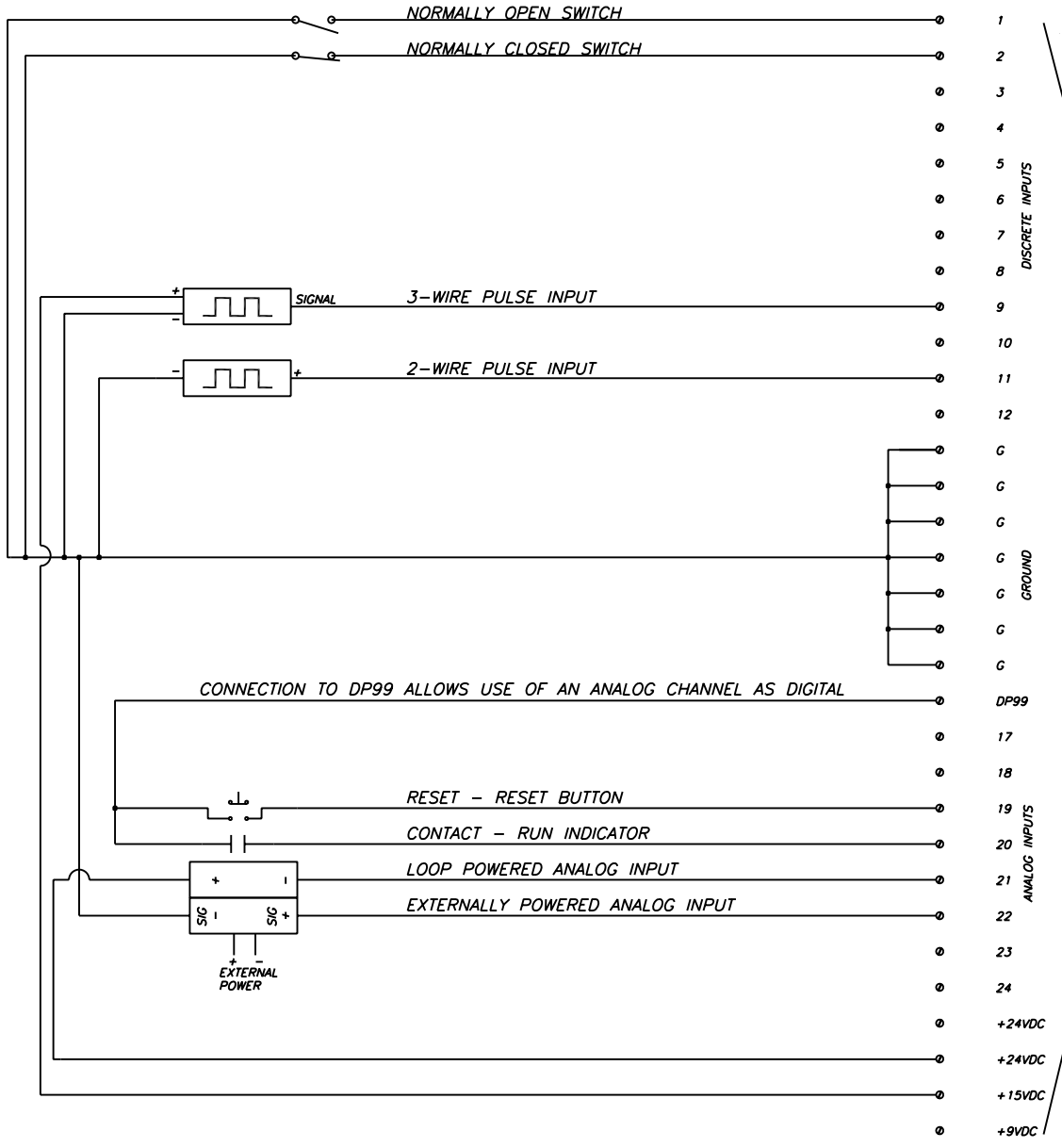
The ProControl unit can alert you to important conditions at your site via a page alert. Any system that is not in manual mode, that is, executing process tasks or the startup or shutdown sequences, can send a message up to eighty characters in length to an alphanumeric pager or up to nineteen digits in length to a numeric pager. If you are out of the office and away from a fax machine, you will still be alerted to any trouble at your site. With ProView you can select up to two pager numbers to be called. Each process task or startup/shutdown algorithm is capable of sending a message to either or both of these pagers. The pager messages are configured by EOS Research according to your specifications.

An example message for an alphanumeric pager would be:

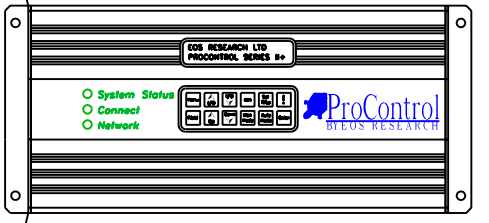
```
ANYTOWN SITE
High water level EQ Tank
System shut down!
Call Fred to fix: 555-6789
```

APPENDIX A

EXAMPLE WIRING DIAGRAM



SERIES 2*plus* Type B1-B2, A1-A2

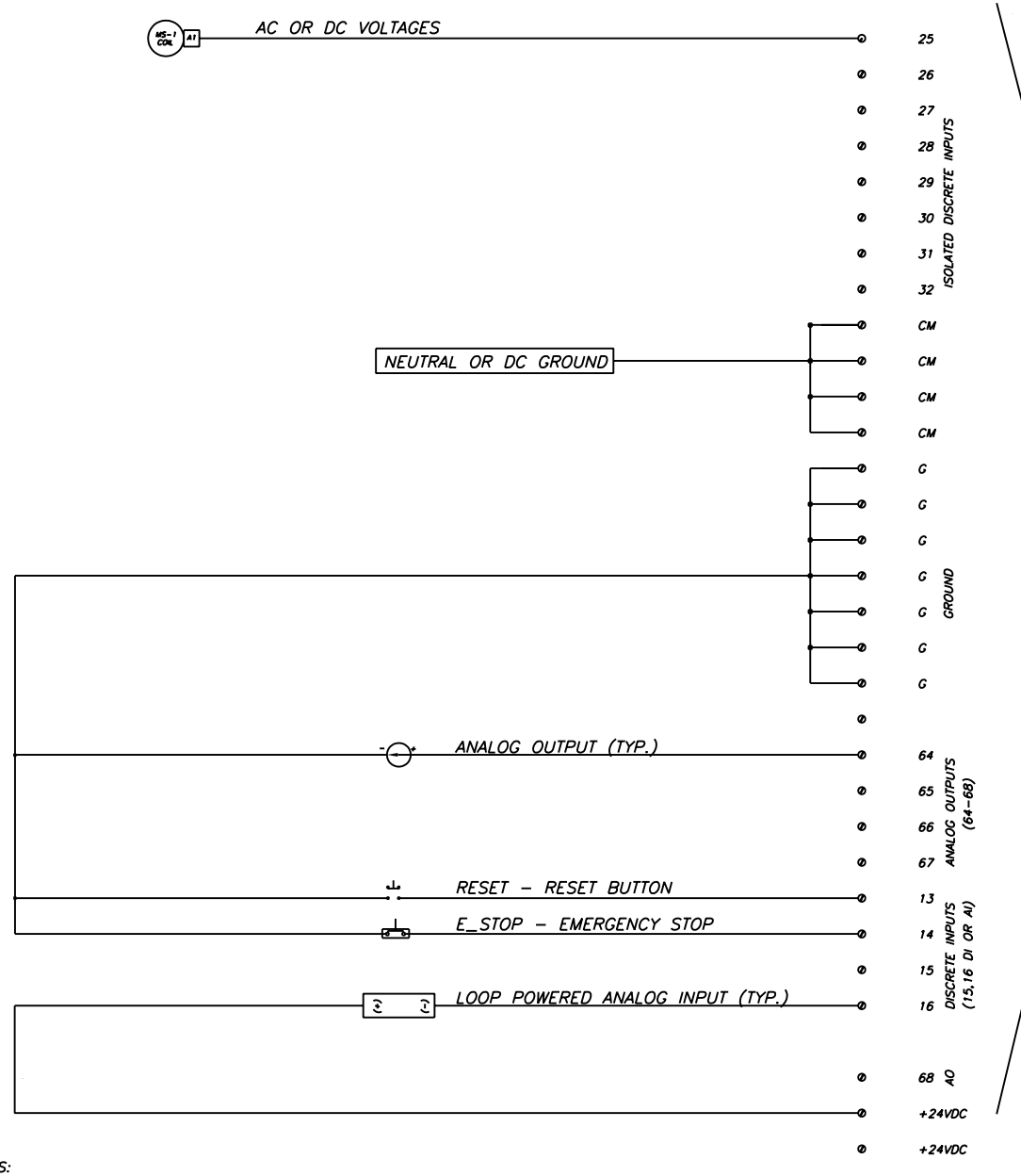


NOTES:
1. FOR ANALOG INPUTS, MAINTAIN VOLTAGE AND TOTAL LOOP RESISTANCE PER MFG. SPECIFICATIONS.
2. INPUT IMPEDANCE FOR SERIES 2Plus ANALOG INPUTS IS 135 OHMS.
3. ACTIVE DISCRETE INPUTS WILL SOURCE 1mA WHEN GROUNDED.
4. THE ProControl SOURCES 5VDC FOR DISCRETE INPUTS.
5. DISTRIBUTE ANALOG INSTRUMENTS EVENLY ACROSS +24VDC TERMINALS.

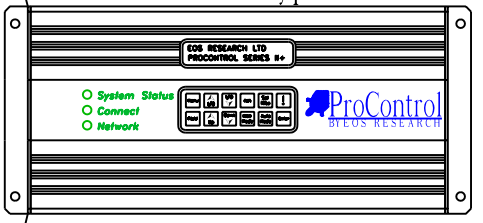
E O S
research
159 Walnut Street, Rochester, NH

TYPICAL ProControl WIRING
DIGITAL & ANALOG INPUTS - BOTTOM LEFT SIDE

EXAMPLE WIRING DIAGRAM



SERIES 2*plus* Type B2 ONLY

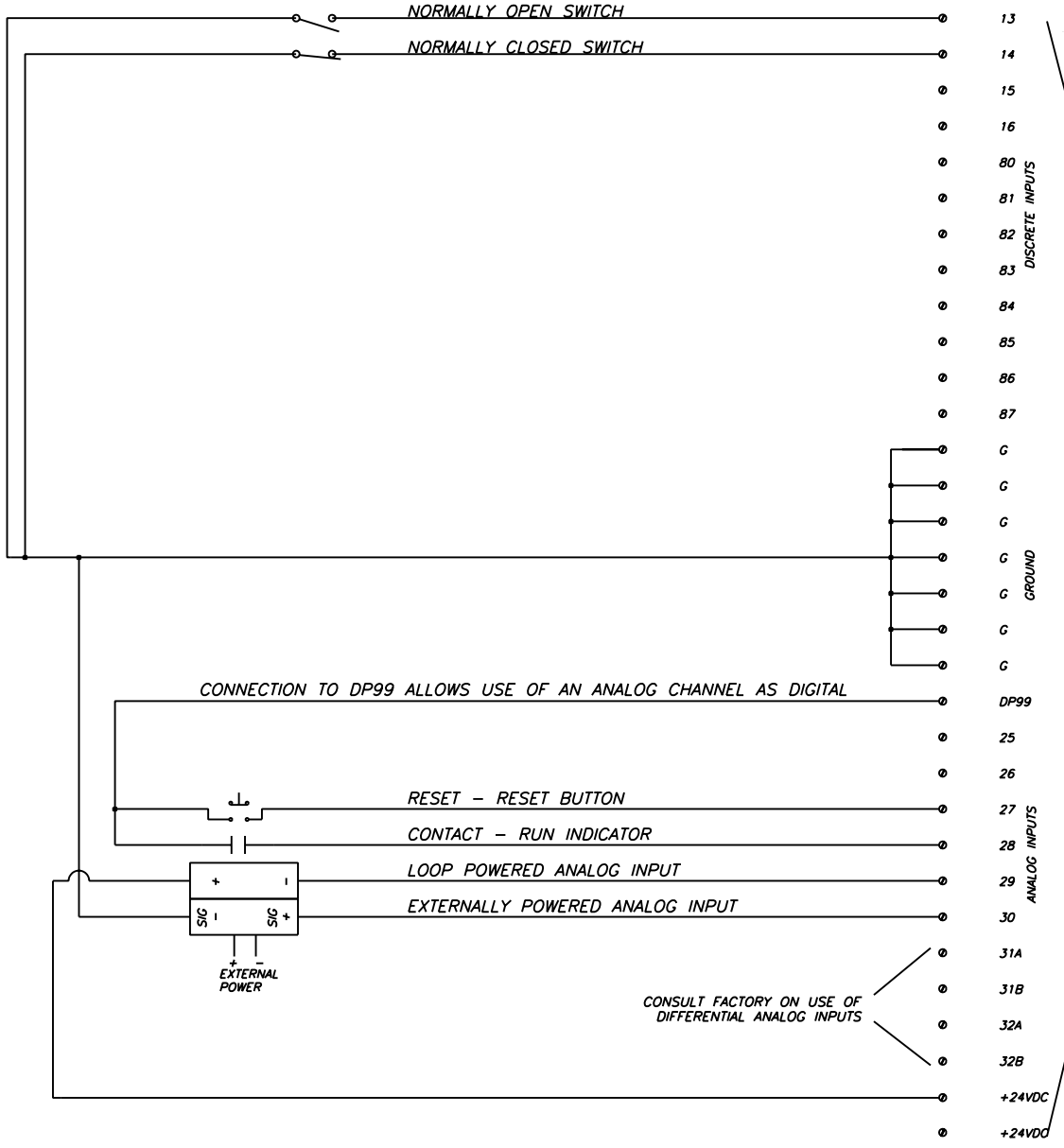


NOTES:
1. FOR ANALOG INPUTS, MAINTAIN VOLTAGE AND TOTAL LOOP RESISTANCE PER MFG. SPECIFICATIONS.
2. INPUT IMPEDANCE FOR SERIES 2Plus ANALOG INPUTS IS 135 OHMS.
3. MAXIMUM ISOLATED DISCRETE INPUT VOLTAGE 120V. ALL INPUTS MUST BE SAME VOLTAGE AND SHARE THE SAME COMMON OR NEUTRAL!
4. CM REPRESENTS COMMON FOR INPUTS 25-32. (ie. 120VAC, CM=NEUTRAL/ 24VDC, CM=DC GROUND)

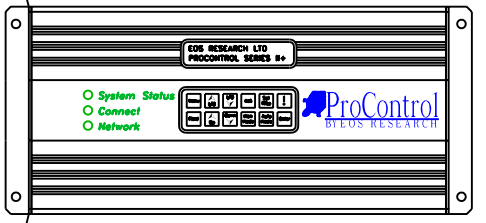
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TYPICAL ProControl WIRING
DIGITAL INPUTS & ANALOG OUTPUTS
TYPE B2 - TOP LEFT SIDE

EXAMPLE WIRING DIAGRAM



SERIES 2*plus* Type A1-A2



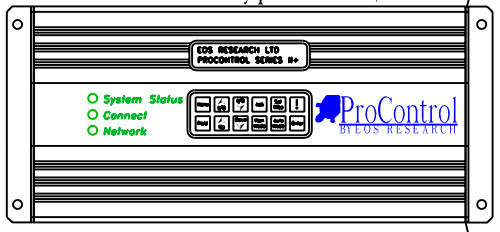
NOTES:
1. FOR ANALOG INPUTS, MAINTAIN VOLTAGE AND TOTAL LOOP RESISTANCE PER MFG. SPECIFICATIONS.
2. INPUT IMPEDANCE FOR SERIES 2Plus ANALOG INPUTS IS 135 OHMS.
3. ACTIVE DISCRETE INPUTS WILL SOURCE 1mA WHEN GROUNDED.
4. THE ProControl SOURCES 5VDC FOR DISCRETE INPUTS.
5. DISTRIBUTE ANALOG INSTRUMENTS EVENLY ACROSS +24VDC TERMINALS.

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TYPICAL ProControl WIRING
DIGITAL & ANALOG INPUTS -
TYPE A - TOP LEFT SIDE

EXAMPLE WIRING DIAGRAM

SERIES 2*plus* Type B1-B2, A1-A2



RS-232/SERIAL RJ-45 LOCAL CONNECTION PORT

TEL./RS-485 RJ-11 TELEPHONE/NETWORKING PORT

NEUTRAL LINE GROUND +24VDC

DISCRETE OUTPUTS

46
45 SLNVLV - SOLENOID VALVE
44 AIRCMP - AIR COMPRESSOR — MS-2 COIL
43 DISPMP - DISCHARGE PUMP — MS-1 COIL
42
41
40
CM2 COMMON FOR 40-46
39
38
37
36
35 VACALM - HIGH VACUUM ALARM — R
34 PRSALM - LOW PRESSURE ALARM — R
33 SMPALM - HIGH LEVEL ALARM — R
CM1 COMMON FOR 33-39

INPUT POWER 10VAC

10VAC TRANSFORMER SUPPLIED WITH ProControl UNIT. (REV 4 AND ABOVE)

NOTE: 20VAC-CT TRANSFORMER SUPPLIED PRIOR TO REV 4. DO NOT USE 20VAC TRANSFORMER ON REV 4 AND ABOVE!!

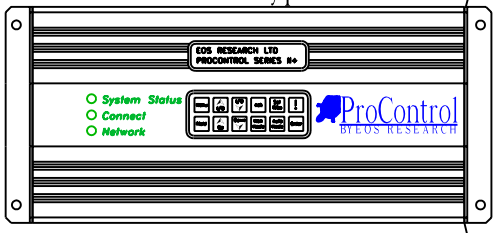
NOTES:
1. OUTPUT RELAYS RATED AT 125VAC/0.5A, 24VDC/0.5A
   UNITS SHIPPED AFTER 12/1/99 RATED AT 125VAC/1.0A, 24VDC/1.0A
2. CM1 IS SWITCHED TO 33-39 AND CM2 IS SWITCHED TO 40-46 WHEN OUTPUT IS ACTIVE.
3. DO NOT USE +24VDC FROM ProControl TO DRIVE OUTPUTS. FOR TRANSDUCER POWER ONLY.

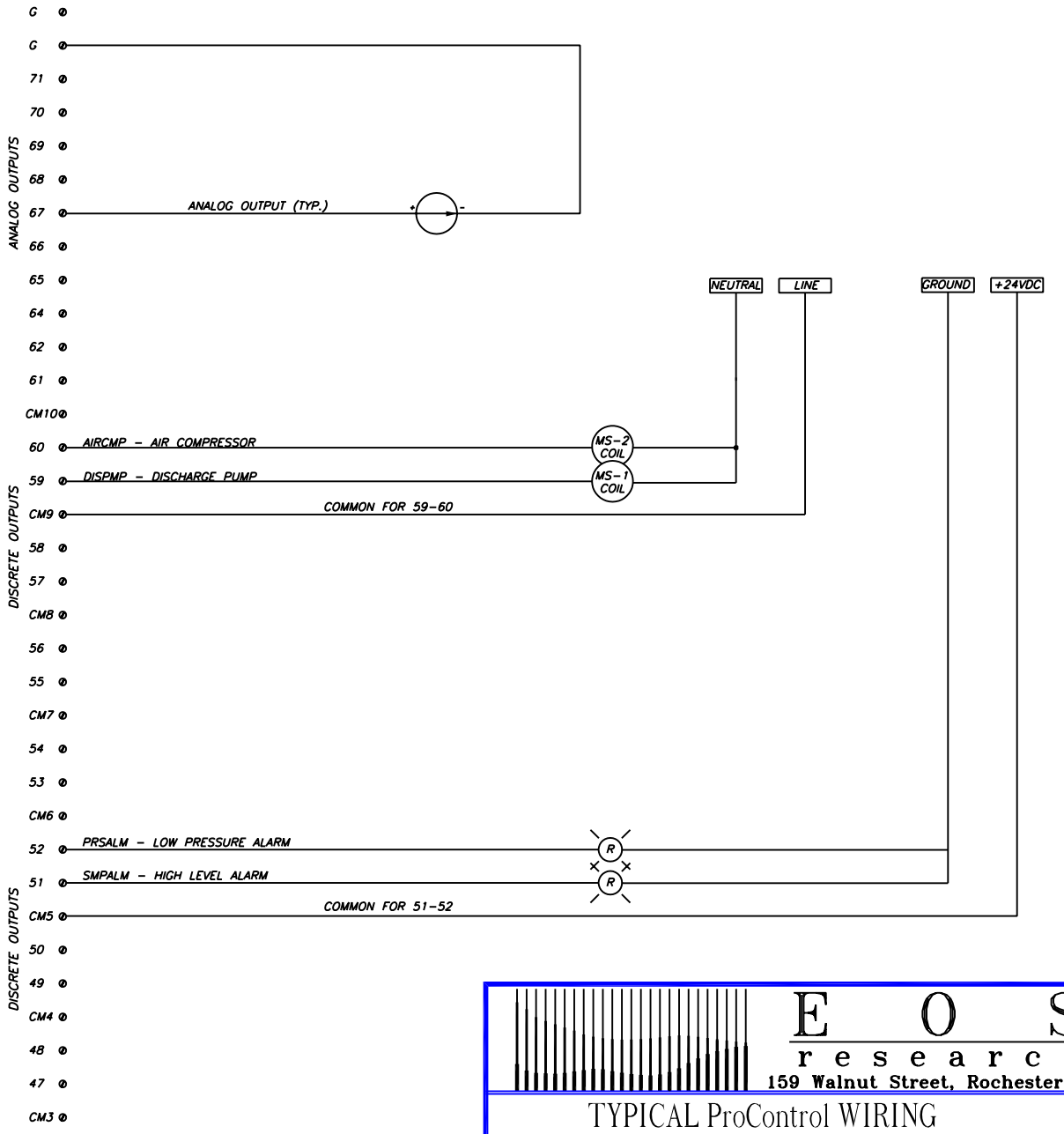
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TYPICAL ProControl WIRING
DIGITAL OUTPUTS - RIGHT SIDE

EXAMPLE WIRING DIAGRAM

SERIES 2*plus* Type A1-A2



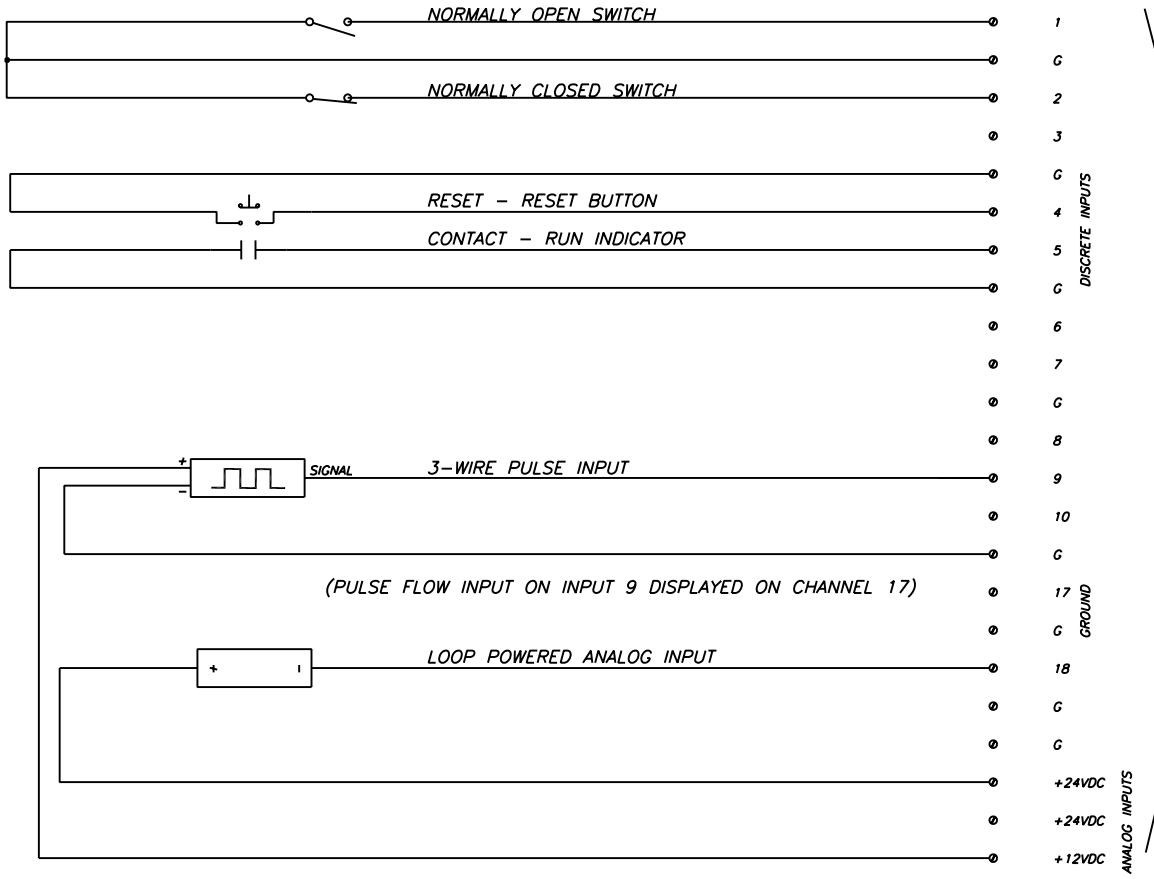


NOTES:
1. OUTPUT RELAYS ARE RATED AT 125VAC/0.5A, 24VDC/0.5A
2. CM3 IS SWITCHED TO 47-48, CM4 IS SWITCHED TO 49-50, ETC. WHEN OUTPUT IS ACTIVE.
3. DO NOT USE +24VDC FROM ProControl TO DRIVE OUTPUTS. FOR TRANSDUCER POWER ONLY.

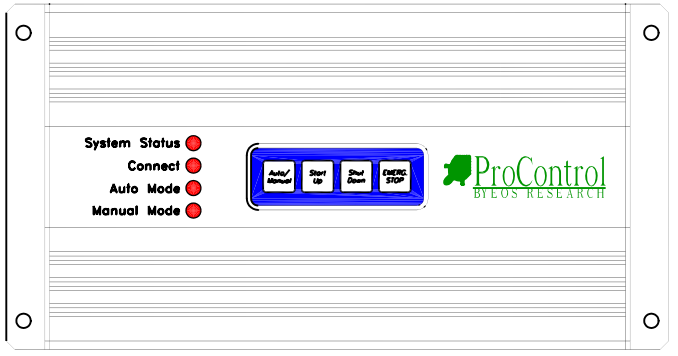
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TYPICAL ProControl WIRING
DIGITAL & ANALOG OUTPUTS
TYPE A - TOP RIGHT SIDE

EXAMPLE WIRING DIAGRAM



SERIES 2*plus* Type C1

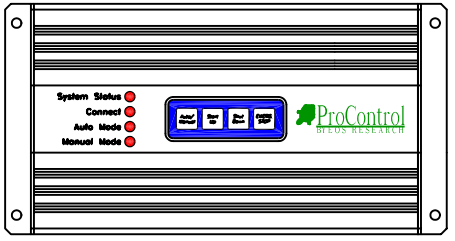


NOTES:
1. FOR ANALOG INPUTS, MAINTAIN VOLTAGE AND TOTAL LOOP RESISTANCE PER MFG. SPECIFICATIONS.
2. INPUT IMPEDANCE FOR SERIES 2Plus ANALOG INPUTS IS 135 OHMS.
3. ACTIVE DISCRETE INPUTS WILL SOURCE 1mA WHEN GROUNDED.
4. THE ProControl SOURCES 5VDC FOR DISCRETE INPUTS.
5. DISTRIBUTE ANALOG INSTRUMENTS EVENLY ACROSS +24VDC TERMINALS.

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TYPICAL ProControl Type C1 WIRING
DIGITAL & ANALOG INPUTS - BOTTOM LEFT SIDE

EXAMPLE WIRING DIAGRAM



RS-232/SERIAL RJ-45 LOCAL CONNECTION PORT

TEL./RS-485 RJ-11 TELEPHONE/NETWORKING PORT

GROUND +24VDC NEUTRAL LINE

DISCRETE OUTPUTS

40 PRSALM - LOW PRESSURE ALARM (R)

39 SMPALM - HIGH LEVEL ALARM (R)

CM4 COMMON FOR 39-40

38

37

CM3 COMMON FOR 37-38

36

35 SLNVLV - SOLENOD VALVE (CR-1 COIL)

CM2 COMMON FOR 35-36

34 AIRCMP - AIR COMPRESSOR (MS-2 COIL)

33 RW_PMP - RECOVERY WELL PUMP (MS-1 COIL)

CM1 COMMON FOR 33-34

INPUT POWER 10VAC

10VAC TRANSFORMER SUPPLIED WITH ProControl UNIT.

NOTES:
1. OUTPUT RELAYS RATED AT 125VAC/1.0A, 24VDC/1.0A
2. CM1 IS SWITCHED TO 33-34 AND CM2 IS SWITCHED TO 35-36, CM3 IS SWITCHED TO 37-38, CM4 IS SWITCHED TO 39-40 WHEN OUTPUT IS ACTIVE.
3. DO NOT USE +24VDC FROM ProControl TO DRIVE OUTPUTS. FOR TRANSDUCER POWER ONLY.

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TYPICAL ProControl TYPE C WIRING
DIGITAL OUTPUTS - RIGHT SIDE

Sensors and Transmitters

MEAS KPSI 700



- **Submersible Level Transducer**
- **±1.00% FSO Static Accuracy**
- **Custom Built in Two Days**
- **Two Year Warranty**

DESCRIPTION

The MEAS KPSI 700 is a submersible hydrostatic level transducer specifically designed to meet the rigorous environments encountered in liquid level measurement and control. It can be configured to perform to specifications under most adverse, reactive conditions.

All MEAS KPSI Transducers utilize a highly accurate pressure sensor assembly specifically designed for hostile fluids and gases. The assembly is integrated with supporting electronics in a durable waterproof housing constructed of 316 stainless steel or titanium. The attached electrical cable is custom manufactured and includes Kevlar® members to prevent errors due to cable elongation, and a unique water block feature that self-seals in the event of accidental cuts to the cable. Each transducer is shipped with a SuperDry™ Vent Filter that prevents moisture from entering the vent tube for at least one year without maintenance, even in the most humid environments.

FEATURES

- Custom Polyurethane or ETFE Cable Lengths
- Welded 316SS or Titanium
- Custom Level Ranges up to 700 ft (210m) H2O
- Multiple Analog Outputs
- Multiple Nose Piece Styles
- Optional Lifetime Lightning Protection
- Shipped with Long Life Vent Filter

APPLICATIONS

- Lift Stations
- Pump Control
- Level Control
- Surface Water Monitoring
- Landfill Leachate
- Well Monitoring
- Groundwater Monitoring

SPECIFICATIONS

Parameter		Comment
LEVEL RANGES		
Full Scale Level Ranges (intermediate level ranges are available)	2.3 thru 700 ft H_2O (0.70 thru 210 m H_2O)	Vented Gage Reference
	10 thru 700 ft H_2O (3 thru 210 m H_2O)	Sealed Gage Reference
	35 thru 700 ft H_2O (10 thru 210 m H_2O)	Absolute Gage Reference
Proof Pressure	1.5 x FS	
Burst Pressure	2.0 x FS	

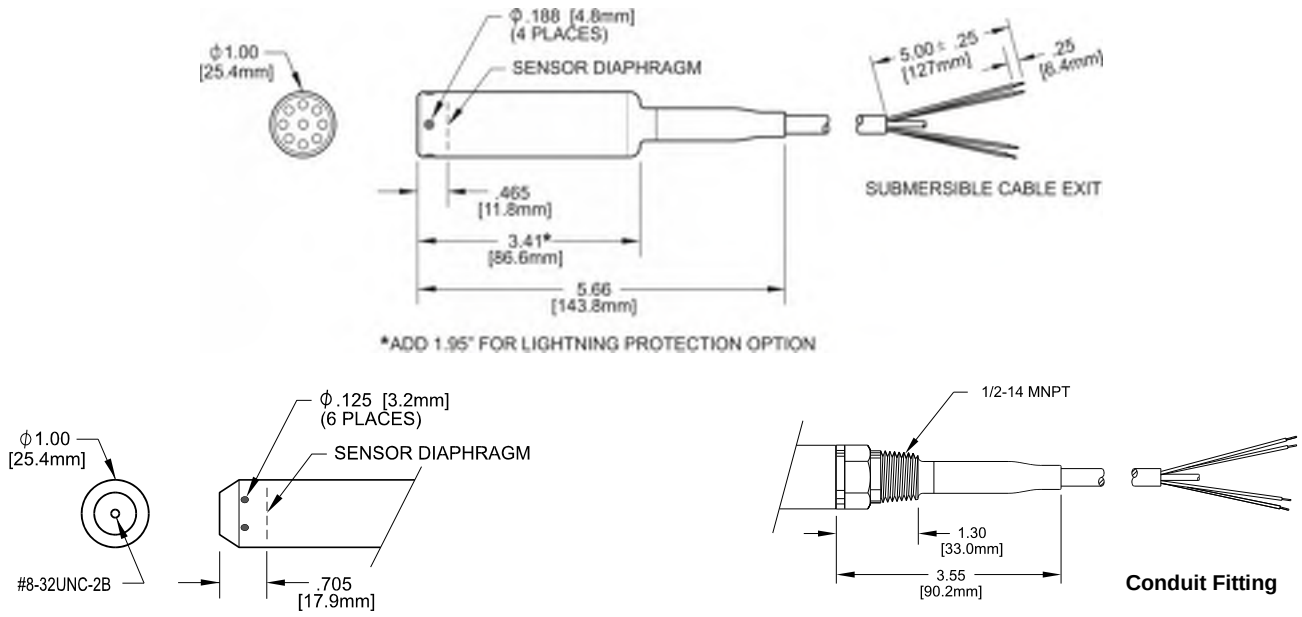
MEAS KPSI 700

SPECIFICATIONS

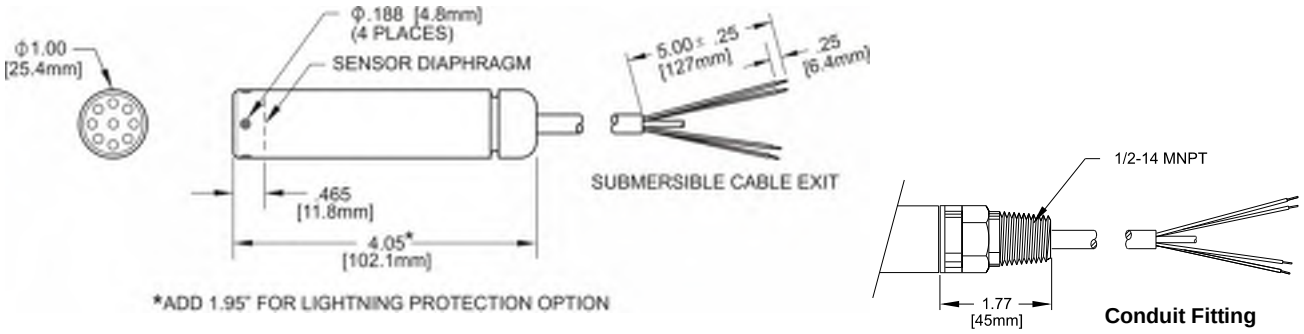
STATIC PERFORMANCE		
Static Accuracy (combined effects of non-linearity, hysteresis and repeatability, best fit straight line method)	±1.00% FSO	BFSL method
Resolution	+0.0001% FS	
ENVIRONMENTAL		
Wetted Materials	316 SS or Titanium; POM; polyurethane or FKM	
Compensated Temp Range	0 to 50ºC	
Thermal Error (maximum allowable deviation from the Best Fit Straight Line due to a change in temperature)	±0.05% FSO/ºC ±0.1% FSO/ºC	worst case over compensated temperature range for ranges < 12 ft (4 m) H_2O
Operating Temp Range	-20 to 60 ºC	when attached to polyurethane cable
Protection Rating	IP 68, NEMA 6P	
ELECTRICAL		
Excitation	9-28V – VDC output 9-28V – mA output 15-28V – VDC output 10-28V – VDC output	0-5V, 0-2.5V, 0-4V 4-20 0-10V 1.5-7.5V
Input Current	20 mA max 3.5 mA max	for mA output for VDC output
Output	4-20mA, 0-5 VDC, 0-2.5VDC, 0-4VDC, 0-10VDC, 1.5-7.5VDC	for ranges < 5 ft (1.5m) H2O, only 4-20mA output is available
Zero Offset	±0.25 mA for mA output < 0.25 VDC for VDC output	
Output Impedance	See loop diagram for mA output 20 ohm for VDC output	
Insulation Resistance	100 mega ohm at 50 VDC	
Circuit Protection	Polarity, surge/shorted output	
CERTIFICATIONS		
	CE compliant	EN 61326-1:2001 and 61326-2-3:2006
	UL, CUL and FM	Class I, II, III, Div 1, Groups A,B,C,D,E,F&G
	WEEE/RoHS	Waste from Electrical and Electronic Equipment (WEEE) and Restrictions on the use of Hazardous Substances (RoHS)
PHYSICAL		
Approximate Weight	0.44 lbs (198 g) transducer 0.05 lbs/ft (79 g/m) cable	
Cable Jacket Material	Polyurethane (standard) ETFE (optional)	
Cable Pull Strength	200 lbs (90 kg)	
Cable Number of Conductors	4	
Cable Conductor Size	22 AWG	
Cable Seal	Molded Polyurethane FKM Gland	for polyurethane cable for ETFE cable
TEMPERATURE OUTPUT OPTION (not intrinsically safety approved)		
Temperature Range	-20 to 60ºC	available for 4-20mA output versions only
Output Signal	4-20mA	
Temperature Measurement Accuracy	±4ºC	
LIGHTNING PROTECTION (power supply needs to be limited to 150mA to avoid lock up of the gas tube after a suppression event)		
Life Expectancy	>1,000 Operations	
Peak Clamping Voltage	36 Volts	
Response Time	<10 nsecs	
Shunts	20,000 Amperes	

MEAS KPSI 700

DIMENSIONS



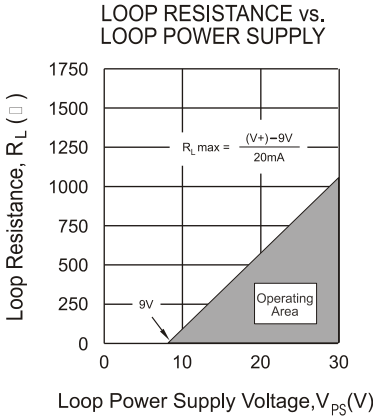
Molded Cable Seal Configuration for Polyurethane Cable



Gland Cable Seal Configuration for ETFE cable

ELECTRICAL TERMINATION / LOOP RESISTANCE / CERTIFICATIONS

ELECTRICAL TERMINATION		
22AWG CONDUCTORS IN A SHIELDED CABLE WITH VENT TUBE		
4-20 mA	RED	+ EXCITATION
	BLACK	- EXCITATION
0-5 VDC	RED	+ EXCITATION
	BLACK	- EXCITATION
	WHITE	+ SIGNAL
ALL	DRAIN WIRE	SHIELD



MEAS KPSI 700

ORDERING INFORMATION

MODEL	SUBMERSIBLE LEVEL TRANSDUCER
7 0 0	±1.00% FSO Static Accuracy
↓	**MATERIAL**
S	Stainless Steel
T	Titanium
↓	**REFERENCE FORMAT**
1	Vented gage
3	Sealed gage
4	Absolute
↓	**OUTPUT**
3	0-5 VDC
F	0-2.5 V
G	0-4 V
H	0-10 V
J	1.5-7.5V
4	4-20mA
6	4-20mA temperature measurement option
↓	**PRESSURE CONNECTION**
A	Open-face nose cap
B	Ported nose cap
E	Piezometer nose cap
2	1/4" - 18 NPT male fitting
7	1/2" - 14 NPT male fitting
↓	**ELECTRICAL CONNECTION**
0	Molded cable seal
4	1/2" - 14 NPT male conduit fitting with molded cable seal
A	Gland cable seal
B	1/2" - 14 NPT male conduit fitting with gland cable seal
↓	**LIGHTNING PROTECTION**
A	None
B	Full Lightning Protection
↓	**LEVEL RANGE (at MAX output)**[1]
	# # # . # # #
↓	↓ ↓ ↓ ↓ ↓ ↓ ↓
	LEVEL RANGE (at MIN output)[1]
	# # # . # # #
↓	↓ ↓ ↓ ↓ ↓ ↓ ↓
	MOISTURE PROTECTION
A	None (sealed/absolute only)
B	Vent Filter
C	Aneroid Bellows
↓	**CABLE TYPE**
1	Polyurethane
2	ETFE
↓	**CABLE LENGTH**
	# # # # (in feet)
↓	↓ ↓ ↓ ↓
	LABEL[2]
A	psi
B	ft H_2O
C	m H_2O
↓	
7 0 0	

Notes:

1 The part number requires two level range limits, corresponding to the maximum and minimum analog outputs of the transducer, to be specified in **pounds per square inch (psi)** to three decimal places. The lower level range is typically 000.000 unless otherwise required. For reverse output requirements, enter the lower level range for the maximum output signal and the upper range for the minimum output. Use the following conversion factors:

ft H_2O / 2.3073 = psi
m H_2O / 0.703265 = psi

Examples: 10 ft H_2O / 2.3073 = 4.334 psi (enter 004.334 in the part number)
10m H_2O / 0.703265 = 14.219 psi (enter 014.219 in the part number)

For sealed gage reference add local atmosphere when converting to psi. Contact MEAS for assistance.
Example: 10 ft H_2O / 2.3073 +14.7 = 19.034 psi (enter 019.034 in the part number)

2 Units of measure on standard MEAS label. Contact Measurement Specialties if private labeling is required.

NORTH AMERICA

Measurement Specialties, Inc.
1000 Lucas Way
Hampton, VA 23666
USA
Tel: 1-757-766-1500
Fax: 1-757-766-4297
Toll Free: 1-800-745-8008
Sales: WL.sales@meas-spec.com

EUROPE

Measurement Specialties (Europe), Ltd.
26 Rue des Dames
78340 Les Clayes-sous-Bois
France
Tel: +33 (0) 130 79 33 00
Fax: +33 (0) 134 81 03 59
Sales: pfg.cs.emea@meas-spec.com

ASIA

Measurement Specialties (China), Ltd.
No. 26 Langshan Road
Shenzhen High-Tech Park (North)
Nanshan District, Shenzhen 518057
China
Tel: +86 755 3330 5088
Fax: +86 755 3330 5099
Sales: pfg.cs.asia@meas-spec.com

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Miniature Temperature Transmitters

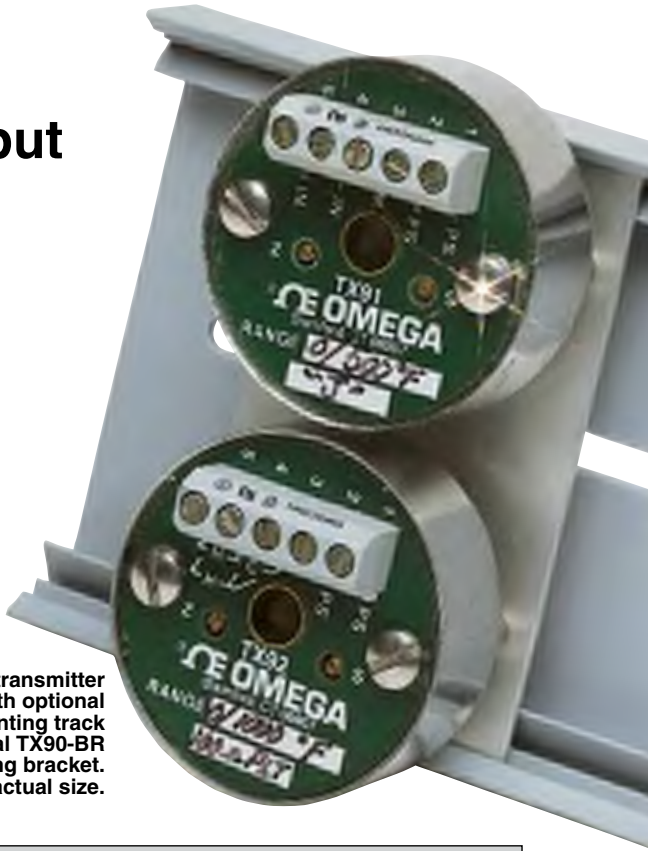
Thermocouple or RTD (Pt100) Input

- **Metal Case, RFI Shield**
- **2-Wire Transmitter**
- **4 to 20 mA Output**
- **±0.1% FS Accuracy**
- **Upscale Break Protection**
- **Non-Isolated**
- **Mounts in Protection Head**

TX90 Series

MADE IN USA | 5 YEAR WARRANTY | FM APPROVED

IS/I/1/ABCD
NI/I/2/ABCD
TX91 & TX92
Entity Parameters
Vmax. = 30 V
Imax = 150 mA
Ci = Oμf



TX92-6 transmitter shown with optional RT mounting track and optional TX90-BR mounting bracket. Shown actual size.

The economical OMEGA® TX91 and TX92 2-wire transmitters provide an output current of 4 to 20 mA, and are proportional to the mV signal of a thermocouple or to a 2- or 3-wire RTD sensor input.

The TX91 or TX92 are[illegible]t directly within the OME[illegible] head. By having the tra[illegible]e effects of electrical noi[illegible]g runs of thermocouple v[illegible]

identify which model was selected

Specifications

Output Range: 4 to 20 mA DC

Zero and Span Adjustment Range: ±25%

Accuracy: ±0.1% FS (includes effects of linearity, hysteresis and repeatability) referenced to the mV input

Ambient Temperature Range: -32 to 85°C (-25 to 185°F)

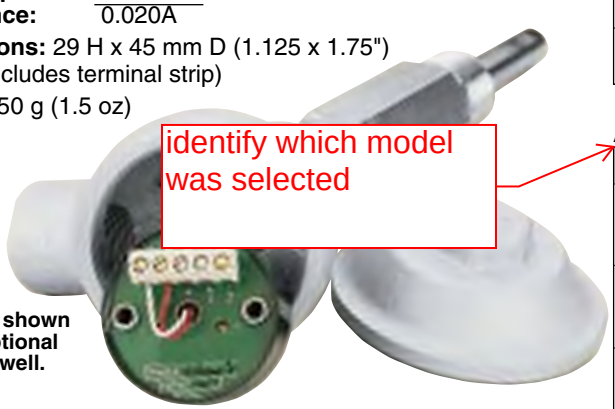
Storage Temperature Range: -65 to 90°C (-85 to 193°F)

Supply Voltage: 11 to 44 Vdc; 24 Vdc recommended

Max Loop Resistance: $\frac{Vs - 11\ V}{0.020A}$

Dimensions: 29 H x 45 mm D (1.125 x 1.75") (height includes terminal strip)

Weight: 50 g (1.5 oz)



NB1TX shown with optional thermowell.

identify which model was selected

To Order

Model No.	Description
TX91-(*)	Thermocouple transmitter (J, K, T or E)
TX92-(*)	RTD transmitter (100 Ω, Pt 0.00385)
NB1TX-(*)	NB1 thermocouple probe, 305 mm (12") L, ¼" OD, ungrounded junction, 304 SS sheath, with TX91 transmitter
PRTX-(*)	PR-12 RTD probe, 305 mm (12") L, ¼"

***** *Insert range code from chart below.*

Accessories

Model No.	Description
PSR-24S	Regulated power supply, US plug, 90 to 264 Vac input, 24 Vdc output, 400 mA, screw terminals, UL
PSR-24L	Regulated power supply, US plug, 90 to 264 Vac input, 24 Vdc output, 400 mA, stripped leads, UL
PSR-24L-230	Regulated power supply, European plug, 230 Vac input, 24 Vdc output, 400 mA, stripped leads, CE
PSU-93	Unregulated power supply, 16 to 23 Vdc, 300 mA max, screw terminal
TX82B	Process loop-powered indicator (see omega.com)
RT	1.2 m (48") mounting track
TX90-BR	Mounting bracket for RT mounting track
TX90-DIN	DIN rail mounting adaptor
RAIL-35-2	2 m (6.6') section 35 mm DIN rail

Comes complete with operator's manual.

Ordering Example: NB1TX-K6, *TX91 transmitter for Type K thermocouple, 0 to 1000°F output range. Transmitter housed in NB1-CASS-14U-12 Type K probe.*

For complete information on NB1 thermocouple probes and PR-12 RTD probes, see omega.com

Model Number					
TX91				TX92	
J	K	T	E	RTD	Range °C (°F)
–	–	–	–	1	-40 to 49 (-40 to 120)
J2	K2	T2	E2	2	-18 to 93 (0 to 200)
J3	K3	T3	E3	3	-18 to 149 (0 to 300)
J4	K4	T4	E4	4	-18 to 260 (0 to 500)
J5	K5	–	E5	5	-18 to 399 (0 to 750)
J6	K6	–	E6	6	-18 to 538 (0 to 1000)

Notes: *(1) Thermocouple models' output proportional to mV output of T/C. Not linearized to temperature. (2) Non-Isolated unit for use with ungrounded probes.*

Signet 2536 Rotor-X Paddlewheel Flow Sensors



Standard Sensor (with blue cap)

Integral Sensor

Wet-Tap Sensor

Simple to install with time-honored reliable performance, Signet 2536 Rotor-X Paddlewheel Flow Sensors are highly repeatable, rugged sensors that offer exceptional value with little or no maintenance. The Model 2536 has a process-ready open collector signal with a wide dynamic flow range of 0.1 to 6 m/s (0.3 to 20 ft/s). The sensor measures liquid flow rates in full pipes and can be used in low pressure systems.

The Signet 2536 sensors are offered in a variety of materials for a wide range of pipe sizes and insertion configurations. The many material choices including PP and PVDF make this model highly versatile and chemically compatible to many liquid process solutions. Sensors can be installed in DN15 to DN900 (½ to 36 in.) pipes using Signet's comprehensive line of custom fittings. These custom fittings, which include tees, saddles, and weldolets, seat the sensor to the proper insertion depth into the process flow. The sensors are also offered in configurations for wet-tap installation requirements.

Features

- **Operating range 0.1 to 6 m/s (0.3 to 20 ft/s)**
- **Wide turndown ratio of 66:1**
- **Open-collector output**
- **Highly repeatable output**
- **Simple, economical design**
- **Installs into pipe sizes DN15 to DN900 (½ to 36 in.)**
- **High resolution and noise immunity**
- **Test certificate included for -X0, -X1**
- **Chemically resistant materials**

(3-2536-PX version only)

Applications

- **Pure Water Production**
- **Filtration Systems**
- **Chemical Production**
- **Liquid Delivery Systems**
- **Pump Protection**
- **Scrubber/Gas Stacks**
- **Gravity Feed Lines**
- **Not suitable for gases**

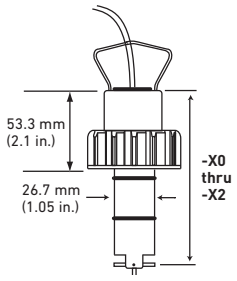
Specifications

General			
Operating Range		0.1 to 6 m/s	0.3 to 20 ft/s
Pipe Size Range		DN15 to DN900	½ to 36 in.
Linearity		±1% of max. range @ 25 °C (77 °F)	
Repeatability		±0.5% of max. range @ 25 °C (77 °F)	
Min. Reynolds Number Required		4500	
Wetted Materials			
Sensor Body		Glass-filled PP (black) or PVDF (natural)	
O-rings		FPM (std) optional EPR (EPDM) or FFPM	
Rotor Pin		Titanium, Hastelloy-C or PVDF; optional Ceramic, Tantalum or Stainless Steel	
Rotor		Black PVDF or Natural PVDF; optional ETFE, with or w/o carbon fiber reinforced PTFE sleeve for rotor pin	
Electrical			
Frequency		49 Hz per m/s nominal	15 Hz per ft/s nominal
Supply Voltage		5 to 24 VDC ±10%, regulated	
Supply Current		<1.5 mA @ 3.3 to 6 VDC	<20 mA @ 6 to 24 VDC
Output Type		Open collector, sinking 10 mA max.	
Cable Type		2-conductor twisted pair with shield, 22 AWG	
Cable Length		7.6 m (25 ft) can be extended up to 305 m (1000 ft) maximum	
Max. Temperature/Pressure Rating - Standard and Integral Sensor			
	PP	12.5 bar @ 20 °C	180 psi @ 68 °F
		1.7 bar @ 85 °C	25 psi @185°F
	PVDF	14 bar @ 20 °C	200 psi @ 68 °F
		1.7 bar @ 85 °C	25 psi @ 185 °F
Operating Temperature			
	PP	-18 °C to 85 °C	0 °F to 185 °F
	PVDF	-18 °C to 85 °C	0 °F to 185 °F
Max. Temperature/Pressure Rating - Wet-Tap Sensor			
	PP	7 bar @ 20 °C	100 psi @ 68 °F
		1.4 bar @ 66 °C	20 psi @ 150 °F
Operating Temperature		-18 °C to 66 °C	0 °F to 150 °F
Max. Wet-Tap Sensor Removal Rating		1.7 bar @ 22 °C	25 psi @ 72 °F
Shipping Weight			
	3-2536-X0	0.454 kg	1.00 lb
	3-2536-X1	0.476 kg	1.05 lb
	3-2536-X2	0.680 kg	1.50 lb
	3-2536-X3	0.780 kg	1.72 lb
	3-2536-X4	0.800 kg	1.76 lb
	3-2536-X5	0.880 kg	1.94 lb
	3-8512-X0	0.35 kg	0.77 lb
	3-8512-X1	0.37 kg	0.81 lb
Standards and Approvals			
	CE, FCC, NSF (3-2536-PX only)		
	RoHS compliant, China RoHS		
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety		

See Temperature and Pressure Graphs for more information

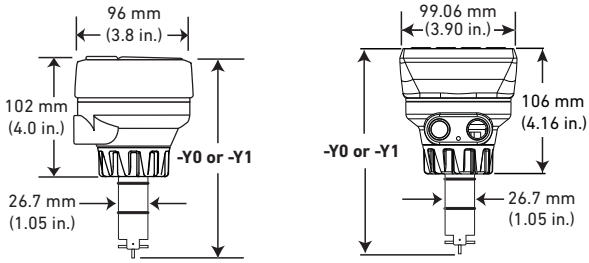
Dimensions

Standard Mount



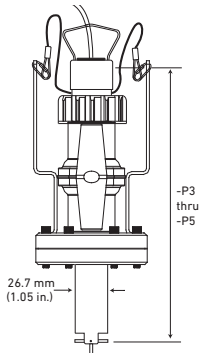
Pipe range	
0.5 to 4 in.	-X0 = 104 mm (4.1 in.)
5 to 8 in.	-X1 = 137 mm (5.4 in.)
10 in. and up	-X2 = 213 mm (8.4 in.)

Integral Mount
(shown with Transmitter sold separately)



Pipe range	
0.5 to 4 in.	-Y0 = 152 mm (6.0 in.)
5 to 8 in.	-Y1 = 185 mm (7.3 in.)

Wet-Tap Mount Sensor with 3519 Wet-Tap Valve
(See 3519 product page for more information).



Pipe range	
0.5 to 4 in.	-P3 = 297 mm (11.7 in.)
5 to 8 in.	-P4 = 333 mm (13.1 in.)
10 in. and up	-P5 = 409 mm (16.1 in.)

System Overview

Panel Mount	Field Mount - Pipe, Tank, Wall	Integral Mount
Signet Instruments 8550 8900 9900 9900-1BC	Signet Instruments 8550 9900 with 3-8050 Universal Mount Kit	Signet Instruments 8550 9900 with 3-8051-X Integral Mount Kit

Signet 2536
Standard or Wet-Tap
Flow Sensor

Signet 8512
Integral Mount
Flow Sensor

Signet Fittings

All sold separately

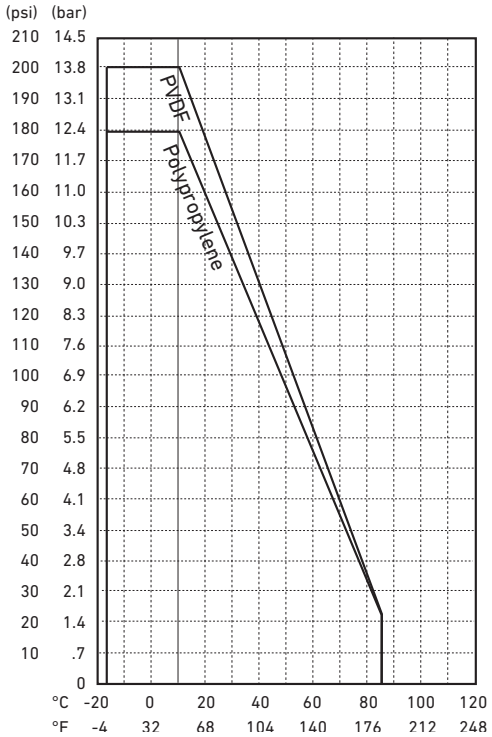
For overview of Wet-Tap System, see 3519 product page

Application Tips

- Use the Conduit Adapter Kit to protect the cable-to-sensor connection when used in outdoor environments. See Accessories section for more information.
- Use a sleeved rotor in abrasive liquids to reduce wear.
- Sensor plug can be used to plug installation fitting after extraction of sensor from pipe.
- For liquids containing ferrous particles, use Signet Magmeters.
- For systems with components of more than one material, the maximum temperature/pressure specification must always be referenced to the component with the lowest rating.

Operating Temperature/Pressure Graphs

Note:
The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.



Ordering Notes

1) Most common part number combinations shown. For all other combinations contact factory.

2) Other rotor and pin materials available for purchase from the factory and can be easily replaced in the field. See Accessories section.

Ordering Information

Model 2536 Standard Mount Paddlewheel
When choosing this style of sensor, the instrument can be mounted nearby on a pipe or wall or in a remote location up to 305 m (1000 ft) by connecting the sensor through a standard 3-8050-1 universal junction box. Standard cable length is 7.6 m (25 ft). Use Signet fittings for proper seating of the sensor into the process flow.

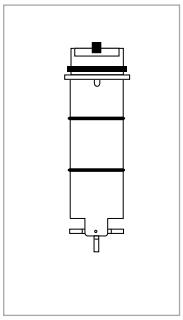


Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow Sensor for use with remote mount instrument				
DN15 to DN100 - ½ to 4 in.				
3-2536-P0	198 840 143	Polypropylene	Black PVDF	Titanium
3-2536-T0	198 840 149	Natural PVDF	Natural PVDF	Natural PVDF
3-2536-V0	198 840 146	Natural PVDF	Natural PVDF	Hastelloy-C
DN125 to DN 200 - 5 to 8 in				
3-2536-P1	198 840 144	Polypropylene	Black PVDF	Titanium
3-2536-V1	198 840 147	Natural PVDF	Natural PVDF	Hastelloy-C
DN250 - DN900 - 10 to 36 in.				
3-2536-P2	198 840 145	Polypropylene	Black PVDF	Titanium

Ordering Information (continued)

Model 2536 Integral Mount Paddlewheel

When choosing this style of sensor, the instrument is mounted directly onto the sensor for a local display. See guidelines below for instructions.



Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow sensor for integral mounting on the 8150 or 8550 instrument using the 3-8051-X Flow Sensor Integral Mount Kit (sold separately)				
DN15 to DN100 - ½ to 4 in.				
3-8512-P0	**198 864 513**	Polypropylene	Black PVDF	Titanium
3-8512-T0	**198 864 518**	Natural PVDF**	Natural PVDF	Natural PVDF
3-8512-V0	**198 864 516**	Natural PVDF**	Natural PVDF	Hastelloy-C
DN125 to DN200 - 5 to 8 in. (PP only)				
3-8512-P1	**198 864 514**	Polypropylene	Black PVDF	Titanium

**Natural PVDF available ½ in. to 4 in. only

Guidelines: Combining a 2536 integral mount flow sensor with an integrally mounted instrument

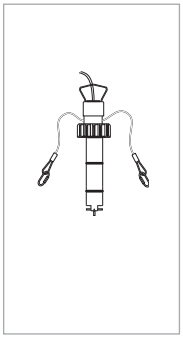
Option 1

Once an integral mount sensor is chosen, it can be mounted directly to a field mount transmitter by following these guidelines:

a) Order the 3-8051-X flow sensor integral mounting kit (sold separately) to connect the sensor to an instrument.
b) Order a field mount transmitter (sold separately). The following part numbers are compatible: 3-8550-3, 3-8[illegible]0-1.
c) Assembling the sensor with the integral adapter and instrument is quick and simple.

Model 2536 Wet-Tap Mount Paddlewheel Flow Sensor

When choosing this style of sensor, the instrument can be mounted nearby on a pipe or wall or in a remote location up to 305 m (1000 ft) by connecting the sensor through a standard 3-8050-1 universal junction box. Standard cable length is 7.6 m (25 ft). This style of sensor uses the 3519 Wet-Tap valve only (see individual product page for more information).



Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow Sensor for wet-tap mounting with the 3519 Wet-Tap Valve (sold separately)				
DN15 to DN100 - ½ to 4 in.				
3-2536-P3	**159 000 758**	Polypropylene	Black PVDF	Titanium
DN125 to DN200 - 5 to 8 in.				
3-2536-P4	**159 000 759**	Polypropylene	Black PVDF	Titanium
DN250 to DN900 - 10 to 36 in.				
3-2536-P5	**159 000 760**	Polypropylene	Black PVDF	Titanium

Guideline: Combining a 2536 Wet-Tap Sensor with a 3519 Wet-Tap Valve

a) Once a sensor is chosen, it can be mounted in a 3519 Wet-Tap Valve (sold separately)
b) Assembling a sensor with a 3519 Wet-Tap valve is quick and simple. These parts can also be ordered as complete assemblies. See 3519 product page.

Model 2536 Ordering Notes

1) Other rotor and pin materials are available for purchase from the factory and can be easily replaced in the field. See Accessories section.

Please refer to Wiring, Installation, Accessories and Fittings sections for more information.

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
Rotors		
3-2536.320-1	**198 820 052**	Rotor, PVDF Black
3-2536.320-2	**159 000 272**	Rotor, PVDF Natural
3-2536.320-3	**159 000 273**	Rotor, ETFE
3-2536.322-1	**198 820 056**	Sleeved rotor, PVDF Black
3-2536.322-2	**198 820 057**	Sleeved rotor, PVDF Natural
3-2536.322-3	**198 820 058**	Sleeved rotor, ETFE
Rotor Pins		
M1546-1	**198 801 182**	Pin, Titanium
M1546-2	**198 801 183**	Pin, Hastelloy-C
M1546-3	**198 820 014**	Pin, Tantalum
M1546-4	**198 820 015**	Pin, Stainless Steel
P51545	**198 820 016**	Pin, Ceramic
O-Rings		
1220-0021	**198 801 000**	O-ring, FPM (2 required per sensor)
1224-0021	**198 820 006**	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	**198 820 007**	O-ring, FFPM (2 required per sensor)
Miscellaneous		
P31536	**198 840 201**	Sensor plug, Polypropylene
P31542-3	**159 000 464**	Sensor cap, Blue
P31934	**159 000 466**	Conduit cap
P51589	**159 000 476**	Conduit adapter kit
5523-0222	**159 000 392**	Cable (per foot), 2 cond. w/shield, 22 AWG
3-2536.321	**198 820 054**	PVDF Natural, Rotor kit (rotor and pin)
3-8050	**159 000 184**	Universal mount kit
3-8050-1	**159 000 753**	Universal junction box
3-8050.390-1	**159 001 702**	Retaining nut replacement kit, NPT, Valox (for use with 8510 and 8512)
3-8050.390-3	**159 310 116**	Retaining nut replacement kit, NPT, PP (for use with 8510 and 8512)
3-8050.390-4	**159 310 117**	Retaining nut replacement kit, NPT, PVDF (for use with 8510 and 8512)
3-8051	**159 000 187**	Transmitter integral adapter (for use with 8510 and 8512)
3-8051-1	**159 001 755**	Transmitter integral mounting kit, NPT, PP (for use with 8510 and 8512)
3-8051-2	**159 001 756**	Transmitter integral mounting kit, NPT, PVDF (for use with 8510 and 8512)

3-2536.099 Rev G (3/15)
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Signet 8550 Flow Transmitters

Check out the 9900 Transmitter for your single channel needs

Member of the ProcessPro® Family of Instruments



Panel Mount



Pipe, Wall, Tank and Integral Mount

Signet 8550 Flow Transmitters are advanced instruments that convert the signal from frequency and digital (S^3L) flow sensors into a 4 to 20 mA signal for long distance transmission. Configuration flexibility is maximized with dual input/output, two optional relays for process control, two packaging options for integral/pipe mount or panel installation, and scalability for virtually any flow range or engineering unit. State-of-the-art electronic design ensures long-term reliability, signal stability, and simple user setup and operation.

Features

- **2 or 4 wire power**
- **Available with dual input & output**
- **4 to 20 mA scaleable outputs**
- **Permanent & resettable totalizers**
- **Relay options available**
- **NEMA 4X enclosure with self-healing window**
- **Output simulation for complete system testing**

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Applications

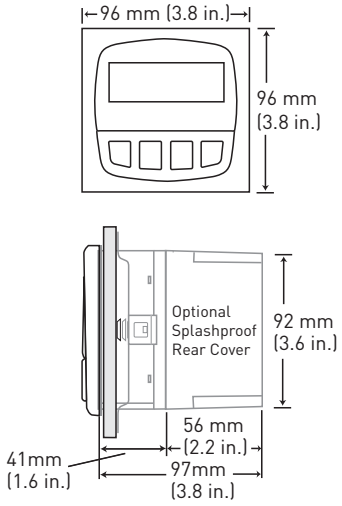
- **Flow Control and Monitoring**
- **Filtration or Softener Regeneration**
- **Effluent Totalization**
- **Pump Protection**
- **Feed Pump Pulsing**
- **Ratio Control**
- **Water Distribution**
- **Leak Detection**

Specifications

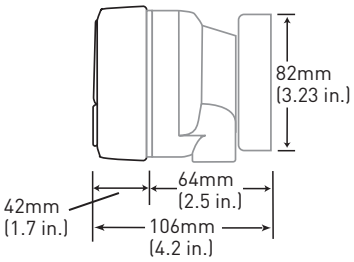
General		
Compatibility	Signet Flow Sensors with frequency outputs	
Accuracy	± 0.5% of reading	
Display	Alphanumeric 2 x 16 LCD	
Update Rate	1 second	
Contrast	User selectable, 5 levels	
Materials		
Enclosure	PBT resin	
Keypad	Sealed 4-key silicon rubber	
Panel and Case Gasket	Neoprene	
Window	Polyurethane coated polycarbonate	
Electrical		
Power	12 to 24 VDC ±10%, regulated	
	100 mA max.	
Sensor Input Range	0.5 to 1500 Hz	
Sensor Power	2-wire: 5 VDC ± 1% @ 1.5 mA	
	3 or 4 wire: 5 VDC ± 1% @ 20 mA	
	Optically isolated from current loop short circuit protected	
Current Output	4 to 20 mA, isolated, passive, fully adjustable and reversible	
Max. Loop Impedance	50 Ω max. @ 12 V	
	325 Ω max. @ 18 V	
	600 Ω max. @ 24 V	
Update Rate	100 ms	
Accuracy	±0.03 mA	
Relay Output		
Mechanical SPDT contacts	High, Low, Pulse, Off	
Maximum Voltage Rating	30 VDC @ 5 A , 250 VAC @ 5 A resistive load	
Hysteresis	User selectable	
Maximum 400 pulses/min		
Open-Collector Output		
	High, Low, Pulse, Off	
	Optically isolated, 50 mA max. sink, 30 VDC max. pull-up voltage.	
Hysteresis	User selectable for exiting alarm condition	
Maximum 400 pulses/min.		
Environmental		
Operating Temperature	-10 °C to 70 °C	14 °F to 158 °F
Storage Temperature	-15 °C to 80 °C	5 °F to 176 °F
Relative Humidity	0 to 95%, non-condensing	
Enclosure	NEMA 4X/IP65 (front face only on panel mount); field mount is 100% NEMA 4X/IP65	
Shipping Weight		
	0.325 kg	0.7 lb
Standards and Approvals		
	CE, FCC, UL, CUL	
	RoHS compliant, China RoHS	
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety	

Dimensions

3-8550-XP



Field version with universal mount



System Overview

Panel Mount	Field Mount - Pipe, Tank, Wall	Integral Mount
Signet 8550 Flow Transmitter (Includes mounting bracket and panel gasket)	**Signet 8550 Flow Transmitter** with 3-8050 Universal Mount Kit	**Signet 8550 Flow Transmitter** with 3-8051-X Integral Mount Kit
Signet Sensor 515 525 2000 2100 2507 2536 2537 2540 2551 2552	Signet Sensor 515 2507 2540 525 2536 2537 2000 2551 2552 2100	Signet Integral Mount Sensor 3-8510-XX 3-8512-XX
Signet Fittings		

All sold separately

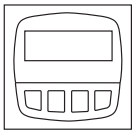
Ordering Notes

1) Use the field mount version to directly mount the instrument to the Model 515 or 2536 integral mount sensor. See sensor data sheet for more information.
2) Field mount and sensor can be ordered in a package. See Integral Mount for more information.
3) Panel cutout should be 92 mm X 92 mm (3.62 in X 3.62 in.).
4) An optional splashproof rear cover for the panel mount version can be ordered separately if needed.

Please refer to Wiring, Installation, and Accessories sections for more information.

Ordering Information





Mfr. Part No.	Code	Input	Output	Power
ProcessPro Flow Transmitter				
Field mount package				
3-8550-3	**159 000 051**	Two	Two 4 to 20 mA outputs and two open collectors for Hi, Lo, Pulse or Frequency	2 or 4 wire
Panel mount package				
3-8550-3P	**159 000 052**	Two	Two 4 to 20 mA outputs and two open collectors for Hi, Lo, Pulse or Frequency	2 or 4 wire

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
Mounting Accessories		
3-8050	**159 000 184**	Universal mounting kit
3-8051	**159 000 187**	Flow Sensor integral mount kit, NPT, Valox
3-8051-1	**159 001 755**	Flow Sensor integral mount kit, NPT, PP
3-8051-2	**159 001 756**	Flow Sensor integral mount kit, NPT, PVDF
3-0000.596	**159 000 641**	Heavy duty wall mount bracket (panel mount only)
3-5000.598	**198 840 225**	Surface mount bracket (panel mount only)
3-8050.395	**159 000 186**	Splashproof rear cover (panel mount only)
3-9900.396	**159 001 701**	Angle adjustment adapter kit
Liquid Tight Connectors and Other		
3-9000.392	**159 000 368**	Liquid tight connector kit for rear cover (includes 3 connectors)
3-9000.392-1	**159 000 839**	Liquid tight connector kit, NPT (1 connector)
3-9000.392-2	**159 000 841**	Liquid tight connector kit, PG 13.5 (1 connector)
3-8050.396	**159 000 617**	RC filter kit (for relay use)

3-8550.099 Rev F (4/13)
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3401 Aero Jet Avenue, El Monte, CA 91731-2882 U.S.A. • Tel. (626) 571-2770 • Fax (626) 573-2057 • www.gfsignet.com • e-mail: signet.ps@georgfischer.com
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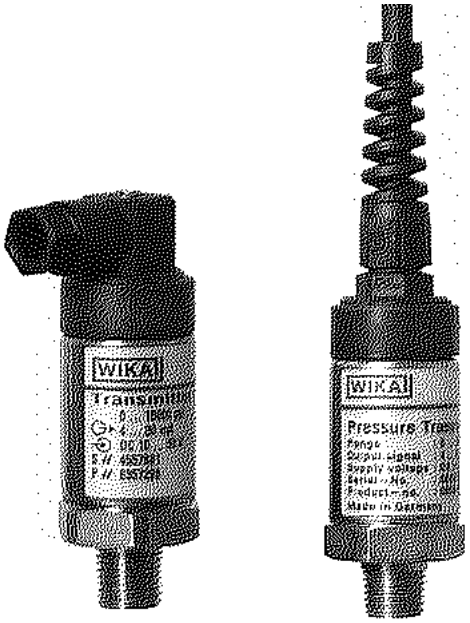
General Purpose Transmitter
Type C-10

Applications

- Hydraulics and pneumatics
- Mechanical engineering
- General industrial applications

Special Features

- Standard ranges from 0…100 InWC to 0…15,000 psi
- Excellent shock and vibration resistance
- Environmental protection to NEMA 4 / IP 67
- Stainless steel case and wetted parts



Left: C-10 with MiniDIN connector
Right: C-10 with optional cable

Description

The WIKA C-10 provides performance and economy for a wide range of OEM applications. They are especially suited to applications subject to severe mechanical shock, vibration and electromagnetic interference. Typical applications include hydraulics and pneumatics, compressor controls, pump protection, refrigeration and air conditioning systems.

Dependable performance

The C-10 features an all-welded stainless steel measuring cell for improved media compatibility. There are no internal soft sealing materials that may react with the media or deteriorate over time. The case is also made of stainless steel and is available with environmental protection ratings up to NEMA 4 / IP 67.

Pressure ranges up to 300 psi use a piezoresistive measuring cell. The higher pressure ranges use thin film sensor technology. Both are time proven highly reliable sensor technologies.

A standard signal output of 4-20 mA allows the C-10 to be integrated into many existing applications. Many custom signal outputs, process connections and electrical connections are available.

Each C-10 undergoes extensive quality control testing and calibration to achieve an accuracy of ≤ 0.50% full scale. The printed circuit boards use state-of-the-art surface mount technology. Each is individually temperature compensated to assure accuracy and long-term stability even when exposed to severe ambient temperature variations.

Specifications Model C-10

Pressure range	100 InWC	5 psi	10 psi	15 psi	25 psi	30 psi	50 psi	100 psi	200 psi
Maximum pressure*	29 psi	29 psi	58 psi	72 psi	145 psi	145 psi	240 psi	500 psi	1,160 psi
Burst pressure**	34 psi	34 psi	69 psi	87 psi	170 psi	170 psi	290 psi	600 psi	1,390 psi
Pressure range	300 psi	500 psi	1,000 psi	2,000 psi	3,000 psi	5,000 psi	7,500 psi	10,000 psi	15,000 psi
Maximum pressure*	1,160 psi	1,160 psi	1,740 psi	4,600 psi	7,200 psi	11,600 psi	17,400 psi	17,400 psi	21,750 psi
Burst pressure**	1,390 psi	5,800 psi	7,970 psi	14,500 psi	17,400 psi	24,650 psi	34,800 psi	34,800 psi	43,500 psi

{absolute pressure references are available}

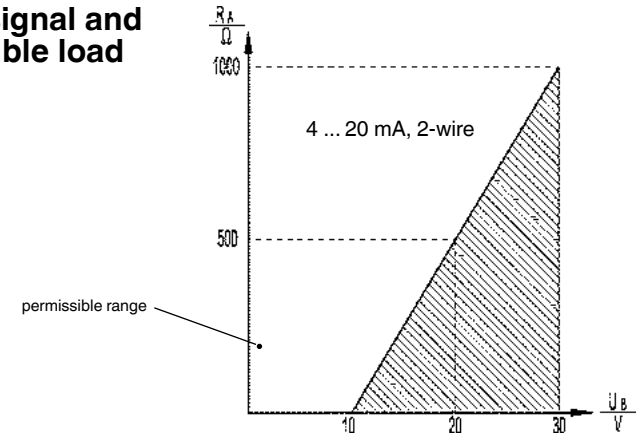
*Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts

**Exceeding the burst pressure may result in destruction of the transmitter and possible loss of media

Materials			
■ Wetted parts		Stainless steel	
■ Case		Stainless steel	
Internal transmission fluid		Synthetic oil, only for pressure ranges up to 0 ... 300 psi	
		{Halocarbon® oil for oxygen applications} [1)]	
Supply Voltage U_B	DC V	$10 < U_B \leq 30$ (14 ... 30 with signal output 0 ... 10 V)	
Response time (10 ... 90 %)	ms	≤ 1 (≤ 10 ms at medium temperatures below -22°F (-30°C) for pressure ranges up to 300 psi	
Accuracy [2)]	% of span	≤ 1.0 (limit point calibration)	
	% of span	≤ 0.5 (BFSL)	
Hysteresis	% of span	≤ 0.1	
Non-repeatability	% of span	≤ 0.05	
1-year stability	% of span	≤ 0.2 (at reference conditions)	
Permissible temperature of			
■ Medium		-22 ... +212 °F	-30 ... +100 °C
■ Ambient		-22 ... +185 °F	-30 ... +85 °C
■ Storage		-40 ... +212 °F	-40 ... +100 °C
Compensated temperature range		0 ... +176 °F	0 ... +80 °C
Temperature coefficients in compensated temp range			
■ Mean TC of zero	% of span	≤ 0.3 / 10 K	
■ Mean TC of range	% of span	≤ 0.2 / 10 K	
CE-conformity		89/336/EWG interference emission and immunity see EN 61326	
		97/23/EG Pressure equipment directive	
Shock resistance	g	1,000 according to IEC 60068-2-27 (mechanical shock)	
Vibration resistance	g	20 according to IEC 60068-2-6 (vibration under resonance)	
Wiring protection		Protected against reverse polarity, overvoltage and short circuiting	
Ingress protection		Per IEC 60529 / EN 60529, see page 3	
Weight	lb	Approx. .22	

1) Media temperature for oxygen version: -4 ... +140 °F (-20 ... 60 °C).
Cannot be manufactured for absolute pressure ranges < 1 bar abs.
2) Including linearity, hysteresis and repeatability.
Limit point calibration in vertical mounting position with down pressure connection.
{ } Items in curved brackets are optional extras for additional price.

Output signal and permissible load



Supply voltage

Output current (2-wire)
4 ... 20 mA: $R_A \leq (U_B - 10\ V) / 0.02\ A$

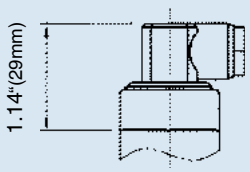
Output current (3-wire)
0 ... 20 mA: $R_A \leq (U_B - 3\ V) / 0.02\ A$

Output voltage (3-wire)
0 ... 5 V: R_A >5 kOhm
0 ... 10 V: R_A >10 kOhm

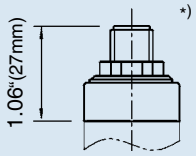
Dimensions in inches (mm)

Electrical connections

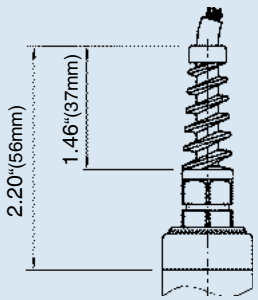
Mini L-connector
G-series
IP 65
Order code: II



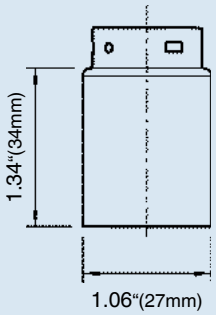
Circular connector,
5-pin, M 12x1,
IP 65
Order code: M5



Cable with Free Ends
IP 65
Order code: CR

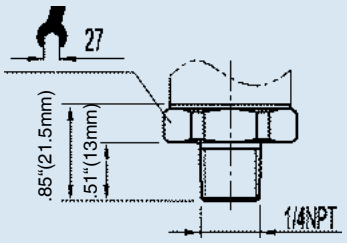


Case

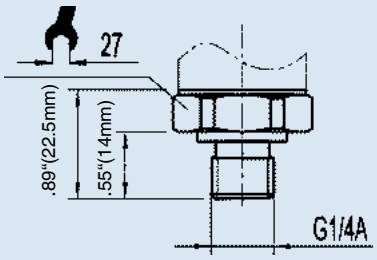


Pressure connections

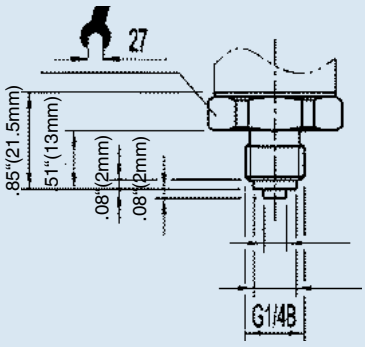
1/4” NPT male
Order code: NB



G 1/4 male
DIN 3852-E
Order code: HD



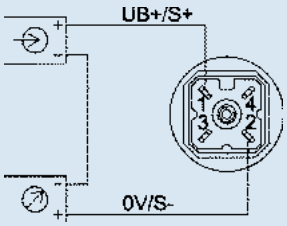
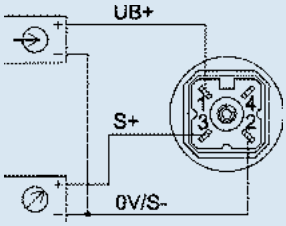
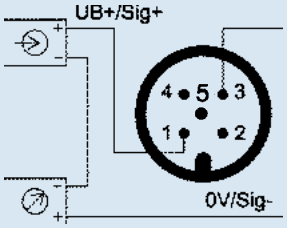
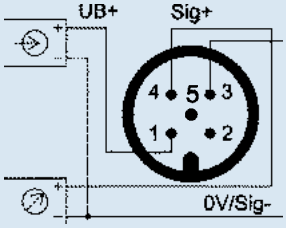
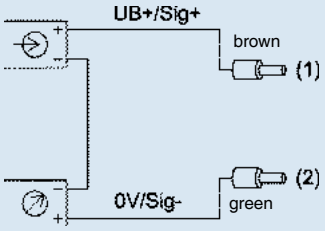
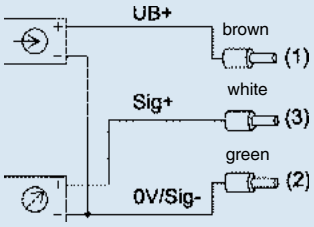
G 1/4 male
EN 837
Order code: GB



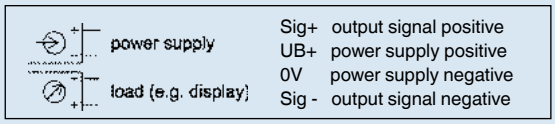
*) Mating connectors are not included

Other process connections available

Wiring details

	2-wire	3-wire
Mini L-connector G-series		
Circular connector M 12x1 5 pin		
Cable with 5 foot (1.5m) of cable and free ends		

Legend:



Specifications and dimensions given in this data sheet represent the state of engineering at the time of printing.
Modifications may take place and materials specified may be replaced by others without prior notice.

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Lawrenceville, GA 30043
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Fax 770-338-5118
info@wika.com www.wika.com

Submersible Pumps

3. Construction

Sectional drawing, SP pump 4" spline shaft (SP 5S - 25S)

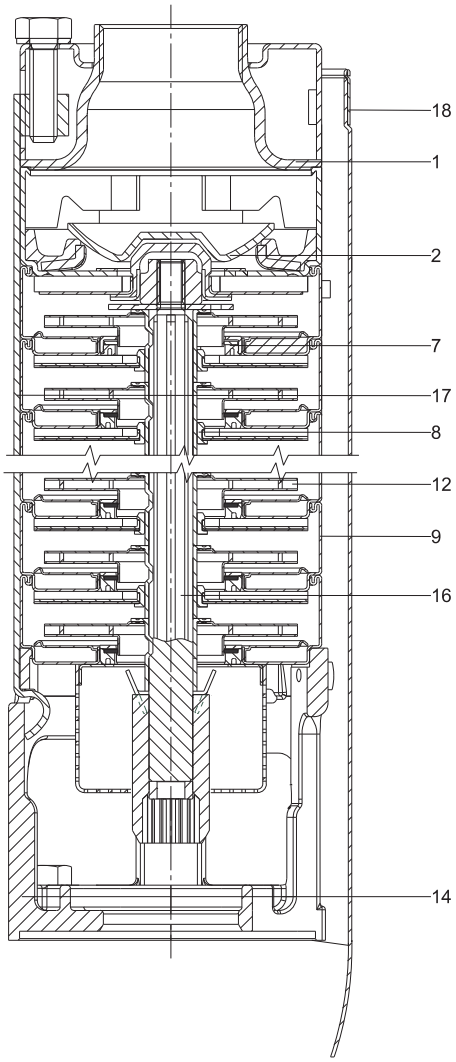


Fig. 13 SP pump, 4" spline shaft (SP 5S - 25S)

Material specification

Pos.	Component	Material	Standard	N-version	R-version
			[AISI (EN)]		
1	Valve casing	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
2	Valve cup	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
7	Neck ring	NBR/TPU			
8	Bearing	NBR			
9	Chamber	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
12	Impeller	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
14	Suction interconnector	Cast stainless steel	304 (1.4308)	316 (1.4408)	904L (1.4517)
16	Shaft complete	Stainless steel	431 (1.4057)	329 (1.4460)	904L (1.4462)
17	Strap	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
18	Cable guard	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
	Washer for stop ring	Carbon/graphite HY22 in PTFE mass			
	Strainer	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
	Valve seat	Rubber type	NBR	NBR-FKM	NBR-FKM

Environmental Equipment & Supply
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Sectional drawing, SP pump 4" smooth shaft (SP 35S - 77S)

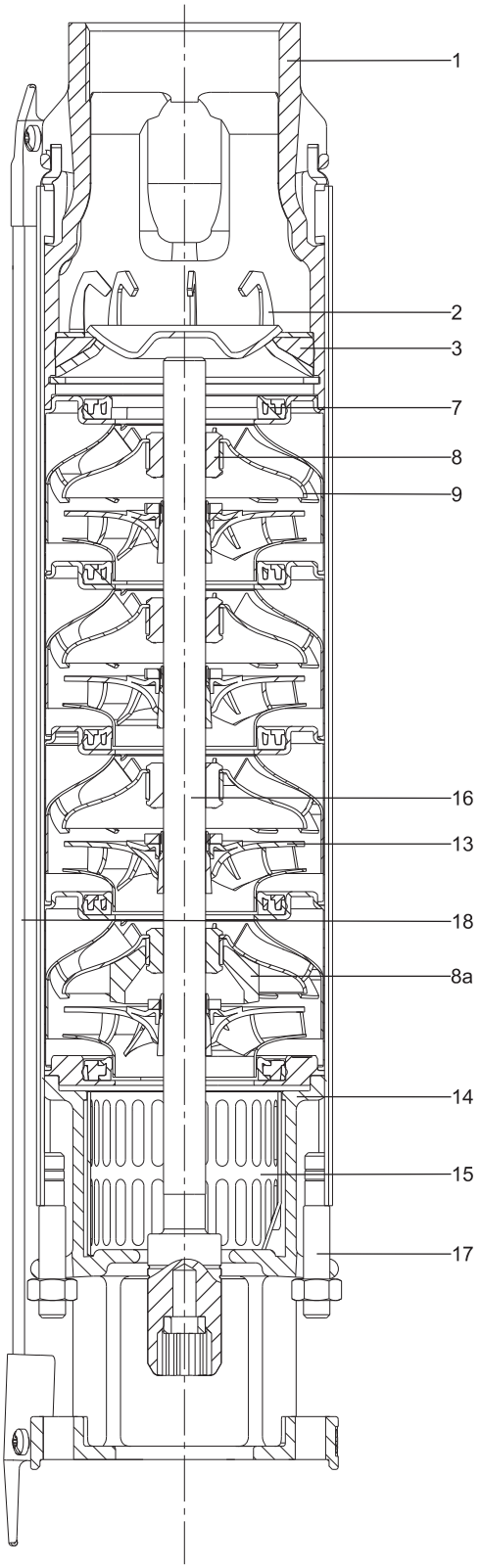
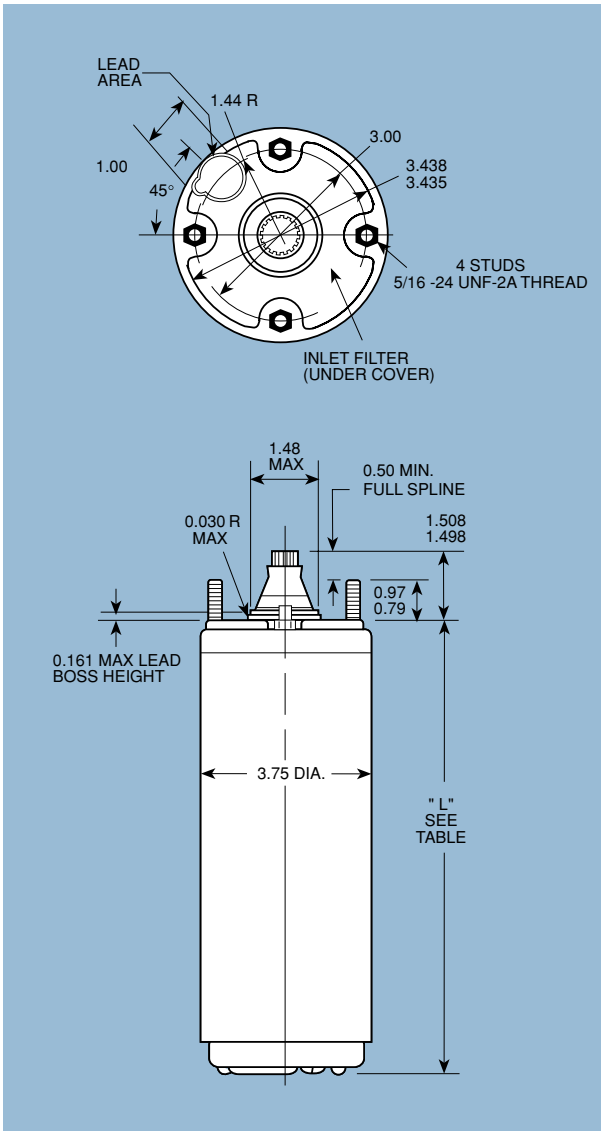


Fig. 14 SP pump, 4" smooth shaft (SP 35S - 77S)

Material specification

Pos.	Component	Material	Standard	N-version	R-version
			[AISI (EN)]		
1	Valve casing	Cast stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
2	Valve cup	Cast stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
3	Valve seat	NBR-FKM	NBR-FKM	NBR-FKM	NBR-FKM
7	Neck ring	TPU/PPS-FKM	TPU/ PPS-FKM	TPU/ PPS-FKM	TPU/ PPS-FKM
8	Bearing	LSR-FKM	LSR/FKM	LSR/FKM	LSR/FKM
8a	Washer for stop ring	Carbon/graphite HY22 in PTFE mass			
9	Chamber	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
13	Impeller	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
14	Suction interconnector	Cast stainless steel	304 (1.4308)	316 (1.4408)	904L (1.4517)
16	Shaft complete	Stainless steel	1.4057	1.4460	1.4462
17	Strap	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
18	Cable guard	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)
	Strainer	Stainless steel	304 (1.4301)	316 (1.4401)	904L (1.4539)

4-Inch Dimensions and Weights



Single-Phase Motors - 2-wire

HP	KW	"L" (inches)	SHIPPING WEIGHT LBS	SHIPPING WEIGHT KG	MOTOR CARTON SIZE (in inches)
1/3	0.25	8.78	16	7.3	4 x 4.375 x 16
0.5	0.37	9.53	18	8.2	4 x 4.375 x 16
0.75	0.55	10.66	21	9.5	4 x 4.375 x 19
1	0.75	11.75	24	10.9	4 x 4.375 x 19
1.5	1.1	15.12	31	14.1	4 x 4.375 x 21

Single-Phase Motors - 3-wire

HP	KW	"L" (inches)	SHIPPING WEIGHT LBS	SHIPPING WEIGHT KG	MOTOR CARTON SIZE (in inches)
1/3	0.25	8.78	17	7.7	4 x 4.375 x 16
0.5	0.37	9.53	19	8.6	4 x 4.375 x 16
0.75	0.55	10.66	21	9.5	4 x 4.375 x 19
1	0.75	11.75	24	10.9	4 x 4.375 x 19
1.5	1.1	13.62	28	12.7	4 x 4.375 x 21
2	1.5	15.12	33	15.0	5 x 4.375 x 21
3	2.2	19.06	41	18.6	6 x 4.375 x 21

Three-Phase Motors

HP	KW	"L" (inches)	SHIPPING WEIGHT LBS	SHIPPING WEIGHT KG	MOTOR CARTON SIZE (in inches)
0.5	0.37	9.53	18	8.2	4 x 4.375 x 16
0.75	0.55	10.66	21	9.5	4 x 4.375 x 16
1	0.75	11.75	24	10.9	4 x 4.375 x 19
1.5	1.1	11.75	24	10.9	4 x 4.375 x 19
2	1.5	13.62	28	12.7	4 x 4.375 x 21
3	2.2	16.06	35	15.9	4 x 4.375 x 21

All dimensions listed above are for models supplied with lead. Consult factory for other models.

4" Submersible Motors Super Stainless

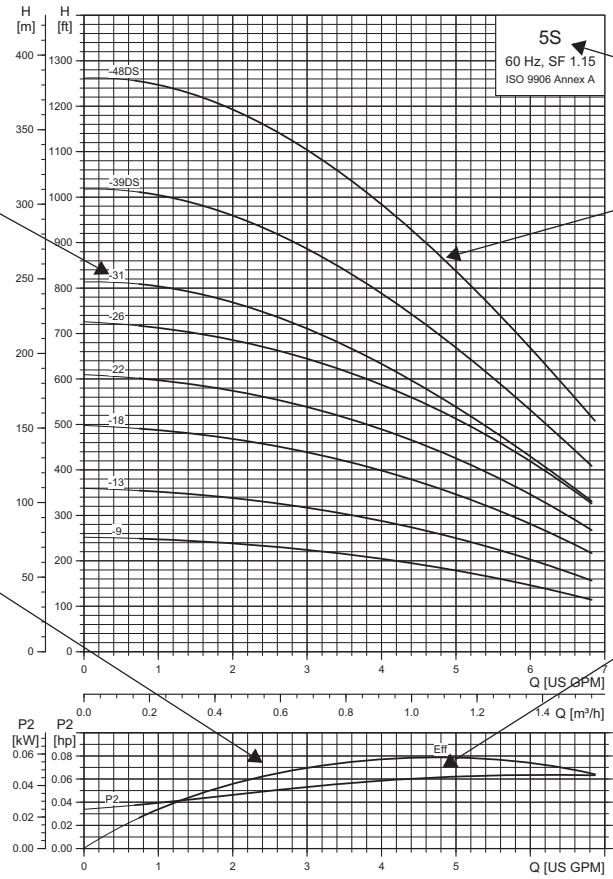
4-Inch 2-wire Models

HP (kW)	DESCRIPTION						MODEL	STOCK STATUS	DOWNWARD THRUST RATING
	W/PH	CONSTRUCTION	VOLTS	HZ	S.F.	LEAD IN MTR			
⅓ hp 0.25 kW	2-WIRE	WATER WELL	115	60	1.75		244 502 01--S		300 LBS (1500 N)
			115	60	1.75	YES	244 502 90--S	YES	
			230	60	1.75		244 503 01--S		
			230	60	1.75	YES	244 503 90--S	YES	
		POLLUTION RECOVERY	115	60	1.75		244 502 09--S		
			230	60	1.75		244 503 09--S		
½ hp 0.37 kW	2-WIRE	WATER WELL	115	60	1.60		244 504 01--S		300 LBS (1500 N)
			115	60	1.60	YES	244 504 90--S	YES	
			220	50	1.00		244 555 01--S		
			230	60	1.60		244 505 01--S		
			230	60	1.60	YES	244 505 90--S	YES	
		POLLUTION RECOVERY	115	60	1.60		244 504 09--S		
			230	60	1.60		244 505 09--S		
¾ hp 0.55 kW	2-WIRE	WATER WELL	220	50	1.00		244 557 01--S		300 LBS (1500 N)
			230	60	1.50		244 507 01--S		
			230	60	1.50	YES	244 507 90--S	YES	
		POLLUTION RECOVERY	230	60	1.50		244 507 09--S		
1 hp 0.75 kW	2-WIRE	WATER WELL	220	50	1.00		244 558 12--S		650 LBS (3000 N)
			230	60	1.40		244 508 12--S		
			230	60	1.40	YES	244 508 90--S	YES	
		POLLUTION RECOVERY	230	60	1.40		244 508 23--S		
1.5 hp 1.1 kW	2-WIRE	WATER WELL	220	50	1.00		244 359 12--S		650 LBS (3000 N)
			230	60	1.30		244 309 12--S		
			230	60	1.30	YES	244 309 90--S	YES	
		POLLUTION RECOVERY	230	60	1.30		244 309 23--S		

NOTES:

1. Pack Designation: --S = Single Pack, available in any quantity. All 3 hp motors are single-packed.
2. Contact factory for lead time for non-stocked items.
3. Pallet packs available but not shown. Please contact customer service for availability.

5. How to read the curve charts



Pump type, number of poles and frequency.

Number of stages. First figure: number of stages; second figure: number of reduced-diameter impellers.

QH curve for the individual pump. The **bold** curves indicate the **recommended** performance range for best efficiency.

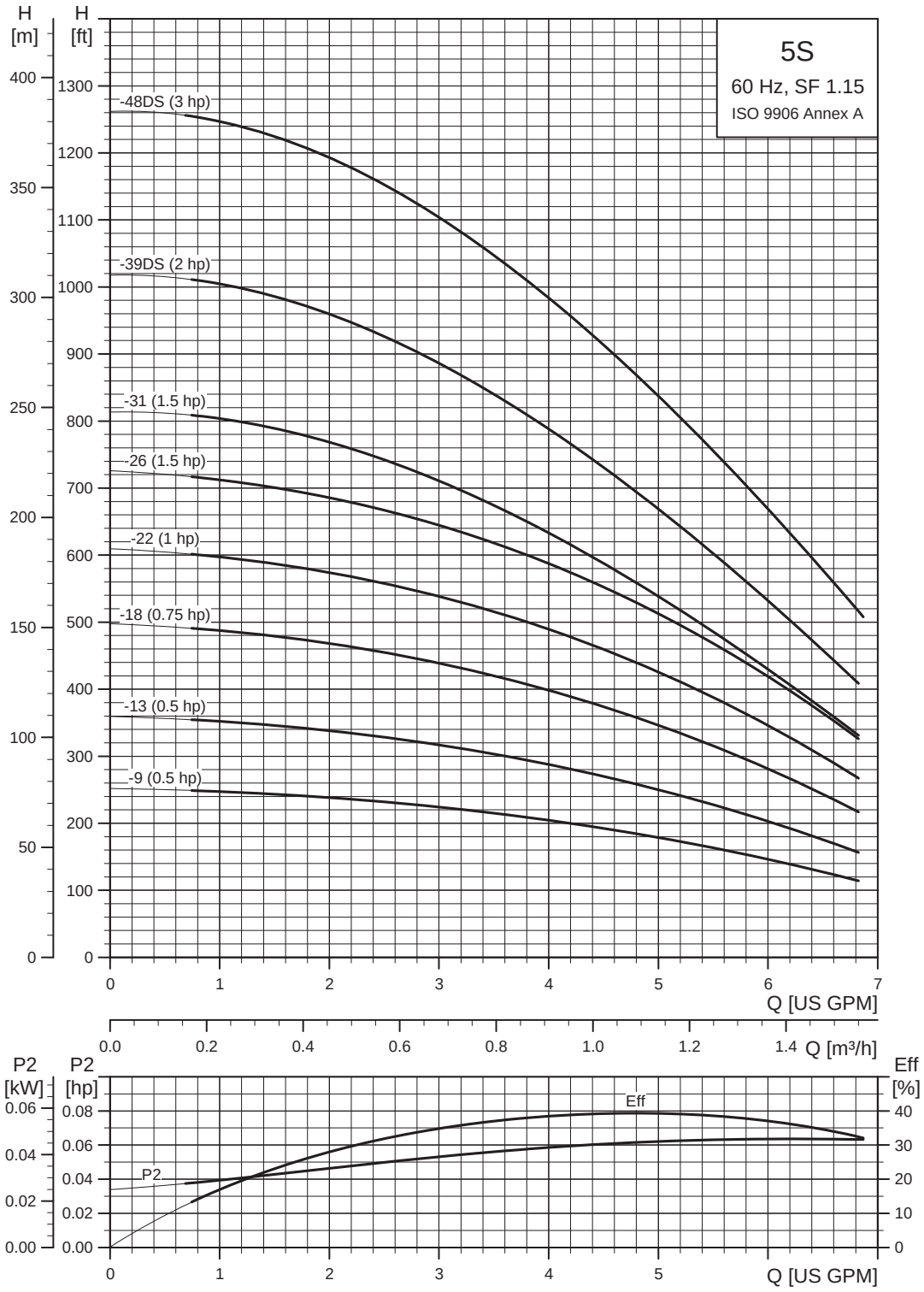
The efficiency curve shows the efficiency of the pump. The efficiency curve is an average curve of all the pump types shown in the chart. The efficiency of pumps with reduced-diameter impellers is approx. 2 % lower than the efficiency curve shown in the chart.

The power curves indicate pump input power **per stage**. Curves are shown for complete (1/1) and for reduced-diameter (2/3) impellers.

6. Curve charts and technical data

4" and larger wells

SP 5S (5 gpm)

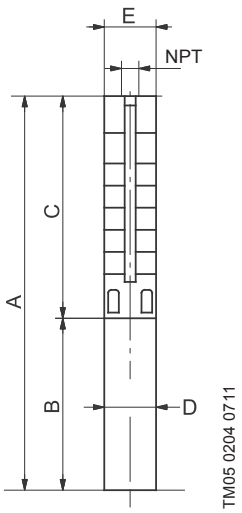


TM05 0229 2112

4" and larger wells - continued
SP 5S (5 gpm) / 4 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
5S, motor dia. 4 inch, 2 wire motor, 60 Hz - rated flow 5 gpm (1" NPT)											
5S05-9	171	1	230	0.5	■	24.57 (624)	11.03 (280)	13.55 (344)	3.74 (95)	3.98 (101)	21.6
5S05-13	247	1	115	0.5	■	27.88 (708)	11.03 (280)	16.86 (428)	3.74 (95)	3.98 (101)	26.9
			230	0.5	■	27.88 (708)	11.03 (280)	16.86 (428)	3.74 (95)	3.98 (101)	26.1
5S07-18	343	1	230	0.75	■	32.60 (828)	11.62 (295)	20.99 (533)	3.74 (95)	3.98 (101)	29.7
5S10-22	419	1	230	1	■	36.50 (927)	12.21 (310)	24.30 (617)	3.74 (95)	3.98 (101)	32.4
5S15-26	495	1	230	1.5	■	41.30 (1049)	13.71 (348)	27.60 (701)	3.74 (95)	3.98 (101)	41.4
5S15-31	527	1	230	1.5	■	47.21 (1199)	13.71 (348)	33.51 (851)	3.74 (95)	3.98 (101)	47.7
5S, motor dia. 4 inch, 3 wire motor, 60 Hz - rated flow 5 gpm (1" NPT)											
5S05-9	171	1	230	0.5	■	24.57 (624)	11.03 (280)	13.55 (344)	3.74 (95)	3.98 (101)	22.5
5S05-13	247	1	115	0.5	■	27.88 (708)	11.03 (280)	16.86 (428)	3.74 (95)	3.98 (101)	26.9
			230	0.5	■	27.88 (708)	11.03 (280)	16.86 (428)	3.74 (95)	3.98 (101)	25.2
5S07-18	343	1	230	0.75	■	32.60 (828)	11.62 (295)	20.99 (533)	3.74 (95)	3.98 (101)	28.8
5S10-22	419	1	230	1	■	36.50 (927)	12.21 (310)	24.30 (617)	3.74 (95)	3.98 (101)	32.4
5S15-26	495	1	230	1.5	■	41.30 (1049)	13.71 (348)	27.60 (701)	3.74 (95)	3.98 (101)	37.8
		3	230	1.5	■	39.81 (1011)	12.21 (310)	27.60 (701)	3.74 (95)	3.98 (101)	38.7
			460	1.5	■	39.81 (1011)	12.21 (310)	27.60 (701)	3.74 (95)	3.98 (101)	38.7
5S15-31	527	1	230	1.5	■	47.21 (1199)	13.71 (348)	33.51 (851)	3.74 (95)	3.98 (101)	47.7
		3	230	1.5	■	45.71 (1161)	12.21 (310)	33.51 (851)	3.74 (95)	3.98 (101)	45.0
			460	1.5	■	45.71 (1161)	12.21 (310)	33.51 (851)	3.74 (95)	3.98 (101)	45.0
5S20-39DS	663	1	230	2	•	59.61 (1514)	19.49 (495)	40.12 (1019)	3.74 (95)	4.25 (108)	57.6
		3	230	2	■	53.82 (1367)	13.71 (348)	40.12 (1019)	3.74 (95)	4.25 (108)	54.0
			460	2	■	53.82 (1367)	13.71 (348)	40.12 (1019)	3.74 (95)	4.25 (108)	54.0
5S30-48DS	816	1	230	3	•	70.16 (1782)	22.60 (574)	47.56 (1208)	3.74 (95)	4.25 (108)	77.4
		3	230	3	•	65.56 (1665)	18.00 (457)	47.56 (1208)	3.74 (95)	4.25 (108)	77.4
			460	3	•	65.56 (1665)	18.00 (457)	47.56 (1208)	3.74 (95)	4.25 (108)	77.4

5S

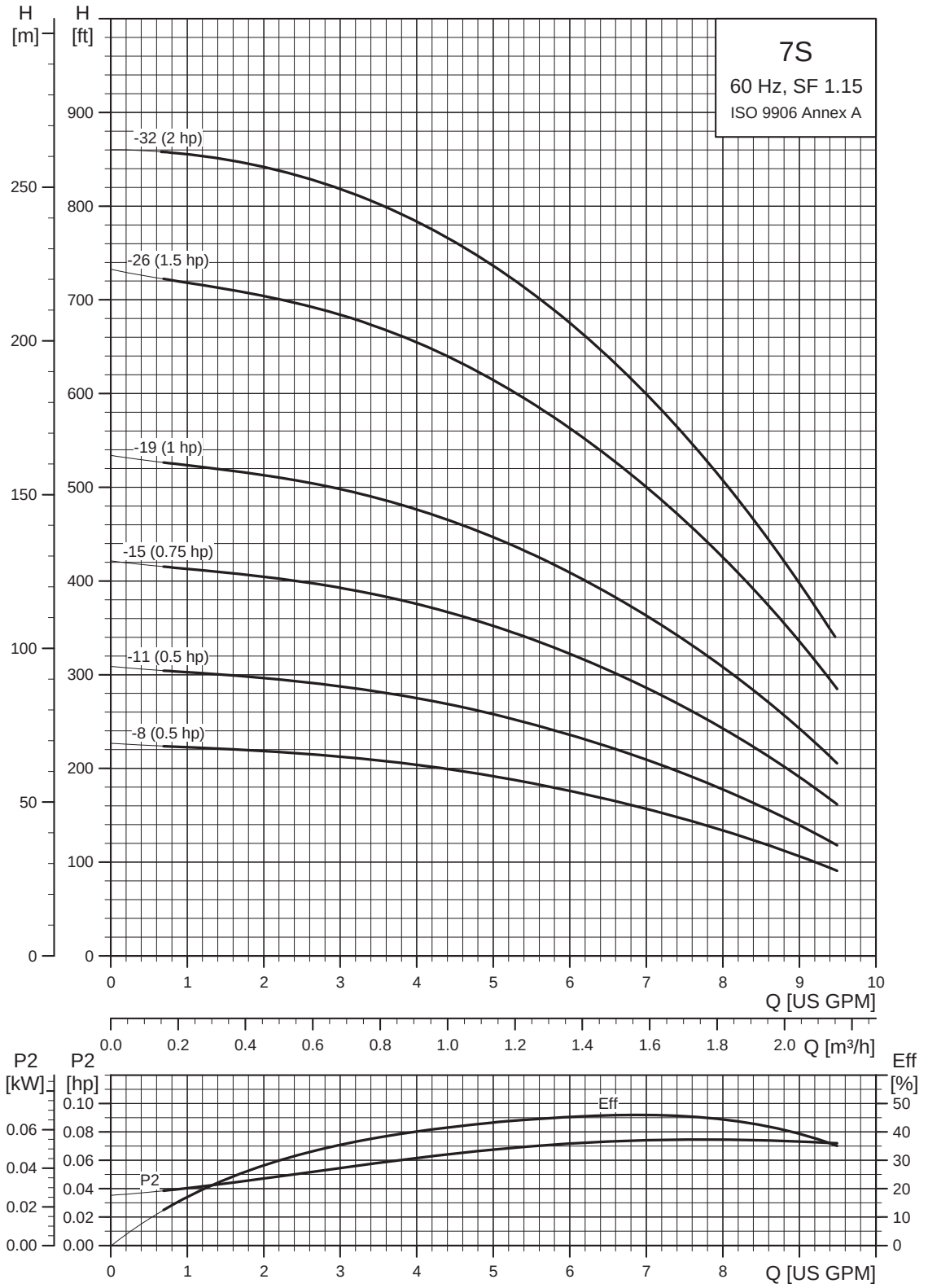


E = Maximum diameter of pump including cable guard and motor.

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
DS designation = Built into sleeve, 1 - 1/2" NPT, 6" minimum well diameter.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

- ■ MS 402 motor.
- • MS 4000 motor.

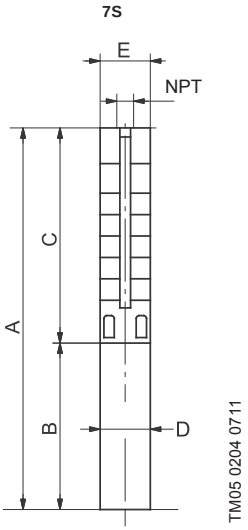
4" and larger wells - continued
SP 7S (7 gpm)



TM05 0982 2112

4" and larger wells - continued
SP 7S (7 gpm) / 4 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
7S, motor dia. 4 inch, 2 wire motor, 60 Hz - rated flow 7 gpm (1" NPT)											
7S05-8	151	1	230	.5	■	23.75 (603)	11.03 (280)	12.72 (323)	3.74 (95)	3.98 (101)	21.6
7S05-11	208	1	115	.5	■	26.23 (666)	11.03 (280)	15.20 (386)	3.74 (95)	3.98 (101)	29.7
			230	.5	■	26.23 (666)	11.03 (280)	15.20 (386)	3.74 (95)	3.98 (101)	24.3
7S07-15	283	1	230	.75	■	30.12 (765)	11.62 (295)	18.51 (470)	3.74 (95)	3.98 (101)	29.7
7S10-19	358	1	230	1	■	34.02 (864)	12.21 (310)	21.82 (554)	3.74 (95)	3.98 (101)	32.4
7S15-26	491	1	230	1.5	■	41.3 (1049)	13.71 (348)	27.60 (701)	3.74 (95)	3.98 (101)	41.4
7S, motor dia. 4 inch, 3 wire motor, 60 Hz - rated flow 7 gpm (1" NPT)											
7S05-8	151	1	230	.5	■	23.75 (603)	11.03 (280)	12.72 (323)	3.74 (95)	3.98 (101)	21.6
7S05-11	208	1	115	.5	■	26.23 (666)	11.03 (280)	15.20 (386)	3.74 (95)	3.98 (101)	21.6
			230	.5	■	26.23 (666)	11.03 (280)	15.20 (386)	3.74 (95)	3.98 (101)	30.6
7S07-15	283	1	230	.75	■	30.12 (765)	11.62 (295)	18.51 (470)	3.74 (95)	3.98 (101)	27.9
7S10-19	358	1	230	1	■	34.02 (864)	12.21 (310)	21.82 (554)	3.74 (95)	3.98 (101)	39.6
7S15-26	491	1	230	1.5	■	41.30 (1049)	13.71 (348)	27.60 (701)	3.74 (95)	3.98 (101)	38.7
		3	230	1.5	■	39.81 (1011)	12.21 (310)	27.60 (701)	3.74 (95)	3.98 (101)	38.7
			460	1.5	■	39.81 (1011)	12.21 (310)	27.60 (701)	3.74 (95)	3.98 (101)	38.7
7S20-32	604	1	230	2	•	52.05 (1322)	19.49 (495)	32.56 (827)	3.74 (95)	3.98 (101)	48.5
		3	230	2	■	46.26 (1175)	13.71 (348)	32.56 (827)	3.74 (95)	3.98 (101)	48.5
			460	2	■	46.26 (1175)	13.71 (348)	32.56 (827)	3.74 (95)	3.98 (101)	48.5

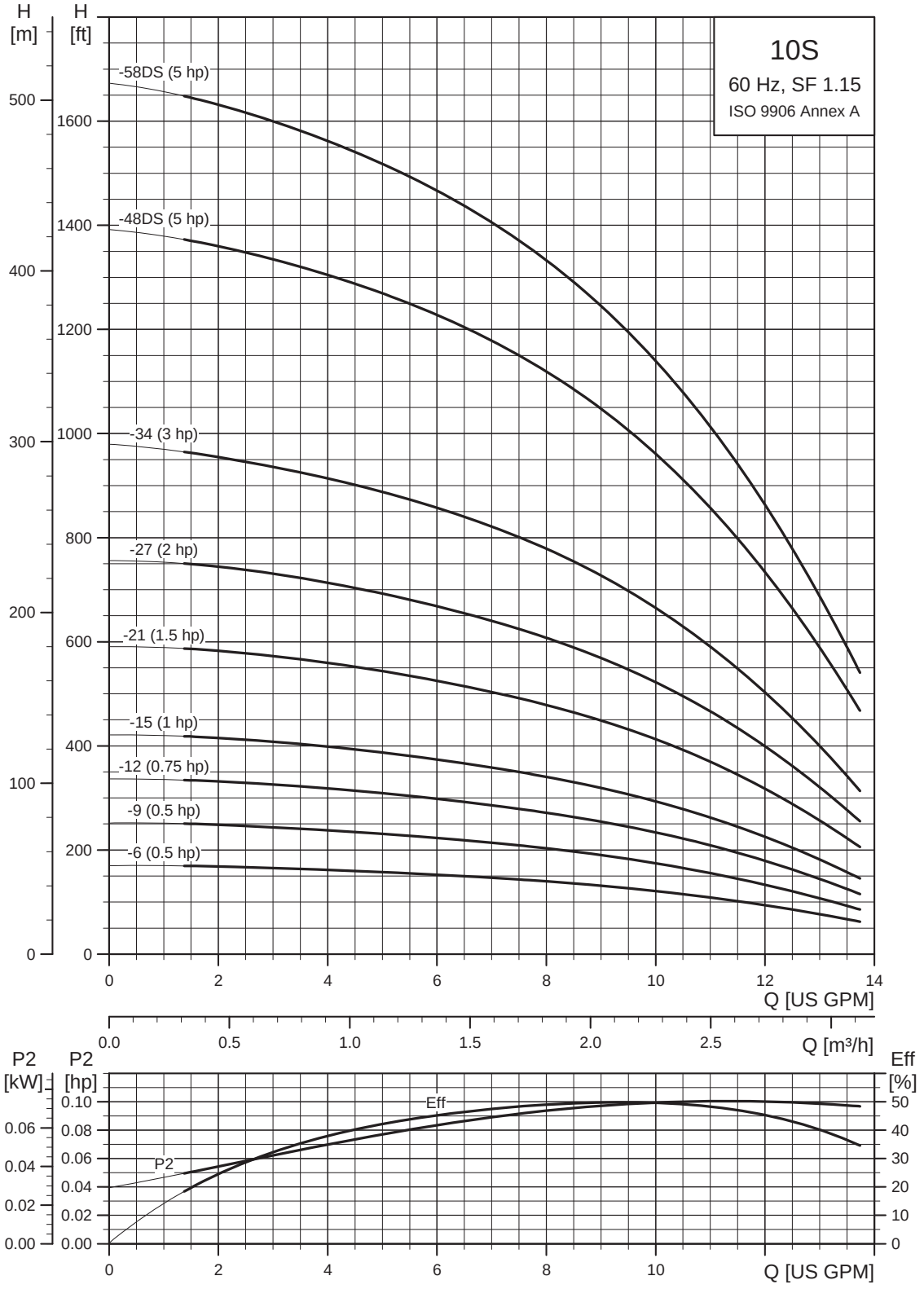


E = Maximum diameter of pump including cable guard and motor.

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
DS designation = Built into sleeve, 1 - 1/2" NPT, 6" minimum well diameter.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

- ■ MS 402 motor.
- • MS 4000 motor.

4" and larger wells - continued
SP 10S (10 gpm)

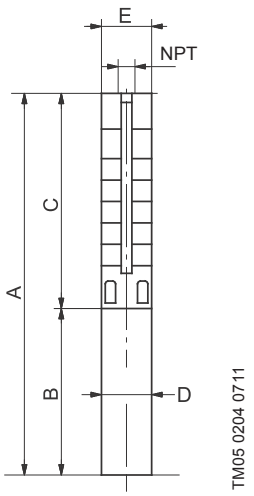


TM05 0230 1812

4" and larger wells - continued
SP 10S (10 gpm) / 4 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
10S, motor dia. 4 inch, 2 wire motor, 60 Hz - rated flow 10 gpm (1.25" NPT)											
10S05-6	116	1	230	.5	■	22.05 (560)	10.99 (279)	11.07 (281)	3.74 (95)	3.98 (101)	20.7
10S05-9	174	1	115	.5	■	24.53 (623)	10.99 (279)	13.55 (344)	3.74 (95)	3.98 (101)	24.3
			230	.5	■	24.53 (623)	10.99 (279)	13.55 (344)	3.74 (95)	3.98 (101)	23.4
10S07-12	233	1	230	.75	■	27.60 (701)	11.58 (294)	16.03 (407)	3.74 (95)	3.98 (101)	24.3
10S10-15	291	1	230	1	■	30.67 (779)	12.17 (309)	18.51 (470)	3.74 (95)	3.98 (101)	29.7
10S15-21	407	1	230	1.5	■	37.17 (944)	13.71 (348)	23.47 (596)	3.74 (95)	3.98 (101)	35.1
10S, motor dia. 4 inch, 3 wire motor, 60 Hz - rated flow 10 gpm (1.25" NPT)											
10S05-6	116	1	230	.5	■	24.77 (629)	13.71 (348)	11.07 (281)	3.74 (95)	3.98 (101)	21.6
10S05-9	174	1	115	.5	■	24.53 (623)	10.99 (279)	13.55 (344)	3.74 (95)	3.98 (101)	25.4
			230	.5	■	24.53 (623)	10.99 (279)	13.55 (344)	3.74 (95)	3.98 (101)	24.3
10S07-12	233	1	230	.75	■	27.60 (701)	11.58 (294)	16.03 (407)	3.74 (95)	3.98 (101)	28.8
10S10-15	291	1	230	1	■	30.67 (779)	12.17 (309)	18.51 (470)	3.74 (95)	3.98 (101)	29.7
10S15-21	407	1	230	1.5	■	37.17 (944)	13.71 (348)	23.47 (596)	3.74 (95)	3.98 (101)	35.1
		3	230	1.5	■	35.63 (905)	12.17 (309)	23.47 (596)	3.74 (95)	3.98 (101)	32.4
			460	1.5	■	35.63 (905)	12.17 (309)	23.47 (596)	3.74 (95)	3.98 (101)	36.0
10S20-27	524	1	230	2	•	47.92 (1217)	19.49 (495)	28.43 (722)	3.74 (95)	3.98 (101)	45.9
		3	230	2	■	42.13 (1070)	13.71 (348)	28.43 (722)	3.74 (95)	3.98 (101)	44.1
			460	2	■	42.13 (1070)	13.71 (348)	28.43 (722)	3.74 (95)	3.98 (101)	44.1
10S30-34	659	1	230	3	•	58.59 (1488)	22.6 (574)	35.99 (914)	3.74 (95)	3.98 (101)	81.9
		3	230	3	•	53.98 (1371)	18.00 (457)	35.99 (914)	3.74 (95)	3.98 (101)	74.7
			460	3	•	53.98 (1371)	18.00 (457)	35.99 (914)	3.74 (95)	3.98 (101)	74.7
10S50-48DS	931	1	230	5	•	74.18 (1884)	26.62 (676)	47.56 (1208)	3.74 (95)	4.25 (108)	103.5
		3	230	5	•	70.16 (1782)	22.60 (574)	47.56 (1208)	3.74 (95)	4.25 (108)	103.5
			460	5	•	70.16 (1782)	22.60 (574)	47.56 (1208)	3.74 (95)	4.25 (108)	103.5
10S50-58DS	1124	1	230	5	•	89.49 (2272)	26.62 (676)	62.88 (1597)	3.74 (95)	4.25 (108)	132.3
		3	230	5	•	85.48 (2171)	22.60 (574)	62.88 (1597)	3.74 (95)	4.25 (108)	132.3
			460	5	•	85.48 (2171)	22.60 (574)	62.88 (1597)	3.74 (95)	4.25 (108)	132.3

10S

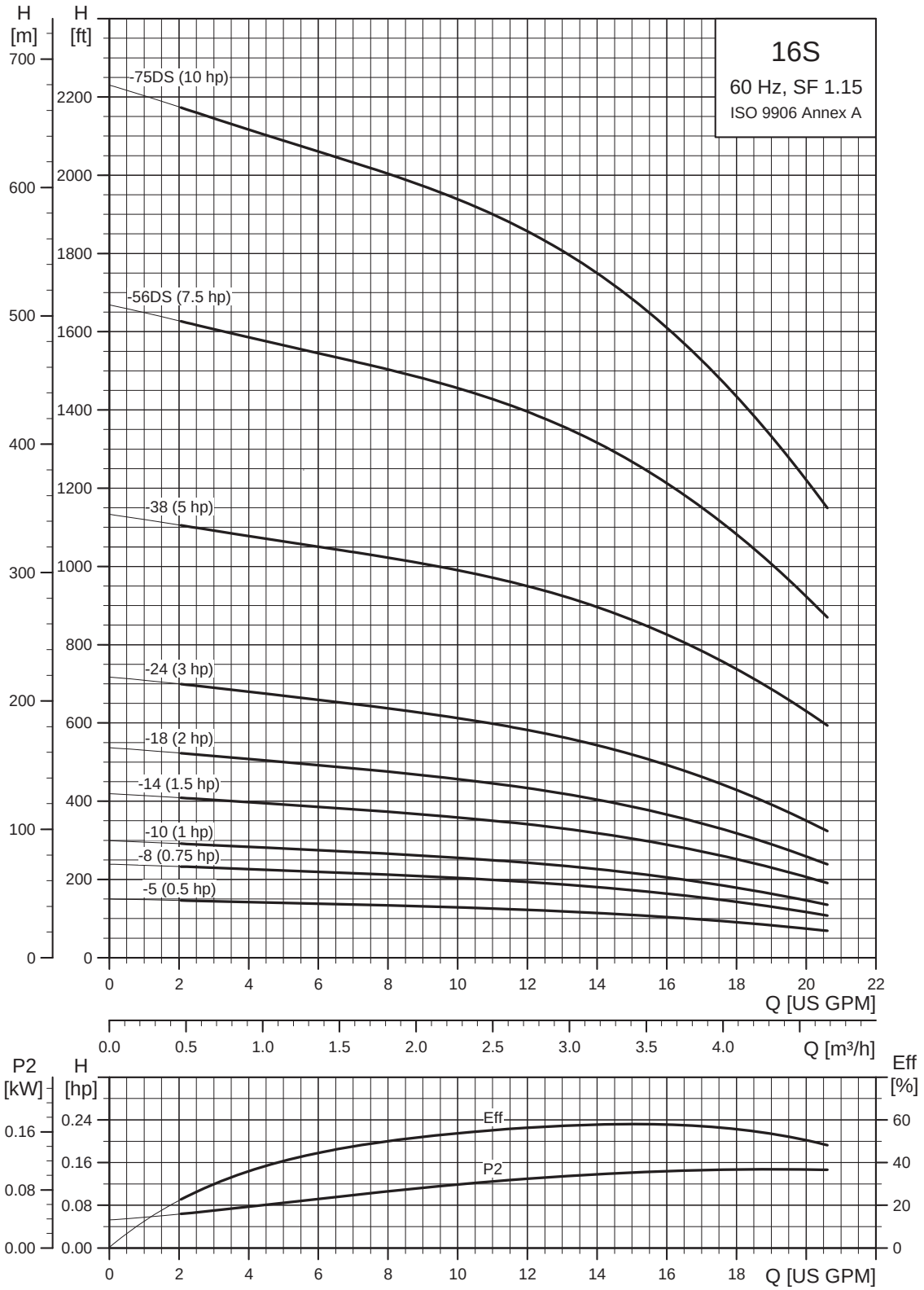


E = Maximum diameter of pump including cable guard and motor.

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
DS designation = Built into sleeve, 1 - 1/2" NPT, 6" minimum well diameter.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

- ■ MS 402 motor.
- • MS 4000 motor.

4" and larger wells - continued
SP 16S (16 gpm)

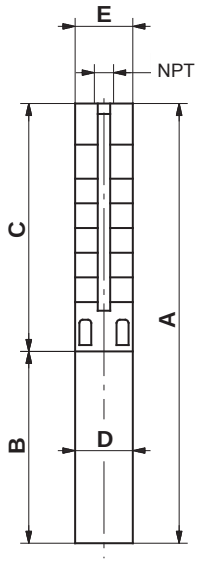


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4" and larger wells - continued
SP 16S (16 gpm) / 4, 6 inch motors

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
16S, motor dia. 4 inch, 2 wire motor, 60 Hz - rated flow 16 gpm (1.25" NPT)											
16S05-5	102	1	115	.5	■	21.26 (540)	11.03 (280)	10.24 (260)	3.74 (95)	3.98 (101)	21.6
			230	.5	■	21.26 (540)	11.03 (280)	10.24 (260)	3.74 (95)	3.98 (101)	23.4
16S07-8	162	1	230	.75	■	24.34 (618)	11.62 (295)	12.72 (323)	3.74 (95)	3.98 (101)	24.3
16S10-10	203	1	230	1	■	26.58 (675)	12.21 (310)	14.38 (365)	3.74 (95)	3.98 (101)	27.9
16S15-14	284	1	230	1.5	■	31.38 (797)	13.71 (348)	17.68 (449)	3.74 (95)	3.98 (101)	36.0
16S, motor dia. 4 inch, 3 wire motor, 60 Hz - rated flow 16 gpm (1.25" NPT)											
16S05-5	102	1	115	.5	■	21.26 (540)	11.03 (280)	10.24 (260)	3.74 (95)	3.98 (101)	21.6
			230	.5	■	21.26 (540)	11.03 (280)	10.24 (260)	3.74 (95)	3.98 (101)	21.6
16S07-8	162	1	230	.75	■	24.34 (618)	11.62 (295)	12.72 (323)	3.74 (95)	3.98 (101)	27.0
16S10-10	203	1	230	1	■	26.58 (675)	12.21 (310)	14.38 (365)	3.74 (95)	3.98 (101)	27.9
16S15-14	284	1	230	1.5	•	31.38 (797)	13.71 (348)	17.68 (449)	3.74 (95)	3.98 (101)	32.4
		3	230	1.5	■	29.89 (759)	12.21 (310)	17.68 (449)	3.74 (95)	3.98 (101)	28.8
			460	1.5	■	29.89 (759)	12.21 (310)	17.68 (449)	3.74 (95)	3.98 (101)	28.8
16S20-18	366	1	230	2	•	40.48 (1028)	19.49 (495)	20.99 (533)	3.74 (95)	3.98 (101)	36.0
		3	230	2	■	34.69 (881)	13.71 (348)	20.99 (533)	3.74 (95)	3.98 (101)	36.0
			460	2	■	34.69 (881)	13.71 (348)	20.99 (533)	3.74 (95)	3.98 (101)	36.0
16S30-24	487	1	230	3	•	48.55 (1233)	22.60 (574)	25.95 (659)	3.74 (95)	3.98 (101)	62.1
		3	230	3	•	43.94 (1116)	18.00 (457)	25.95 (659)	3.74 (95)	3.98 (101)	57.6
			460	3	•	43.94 (1116)	18.00 (457)	25.95 (659)	3.74 (95)	3.98 (101)	57.6
16S50-38	814	1	230	5	•	65.91 (1674)	26.62 (676)	39.30 (998)	3.74 (95)	3.98 (101)	97.2
		3	230	5	•	62.01 (1575)	22.72 (577)	39.30 (998)	3.74 (95)	3.98 (101)	90.0
			460	5	•	62.01 (1575)	22.72 (577)	39.30 (998)	3.74 (95)	3.98 (101)	90.0
SP 16S, motor dia. 6 inch, 60 Hz - rated flow 16 gpm (1.25" NPT)											
16S75-56DS	1200	3	230	7.5	▲	92.28 (2344)	23.50 (597)	68.78 (1747)	5.63 (143)	5.51 (140)	165.1
			460	7.5	▲	92.28 (2344)	23.50 (597)	68.78 (1747)	5.63 (143)	5.51 (140)	165.1
16S100-75DS	1607	3	460	10	▲	109.18 (2773)	24.69 (627)	84.49 (2146)	5.63 (143)	5.51 (140)	190.0

16S



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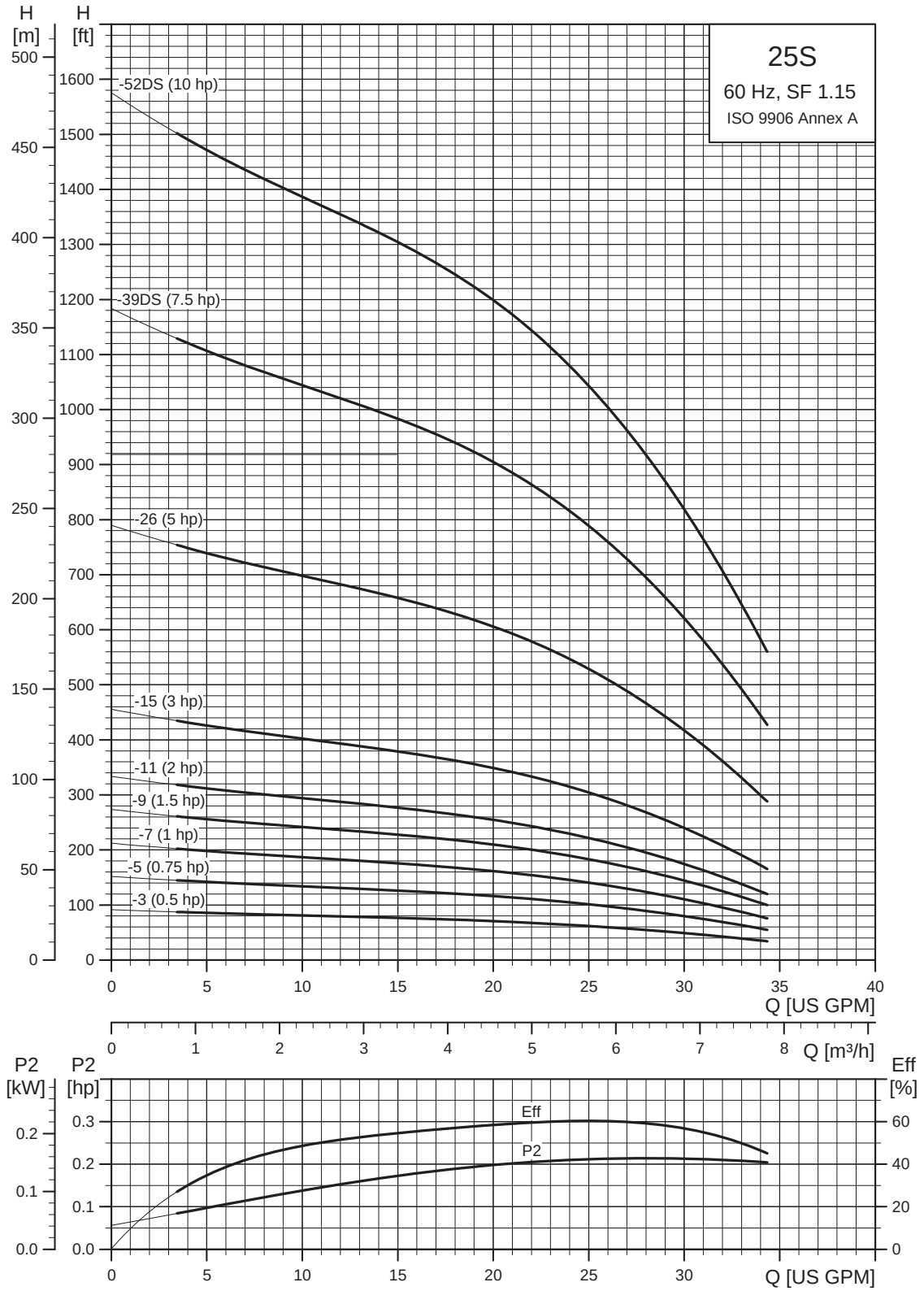
E = Maximum diameter of pump including cable guard and motor.

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
DS designation = Built into sleeve, 1 - 1/2" NPT, 6" minimum well diameter.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

- ■ MS 402 motor.
- • MS 4000 motor.
- ▲ MS 6000C motor.

4" and larger wells - continued

SP 25S (25 gpm)



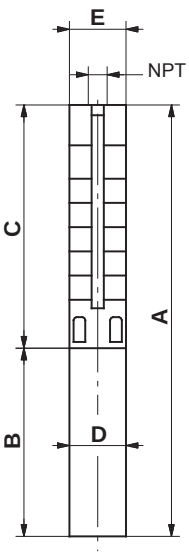
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4" and larger wells - continued

SP 25S (25 gpm) / 4, 6 inch motors

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
25S, motor dia. 4 inch, 2 wire motor, 60 Hz - rated flow 25 gpm (1.5" NPT)											
25S05-3	60	1	115	.5	■	19.61 (498)	11.03 (280)	8.59 (218)	3.74 (95)	3.98 (101)	21.6
			230	.5	■	19.61 (498)	11.03 (280)	8.59 (218)	3.74 (95)	3.98 (101)	21.6
25S07-5	99	1	230	.75	■	21.86 (555)	11.62 (295)	10.24 (260)	3.74 (95)	3.98 (101)	23.4
25S10-7	139	1	230	1	■	24.10 (612)	12.21 (310)	11.89 (302)	3.74 (95)	3.98 (101)	25.2
25S15-9	179	1	230	1.5	■	27.25 (692)	13.71 (348)	13.55 (344)	3.74 (95)	3.98 (101)	28.8
25S, motor dia. 4 inch, 3 wire motor, 60 Hz - rated flow 25 gpm (1.5" NPT)											
25S05-3	60	1	115	.5	■	19.61 (498)	11.03 (280)	8.59 (218)	3.74 (95)	3.98 (101)	21.6
			230	.5	■	19.61 (498)	11.03 (280)	8.59 (218)	3.74 (95)	3.98 (101)	21.6
25S07-5	99	1	230	.75	■	21.86 (555)	11.62 (295)	10.24 (260)	3.74 (95)	3.98 (101)	23.4
25S10-7	139	1	230	1	■	24.10 (612)	12.21 (310)	11.89 (302)	3.74 (95)	3.98 (101)	25.2
25S15-9	179	1	230	1.5	■	27.25 (692)	13.71 (348)	13.55 (344)	3.74 (95)	3.98 (101)	29.7
		3	230	1.5	■	25.75 (654)	12.21 (310)	13.55 (344)	3.74 (95)	3.98 (101)	27.0
			460	1.5	■	25.75 (654)	12.21 (310)	13.55 (344)	3.74 (95)	3.98 (101)	28.8
25S20-11	219	1	230	2	●	34.69 (881)	19.49 (495)	15.20 (386)	3.74 (95)	3.98 (101)	33.1
		3	230	2	■	28.90 (734)	13.71 (348)	15.20 (386)	3.74 (95)	3.98 (101)	37.0
			460	2	■	28.90 (734)	13.71 (348)	15.20 (386)	3.74 (95)	3.98 (101)	33.3
25S30-15	298	1	230	3	●	41.11 (1044)	22.60 (574)	18.51 (470)	3.74 (95)	3.98 (101)	61.2
		3	230	3	●	36.50 (927)	18.00 (457)	18.51 (470)	3.74 (95)	3.98 (101)	53.1
			460	3	●	36.50 (927)	18.00 (457)	18.51 (470)	3.74 (95)	3.98 (101)	53.1
25S50-26	517	1	230	5	●	54.22 (1377)	26.62 (676)	27.60 (701)	3.74 (95)	3.98 (101)	72.9
		3	230	5	●	50.32 (1278)	22.72 (577)	27.60 (701)	3.74 (95)	3.98 (101)	72.9
			460	5	●	50.32 (1278)	22.72 (577)	27.60 (701)	3.74 (95)	3.98 (101)	72.9
SP 25S, motor dia. 6 inch, 60 Hz - rated flow 25 gpm (1.5" NPT)											
25S75-39DS	775	3	230	7.5	▲	66.06 (1678)	23.50 (597)	42.56 (1081)	5.63 (143)	5.43 (138)	122.1
			460	7.5	▲	66.06 (1678)	23.50 (597)	42.56 (1081)	5.63 (143)	5.43 (138)	122.1
25S100-52DS	1034	3	460	10	▲	90.17 (2290)	24.69 (627)	65.48 (1663)	5.63 (143)	5.51 (140)	163.1

25S



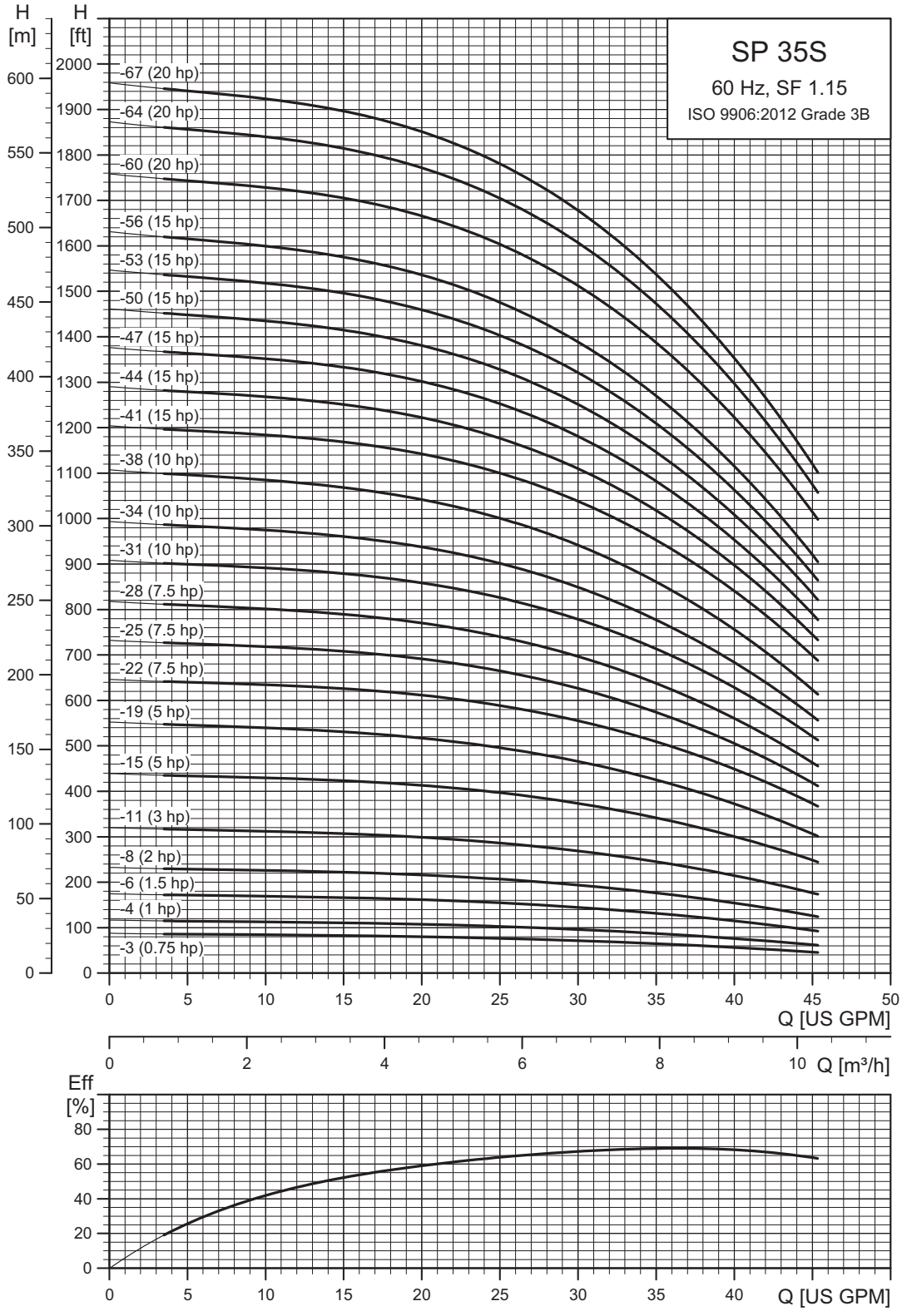
TM00 8521 3196

E = Maximum diameter of pump including cable guard and motor.

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
DS designation = Built into sleeve, 1 - 1/2" NPT, 6" minimum well diameter.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

- ■ MS 402 motor.
- ● MS 4000 motor.
- ▲ MS 6000C motor.

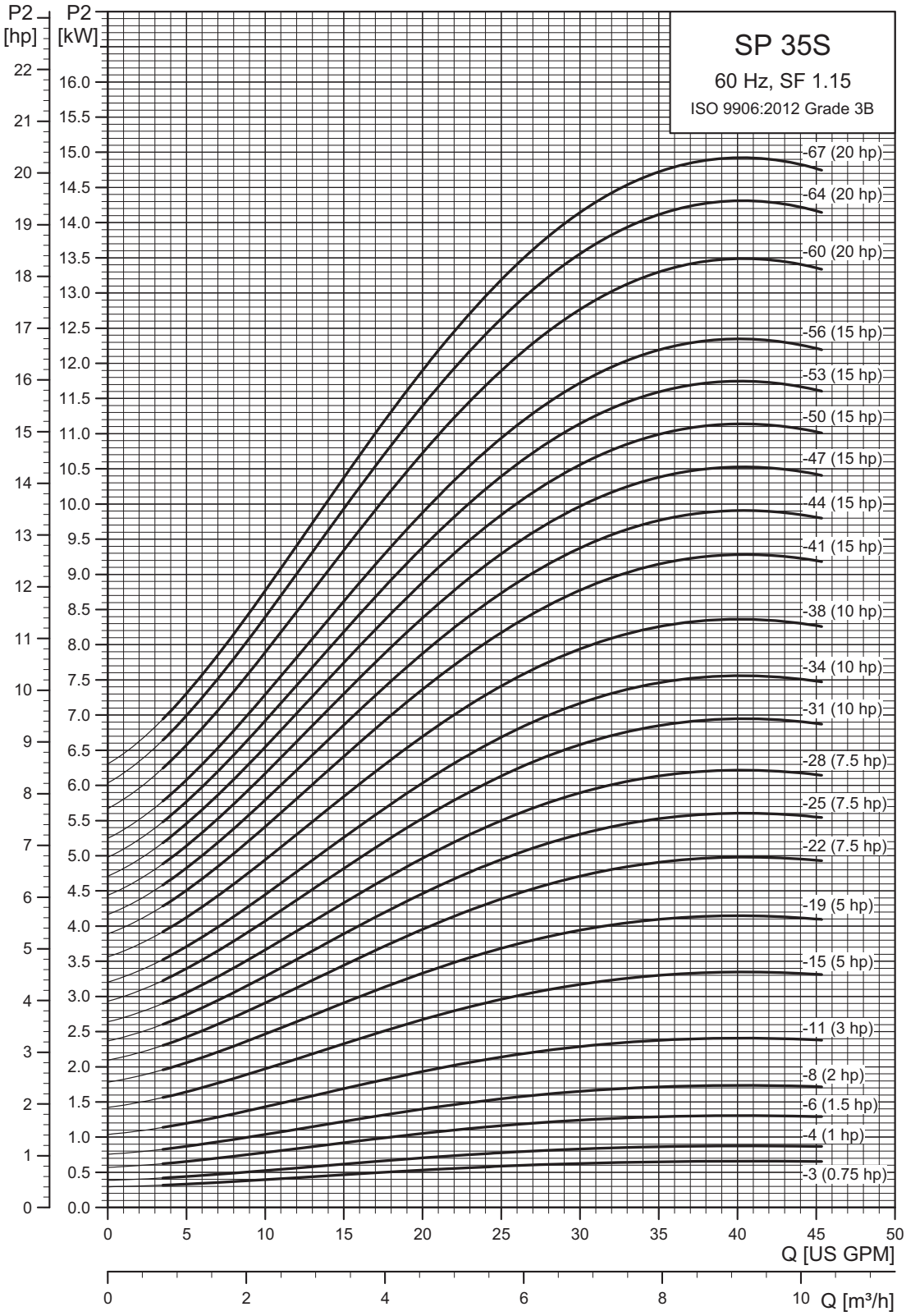
4" and larger wells - continued
SP 35S (35 gpm)



TM06 4614 3215

4" and larger wells - continued

SP 35S (35 gpm) pump power requirement (P2)

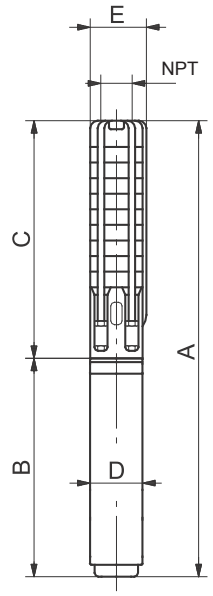


TM06 4615 3215

4" and larger wells - continued
SP 35S (35 gpm) / 4 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
35S - Motor dia. 4 inch, 3 wire motor, 60 Hz, rated flow 35 gpm (1 1/2" NPT)											
35S07-3	63	1	230	.75	■	28.35 (720)	13.08 (332)	15.28 (388)	3.75 (95)	3.98 (101)	29.9
		3	230	.75	■	26.97 (685)	11.70 (297)	15.28 (388)	3.75 (95)	3.98 (101)	26.9
		3	460	.75	■	26.97 (685)	11.70 (297)	15.28 (388)	3.75 (95)	3.98 (101)	26.9
		3	575	.75	■	26.97 (685)	11.70 (297)	15.28 (388)	3.75 (95)	3.98 (101)	26.9
35S10-4	85	1	230	1	■	30.91 (785)	13.67 (347)	17.25 (438)	3.75 (95)	3.98 (101)	32.8
		3	230	1	■	29.73 (755)	12.49 (317)	17.25 (438)	3.75 (95)	3.98 (101)	30.1
		3	460	1	■	29.73 (755)	12.49 (317)	17.25 (438)	3.75 (95)	3.98 (101)	29.9
		3	575	1	■	29.73 (755)	12.49 (317)	17.25 (438)	3.75 (95)	3.98 (101)	29.9
35S15-6	130	1	230	1.5	■	36.42 (925)	15.24 (387)	21.19 (538)	3.75 (95)	3.98 (101)	39.1
		3	230	1.5	■	34.85 (885)	13.67 (347)	21.19 (538)	3.75 (95)	3.98 (101)	35.5
		3	460	1.5	■	34.85 (885)	13.67 (347)	21.19 (538)	3.75 (95)	3.98 (101)	35.5
		3	575	1.5	■	34.85 (885)	13.67 (347)	21.19 (538)	3.75 (95)	3.98 (101)	35.3
35S20-8	175	1	230	2	•	44.69 (1135)	19.57 (497)	25.12 (638)	3.75 (95)	3.98 (101)	57.3
		3	230	2	■	40.36 (1025)	15.24 (387)	25.12 (638)	3.75 (95)	3.98 (101)	41.9
		3	460	2	■	40.36 (1025)	15.24 (387)	25.12 (638)	3.75 (95)	3.98 (101)	42.1
		3	575	2	■	40.36 (1025)	15.24 (387)	25.12 (638)	3.75 (95)	3.98 (101)	41.9
35S30-11	242	1	230	3	•	53.75 (1365)	22.72 (577)	31.03 (788)	3.75 (95)	3.98 (101)	69.9
		3	208-230	3	•	49.02 (1245)	18.00 (457)	31.03 (788)	3.75 (95)	3.98 (101)	56.7
		3	460	3	•	49.02 (1245)	18.00 (457)	31.03 (788)	3.75 (95)	3.98 (101)	56.7
35S50-15	331	1	230	5	•	65.56 (1665)	26.66 (677)	38.90 (988)	3.75 (95)	3.98 (101)	86.1
		3	208-230	5	•	61.62 (1565)	22.72 (577)	38.90 (988)	3.75 (95)	3.98 (101)	75.1
		3	460	5	•	61.62 (1565)	22.72 (577)	38.90 (988)	3.75 (95)	3.98 (101)	75.1
35S50-19	420	1	230	5	•	73.43 (1865)	26.66 (677)	46.78 (1188)	3.75 (95)	3.98 (101)	91.2
		3	208-230	5	•	69.49 (1765)	22.72 (577)	46.78 (1188)	3.75 (95)	3.98 (101)	80.2
		3	460	5	•	69.49 (1765)	22.72 (577)	46.78 (1188)	3.75 (95)	3.98 (101)	80.2
35S75-22	487	3	208-230	7.5	•	79.34 (2015)	26.66 (677)	52.68 (1338)	3.75 (95)	3.98 (101)	95.0
		3	460	7.5	•	79.34 (2015)	26.66 (677)	52.68 (1338)	3.75 (95)	3.98 (101)	95.0
		3	575	7.5	•	79.34 (2015)	26.66 (677)	52.68 (1338)	3.75 (95)	3.98 (101)	95.0
35S75-25	554	3	208-230	7.5	•	85.24 (2165)	26.66 (677)	58.59 (1488)	3.75 (95)	3.98 (101)	98.9
		3	460	7.5	•	85.24 (2165)	26.66 (677)	58.59 (1488)	3.75 (95)	3.98 (101)	98.9
		3	575	7.5	•	85.24 (2165)	26.66 (677)	58.59 (1488)	3.75 (95)	3.98 (101)	98.9
35S75-28	621	3	208-230	7.5	•	91.15 (2315)	26.66 (677)	64.49 (1638)	3.75 (95)	3.98 (101)	102.7
		3	460	7.5	•	91.15 (2315)	26.66 (677)	64.49 (1638)	3.75 (95)	3.98 (101)	102.7
		3	575	7.5	•	91.15 (2315)	26.66 (677)	64.49 (1638)	3.75 (95)	3.98 (101)	102.7
35S100-31	688	3	460	10	•	100.99 (2565)	30.60 (777)	70.40 (1788)	3.75 (95)	3.98 (101)	115.4
		3	575	10	•	100.99 (2565)	30.60 (777)	70.40 (1788)	3.75 (95)	3.98 (101)	115.4
35S100-34	755	3	460	10	•	106.89 (2715)	30.60 (777)	76.30 (1938)	3.75 (95)	3.98 (101)	119.2
		3	575	10	•	106.89 (2715)	30.60 (777)	76.30 (1938)	3.75 (95)	3.98 (101)	119.2
35S100-38	844	3	460	10	•	114.77 (2915)	30.60 (777)	84.18 (2138)	3.75 (95)	3.98 (101)	124.3
		3	575	10	•	114.77 (2915)	30.60 (777)	84.18 (2138)	3.75 (95)	3.98 (101)	124.3

35S



TM06 4962 3415

E = Maximum diameter of pump including cable guard and motor.

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

- ■ MS 402 motor.
- • MS 4000 motor.

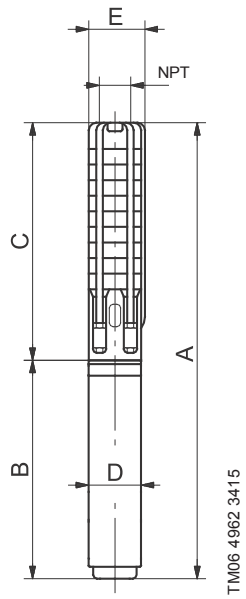
4" and larger wells - continued
SP 35S (35 gpm) / 6 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]	Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
35S - Motor dia. 6 inch, 60 Hz, rated flow 35 gpm (1 1/2" NPT)										
35S75-22	487	3	208-230	7.5 ▲	78.67 (1998)	23.51 (597)	55.16 (1401)	5.50 (140)	5.50 (140)	123.6
		3	460	7.5 ▲	78.67 (1998)	23.51 (597)	55.16 (1401)	5.50 (140)	5.50 (140)	123.6
		3	575	7.5 ▲	78.67 (1998)	23.51 (597)	55.16 (1401)	5.50 (140)	5.50 (140)	123.6
35S75-25	554	3	208-230	7.5 ▲	84.57 (2148)	23.51 (597)	61.07 (1551)	5.50 (140)	5.50 (140)	127.5
		3	460	7.5 ▲	84.57 (2148)	23.51 (597)	61.07 (1551)	5.50 (140)	5.50 (140)	127.5
		3	575	7.5 ▲	84.57 (2148)	23.51 (597)	61.07 (1551)	5.50 (140)	5.50 (140)	127.5
35S75-28	621	3	208-230	7.5 ▲	90.48 (2298)	23.51 (597)	66.97 (1701)	5.50 (140)	5.50 (140)	131.4
		3	460	7.5 ▲	90.48 (2298)	23.51 (597)	66.97 (1701)	5.50 (140)	5.50 (140)	131.4
		3	575	7.5 ▲	90.48 (2298)	23.51 (597)	66.97 (1701)	5.50 (140)	5.50 (140)	131.4
35S100-31	688	3	208-230	10 ▲	97.56 (2478)	24.69 (627)	72.88 (1851)	5.50 (140)	5.50 (140)	142.0
		3	460	10 ▲	97.56 (2478)	24.69 (627)	72.88 (1851)	5.50 (140)	5.50 (140)	142.0
		3	575	10 ▲	97.56 (2478)	24.69 (627)	72.88 (1851)	5.50 (140)	5.50 (140)	142.0
35S100-34	755	3	208-230	10 ▲	103.47 (2628)	24.69 (627)	78.78 (2001)	5.50 (140)	5.50 (140)	145.9
		3	460	10 ▲	103.47 (2628)	24.69 (627)	78.78 (2001)	5.50 (140)	5.50 (140)	145.9
		3	575	10 ▲	103.47 (2628)	24.69 (627)	78.78 (2001)	5.50 (140)	5.50 (140)	145.9
35S100-38	844	3	208-230	10 ▲	111.34 (2828)	24.69 (627)	86.66 (2201)	5.50 (140)	5.50 (140)	151.1
		3	460	10 ▲	111.34 (2828)	24.69 (627)	86.66 (2201)	5.50 (140)	5.50 (140)	151.1
		3	575	10 ▲	111.34 (2828)	24.69 (627)	86.66 (2201)	5.50 (140)	5.50 (140)	151.1

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

▲ MS 6000C motor.

35S

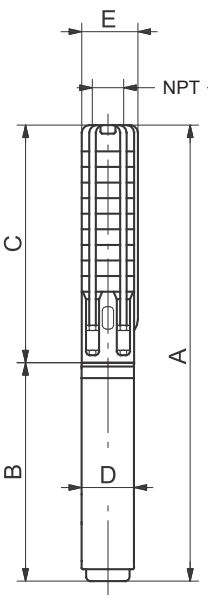


E = Maximum diameter of pump including cable guard and motor.

4" and larger wells - continued
SP 35S (35 gpm) / 6 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]	Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
35S - Motor dia. 6 inch, 60 Hz, rated flow 35 gpm (2" NPT)										
35S150-41DS	911	3	208-230	15	▲ 131.23 (3333)	27.05 (687)	104.18 (2646)	5.50 (140)	5.50 (140)	217.3
		3	460	15	▲ 131.23 (3333)	27.05 (687)	104.18 (2646)	5.50 (140)	5.50 (140)	217.3
		3	575	15	▲ 131.23 (3333)	27.05 (687)	104.18 (2646)	5.50 (140)	5.50 (140)	217.3
35S150-44DS	978	3	208-230	15	▲ 137.13 (3483)	27.05 (687)	110.08 (2796)	5.50 (140)	5.50 (140)	223.1
		3	460	15	▲ 137.13 (3483)	27.05 (687)	110.08 (2796)	5.50 (140)	5.50 (140)	223.1
		3	575	15	▲ 137.13 (3483)	27.05 (687)	110.08 (2796)	5.50 (140)	5.50 (140)	223.1
35S150-47DS	1044	3	208-230	15	▲ 143.04 (3633)	27.05 (687)	115.99 (2946)	5.50 (140)	5.50 (140)	228.8
		3	460	15	▲ 143.04 (3633)	27.05 (687)	115.99 (2946)	5.50 (140)	5.50 (140)	228.8
		3	575	15	▲ 143.04 (3633)	27.05 (687)	115.99 (2946)	5.50 (140)	5.50 (140)	228.8
35S150-50DS	1111	3	208-230	15	▲ 148.94 (3783)	27.05 (687)	121.89 (3096)	5.50 (140)	5.50 (140)	234.6
		3	460	15	▲ 148.94 (3783)	27.05 (687)	121.89 (3096)	5.50 (140)	5.50 (140)	234.6
		3	575	15	▲ 148.94 (3783)	27.05 (687)	121.89 (3096)	5.50 (140)	5.50 (140)	234.6
35S150-53DS	1178	3	208-230	15	▲ 154.85 (3933)	27.05 (687)	127.80 (3246)	5.50 (140)	5.50 (140)	240.3
		3	460	15	▲ 154.85 (3933)	27.05 (687)	127.80 (3246)	5.50 (140)	5.50 (140)	240.3
		3	575	15	▲ 154.85 (3933)	27.05 (687)	127.80 (3246)	5.50 (140)	5.50 (140)	240.3
35S150-56DS	1245	3	208-230	15	▲ 160.75 (4083)	27.05 (687)	133.71 (3396)	5.50 (140)	5.50 (140)	246.1
		3	460	15	▲ 160.75 (4083)	27.05 (687)	133.71 (3396)	5.50 (140)	5.50 (140)	246.1
		3	575	15	▲ 160.75 (4083)	27.05 (687)	133.71 (3396)	5.50 (140)	5.50 (140)	246.1
35S200-60DS	1334	3	208-230	20	▲ 171.19 (4348)	29.61 (752)	141.58 (3596)	5.50 (140)	5.50 (140)	269.2
		3	460	20	▲ 171.19 (4348)	29.61 (752)	141.58 (3596)	5.50 (140)	5.50 (140)	269.2
		3	575	20	▲ 171.19 (4348)	29.61 (752)	141.58 (3596)	5.50 (140)	5.50 (140)	269.2
35S200-64DS	1424	3	208-230	20	▲ 179.06 (4548)	29.61 (752)	149.45 (3796)	5.50 (140)	5.50 (140)	276.9
		3	460	20	▲ 179.06 (4548)	29.61 (752)	149.45 (3796)	5.50 (140)	5.50 (140)	276.9
		3	575	20	▲ 179.06 (4548)	29.61 (752)	149.45 (3796)	5.50 (140)	5.50 (140)	276.9
35S200-67DS	1491	3	208-230	20	▲ 184.97 (4698)	29.61 (752)	155.36 (3946)	5.50 (140)	5.50 (140)	282.7
		3	460	20	▲ 184.97 (4698)	29.61 (752)	155.36 (3946)	5.50 (140)	5.50 (140)	282.7
		3	575	20	▲ 184.97 (4698)	29.61 (752)	155.36 (3946)	5.50 (140)	5.50 (140)	282.7

35S

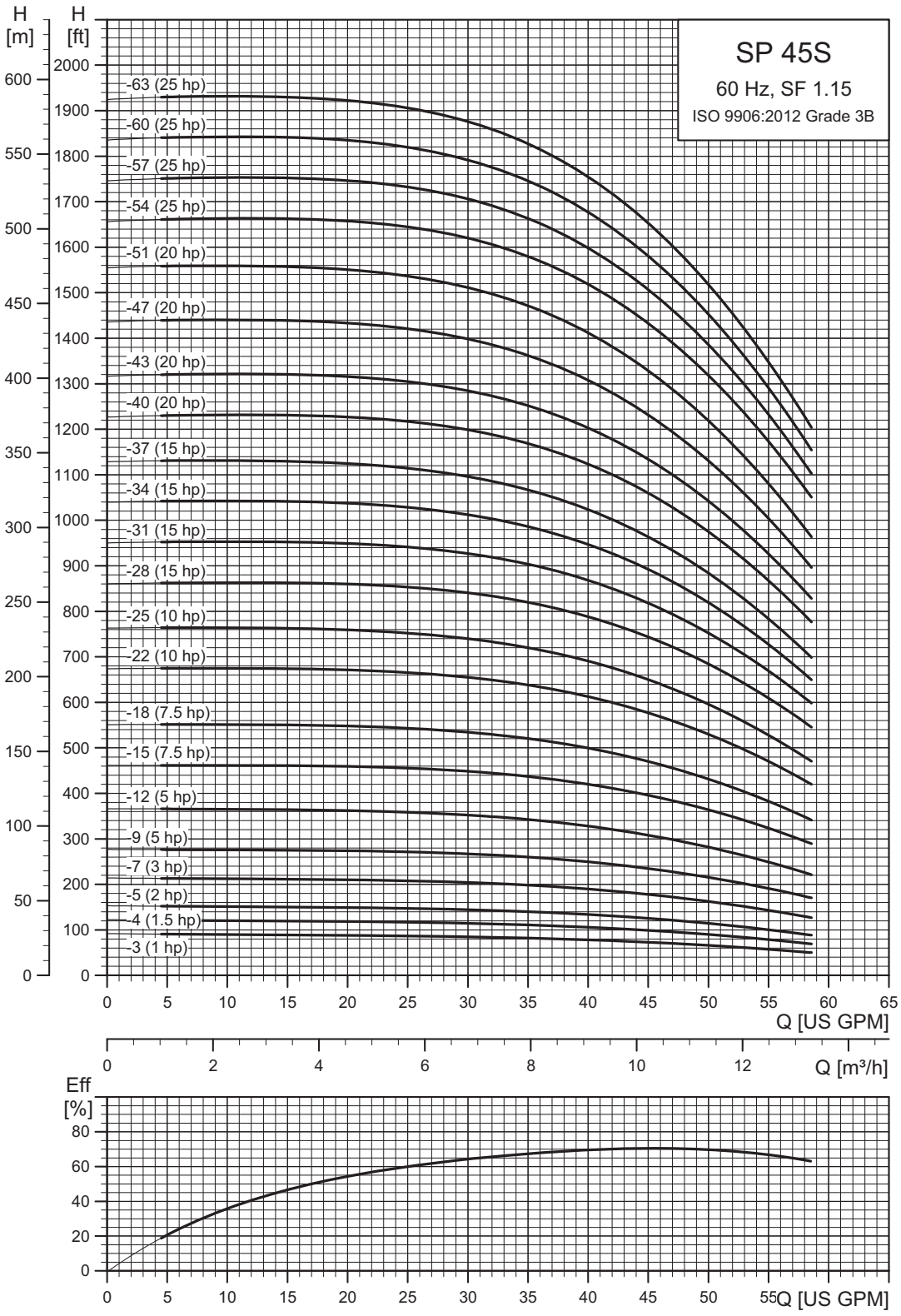


E = Maximum diameter of pump including cable guard and motor.

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
DS designation = Built into sleeve, 2" NPT, 6" minimum well diameter.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

▲ MS 6000C motor.

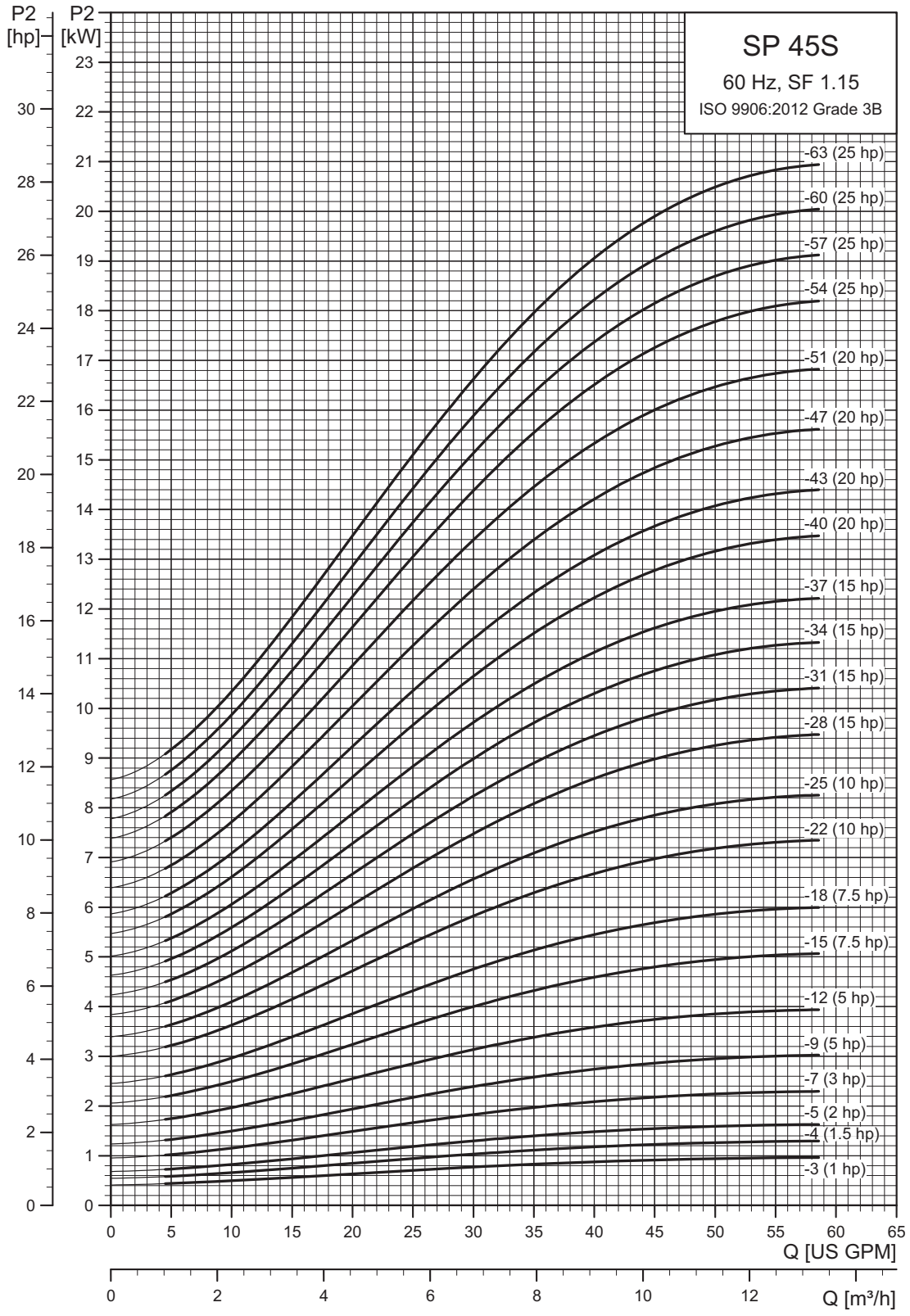
4" and larger wells - continued
SP 45S (45 gpm)



TM06 4616 3215

4" and larger wells - continued

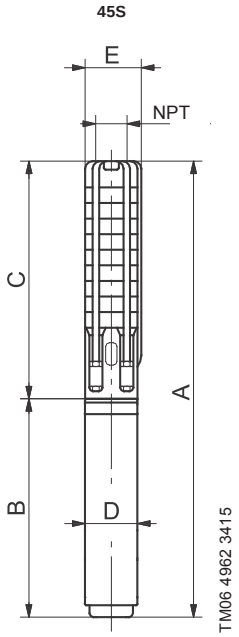
SP 45S (45 gpm) pump power requirement (P2)



TM06 4617 3215

4" and larger wells - continued
SP 45S (45 gpm) / 4 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
45S - Motor dia. 4 inch, 3 wire motor, 60 Hz, rated flow 45 gpm (2" NPT)											
45S10-3	72	1	230	1	■	28.94 (735)	13.67 (347)	15.28 (388)	3.75 (95)	3.98 (101)	31.5
		3	230	1	■	27.76 (705)	12.49 (317)	15.28 (388)	3.75 (95)	3.98 (101)	28.8
		3	460	1	■	27.76 (705)	12.49 (317)	15.28 (388)	3.75 (95)	3.98 (101)	28.6
		3	575	1	■	27.76 (705)	12.49 (317)	15.28 (388)	3.75 (95)	3.98 (101)	28.6
45S15-4	97	1	230	1.5	■	32.49 (825)	15.24 (387)	17.25 (438)	3.75 (95)	3.98 (101)	36.5
		3	230	1.5	■	30.91 (785)	13.67 (347)	17.25 (438)	3.75 (95)	3.98 (101)	33.0
		3	460	1.5	■	30.91 (785)	13.67 (347)	17.25 (438)	3.75 (95)	3.98 (101)	33.0
		3	575	1.5	■	30.91 (785)	13.67 (347)	17.25 (438)	3.75 (95)	3.98 (101)	32.8
45S20-5	123	1	230	2	•	38.78 (985)	19.57 (497)	19.22 (488)	3.75 (95)	3.98 (101)	53.4
		3	230	2	■	34.45 (875)	15.24 (387)	19.22 (488)	3.75 (95)	3.98 (101)	38.0
		3	460	2	■	34.45 (875)	15.24 (387)	19.22 (488)	3.75 (95)	3.98 (101)	38.2
		3	575	2	■	34.45 (875)	15.24 (387)	19.22 (488)	3.75 (95)	3.98 (101)	38.0
45S30-7	174	1	230	3	•	45.87 (1165)	22.72 (577)	23.15 (588)	3.75 (95)	3.98 (101)	64.8
		3	208-230	3	•	41.15 (1045)	18.00 (457)	23.15 (588)	3.75 (95)	3.98 (101)	51.6
		3	460	3	•	41.15 (1045)	18.00 (457)	23.15 (588)	3.75 (95)	3.98 (101)	51.6
45S50-9	225	1	230	5	•	53.75 (1365)	26.66 (677)	27.09 (688)	3.75 (95)	3.98 (101)	78.4
		3	208-230	5	•	49.81 (1265)	22.72 (577)	27.09 (688)	3.75 (95)	3.98 (101)	67.4
		3	460	5	•	49.81 (1265)	22.72 (577)	27.09 (688)	3.75 (95)	3.98 (101)	67.4
45S50-12	302	1	230	5	•	59.65 (1515)	26.66 (677)	33.00 (838)	3.75 (95)	3.98 (101)	82.2
		3	208-230	5	•	55.71 (1415)	22.72 (577)	33.00 (838)	3.75 (95)	3.98 (101)	71.2
		3	460	5	•	55.71 (1415)	22.72 (577)	33.00 (838)	3.75 (95)	3.98 (101)	71.2
45S75-15	379	3	208-230	7.5	•	65.56 (1665)	26.66 (677)	38.90 (988)	3.75 (95)	3.98 (101)	86.1
		3	460	7.5	•	65.56 (1665)	26.66 (677)	38.90 (988)	3.75 (95)	3.98 (101)	86.1
		3	575	7.5	•	65.56 (1665)	26.66 (677)	38.90 (988)	3.75 (95)	3.98 (101)	86.1
45S75-18	455	3	208-230	7.5	•	71.46 (1815)	26.66 (677)	44.81 (1138)	3.75 (95)	3.98 (101)	89.9
		3	460	7.5	•	71.46 (1815)	26.66 (677)	44.81 (1138)	3.75 (95)	3.98 (101)	89.9
		3	575	7.5	•	71.46 (1815)	26.66 (677)	44.81 (1138)	3.75 (95)	3.98 (101)	89.9
45S100-22	558	3	460	10	•	83.27 (2115)	30.60 (777)	52.68 (1338)	3.75 (95)	3.98 (101)	103.8
		3	575	10	•	83.27 (2115)	30.60 (777)	52.68 (1338)	3.75 (95)	3.98 (101)	103.8
45S100-25	634	3	460	10	•	89.18 (2265)	30.60 (777)	58.59 (1488)	3.75 (95)	3.98 (101)	107.7
		3	575	10	•	89.18 (2265)	30.60 (777)	58.59 (1488)	3.75 (95)	3.98 (101)	107.7



E = Maximum diameter of pump including cable guard and motor.

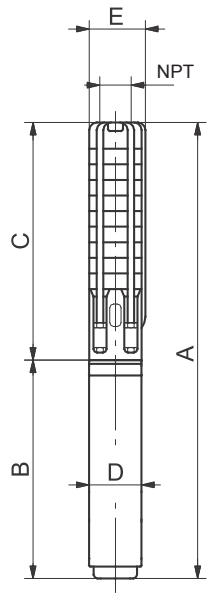
Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

- ■ MS 402 motor.
- • MS 4000 motor.

4" and larger wells - continued
SP 45S (45 gpm) / 6 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
45S - Motor dia. 6 inch, 60 Hz, rated flow 45 gpm (2" NPT)											
45S75-15	379	3	208-230	7.5	▲	64.89 (1648)	23.51 (597)	41.38 (1051)	5.50 (140)	5.50 (140)	114.4
		3	460	7.5	▲	64.89 (1648)	23.51 (597)	41.38 (1051)	5.50 (140)	5.50 (140)	114.4
		3	575	7.5	▲	64.89 (1648)	23.51 (597)	41.38 (1051)	5.50 (140)	5.50 (140)	114.4
45S75-18	455	3	208-230	7.5	▲	70.79 (1798)	23.51 (597)	47.29 (1201)	5.50 (140)	5.50 (140)	118.3
		3	460	7.5	▲	70.79 (1798)	23.51 (597)	47.29 (1201)	5.50 (140)	5.50 (140)	118.3
		3	575	7.5	▲	70.79 (1798)	23.51 (597)	47.29 (1201)	5.50 (140)	5.50 (140)	118.3
45S100-22	558	3	208-230	10	▲	79.85 (2028)	24.69 (627)	55.16 (1401)	5.50 (140)	5.50 (140)	130.2
		3	460	10	▲	79.85 (2028)	24.69 (627)	55.16 (1401)	5.50 (140)	5.50 (140)	130.2
		3	575	10	▲	79.85 (2028)	24.69 (627)	55.16 (1401)	5.50 (140)	5.50 (140)	130.2
45S100-25	634	3	208-230	10	▲	85.75 (2178)	24.69 (627)	61.07 (1551)	5.50 (140)	5.50 (140)	134.1
		3	460	10	▲	85.75 (2178)	24.69 (627)	61.07 (1551)	5.50 (140)	5.50 (140)	134.1
		3	575	10	▲	85.75 (2178)	24.69 (627)	61.07 (1551)	5.50 (140)	5.50 (140)	134.1
45S150-28	711	3	208-230	15	▲	94.02 (2388)	27.05 (687)	66.97 (1701)	5.50 (140)	5.50 (140)	160.6
		3	460	15	▲	94.02 (2388)	27.05 (687)	66.97 (1701)	5.50 (140)	5.50 (140)	160.6
		3	575	15	▲	94.02 (2388)	27.05 (687)	66.97 (1701)	5.50 (140)	5.50 (140)	160.6
45S150-31	788	3	208-230	15	▲	99.93 (2538)	27.05 (687)	72.88 (1851)	5.50 (140)	5.50 (140)	164.7
		3	460	15	▲	99.93 (2538)	27.05 (687)	72.88 (1851)	5.50 (140)	5.50 (140)	164.7
		3	575	15	▲	99.93 (2538)	27.05 (687)	72.88 (1851)	5.50 (140)	5.50 (140)	164.7
45S150-34	864	3	208-230	15	▲	105.83 (2688)	27.05 (687)	78.78 (2001)	5.50 (140)	5.50 (140)	168.8
		3	460	15	▲	105.83 (2688)	27.05 (687)	78.78 (2001)	5.50 (140)	5.50 (140)	168.8
		3	575	15	▲	105.83 (2688)	27.05 (687)	78.78 (2001)	5.50 (140)	5.50 (140)	168.8
45S150-37	941	3	208-230	15	▲	111.74 (2838)	27.05 (687)	84.69 (2151)	5.50 (140)	5.50 (140)	172.9
		3	460	15	▲	111.74 (2838)	27.05 (687)	84.69 (2151)	5.50 (140)	5.50 (140)	172.9
		3	575	15	▲	111.74 (2838)	27.05 (687)	84.69 (2151)	5.50 (140)	5.50 (140)	172.9
45S200-40DS	1018	3	208-230	20	▲	131.82 (3348)	29.61 (752)	102.21 (2596)	5.50 (140)	5.50 (140)	230.8
		3	460	20	▲	131.82 (3348)	29.61 (752)	102.21 (2596)	5.50 (140)	5.50 (140)	230.8
		3	575	20	▲	131.82 (3348)	29.61 (752)	102.21 (2596)	5.50 (140)	5.50 (140)	230.8
45S200-43DS	1095	3	208-230	20	▲	137.72 (3498)	29.61 (752)	108.12 (2746)	5.50 (140)	5.50 (140)	236.6
		3	460	20	▲	137.72 (3498)	29.61 (752)	108.12 (2746)	5.50 (140)	5.50 (140)	236.6
		3	575	20	▲	137.72 (3498)	29.61 (752)	108.12 (2746)	5.50 (140)	5.50 (140)	236.6
45S200-47DS	1197	3	208-230	20	▲	145.60 (3698)	29.61 (752)	115.99 (2946)	5.50 (140)	5.50 (140)	244.2
		3	460	20	▲	145.60 (3698)	29.61 (752)	115.99 (2946)	5.50 (140)	5.50 (140)	244.2
		3	575	20	▲	145.60 (3698)	29.61 (752)	115.99 (2946)	5.50 (140)	5.50 (140)	244.2
45S200-51DS	1299	3	208-230	20	▲	153.47 (3898)	29.61 (752)	123.86 (3146)	5.50 (140)	5.50 (140)	251.9
		3	460	20	▲	153.47 (3898)	29.61 (752)	123.86 (3146)	5.50 (140)	5.50 (140)	251.9
		3	575	20	▲	153.47 (3898)	29.61 (752)	123.86 (3146)	5.50 (140)	5.50 (140)	251.9

45S



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E = Maximum diameter of pump including cable guard and motor.

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
DS designation = Built into sleeve, 2" NPT, 6" minimum well diameter.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

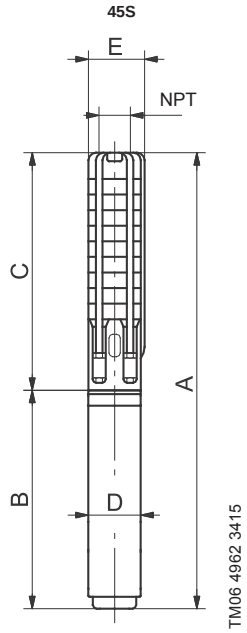
▲ MS 6000C motor.

4" and larger wells - continued
SP 45S (45 gpm) / 6 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]	Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
45S - Motor dia. 6 inch, 60 Hz, rated flow 45 gpm (2" NPT)										
45S250-54DS	1376	3	208-230	25 ▲	161.54 (4103)	31.78 (807)	129.77 (3296)	5.50 (140)	5.50 (140)	267.6
		3	460	25 ▲	161.54 (4103)	31.78 (807)	129.77 (3296)	5.50 (140)	5.50 (140)	267.6
		3	575	25 ▲	161.54 (4103)	31.78 (807)	129.77 (3296)	5.50 (140)	5.50 (140)	267.6
45S250-57DS	1453	3	208-230	25 ▲	167.45 (4253)	31.78 (807)	135.67 (3446)	5.50 (140)	5.50 (140)	273.4
		3	460	25 ▲	167.45 (4253)	31.78 (807)	135.67 (3446)	5.50 (140)	5.50 (140)	273.4
		3	575	25 ▲	167.45 (4253)	31.78 (807)	135.67 (3446)	5.50 (140)	5.50 (140)	273.4
45S250-60DS	1529	3	208-230	25 ▲	173.35 (4403)	31.78 (807)	141.58 (3596)	5.50 (140)	5.50 (140)	279.1
		3	460	25 ▲	173.35 (4403)	31.78 (807)	141.58 (3596)	5.50 (140)	5.50 (140)	279.1
		3	575	25 ▲	173.35 (4403)	31.78 (807)	141.58 (3596)	5.50 (140)	5.50 (140)	279.1
45S250-63DS	1606	3	208-230	25 ▲	167.64 (4258)	31.78 (807)	135.87 (3451)	5.50 (140)	5.50 (140)	233.7
		3	460	25 ▲	167.64 (4258)	31.78 (807)	135.87 (3451)	5.50 (140)	5.50 (140)	233.7
		3	575	25 ▲	167.64 (4258)	31.78 (807)	135.87 (3451)	5.50 (140)	5.50 (140)	233.7

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
DS designation = Built into sleeve, 2" NPT, 6" minimum well diameter.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

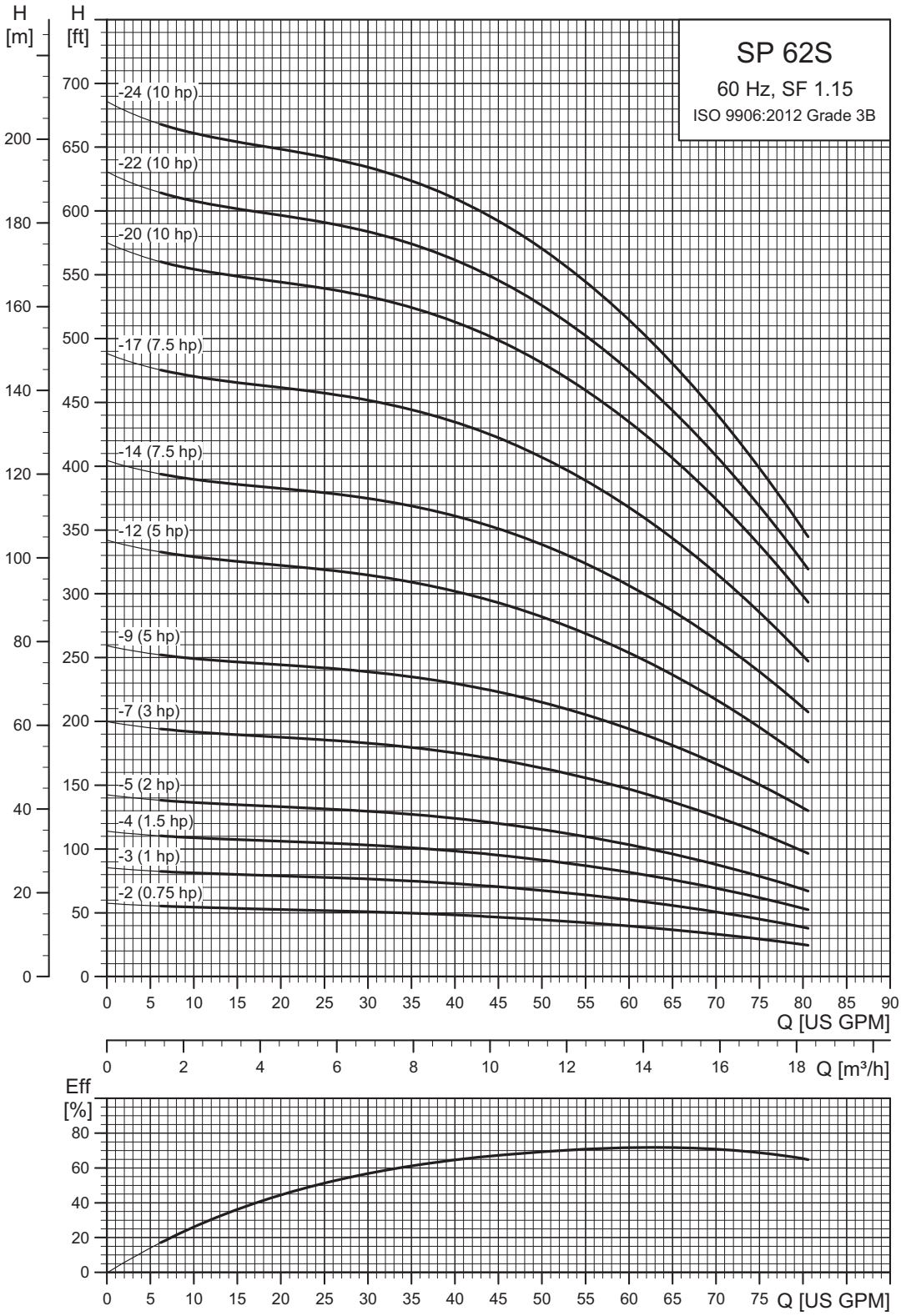
▲ MS 6000C motor.



E = Maximum diameter of pump including cable guard and motor.

4" and larger wells - continued

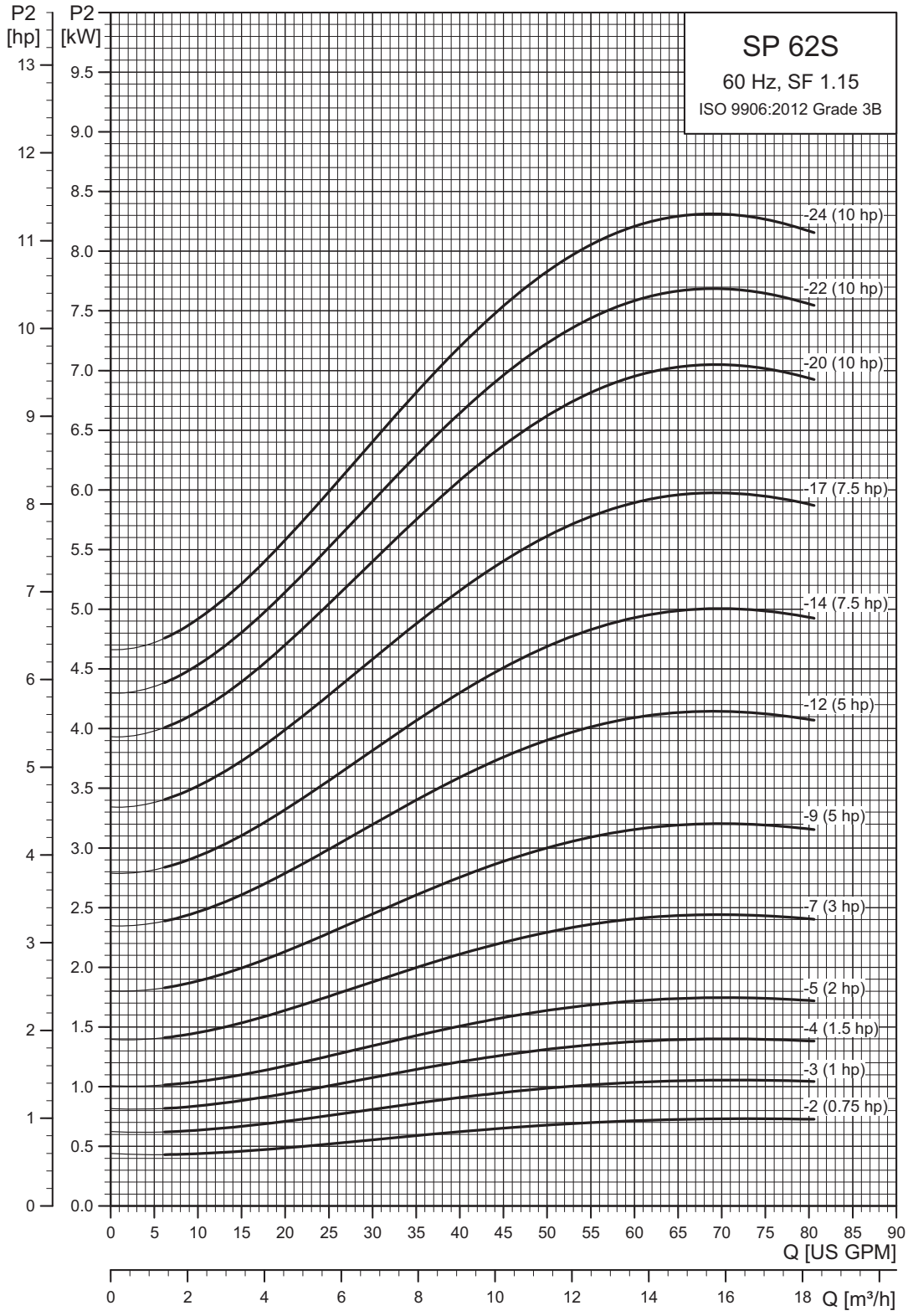
SP 62S (62 gpm)



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4" and larger wells - continued

SP 62S (62 gpm) pump power requirement (P2)

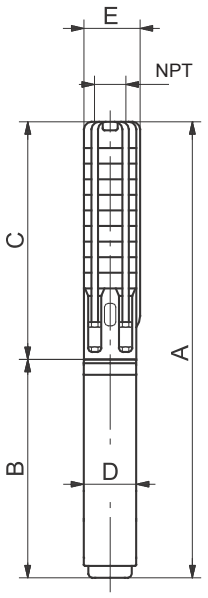


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4" and larger wells - continued
SP 62S (62 gpm) / 4 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
62S - Motor dia. 4 inch, 3 wire motor, 60 Hz, rated 62 gpm (2" NPT)											
62S07-2	38	1	230	.75	■	28.35 (720)	13.08 (332)	15.28 (388)	3.75 (95)	3.98 (101)	29.7
		3	230	.75	■	26.97 (685)	11.70 (297)	15.28 (388)	3.75 (95)	3.98 (101)	26.7
		3	460	.75	■	26.97 (685)	11.70 (297)	15.28 (388)	3.75 (95)	3.98 (101)	26.7
		3	575	.75	■	26.97 (685)	11.70 (297)	15.28 (388)	3.75 (95)	3.98 (101)	26.7
62S10-3	58	1	230	1	■	31.89 (810)	13.67 (347)	18.23 (463)	3.75 (95)	3.98 (101)	33.0
		3	230	1	■	30.71 (780)	12.49 (317)	18.23 (463)	3.75 (95)	3.98 (101)	30.4
		3	460	1	■	30.71 (780)	12.49 (317)	18.23 (463)	3.75 (95)	3.98 (101)	30.2
		3	575	1	■	30.71 (780)	12.49 (317)	18.23 (463)	3.75 (95)	3.98 (101)	30.2
62S15-4	79	1	230	1.5	■	36.42 (925)	15.24 (387)	21.19 (538)	3.75 (95)	3.98 (101)	38.5
		3	230	1.5	■	34.85 (885)	13.67 (347)	21.19 (538)	3.75 (95)	3.98 (101)	35.0
		3	460	1.5	■	34.85 (885)	13.67 (347)	21.19 (538)	3.75 (95)	3.98 (101)	35.0
		3	575	1.5	■	34.85 (885)	13.67 (347)	21.19 (538)	3.75 (95)	3.98 (101)	34.8
62S20-5	100	1	230	2	•	43.71 (1110)	19.57 (497)	24.14 (613)	3.75 (95)	3.98 (101)	56.0
		3	230	2	■	39.38 (1000)	15.24 (387)	24.14 (613)	3.75 (95)	3.98 (101)	40.5
		3	460	2	■	39.38 (1000)	15.24 (387)	24.14 (613)	3.75 (95)	3.98 (101)	40.7
		3	575	2	■	39.38 (1000)	15.24 (387)	24.14 (613)	3.75 (95)	3.98 (101)	40.5
62S30-7	141	1	230	3	•	52.76 (1340)	22.72 (577)	30.04 (763)	3.75 (95)	3.98 (101)	68.3
		3	208-230	3	•	48.04 (1220)	18.00 (457)	30.04 (763)	3.75 (95)	3.98 (101)	55.1
		3	460	3	•	48.04 (1220)	18.00 (457)	30.04 (763)	3.75 (95)	3.98 (101)	55.1
62S50-9	182	1	230	5	•	62.60 (1590)	26.66 (677)	35.95 (913)	3.75 (95)	3.98 (101)	82.8
		3	208-230	5	•	58.67 (1490)	22.72 (577)	35.95 (913)	3.75 (95)	3.98 (101)	71.8
		3	460	5	•	58.67 (1490)	22.72 (577)	35.95 (913)	3.75 (95)	3.98 (101)	71.8
62S50-12	244	1	230	5	•	71.46 (1815)	26.66 (677)	44.81 (1138)	3.75 (95)	3.98 (101)	88.1
		3	208-230	5	•	67.52 (1715)	22.72 (577)	44.81 (1138)	3.75 (95)	3.98 (101)	77.1
		3	460	5	•	67.52 (1715)	22.72 (577)	44.81 (1138)	3.75 (95)	3.98 (101)	77.1
62S75-14	285	3	208-230	7.5	•	77.37 (1965)	26.66 (677)	50.71 (1288)	3.75 (95)	3.98 (101)	91.6
		3	460	7.5	•	77.37 (1965)	26.66 (677)	50.71 (1288)	3.75 (95)	3.98 (101)	91.6
		3	575	7.5	•	77.37 (1965)	26.66 (677)	50.71 (1288)	3.75 (95)	3.98 (101)	91.6
62S75-17	347	3	208-230	7.5	•	86.23 (2190)	26.66 (677)	59.57 (1513)	3.75 (95)	3.98 (101)	96.9
		3	460	7.5	•	86.23 (2190)	26.66 (677)	59.57 (1513)	3.75 (95)	3.98 (101)	96.9
		3	575	7.5	•	86.23 (2190)	26.66 (677)	59.57 (1513)	3.75 (95)	3.98 (101)	96.9
62S100-20	409	3	460	10	•	99.02 (2515)	30.60 (777)	68.43 (1738)	3.75 (95)	3.98 (101)	111.0
		3	575	10	•	99.02 (2515)	30.60 (777)	68.43 (1738)	3.75 (95)	3.98 (101)	111.0
62S100-22	450	3	460	10	•	104.93 (2665)	30.60 (777)	74.34 (1888)	3.75 (95)	3.98 (101)	114.5
		3	575	10	•	104.93 (2665)	30.60 (777)	74.34 (1888)	3.75 (95)	3.98 (101)	114.5
62S100-24	491	3	460	10	•	110.83 (2815)	30.60 (777)	80.24 (2038)	3.75 (95)	3.98 (101)	118.0
		3	575	10	•	110.83 (2815)	30.60 (777)	80.24 (2038)	3.75 (95)	3.98 (101)	118.0

62S



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E = Maximum diameter of pump including cable guard and motor.

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

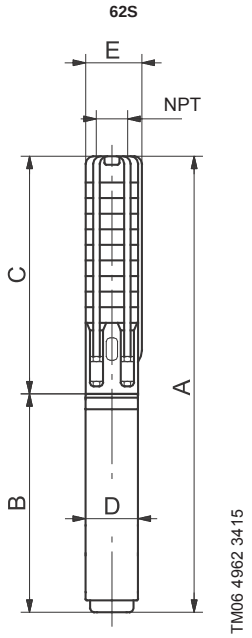
- ■ MS 402 motor.
- • MS 4000 motor.

4" and larger wells - continued
SP 62S (62 gpm) / 6 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
62S - Motor dia. 6 inch, 60 Hz, rated 62 gpm (2" NPT)											
62S75-14	285	3	208-230	7.5	▲	76.70 (1948)	23.51 (597)	53.19 (1351)	5.50 (140)	5.50 (140)	119.3
		3	460	7.5	▲	76.70 (1948)	23.51 (597)	53.19 (1351)	5.50 (140)	5.50 (140)	119.3
		3	575	7.5	▲	76.70 (1948)	23.51 (597)	53.19 (1351)	5.50 (140)	5.50 (140)	119.3
62S75-17	347	3	208-230	7.5	▲	85.56 (2173)	23.51 (597)	62.05 (1576)	5.50 (140)	5.50 (140)	124.6
		3	460	7.5	▲	85.56 (2173)	23.51 (597)	62.05 (1576)	5.50 (140)	5.50 (140)	124.6
		3	575	7.5	▲	85.56 (2173)	23.51 (597)	62.05 (1576)	5.50 (140)	5.50 (140)	124.6
62S100-20	409	3	208-230	10	▲	95.60 (2428)	24.69 (627)	70.91 (1801)	5.50 (140)	5.50 (140)	136.4
		3	460	10	▲	95.60 (2428)	24.69 (627)	70.91 (1801)	5.50 (140)	5.50 (140)	136.4
		3	575	10	▲	95.60 (2428)	24.69 (627)	70.91 (1801)	5.50 (140)	5.50 (140)	136.4
62S100-22	450	3	208-230	10	▲	101.50 (2578)	24.69 (627)	76.82 (1951)	5.50 (140)	5.50 (140)	139.9
		3	460	10	▲	101.50 (2578)	24.69 (627)	76.82 (1951)	5.50 (140)	5.50 (140)	139.9
		3	575	10	▲	101.50 (2578)	24.69 (627)	76.82 (1951)	5.50 (140)	5.50 (140)	139.9
62S100-24	491	3	208-230	10	▲	107.41 (2728)	24.69 (627)	82.72 (2101)	5.50 (140)	5.50 (140)	143.4
		3	460	10	▲	107.41 (2728)	24.69 (627)	82.72 (2101)	5.50 (140)	5.50 (140)	143.4
		3	575	10	▲	107.41 (2728)	24.69 (627)	82.72 (2101)	5.50 (140)	5.50 (140)	143.4

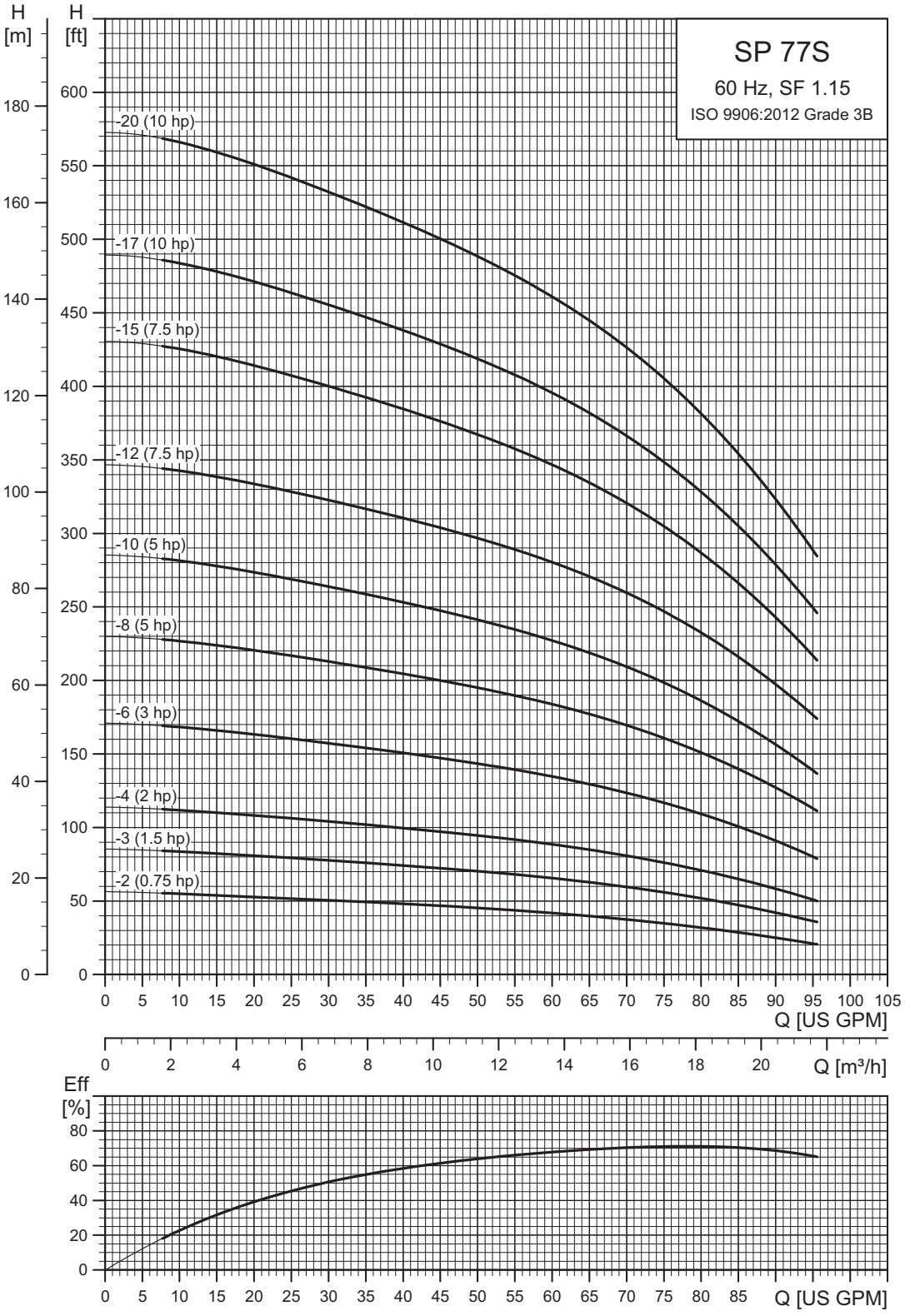
Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

▲ MS 6000C motor.



E = Maximum diameter of pump including cable guard and motor.

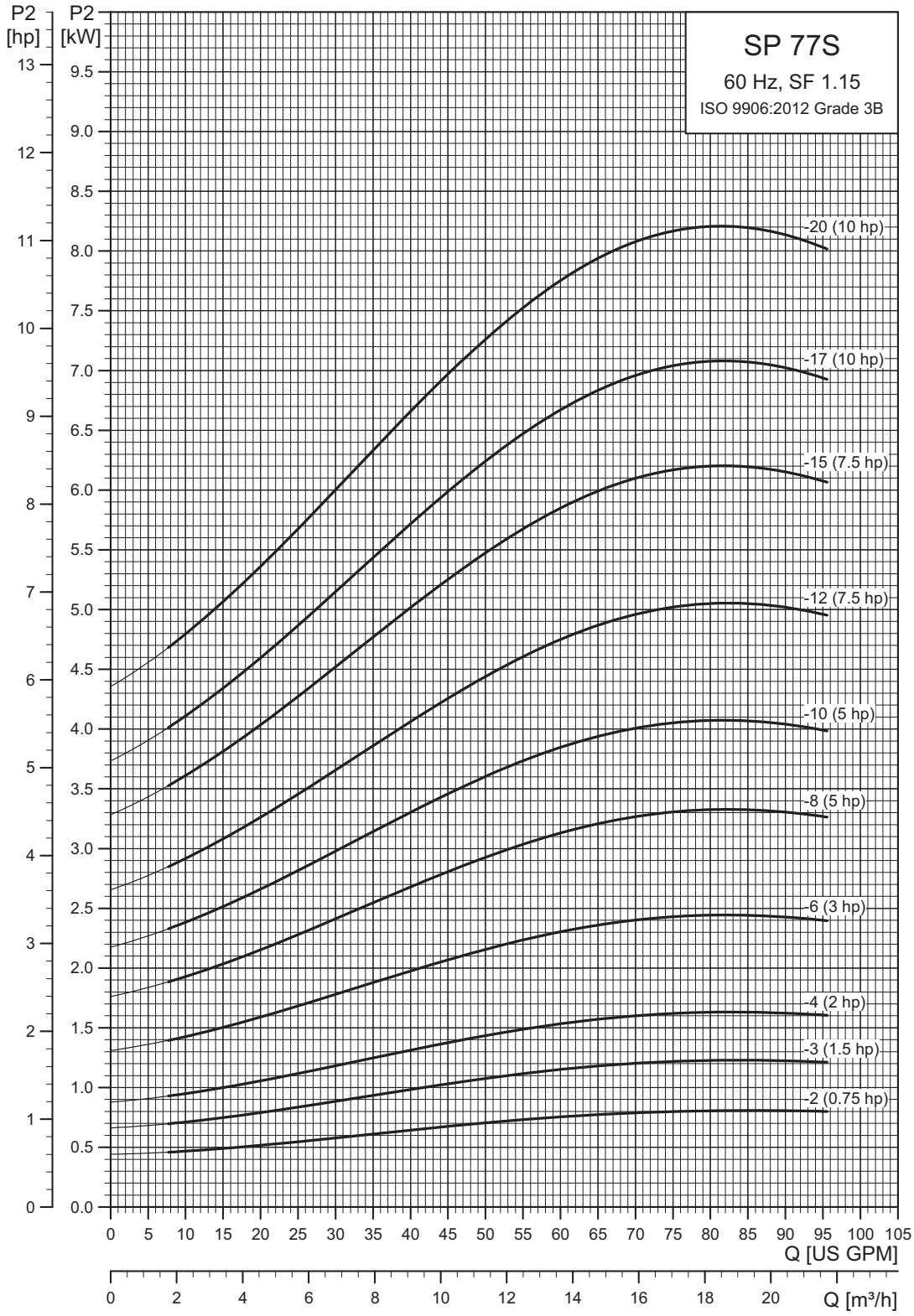
4" and larger wells - continued
SP 77S (77 gpm)



TM06 4620 3215

4" and larger pumps - continued

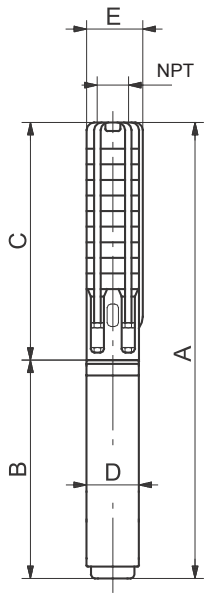
SP 77S (77 gpm) pump power requirement (P2)



4" and larger wells - continued
SP 77S (77 gpm) / 4 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
77S - Motor dia. 4 inch, 3 wire motor, 60 Hz, rated 77 gpm (2" NPT)											
77S07-2	34	1	230	.75	■	28.35 (720)	13.08 (332)	15.28 (388)	3.75 (95)	3.98 (101)	29.7
		3	230	.75	■	26.97 (685)	11.70 (297)	15.28 (388)	3.75 (95)	3.98 (101)	26.7
		3	460	.75	■	26.97 (685)	11.70 (297)	15.28 (388)	3.75 (95)	3.98 (101)	26.7
		3	575	.75	■	26.97 (685)	11.70 (297)	15.28 (388)	3.75 (95)	3.98 (101)	26.7
77S15-3	53	1	230	1	■	33.47 (850)	15.24 (387)	18.23 (463)	3.75 (95)	3.98 (101)	36.8
		3	230	1.5	■	31.89 (810)	13.67 (347)	18.23 (463)	3.75 (95)	3.98 (101)	33.3
		3	460	1.5	■	31.89 (810)	13.67 (347)	18.23 (463)	3.75 (95)	3.98 (101)	33.3
		3	575	1.5	■	31.89 (810)	13.67 (347)	18.23 (463)	3.75 (95)	3.98 (101)	33.0
77S20-4	73	1	230	2	•	40.75 (1035)	19.57 (497)	21.19 (538)	3.75 (95)	3.98 (101)	54.2
		3	230	2	■	36.42 (925)	15.24 (387)	21.19 (538)	3.75 (95)	3.98 (101)	38.8
		3	460	2	■	36.42 (925)	15.24 (387)	21.19 (538)	3.75 (95)	3.98 (101)	39.0
		3	575	2	■	36.42 (925)	15.24 (387)	21.19 (538)	3.75 (95)	3.98 (101)	38.8
77S30-6	112	1	230	3	•	49.81 (1265)	22.72 (577)	27.09 (688)	3.75 (95)	3.98 (101)	66.5
		3	208-230	3	•	45.08 (1145)	18.00 (457)	27.09 (688)	3.75 (95)	3.98 (101)	53.3
		3	460	3	•	45.08 (1145)	18.00 (457)	27.09 (688)	3.75 (95)	3.98 (101)	53.3
77S50-8	152	1	230	5	•	59.65 (1515)	26.66 (677)	33.00 (838)	3.75 (95)	3.98 (101)	81.1
		3	208-230	5	•	55.71 (1415)	22.72 (577)	33.00 (838)	3.75 (95)	3.98 (101)	70.1
		3	460	5	•	55.71 (1415)	22.72 (577)	33.00 (838)	3.75 (95)	3.98 (101)	70.1
77S50-10	191	1	230	5	•	65.56 (1665)	26.66 (677)	38.90 (988)	3.75 (95)	3.98 (101)	84.6
		3	208-230	5	•	61.62 (1565)	22.72 (577)	38.90 (988)	3.75 (95)	3.98 (101)	73.6
		3	460	5	•	61.62 (1565)	22.72 (577)	38.90 (988)	3.75 (95)	3.98 (101)	73.6
77S75-12	230	3	208-230	7.5	•	71.46 (1815)	26.66 (677)	44.81 (1138)	3.75 (95)	3.98 (101)	88.1
		3	460	7.5	•	71.46 (1815)	26.66 (677)	44.81 (1138)	3.75 (95)	3.98 (101)	88.1
		3	575	7.5	•	71.46 (1815)	26.66 (677)	44.81 (1138)	3.75 (95)	3.98 (101)	88.1
77S75-15	289	3	208-230	7.5	•	80.32 (2040)	26.66 (677)	53.67 (1363)	3.75 (95)	3.98 (101)	93.4
		3	460	7.5	•	80.32 (2040)	26.66 (677)	53.67 (1363)	3.75 (95)	3.98 (101)	93.4
		3	575	7.5	•	80.32 (2040)	26.66 (677)	53.67 (1363)	3.75 (95)	3.98 (101)	93.4
77S100-17	329	3	460	10	•	90.16 (2290)	30.60 (777)	59.57 (1513)	3.75 (95)	3.98 (101)	105.7
		3	575	10	•	90.16 (2290)	30.60 (777)	59.57 (1513)	3.75 (95)	3.98 (101)	105.7
77S100-20	388	3	460	10	•	99.02 (2515)	30.60 (777)	68.43 (1738)	3.75 (95)	3.98 (101)	111.0
		3	575	10	•	99.02 (2515)	30.60 (777)	68.43 (1738)	3.75 (95)	3.98 (101)	111.0

77S



TM06 4962 3415

E = Maximum diameter of pump including cable guard and motor.

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

- ■ MS 402 motor.
- • MS 4000 motor.

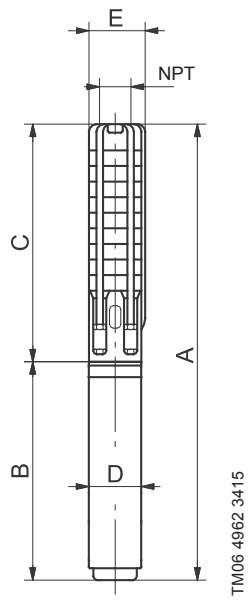
4" and larger wells - continued
SP 77S (77 gpm) / 6 inch motor

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]	Dimensions A [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]	E [in. (mm)]	Net weight (complete) [lb]
77S - Motor dia. 6 inch, 60 Hz, rated 77 gpm (2" NPT)										
77S75-12	230	3	208-230	.75 ▲	70.79 (1798)	23.51 (597)	47.29 (1201)	5.50 (140)	5.50 (140)	115.8
		3	460	.75 ▲	70.79 (1798)	23.51 (597)	47.29 (1201)	5.50 (140)	5.50 (140)	115.8
		3	575	.75 ▲	70.79 (1798)	23.51 (597)	47.29 (1201)	5.50 (140)	5.50 (140)	115.8
77S75-15	289	3	208-230	.75 ▲	79.65 (2023)	23.51 (597)	56.15 (1426)	5.50 (140)	5.50 (140)	121.1
		3	460	.75 ▲	79.65 (2023)	23.51 (597)	56.15 (1426)	5.50 (140)	5.50 (140)	121.1
		3	575	.75 ▲	79.65 (2023)	23.51 (597)	56.15 (1426)	5.50 (140)	5.50 (140)	121.1
77S100-17	329	3	208-230	10 ▲	86.74 (2203)	24.69 (627)	62.05 (1576)	5.50 (140)	5.50 (140)	131.2
		3	460	10 ▲	86.74 (2203)	24.69 (627)	62.05 (1576)	5.50 (140)	5.50 (140)	131.2
		3	575	10 ▲	86.74 (2203)	24.69 (627)	62.05 (1576)	5.50 (140)	5.50 (140)	131.2
77S100-20	388	3	208-230	10 ▲	95.60 (2428)	24.69 (627)	70.91 (1801)	5.50 (140)	5.50 (140)	136.4
		3	460	10 ▲	95.60 (2428)	24.69 (627)	70.91 (1801)	5.50 (140)	5.50 (140)	136.4
		3	575	10 ▲	95.60 (2428)	24.69 (627)	70.91 (1801)	5.50 (140)	5.50 (140)	136.4

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
Performance conforms to ISO 9906. 1999 (E) Annex A. Minimum submergence is 2 feet.

▲ MS 6000C motor.

77S



E = Maximum diameter of pump including cable guard and motor.

Environmental Equipment & Supply

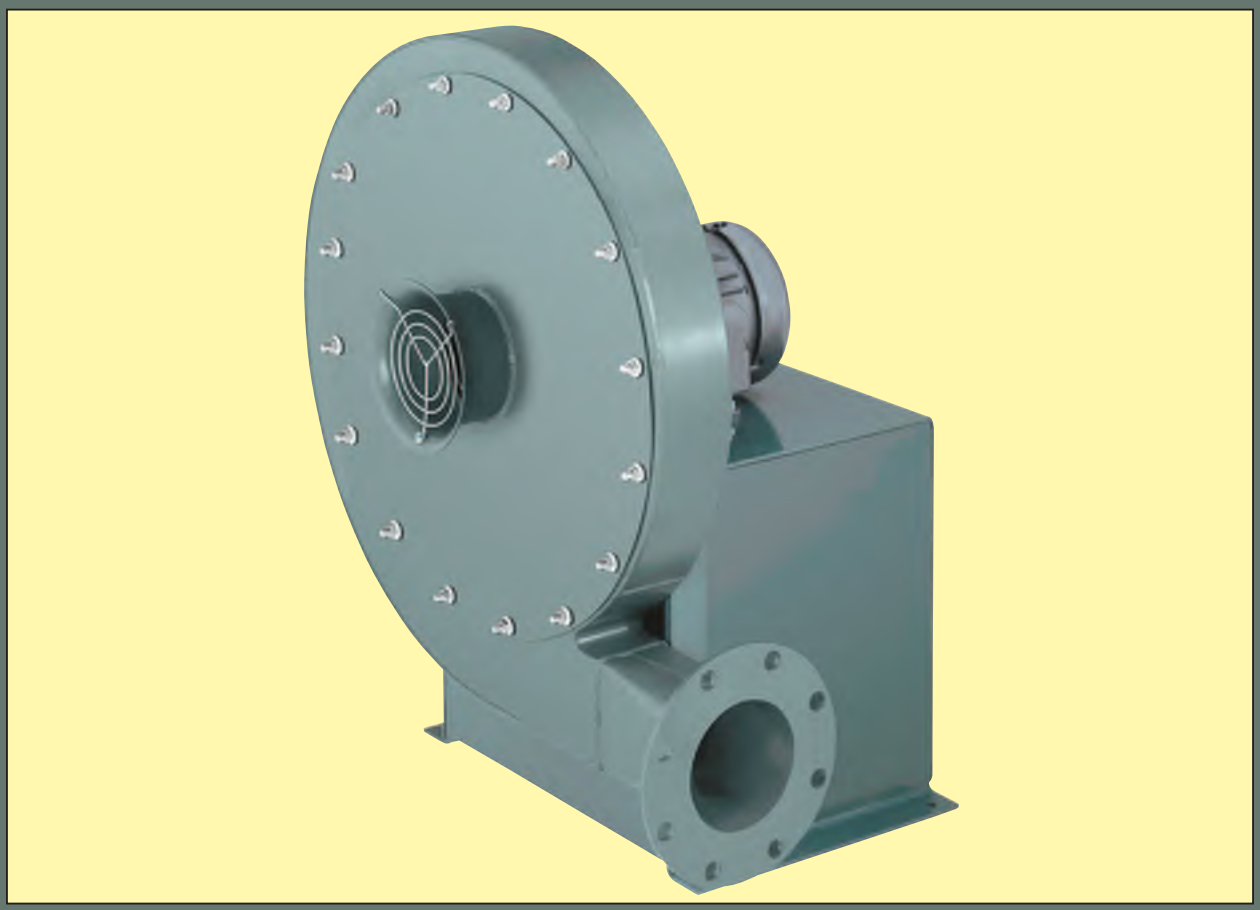
For further information contact:
Environmental Equipment & Supply
Fax: (717) 901-8114 Tel: (800) 739-7706 (717) 901-8891
491L Blue Eagle Ave. Harrisburg, PA 17112
Web: www.envisupply.com E-mail: sales@envisupply.com

Air Stripper Blower

BULLETIN 451
MARCH, 2014

PRESSURE BLOWERS

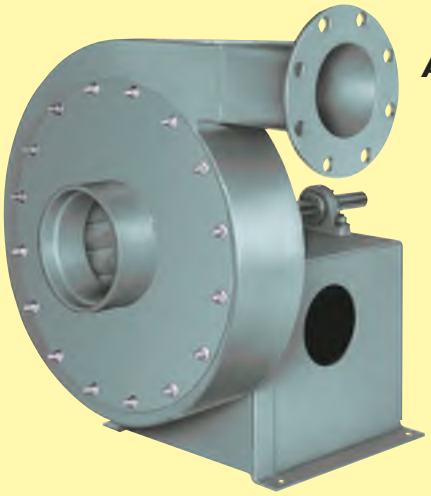
- Capacities to 5,200 CFM
- Two wheel choices
- Static pressures to 58"WG
- Temperatures to 600°F.



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Willowbrook, IL 60527-5530

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For greater pressures and capacities: see Type HP Pressure Blowers



ARRANGEMENT

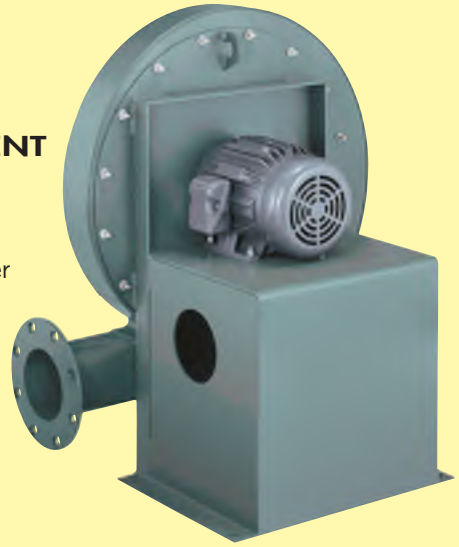
1

Pressure Blower with plain pipe inlet.

ARRANGEMENT

4

Pressure Blower with motor.



ARRANGEMENT

4-V

Pressure Blower with motor.



The New York Blower Company certifies that the Pressure Blowers shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

PRESSURE BLOWERS

...for process systems

DESIGN FEATURES

- Pressures to 58"WG.
- Capacities to 5,200 CFM.
- Stable performance . . . the pressure curve remains stable from wide-open to closed-off . . . fan instability, or pulsation, is eliminated even when "turn-down" approaches zero flow.
- Choice of wheel designs . . . standard aluminum wheel for optimum efficiency or optional steel wheel for more rugged applications.
- Efficiency . . . advanced wheel and aerodynamic housing design combine for air-handling efficiency superior to conventional radial-wheel designs.
- Variable wheel diameters and a choice of six outlet sizes enable efficient fan selection across a wide range of volumes and pressures.
- Choice of arrangements . . . direct-drive and belt-drive.
- Wide application range . . . designed for continuous operation in combustion, cooling, conveying, drying, and various process systems.

CONSTRUCTION FEATURES

- All-welded steel housings . . . heavy-gauge housings are designed specifically to prevent "flexing" at high pressures.
- Flanges . . . continuously welded flanges match ANSI Class 125/150 hole pattern.
- Balance . . . all wheels are precision-balanced prior to assembly . . . fans with motors and drives mounted by **nyb** are given a final trim balance check at the specified running speed.
- Shafting . . . straightened to close tolerance to minimize "run-out" and ensure smooth operation.
- Inlet configuration . . . a choice of three inlet types allows units to be tailored to specific application requirements.
- Lifting eyes . . . standard on all units for ease of handling and installation.
- Finish . . . medium-green industrial coating.

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ACCESSORIES/MODIFICATIONS

- **COMPANION FLANGES**
  Designed to fit flush with fan inlet and outlet flanges, provided with a matching hole pattern.
- **DRAINS**
  Tank flange is welded to the lowest point of the housing scroll . . . female pipe thread.
- **INLET FILTER**
  Filters are available with a choice of three element types: wire mesh, hi-flow polyester, and ultra-synthetic. High-efficiency filter is flange-mounted. Furnished standard with outboard support bracket and available with or without protective hood.
- **SILENCERS**
  Available to match standard inlet or outlet flange sizes. Heavy-welded construction filled with high-density, acoustical absorption material.
- **OUTLET DAMPERS**
  Available as either an integral outlet design for fixed damper control or as a separate wafer design for variable-flow applications [shown]. Wafer damper is available with an optional actuator and positioner.



- **SHAFT SEALS**
  Ceramic-felt shaft seals consist of compressed ceramic felt elements. Lubricated lip seals [Buna, Teflon®, and Viton®] and gas-purgeable, segmental bushing seals are also available. See your **nyb** representative for availability.
  [Teflon and Viton are registered trademarks of DuPont and DuPont Dow Elastomers, respectively.]
- **ACCESS DOOR**
  Gasketed, flush-bolted door opens to provide access to the wheel.
- **HEAT-FAN CONSTRUCTION**
  Available on Arrangements 1, 8, 9, and 10 steel wheel Pressure Blowers up to 600°F. Modifications include shaft cooler and shaft-cooler guard.
- **LL-1 LOW LEAKAGE CONSTRUCTION**
  Special construction to minimize leakage includes lip-type shaft seal, non-rotatable housing with solid drive side, double studs, and neoprene gasketing. Maximum temperature 200°F. due to gasketing limitations. Not available with heat-fan construction. Contact your **nyb** representative for other options.
- **SPECIAL ALLOY CONSTRUCTION**
  Airstream components can be constructed of a wide range of alternate alloys for corrosive applications.
- **UNITARY BASE**
  Fan, motor, and guards can be mounted and shipped on a rugged, structural-steel base. Factory-assembled and run-tested prior to shipment.

ARRANGEMENT 8

Pressure Blower with Venturi inlet, shaft and bearing guard, coupling guard, and motor.



ARRANGEMENT 9

Pressure Blower with flanged inlet, flush-bolted cleanout door, motor, belt guard, and shaft and bearing guard.



ARRANGEMENT 10

Pressure Blower with flanged inlet and optional weather cover/belt guard.

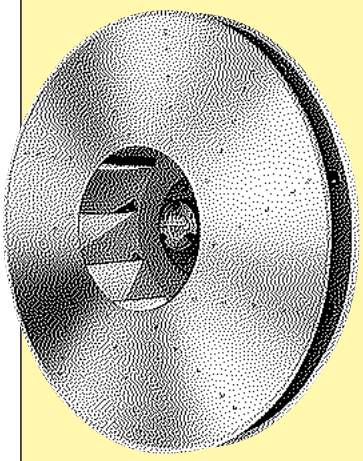


Wheels

Standard Aluminum

The unique Aluminum Pressure Blower wheel is designed to provide efficient performance and reduced sound levels … the dual-taper design concept on all but the narrowest wheel sizes yields typical efficiencies up to 10 percentage points greater than conventional straight radial wheels. Riveted high-strength aluminum alloy blades and side plates minimize overhung wheel weight and starting inertia. Ductile-iron, taper-lock hubs make wheels easily removable.

Note: Maximum operating temperature of aluminum wheel is 200°F.



Optional Steel

Either welded steel or stainless-steel wheel construction is available in straight radial design. AMCA Certified Ratings Seal applies to Pressure Blowers with aluminum-wheel design only. Air volume and pressure capabilities are the same as the dual-taper aluminum wheel, but brake horsepower requirements are typically higher. Refer to The New York Blower Company's fan-selection program for details.

Note: Maximum operating temperature of steel wheel with heat fan construction is 600°F. Some fan-and-motor combinations with steel wheels may be restricted due to starting torque requirements. Consult **nyb**.

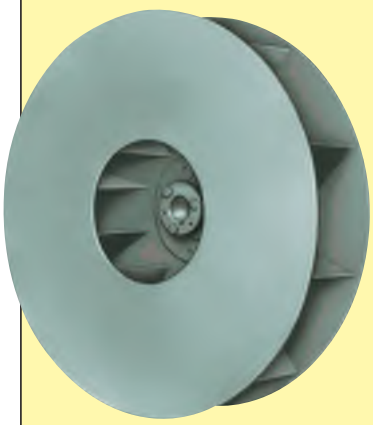


Chart II

STEEL WHEEL HORSEPOWER CORRECTIONS

18″ Pressure Blower with 04 outlet to handle 400 CFM at 23½″SP at .075 lbs./ft.³ density. Aluminum wheels require 2.6 BHP as shown on page 7. Steel or stainless-steel wheels require [1.15 x 2.6] 3.0 BHP.

Outlet size	Wheel size	BHP correction factors
03	14 to 22 23 to 26	0.96 1.02
04	14 to 26	1.15
06	14 to 18 19 to 26	1.06 1.15
08	15 to 22 23 to 26	1.06 1.15
10	19 to 26	1.06
12	19 to 26	1.06

Spark-Resistant Construction [SRC]

Intended to minimize the potential for any two or more fan components to generate sparks within the airstream by rubbing or striking during operation.

The following types are available:

AMCA A [AIRSTREAM] SRC

To include all airstream parts constructed of a spark-resistant alloy . . . maximum temperature: 200°F.

AMCA B [WHEEL] SRC

To include the fan wheel constructed of a spark-resistant alloy and a buffer plate around the housing shaft-hole opening . . . maximum temperature: 200°F.

Chart I
Maximum Safe Speeds [RPM]†

Wheel diameter	Aluminum wheel	Steel wheel	
	All Arr.	Arr. 1, 4, 4-V, 8, 9	Arr. 10
14	4000	4000	4000
15	4000	4000	4000
16	4000	4000	4000
17	4000	4000	4000
18	4000	4000	4000
19	3900	3900	2992
20	3900	3900	2918
21	3900	3900	2851
22	3900	3900	2787
23	3800	3800	3178
24	3800	3800	3121
25	3800	3800	3068
26	3800	3800	3017

† derate for temperature not required.
* Arr. 9 fans may have additional speed limits based on pedestal length.

SAFETY EQUIPMENT

Safety accessories are available from **nyb**, but selection of the appropriate devices is the responsibility of the system-designer who is familiar with the particular installation, or application, and can provide for guards for all exposed moving parts as well as protection from access to high-velocity airstreams. Neither **nyb** nor its sales representatives is in a position to make such a determination. Users and/or installers should read "Recommended Safety Practices for Air Moving Devices" as published by the Air Movement and Control Association International, Arlington Heights, Illinois.

PERFORMANCE

USING PERFORMANCE CURVES

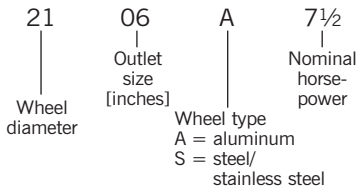
Performance is shown according to outlet sizes for quick reference to duct diameter. Brake horsepower increments are identified on each curve. Recommended standard blower size and motor combinations, which are based on the most efficient area of operation, are listed on page 14 for Arrangements 4, 4-V, and 8. Nonstandard combinations are generally available, but are usually less efficient than the standard combinations.

SIZING NOMENCLATURE

7-digit model number designates the wheel diameter, outlet size, wheel type, and nominal motor horsepower.

Note: the last two digits showing motor horsepower are not required for Arrangement 1 Pressure Blowers.

EXAMPLE



PROCEDURE	STEPS	EXAMPLE
Determine the appropriate outlet size.	1	The 06 outlet is selected for 800 CFM at 32″SP.
Plot the CFM and SP [standard] and select a performance curve for the fan size that meets or slightly exceeds the required performance.	2	A Size 2106A will provide 800 CFM at 33.6″SP.
Determine the BHP required for the point of operation . . . see page 4 for steel or stainless-steel wheel factors.	3	2106A requires 6.3 BHP. 2106S requires 7.2 BHP [6.3 x 1.15].
Read to the right to select motor horsepower.	4	A 7½ HP motor will cover both wheel types.

Note: The horsepower coverage of a given motor will increase 15% when a 1.15 service factor motor is utilized.

CORRECTION FACTORS

Performance is based on actual cubic feet per minute [ACFM] at the blower inlet at standard density [.075 lbs./ft.^{3}] and static pressure at the blower outlet. Static pressure capabilities are shown in inches water gauge [″WG].

Air density corrections are necessary for proper selection when air density varies from the standard .075 lbs./ft.^{3} at 70˚F. at sea level. This also occurs when negative static pressure exists [rarefication] on the inlet side of the fan. Multiply the required static pressure at conditions by the appropriate factors in Charts III, IV, and V to obtain corrected pressure for blower selection. Pressure and BHP will be reduced at conditions by the inverse of these factors. Multiply one factor by the other if temperature, altitude, and rarefication are non-standard. For example: If the installation is located at an altitude of 4000 feet, the gas temperature is 300°F., and the inlet pressure is –40″WG, the correction factor is 1.84 [1.16 x 1.43 x 1.11].

CHART III
ALTITUDE [ft.] CORRECTIONS

Alt.	Factor
0	1.00
500	1.02
1000	1.04
1500	1.06
2000	1.08
2500	1.10
3000	1.12
3500	1.14
4000	1.16
4500	1.18
5000	1.20
6000	1.25
7000	1.30
8000	1.35
9000	1.40
10000	1.45

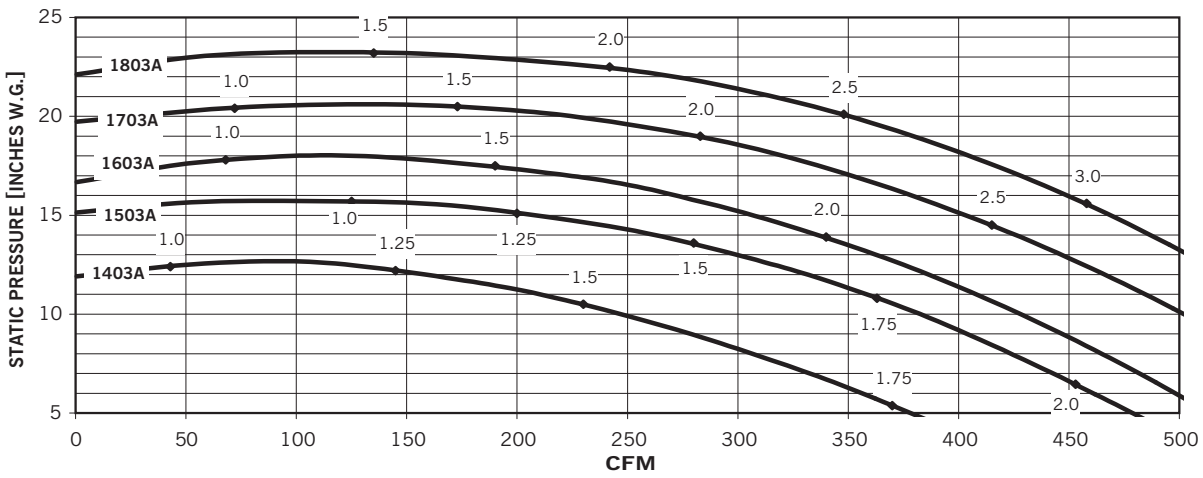
CHART IV
TEMPERATURE CORRECTIONS

Temp.˚F.	Factor
0	.87
20	.91
40	.94
60	.98
70	1.00
80	1.02
100	1.06
120	1.09
140	1.13
160	1.17
180	1.21
200	1.25
300	1.43
400	1.62
500	1.81
600	2.00

CHART V
RAREFICATION CORRECTIONS

Neg. inlet pressure ″WG	Factor
15	1.04
20	1.05
25	1.07
30	1.08
35	1.09
40	1.11
45	1.12
50	1.14
55	1.16
60	1.17
65	1.19
70	1.21
75	1.23
85	1.26

1403A-1803A



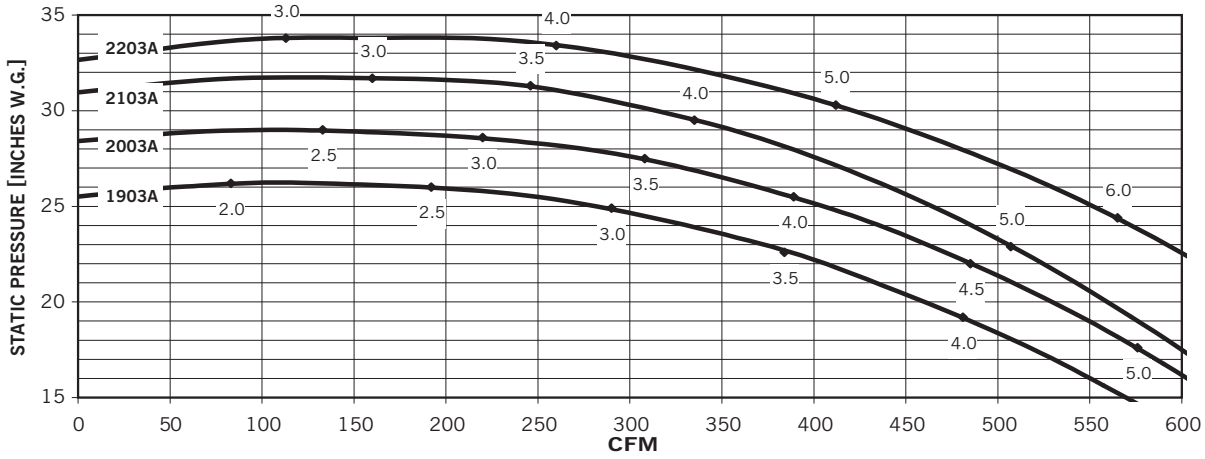
PERFORMANCE AT 3500 RPM



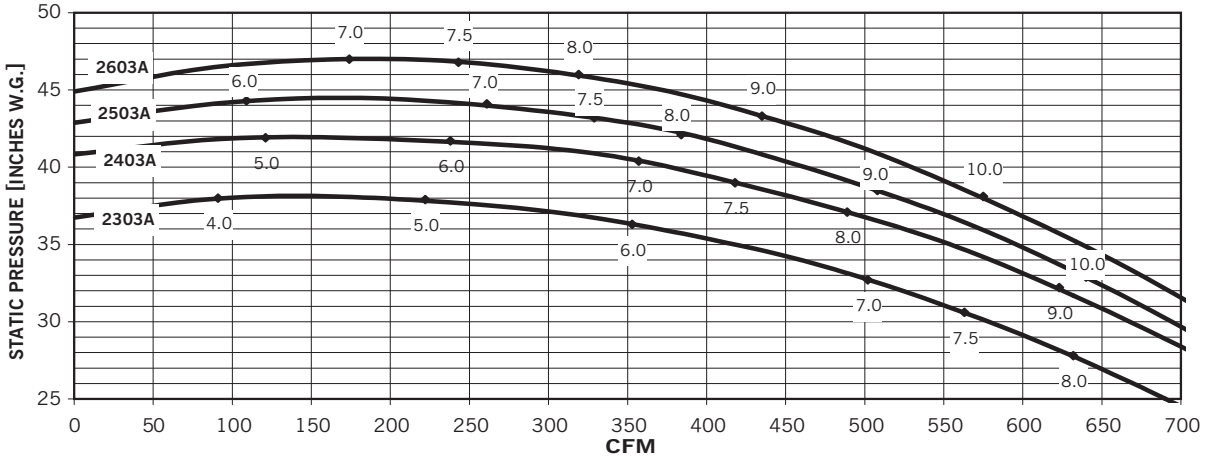
Aluminum Wheel
Pressure Blower

NOTE: Values shown on curves indicate brake horsepower [BHP] required.

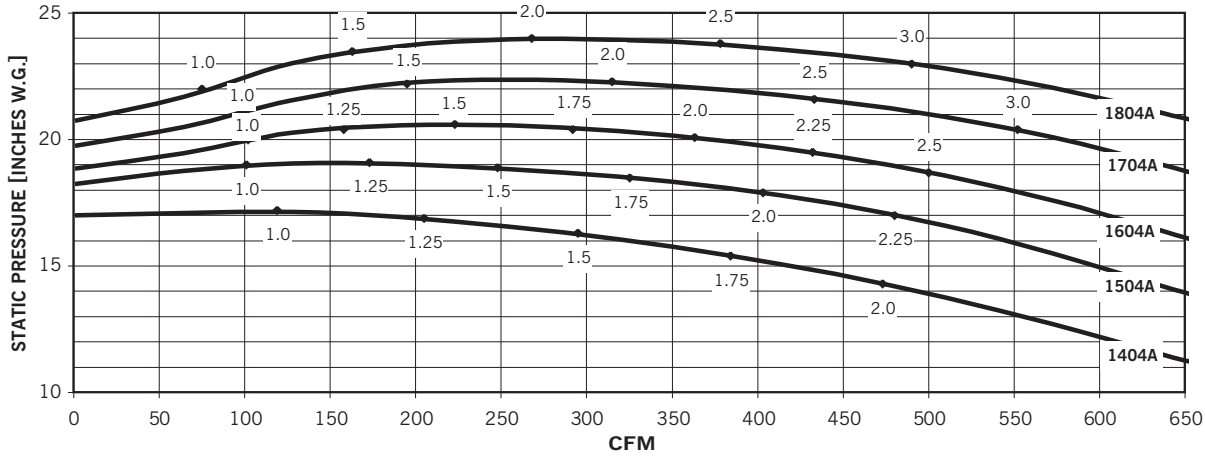
1903A-2203A



2303A-2603A



1404A-1804A



Performance certified is installation Type B: Free inlet, Ducted outlet. Power rating (BHP) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories).

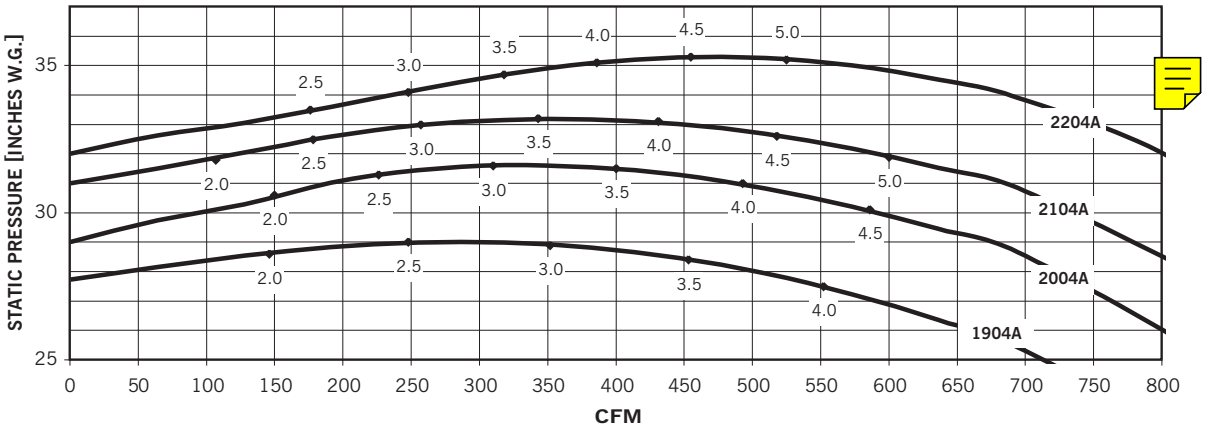
Performance at 3500 RPM



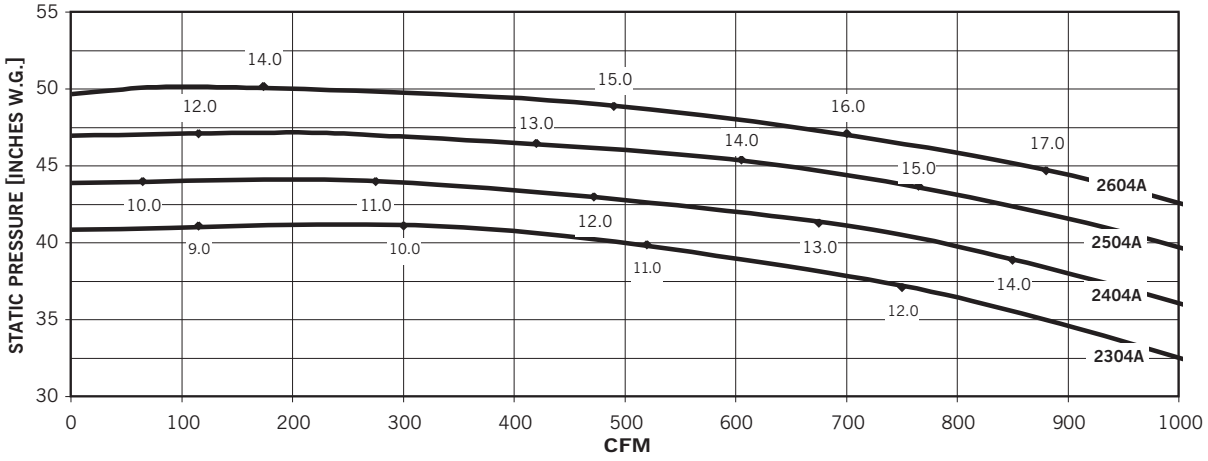
Aluminum Wheel
Pressure Blower

NOTE: Values shown on curves indicate brake horsepower [BHP] required.

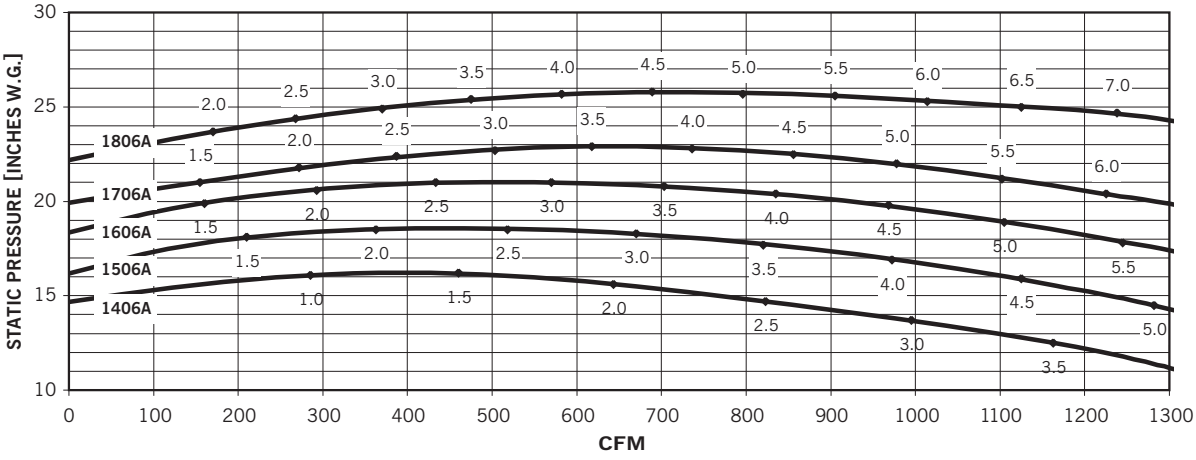
1904A-2204A



2304A-2604A



1406A-1806A



Performance certified is installation Type B: Free inlet, Ducted outlet. Power rating (BHP) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories).

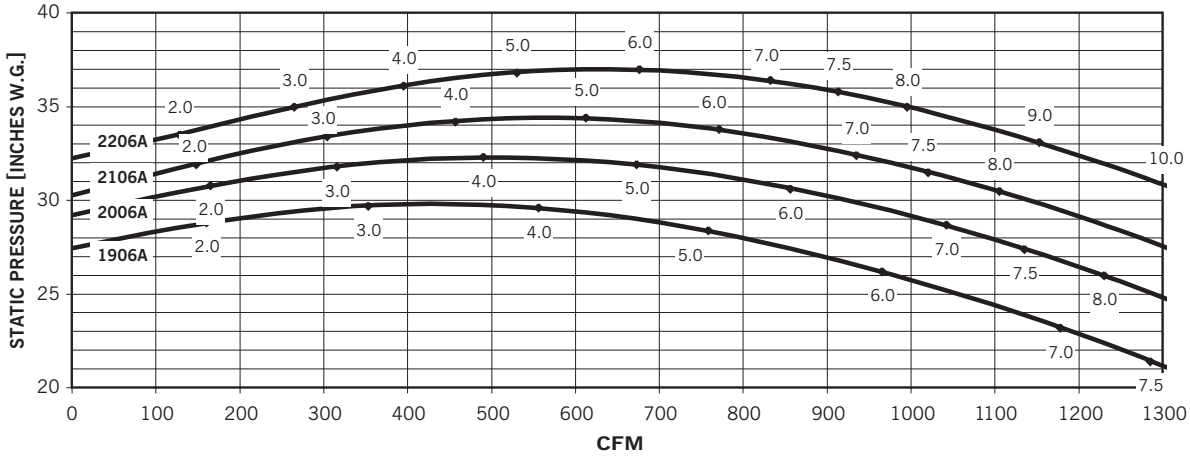
PERFORMANCE AT 3500 RPM



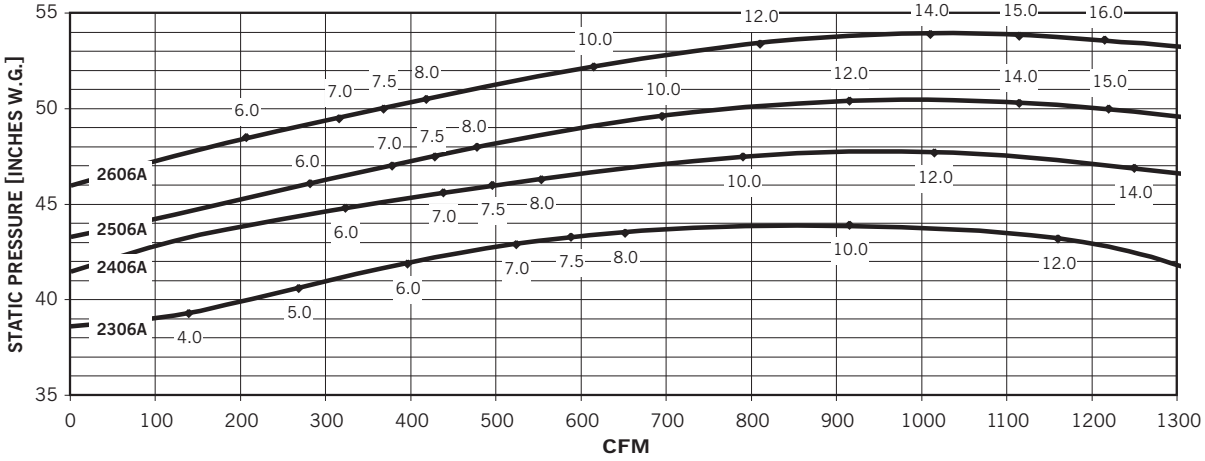
Aluminum Wheel
Pressure Blower

NOTE: Values shown on curves indicate brake horsepower [BHP] required.

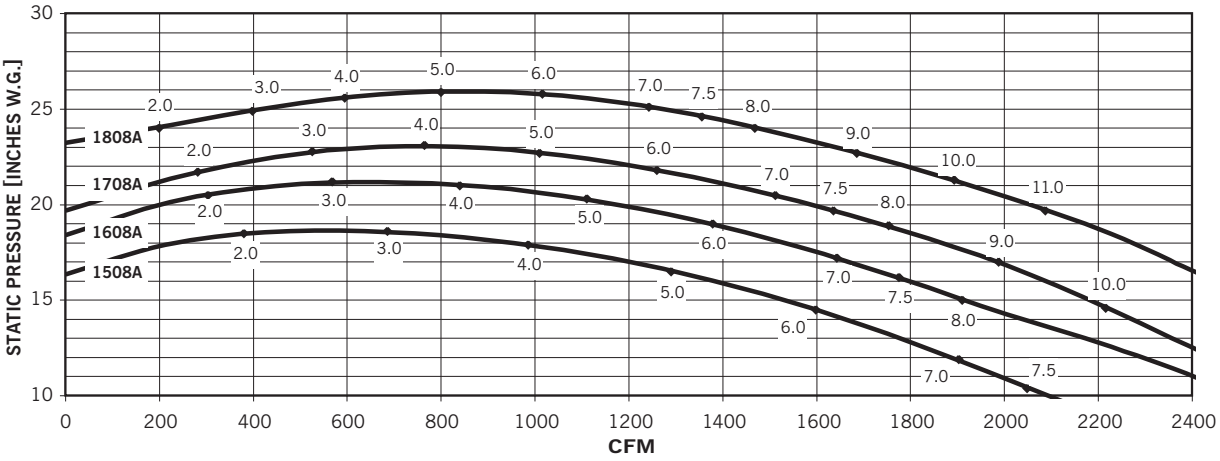
1906A-2206A



2306A-2606A



1508A-2208A



Performance certified is installation Type B: Free inlet, Ducted outlet. Power rating (BHP) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories).

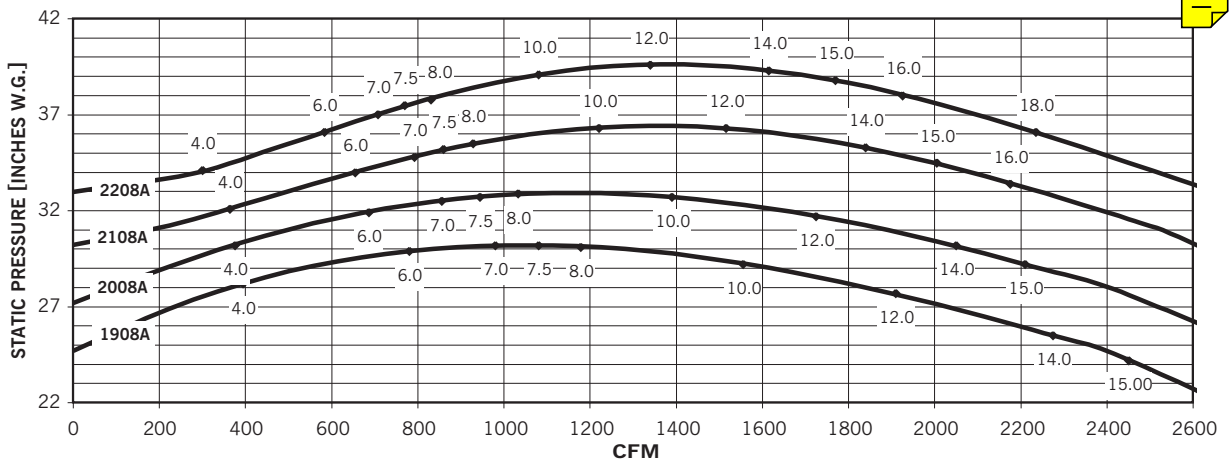
Performance at 3500 RPM



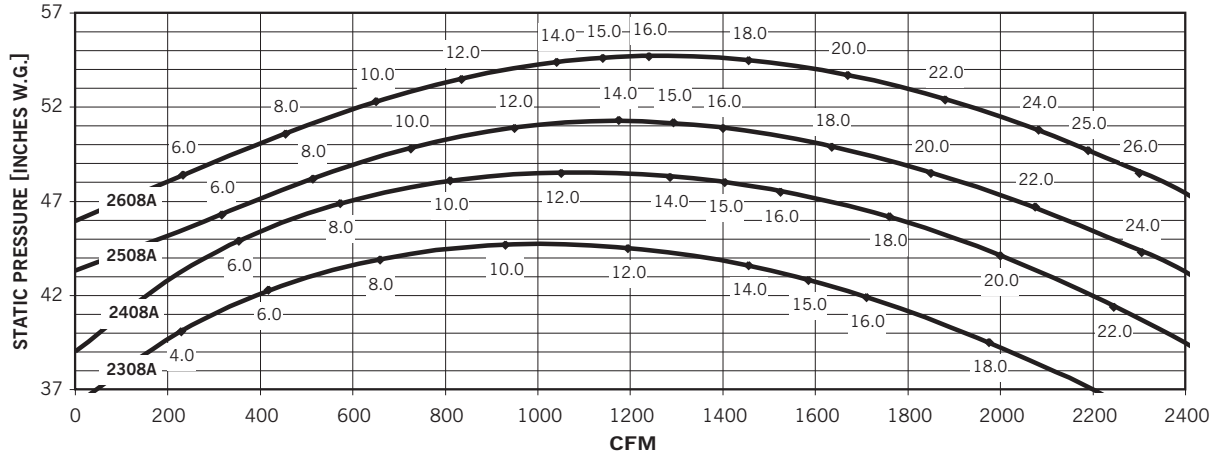
Aluminum Wheel
Pressure Blower

NOTE: Values shown on curves indicate brake horsepower [BHP] required.

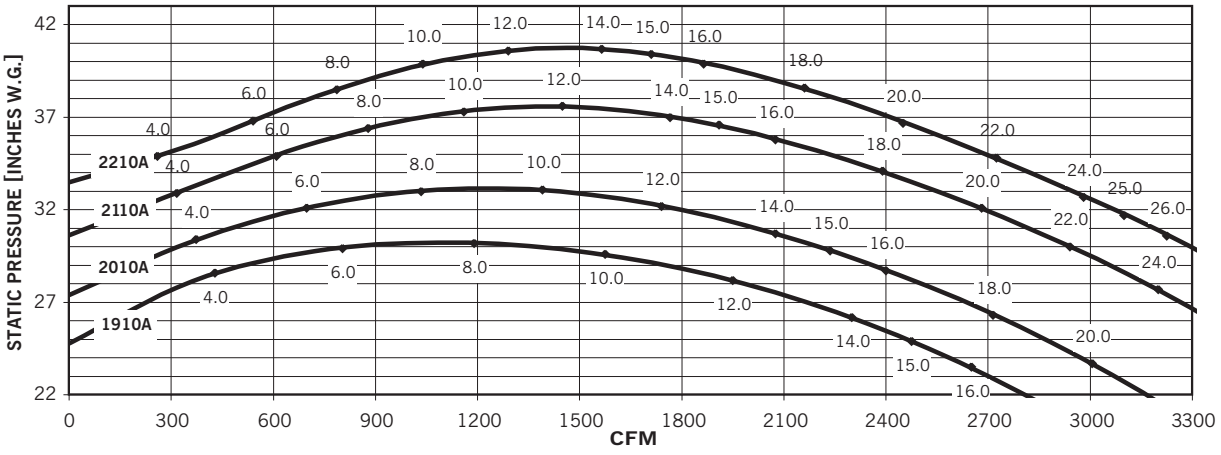
1908A-2208A



2308A-2608A



1910A-2210A



Performance certified is installation Type B: Free inlet, Ducted outlet. Power rating (BHP) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories).

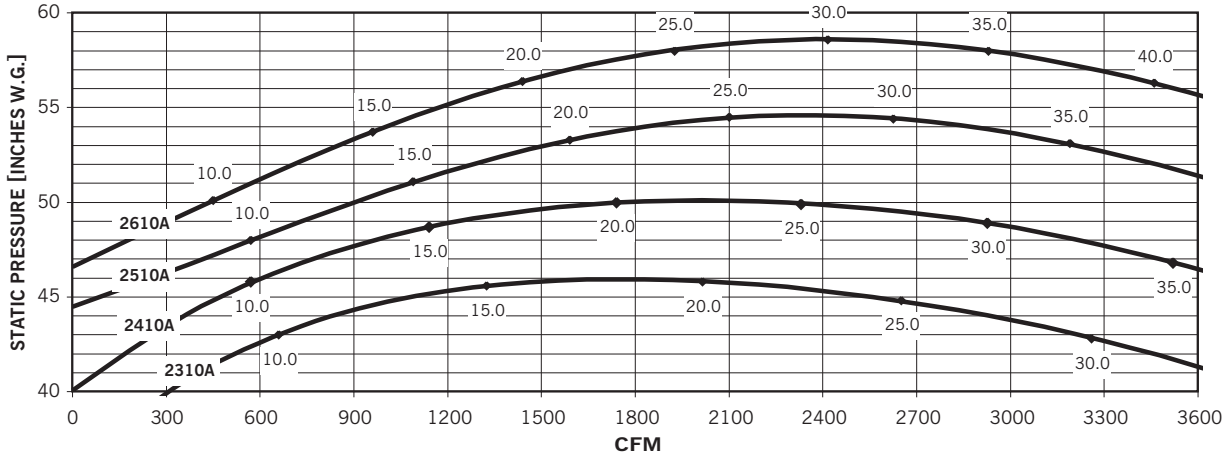
PERFORMANCE AT 3500/3550 RPM



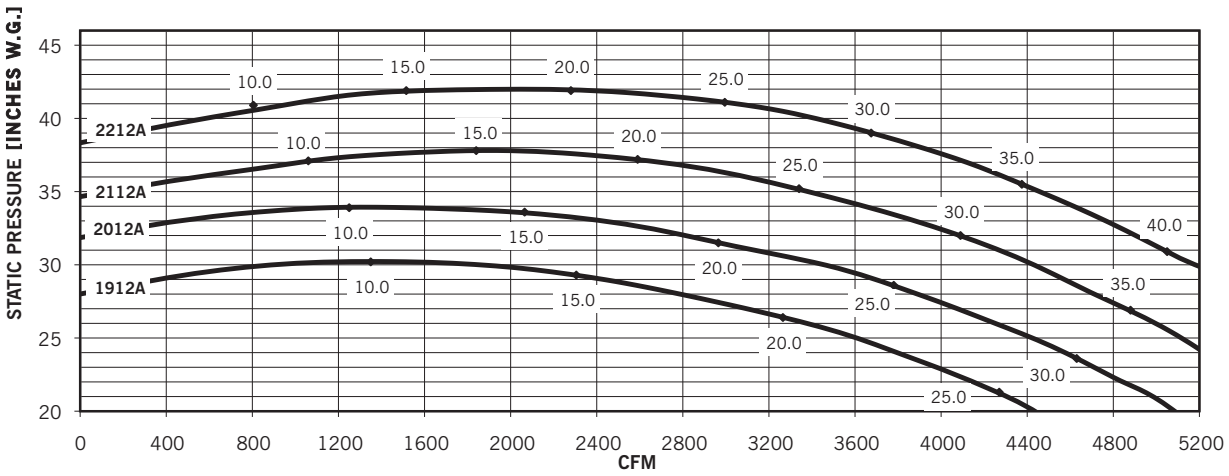
Aluminum Wheel
Pressure Blower

NOTE: Values shown on curves indicate brake horsepower [BHP] required.

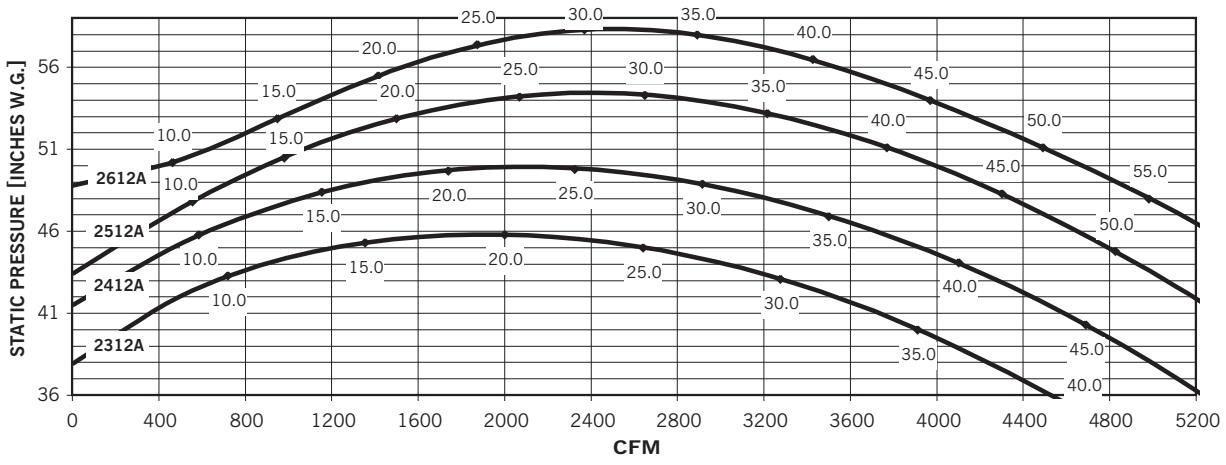
2310A-2610A



1912A-2212A



2312A-2612A



Performance certified is installation Type B: Free inlet, Ducted outlet. Power rating (BHP) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories).

SPECIFICATIONS

U.S. standard sheet gauge to 7 gauge. Dimensions in inches. Weights in pounds. WR^2 in lb.-ft.^{2}.

WHEEL SPECIFICATIONS

Size	Aluminum		Steel	
	Wt.	WR^2	Wt.	WR^2
1403	10.1	0.96	19.7	2.74
1404	8.5	1.43	18.0	3.04
1406	11.7	2.40	20.5	3.46
1503	10.8	1.23	21.8	3.59
1504	8.8	1.69	19.0	3.68
1506, 1508	11.8	2.40	21.5	4.16
1603	11.5	1.53	23.9	4.56
1604	9.0	1.98	20.0	4.41
1606, 1608	12.1	2.50	23.0	5.07
1703	12.3	1.93	26.3	5.79
1704	9.3	2.30	21.0	5.22
1706, 1708	12.2	2.60	24.5	6.09
1803	13.0	2.36	28.6	7.16
1804	9.5	2.65	22.0	6.13
1806, 1808	12.4	2.60	26.0	7.25
1903	14.2	2.92	31.1	8.42
1904, 1906	12.0	3.73	29.5	9.16
1908, 1910	15.1	5.10	34.5	10.72
1912	12.9	5.07	32.8	10.15
2003	15.1	5.02	33.7	10.23
2004, 2006	12.3	4.22	31.0	10.67
2008, 2010	15.3	5.20	36.5	12.56
2012	13.1	5.21	36.1	12.37
2103	16.0	4.24	36.5	12.31
2104, 2106	12.5	4.74	32.5	12.33
2108, 2110	15.5	5.30	38.0	14.42
2112	13.3	5.34	39.4	14.91
2203	17.1	5.02	39.3	14.70
2204, 2206	12.8	5.31	34.0	14.16
2208, 2210	15.6	5.40	40.0	16.66
2212	13.5	5.48	42.9	17.80
2303	18.3	6.07	49.4	20.83
2304	19.8	6.50	52.5	22.27
2306, 2308	18.5	8.42	45.0	20.93
2310, 2312	21.7	10.60	53.5	24.35
2403	19.4	7.16	53.1	24.50
2404	20.9	7.80	56.4	26.14
2406, 2408	18.8	9.29	48.0	23.79
2410, 2412	21.9	10.80	56.0	27.75
2503	20.5	8.33	56.9	28.64
2504	22.0	9.00	60.4	30.49
2506, 2508	19.0	10.22	50.0	26.89
2510, 2512	21.9	11.00	58.5	31.46
2603	21.8	9.63	60.9	33.27
2604	23.1	10.30	64.5	35.36
2606, 2608	19.3	11.20	52.0	30.24
2610, 2612	22.3	11.20	61.0	35.48

MATERIAL SPECIFICATIONS

HOUSING

Wheel diameter	Sides	Scroll	Inlet plate	Drive plate
14-18	10	10	1/4	10
19-22	10	10	1/4	10
23-26	10	10	1/4	10

SHAFT DIAMETER

Wheel diameter	Arrangement 1		Arrangement 8	
	Standard	Heat Fan with Shaft Seal	Standard	Heat Fan with Shaft Seal
14-18	1 7/16	1 7/16	1 7/16	1 7/16
19-22	1 7/16	1 11/16	1 7/16	1 7/16
23-26	1 11/16	1 15/16‡	1 7/16	1 11/16

SHAFT DIAMETER

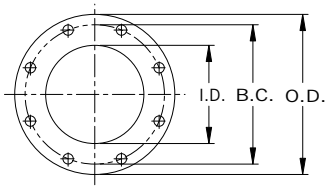
Wheel diameter	Arrangement 9		Arrangement 10	
	Standard	Heat Fan with Shaft Seal	Standard	Heat Fan
14-18	1 7/16	1 7/16	1 7/16	1 7/16
19-22	1 11/16	1 11/16	1 7/16	1 7/16
23-26	1 15/16	1 15/16	1 11/16	1 11/16

BEARINGS*

Wheel diameter	Arrangement 1/9		Arrangement 8	Arrangement 10
	Inboard	Outboard		
14-18	A	A‡	A	A
19-22	B	B	A	B
23-26	C	B‡	A	B

A–200 Series ball bearing. B–22400 Series roller bearing.
C–300 Series ball bearing.
***nyb** reserves the right to substitute bearings of equal rating.
‡ Fans with heat fan construction and shaft seal:
Arr. 1: Sizes 23-26 include a shaft turndown at the outboard bearing, with a bearing size of 1 11/16". Inboard bearing size is 1 15/16".
Arr. 9: Sizes 14-18 include a Type B outboard bearing, in lieu of the standard Type

FLANGE



DIMENSIONS [INCHES]

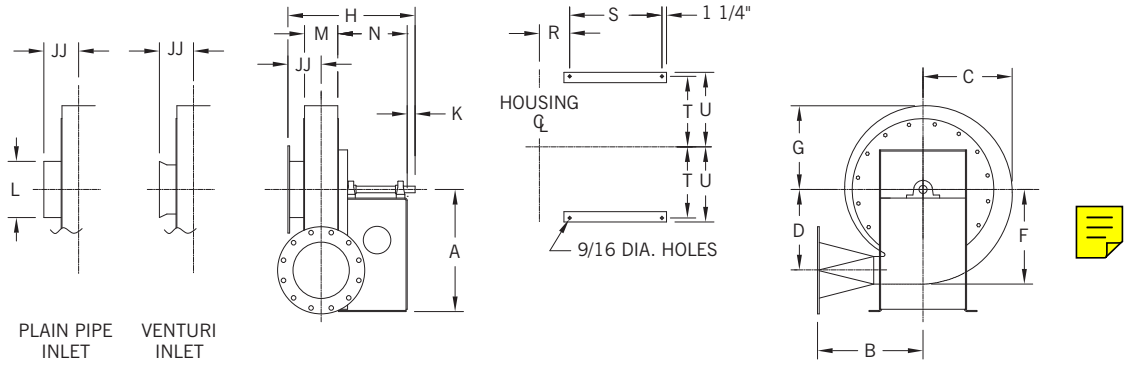
Size	I.D.	O.D.	Bolt circle	Holes† No. – size
03	3	7 1/2	6	4 – 3/4"
04	4	9	7 1/2	8 – 3/4"
05	5	10	8 1/2	8 – 7/8"
06	6	11	9 1/2	8 – 7/8"
08	8	13 1/2	11 3/4	8 – 7/8"
10	10	16	14 1/4	12 – 1"
12	12	19	17	12 – 1"

† Holes straddle centerline. ANSI Class 125/150 hole pattern. Flange thickness 3/8"

ARRANGEMENTS 1/9

PRESSURE BLOWERS

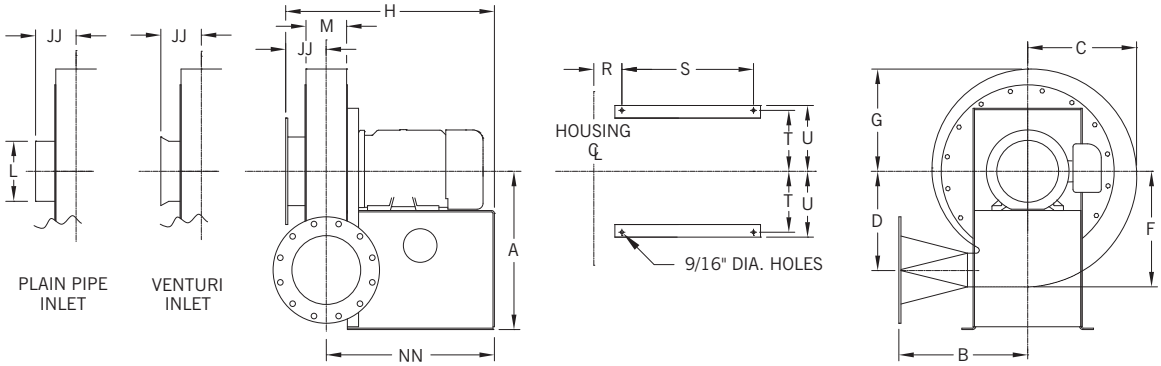
Maximum Airstream Temperature:
200°F. – aluminum wheel.
300°F. – steel wheel.
600°F. – heat fan.



ARRANGEMENT 4

PRESSURE BLOWERS

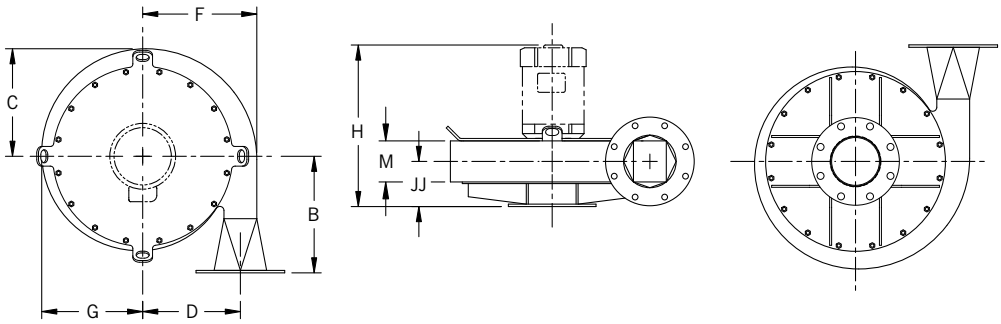
Maximum Airstream Temperature:
180°F.



ARRANGEMENT 4-V

PRESSURE BLOWERS

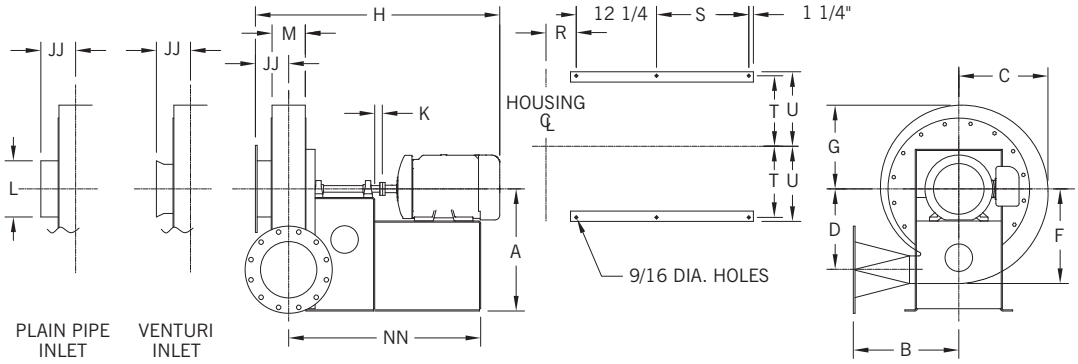
Maximum Airstream Temperature:
120°F.



ARRANGEMENT 8

PRESSURE BLOWERS

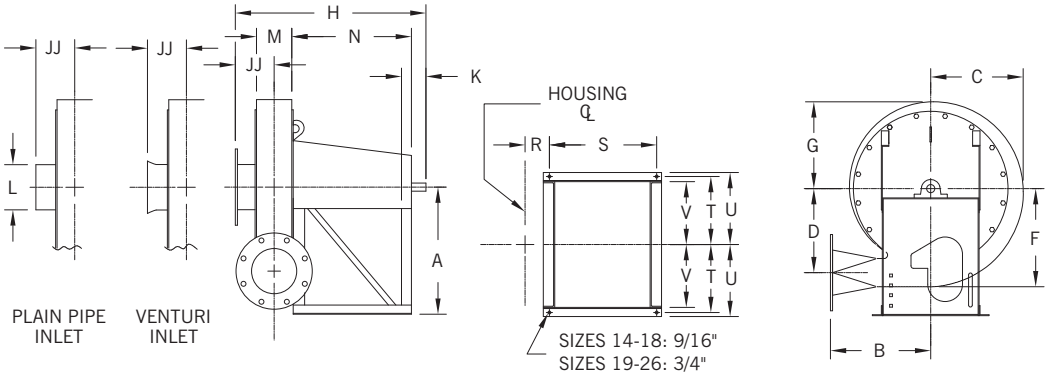
Maximum Airstream Temperature:
200°F. – aluminum wheel.
300°F. – steel wheel.
600°F. – heat fan.



ARRANGEMENT 10

PRESSURE BLOWERS

Maximum Airstream Temperature:
200°F. – aluminum wheel.
300°F. – steel wheel.
600°F. – heat fan.



ARRANGEMENTS 1, 4, 4-V, 8, 9, 10

Dimensions not to be used for construction unless certified. Bare fan weight does not include wheel or motor. Weights in pounds. Wheel weights on page 11.

HOUSING DIMENSIONS [INCHES]

Fan Size	Outlet Size	Inlet Size	B	C	D	F	G	M	JJ [Inlet types]			L
									Flanged	Plain pipe	Venturi	
14-18	03	05	18 1/4	13 5/8	11 3/4	14 3/8	12 3/4	2 7/8	5 1/16	4 11/16	4 9/16	5 9/16
	04	06						3 7/8	5 9/16	5 3/16	4 13/16	6 5/8
	06	08						6 1/4	6 3/4	6 3/8	6 3/8	8 5/8
	08	08										
19-22	03	05	17 3/4	16 1/2	14 7/8	17 1/2	15 1/2	2 7/8	5 9/16	5 3/16	5 3/16	5 9/16
	04	06						3 7/8	6 1/16	5 11/16	5 5/16	6 5/8
	06	06										
	08	08						6 1/4	6 3/4	6 3/8	6 3/8	8 5/8
	10	10	21 3/4									
	12	12	23		14 1/2			7 1/4	7 1/4	6 7/8	6 7/8	10 3/4
23-26	03	05	19	19 1/2	17 5/8	20 5/8	18 1/4	3 5/8	6 5/16	5 15/16	5 9/16	5 9/16
	04	06						5	7	6 5/8	6 5/8	6 5/8
	06	08										8 5/8
	08	08										
	10	10	23					7 1/4	7 1/4	6 7/8	6 7/8	10 3/4
	12	12										

Tolerance: ± 1/8"

BARE FAN WEIGHTS AND MOTOR LIMITATIONS

Fan Size	Outlet Size	Inlet Size	Arr. 1 Wt.	Motor Frame Size (Arr. 4, 8)	Weight		Arr. 4-V	
					Arr. 4	Arr. 8	Motor Frame Size	Weight
14-18	03	05	200	143T-145T	145	285	182TC-184TC	120
				182T-184T	170			
	04	06	205	143T-145T	150	295	182TC-184TC	130
				182T-184T	175			
	06	08	220	143T-145T	165	300	182TC-184TC	135
				182T-184T	190			
				213T-215T		305	213TC-215TC	
15-18	08	08	220	182T-184T	190	310	182TC-184TC	145
				213T-215T		315	213TC-215TC	
19-22	03	05	270	143T-145T	235	370	182TC-184TC	160
				182T-184T		375		
				213T-215T		380	213TC-215TC	
	04	06	275	143T-145T	245	385	182TC-184TC	170
				182T-184T				
				213T-215T		390	213TC-215TC	
	06	06	275	143T-145T	245	385	182TC-184TC	175
				182T-184T		390		
				213T-215T		395	213TC-215TC	
	08	08	290	182T-184T	260	410	182TC-184TC	190
				213T-215T		415	213TC-215TC	
				254T-256T	290	430	254TC-256TC	
	10	10	300	213T-215T	270	415	213TC-215TC	190
				254T-256T	300	430	254TC-256TC	
				284TS-286TS			284TSC-286TSC	
	12	12	320	254T-256T	320	445	254TC-256TC	215
				284T-286T		455	284TSC-286TSC	
				324TS-326TS	345	460	324TSC-326TSC	
23-26	03	05	330	182T-184T	270	435	182TC-184TC	205
				213T-215T		445	213TC-215TC	
				254T-256T	300	460	254TC-256TC	
	04	06	350	182T-184T	275	465	182TC-184TC	230
				213T-215T		470	213TC-215TC	
				254T-256T	300	490	254TC-256TC	
	06	08	365	182T-184T	285	460	182TC-184TC	230
				213T-215T		465	213TC-215TC	
				254T-256T	315	485	254TC-256TC	
	08	08	365	213T-215T	290	475	213TC-215TC	235
				254T-256T	320	495	254TC-256TC	
				284TS-286TS		495	284TSC-286TSC	
	10	10	385	254T-256T	335	500	254TC-256TC	255
				284TS-286TS			284TSC-286TSC	
				324TS-326TS	360	505	324TSC-326TSC	
	12	12	395	284TS-286TS	345	515	284TSC-286TSC	265
				324TS-326TS	370	520	324TSC-326TSC	

Fan Size	Outlet Size	Arr. 9		Arr. 10			
		Pedestal Number	Weight	Weight	Max. Motor Size		
					ODP	TEFC	C-NW
14-18	03	1	190	220	215T	215T	16 5/8
		2	225				
		3	260				
		4	300				
	04	1	195	230			
		2	235				
		3	265				
		4	305				
	06,08	1	210	245			
		2	250				
		3	280				
		4	325				
19-22	03	5	280	290	256T	254T	18 5/8
		6	300				
		7	340				
		8	360				
		9	370				
	04,06	5	295	305			
		6	315				
		7	355				
		8	375				
		9	385				
	08,10	5	315	325			
		6	335				
		7	375				
		8	395				
		9	405				
	12	5	340	350			
		6	360				
		7	405				
		8	420				
		9	430				
23-26	03,04	10	435	355	256T	254T	18 5/8
		11	455				
		12	465				
		13	550				
	06,08	10	440	360			
		11	460				
		12	470				
		13	555				
	10,12	10	460	375			
		11	480				
		12	490				
		13	570				

N/A: Not Available due to motor shaft/wheel fit.

Tolerance: ± 1/8"

ARRANGEMENTS 4, 4-V, 8

Dimensions not to be used for construction unless certified. Note: See page 12 for dimensional drawings.

Wheel dia.	Outlet Size	Inlet flange	Arr. 4 & 8 Motor Frame Size	A		H*		Arr. 4-V Motor Frame Size	H*	K	NN		R	S		T		U	
				Arr. 4	Arr. 8†	Arr. 4	Arr. 8		Arr. 4-V	Arr. 8	Arr. 4	Arr. 8		Arr. 4	Arr. 8	Arr. 4	Arr. 8	Arr. 4	Arr. 8
14-18	03	05	143T-145T	17¾	19½	18	38	182TC-184TC	20⅞	3⅜	12 15/16	31 5/16	2 13/16	8⅝	15	8⅞	9⅛	9¾	10
			182T-184T	19		23½	40⅝				17 13/16	32 13/16		14⅛	16½				
	04	06	143T-145T	17¾		19	39	182TC-184TC	21⅞		13 7/16	31 13/16	3 5/16	8⅝	15				
			182T-184T	19		24½	41⅝				18 5/16	33 5/16		14⅛	16½				
	06	08	143T-145T	17¾		21⅜	41⅜	182TC-184TC	24¼		14⅝	33	4½	8⅝	15				
			182T-184T	19		26⅞	44				20⅛	34½		14⅛	16½				
			213T-215T	19¾			46⅝	213TC-215TC	25½	2⅞		36¾			18¾				
15-18	08	08	182T-184T	19	19½	26⅞	44	182TC-184TC	24¼	3⅜	20⅛	34½	4½	14⅛	16½				
			213T-215T	19¾			46⅝	213TC-215TC	25½	2⅞		36¾			18¾				
19-22	03	05	143T-145T	23	23⅝	24	38½	182TC-184TC	20⅞	3⅜	18 7/16	31 5/16	2 13/16	14⅛	15	10⅞	10⅞	11¾	11¾
			182T-184T	24			41⅛					32 13/16			16½				
			213T-215T	24¾			43¾	213TC-215TC	22⅝	2⅞		35 1/16			18¾				
	04	06	143T-145T	23		25	39½	182TC-184TC	22⅜	3⅜	18 15/16	31 13/16	3 5/16	14⅛	15				
			182T-184T	24			42⅛					33 5/16			16½				
			213T-215T	24¾			44¾	213TC-215TC	23⅝	2⅞		35 9/16			18¾				
	06	06	143T-145T	23		25	39½	182TC-184TC	22⅜	3⅜	18 15/16	31 13/16	3 5/16	14⅛	15				
			182T-184T	24			42⅛					33 5/16			16½				
			213T-215T	24¾			44¾	213TC-215TC	23⅝	2⅞		35 9/16			18¾				
	08	08	182T-184T	24		26⅞	44	182TC-184TC	24¼	3⅜	20⅛	34½	4½	14⅛	16½				
			213T-215T	24¾			46⅝	213TC-215TC	25½	2⅞		36¾			18¾				
			254T-256T	26		32¼	51⅜	254TC-256Tc	26⅝		25½	42⅛		19½	24⅛				
	10	10	213T-215T	24¾		26⅞	46⅝	213TC-215TC	25½	2⅞	20⅛	36¾	4½	14⅛	18¾				
			254T-256T	26		32¼	51⅜	254TC-256TC	26⅝		25½	42⅛		19½	24⅛				
			284TS-286TS	26¾			53⅜	284TCS-286TCS	33⅜			42⅞			24⅞				
	12	12	254T-256T	26		33¼	52⅜	254TS-256TS	27⅝	2⅞	26	42⅝	5	19½	24⅛				
			284TS-286TS	26¾			54⅜	284TSC-286TSC	34⅜			43⅜			24⅞				
			324TS-326TS	29¼		37¼	57⅞	324TSC-326TSC	36⅜		30	46⅜		23½	27⅞				
23-26	03	05	182T-184T	24	26⅝	25⅛	42¾	182TC-184TC	22½	3⅞	18 13/16	33 1/16	3 3/16	14⅛	17	10⅞	10⅞	11¾	11¾
			213T-215T	24¾			45⅜	213TC-215TC	N/A			35 5/16			19¼				
			254T-256T	26		30½	50⅛	254TC-256TC	N/A		24 3/16	41 5/16		19½	24⅝				
	04	06	182T-184T	24		26½	44⅛	182TC-184TC	23⅞	3⅞	19½	34⅜	3⅞	14⅛	17				
			213T-215T	24¾			46¾	213TC-215TC	N/A			36⅝			19¼				
			254T-256T	26		31⅞	51½	254TC-256TC	N/A		24⅞	42		19½	24⅝				
	06	08	182T-184T	24		26½	44⅛	182TC-184TC	23⅞	3⅞	19½	34⅜	3⅞	14⅛	17				
			213T-215T	24¾			46¾	213TC-215TC	25⅛	3¼		36⅝			19¼				
			254T-256T	26		31⅞	51½	254TC-256TC	26¼		24⅞	42		19½	24⅝				
	08	08	213T-215T	24¾		26½	46¾	213TC-215TC	25⅛	3¼	19½	36⅝	3⅞	14⅛	19¼				
			254T-256T	26		31⅞	51½	254TC-256TC	26¼		24⅞	42		19½	24⅝				
			284TS-286TS	26¾			53½	284TS-286TS	33			42¾			25⅜				
	10	10	254T-256T	26		33¼	52⅞	254TC-256TC	27⅝	3¼	26	43⅛	5	19½	24⅝				
			284TS-286TS	26¾			54⅞	284TCS-286TCS	34⅜			43⅞			25⅜				
			324TS-326TS	29¼		37¼	58⅝	324TCS-326TCS	36⅜		30	46⅜		23½	27⅞				
	12	12	284TS-286TS	28¼		37¼	54⅞	284TCS-286TCS	34⅜	3¼	30	43⅞	5	23½	25⅜				
			324TS-326TS	29¼			58⅝	324TCS-326TCS	36⅜			43⅜			27⅞				

N/A = Not Available

Tolerance: ± 1/8"

* Dimensions may vary slightly depending on motor manufacturer. Given "H" dimensions were based on the larger of those motors most frequently used by **nyb**. † On fan Sizes 23-26 with Size 12 outlet and Bottom Horizontal discharge, the flange extends ½" below the floorline.

The New York Blower Company has a policy of continuous product development and reserves the right to change designs and specifications without notice.

ARRANGEMENTS 1, 9, 10

Dimensions not to be used for construction unless certified. Note: See page 12 for dimensional drawings.

ARRANGEMENTS 1, 9, & 10 DIMENSIONS [INCHES]

Wheel dia.	Outlet Size	Inlet flange	A†		H		K		N		R		S	T		U		V
			Arr. 1	Arr. 10	Arr. 1	Arr. 10	Arr. 1/9	Arr. 10	Arr. 1	Arr. 10	Arr. 1/9	Arr. 10	Arr. 1	Arr. 10	Arr. 1/9	Arr. 10	Arr. 1/9	Arr. 10	Arr. 10
14-18	03	05	19 1/2	21	24 5/8	30 1/8	3	3 1/2	15 1/8	22	2 13/16	3 7/8		17 3/8	9 1/8	9 3/8	10	10 1/4	8 1/4
	04	06			25 5/8	31 1/8					3 5/16	4 3/8							
	06	08			28	33 1/2					4 1/2	5 1/2							
15-18	08	08																	
19-22	03	05	23 5/8	27 5/8	26 1/8	35 1/8	4	4 1/2	15 1/8	26	2 13/16	4 5/8	12 1/4	19 7/8	10 7/8	12 1/4	11 3/4	13	11
	04	06			27 1/8	36 1/8					3 5/16	5 1/8							
	06	06									4 1/2	6 1/4							
	08	08			29	38													
	10	10			30	39					5	6 3/4							
	12	12																	
23-26	03	05	26 5/8	27 7/8	28 1/4	36 1/4	5	4 1/2	15 1/8	26	3 3/16	4 1/4		19 7/8	10 7/8	12 1/4	11 3/4	13	11
	04	06			29 5/8	37 5/8					3 7/8	5 5/8							
	06	08																	
	08	08																	
	10	10			31	39					5	6 3/4							
	12	12																	

† On fan sizes 12, outlet and Bottom Horizontal discharge, the flange extends ½" below the floorline.

Tolerance: ± 1/8"

ARRANGEMENT 9 DIMENSIONS [INCHES]

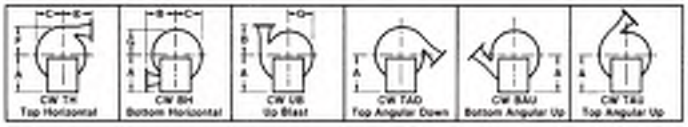
Fan Size	Outlet Size	Pedestal Number	H
14-18	03	1	24 5/8
		2	28 3/8
		3	32 1/8
		4	35 1/4
	04	1	25 5/8
		2	29 3/8
		3	33 1/8
		4	36 1/4
	06,08	1	28
		2	31 3/4
		3	35 1/2
		4	38 5/8
19-22	03	5	26 1/8
		6	29 7/8
		7	33 5/8
		8	36 3/4
		9	38 3/4
	04,06	5	27 1/8
		6	30 7/8
		7	34 5/8
		8	37 3/4
		9	39 3/4

Fan Size	Outlet Size	Pedestal Number	H
19-22	08,10	5	29
		6	32 3/4
		7	36 1/2
		8	39 5/8
		9	41 5/8
	12	5	30
		6	33 3/4
		7	37 1/2
		8	40 5/8
		9	42 5/8
	03	10	35 3/4
		11	38 7/8
		12	40 7/8
		13	42 7/8
23-26	04,06,08	10	37 1/8
		11	40 1/4
		12	42 1/4
		13	44 1/4
	10,12	10	38 1/2
		11	41 5/8
		12	43 5/8
		13	45 5/8

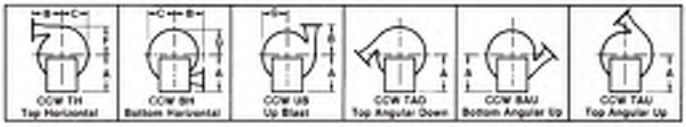
Fan Size	Pedestal Number	Max. C-NW	Max. Frame Size	A	N	S
14-18	1	13 5/8	256T	19 1/2	15 1/8	12 1/4
	2	17 3/8			18 7/8	16
	3	21 1/8			22 5/8	19 3/4
	4	24 1/4	284T	23 1/2	25 3/4	22 7/8
19-22	5	13 5/8	326T	23 5/8	15 1/8	12 1/4
	6	17 3/8			18 7/8	16
	7	21 1/8			22 5/8	19 3/4
	8	24 1/4			25 3/4	22 7/8
	9	26 1/4			27 3/4	24 7/8
23-26	10	21 1/8	326T	26 5/8	22 5/8	19 3/4
	11	24 1/4			25 3/4	22 7/8
	12	26 1/4			27 3/4	24 7/8
	13	28 1/4	365T	30 5/8	29 3/4	26 7/8

Tolerance: ± 1/8"

FAN DISCHARGES – VIEWED FROM DRIVE SIDE



Clockwise—angular discharges at 45°



Counterclockwise—angular discharges at 45°

Housings are reversible and rotatable in 22½° increments except Down Blast and Bottom Angular Down which require special construction. Arrangement 10 fans Sizes 19–22 are not rotatable in the field.

The New York Blower Company has a policy of continuous product development and reserves the right to change designs and specifications without notice.

Complete Selection of Air-Moving Equipment

The New York Blower Company offers thousands of different types, models, and sizes of air-moving equipment. Contact your nyb representative for assistance in identifying the best fan for your application.



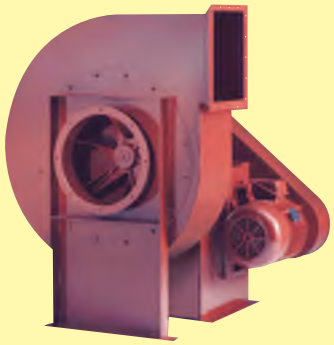
AIR-HANDLING [AXIAL]

For the ideal handling of clean to moderately dirty airstreams. Commercial and industrial HVAC, drying and cooling systems, fume extraction, and process-heat removal are typical applications.



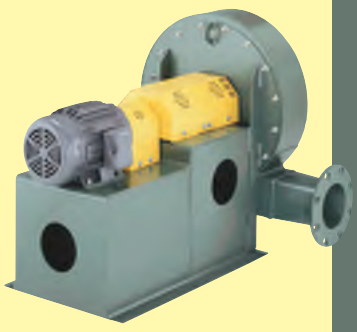
FIBERGLASS REINFORCED PLASTIC [FRP]

Choice of performance and duty for corrosive gas streams. Applications include chemical process, wastewater treatment, laboratory hood exhaust, and tank aeration.



DUST/MATERIAL HANDLING

Wide range of duty available with unique fan lines capable of handling light dust to heavy material. Typical applications include dust-collection and high-pressure process along with material-conveying.



AIR-HANDLING [CENTRIFUGAL]

Designed for clean to moderately dirty gas streams. Commercial and industrial HVAC, process cooling, light material-conveying, heat removal, and dryer exhaust are just a few of the numerous sample applications

CUSTOM PRODUCTS

Designed for unique applications. Variety of configurations, temperatures, flows, and pressures. Wide range of modifications and accessories are available to meet the most demanding specifications.



Leading the industry forward since 1889



ROOF VENTILATORS

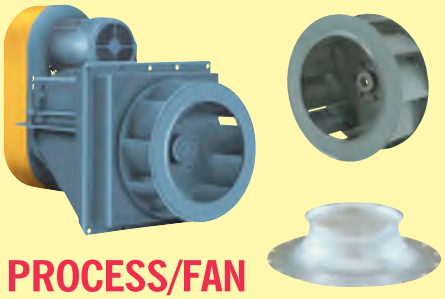
Including both hooded and upblast ventilators, propeller fans, and centrifugal roof exhausters. These units are ideal for industrial, commercial, and institutional applications.

nyb



HEATING PRODUCTS

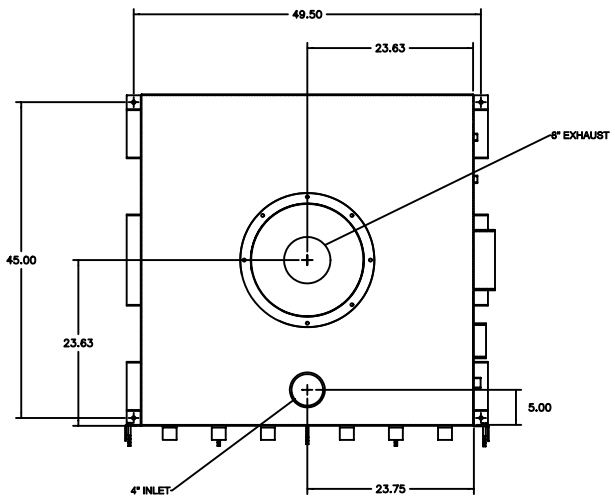
Industrial-duty steam unit heaters with steam heating coils are available for facility heating and process-heat transfer.

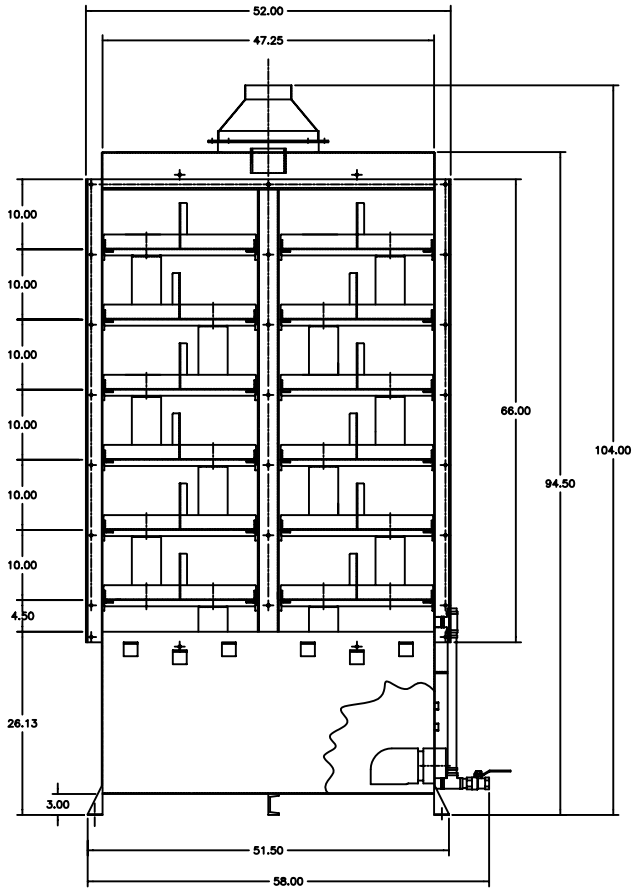


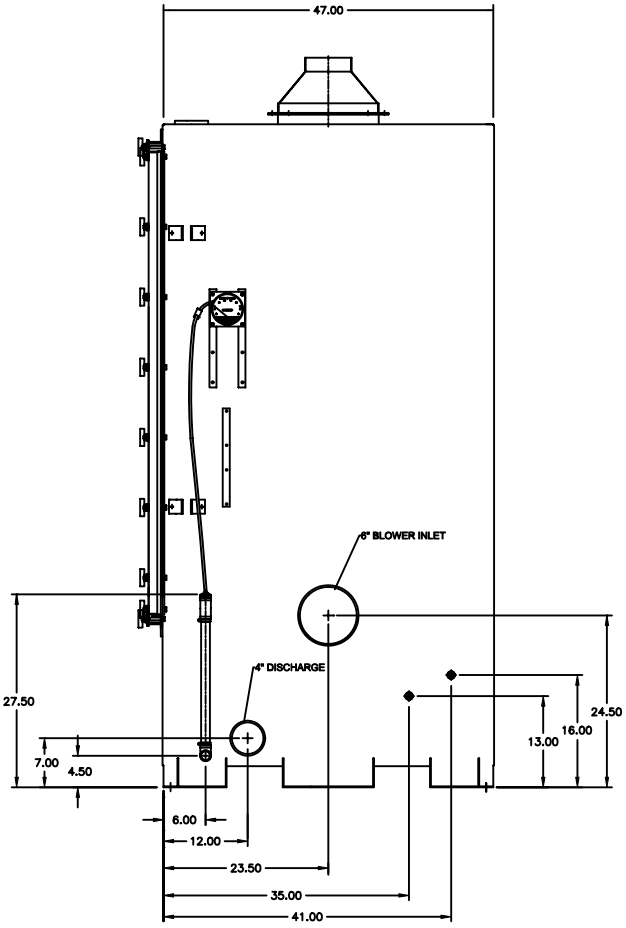
PROCESS/FAN COMPONENTS

Plug fans, plenum fans, wheels, inlet cones, and housings for a wide variety of OEM applications. Process/fan components are used in air-handling units, ovens, dryers, freezer tunnels, and filtration systems.

Air Stripper







UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES AND INCLUDE PLATING REMOVE ALL BURRS	DRAWN BY CB	DATE 12/8/03	Q.E.D. ENVIRONMENTAL SYSTEMS INC. 6155 JACKSON ROAD, ANN ARBOR, MI.
	CHECKED BY	DATE	
TOLERANCES .XX+/-.06 FRACT +/-1/16 .XXX+/-.005 ANGLES+/-1 OTHER TOLERANCES AS SPECIFIED	APPROVED BY	DATE	TITLE EZ-16.6SS AIR STRIPPER
	MFG. APPROVAL		
4.4 SS AIR STRIPPER	MATERIAL		DRAWING NUMBER REV B
NEXT ASS'Y USED ON	FINISH		SCALE SHEET 1 OF 1

QED Air Stripper Model ver. c1.10 — 6/28/2007

Site Data

Name: David
e-mail: dretholtz@qedenv.com
Project: Project Identifier
Units: English
Altitude: 350 ft
Air Temp: 95 F
Flow: 90 gpm
Water Temp: 45 F
Stripper: EZ-Tray 16.x - Click for details
Stripper Air Flow: 850 cfm
Stripper Max Flow: 120 gpm

Water Results

Contaminant	Influent (ppb)	Target (ppb)	4-Tray Results (ppb)	4-Tray % Removal	6-Tray Results (ppb)	6-Tray % Removal
trichloroethylene (TCE)	1930	0	1.1	99.943	< 1	100.000
tetrachloroethylene (PERC,PCE)	8170	0	< 1	100.000	< 1	100.000
c-1,2-dichloroethylene	4860	0	15.4	99.683	< 1	100.000
t-1,2-dichloroethylene	41.8	0	< 1	100.000	< 1	100.000
vinyl chloride (chloroethylene)	297	0	< 1	100.000	< 1	100.000

Air Results

Contaminant	4-Tray (ppmV)	4-Tray (lb/hr)	6-Tray (ppmV)	6-Tray (lb/hr)
trichloroethylene (TCE)	5.3164	0.08692	5.3195	0.08697
tetrachloroethylene (PERC,PCE)	17.8405	0.36813	17.8411	0.36814
c-1,2-dichloroethylene	18.0970	0.21830	18.1539	0.21898
t-1,2-dichloroethylene	0.1555	0.00188	0.1561	0.00188
vinyl chloride (chloroethylene)	1.7208	0.01338	1.7209	0.01338

Notes

Copyright -- QED Treatment Equipment, PO Box 3726, Ann Arbor, MI 48106.

PH-> 1-800-624-2026 or 1-734-995-2547, FX-> 1-734-995-1170. E-mail->info@qedenv.com. WEB->www.qedenv.com.

The QED modeler estimates unit performance for the listed contaminants. ***Results assume -***

1. *dissolved-phase contaminant within a water matrix*
2. *clean stripper air*
3. *no surfactants, oil, grease or other immiscible phase(s) in the influent*
4. *unit operated within the given parameters and as instructed in the O&M manual*

Stripper performance shall meet or exceed either the required effluent concentration (s) or effluent estimates, whichever is greater, for the conditions supplied and assumes the influent concentrations of each contaminant are less than 25% solubility in water. QED makes no claim of the model's accuracy beyond the 25% solubility in water limit.

Contact Us

Fill out your contact and project information and click Send to have a QED Treatment application specialist contact you.

Name - David

Company - Company

Phone - Phone **Fax -** Fax

e-mail - dretholtz@qedenv.com **Project -** Project Identifier

Application Notes

Send Reset

Save Data

Use the following URL to reconstruct your data form for future remodeling with changes. This URL can be saved in any text file for record keeping and later retrieval. This run's URL:

```
http://www.qedenv.com/cgi-bin/remodel.pl?
u=e&tw=45&ta=95&f=90&a=350&s=16.x&n=David&e=dretholtz@qedenv.com&p=Pr
oje&c=35,1930;40,8170;200,4860;405,41.8;445,297;
```

QED Air Stripper Model ver. c1.10 — 6/28/2007

Site Data

Name: David
e-mail: dretholtz@qedenv.com
Project: Project Identifier
Units: English
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Flow: 90 gpm
Water Temp: 45 F
Stripper: EZ-Tray 16.x - Click for details
Stripper Air Flow: 850 cfm
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tetrachloroethylene (PERC,PCE)	8170	0	< 1	100.000	< 1	100.000
c-1,2-dichloroethylene	4860	0	15.4	99.683	< 1	100.000
t-1,2-dichloroethylene	41.8	0	< 1	100.000	< 1	100.000
vinyl chloride (chloroethylene)	297	0	< 1	100.000	< 1	100.000

Air Results

Contaminant	4-Tray (ppmV)	4-Tray (lb/hr)	6-Tray (ppmV)	6-Tray (lb/hr)
trichloroethylene (TCE)	5.3164	0.08692	5.3195	0.08697
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Contact Us

Fill out your contact and project information and click Send to have a QED Treatment application specialist contact you.

Name - David

Company - Company

Phone - Phone **Fax -** Fax

e-mail - dretholtz@qedenv.com **Project -** Project Identifier

Application Notes

Send Reset

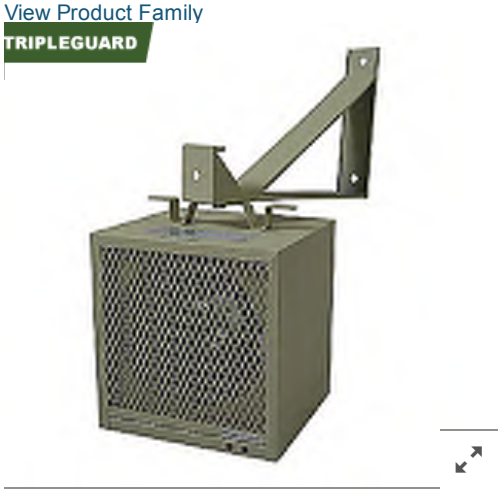
Save Data

Use the following URL to reconstruct your data form for future remodeling with changes. This URL can be saved in any text file for record keeping and later retrieval. This run's URL:

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http://www.qedenv.com/cgi-bin/remodel.pl?
u=e&tw=45&ta=95&f=90&a=350&s=16.x&n=David&e=dretholtz@qedenv.com&p=Pr
oje&c=35,1930;40,8170;200,4860;405,41.8;445,297;
```



Heater



How can we improve our **Product Images**?

Compare

TPI CORP.

Electric Utility Heater, Voltage 240/208, kW 4.8, BtuH 15,086

Price
$301.39 / each

Deliver one time only

Auto-Reorder Every 1 Month

1 Add to Cart

+Add to list

Availability for Qty 1 Go

Shipping **Pickup**

Expected to arrive **Thu. Jan 28**.

Ship to: **12020** (Change)

Add **Repair & Replacement Coverage** for **$75.95 each.**

Be the first to write a review | **Ask & Answer**

Item # **31XL70** Mfr. Model # **HF5848TC** UNSPSC # **40101819**

Catalog Page # **N/A** Shipping Weight **18.1 lbs.**

Country of Origin **China** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

Product Details

Portable heater comes with a manual reset and is ideal for residential garage and workshop areas.

Technical Spec

Item	
kW	
BtuH	
Voltage	
Hz	
Phase	
Amps AC	
Temp. Rise	**55 Degrees F**
Air Flow	**160 cfm**

	10-5/8"
	9-5/8"
	11"
Material	**Steel**
Finish	**Beige**
	Operates On 240 or 208V, 1-Phase, Can Operate As Portable Heater for Bench or Floor Operation, or Mount to The Wall or Ceiling with The Supplied Steel Bracket, Steel Housing with Beige Powder-Coated Finish, Includes Handle with Electric Cord Reel, Fan-Forced Steel Tubular Heating Element Design Generating As Much As 15,086 Btu, Includes 6 ft. Cord with Grounded Plug, Built-In Thermostat, with Automatic Thermal Limit Cut-Out Safety Device, Power-On Indicator and Overheat Pilot Lights, NEMA Plug Configuration (#6-30P)
Includes	**Wall/Ceiling Mounting Bracket, Cord, Thermostat and Power-on Light, and Thermal Limit**
Manufacturers Warranty Length	**1 yr.**

Not today Please don't invite me again

Appendix H

2016 ENGINEERING CONTROLS/ INSTITUTIONAL CONTROLS PLAN

Brewster Village Well Field
Site No. 3-40-012

Village of Brewster
Putnam County, New York

Prepared for:
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7017

Prepared by:
Camp Dresser McKee & Smith
11 British American Boulevard
Suite 200
Latham, NY 12110

September 2016

CDM Smith

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Section 1
Introduction

1.1 General

Remedial activities that have been completed and are currently ongoing at the Site were and are being conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC)-approved remedial design for Brewster Well Field, dated November 2007, and the Record of Decision (ROD), dated September 1986, as well as the Explanation of Significant Differences (ESD) issued by the United States Environmental Protection Agency (EPA) in October 2009. The remedial goals set forth in the ROD are to provide a safe, reliable water supply, meeting EPA standards, to the Village of Brewster; to contain the plume of contamination to mitigate further contamination of public water supplies; and to restore groundwater quality at and in the vicinity of the Brewster Village Well Field to acceptable levels in order to meet NYS groundwater standards.

Since contaminated groundwater still exists beneath the Site, Engineering and Institutional Controls (EC/ICs) are required to protect human health and the environment. This EC/IC Plan describes the procedures for the implementation and management of all EC/ICs at the Site.

1.2 Purpose

The purpose of this EC/IC is to provide:

- A description of all EC/ICs on the Site;
- The basic operation and intended role of each implemented EC/IC;
- A description of the key components of the ICs created as stated in the ESD;
- A description of the features that should be evaluated during each periodic inspection and compliance certification period;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of an Excavation Plan for the safe handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site;
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC; and
- A description of the reporting requirements for these controls.

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Section 2
Engineering Controls

2.1 Engineering Control Systems

2.1.1 Groundwater Treatment System at Brewster Village Well Field

Under a cooperative agreement with the EPA Office of Research and Development, a groundwater treatment system (GWTS) consisting of an on-site packed air stripper was installed in 1984 to provide treatment of the Village's water supply to meet or exceed applicable or relevant and appropriate standards. The air stripper is located north of the East Branch of the Croton River at the Village's well field. It has been concluded that treatment of existing source areas is the most promising of the alternatives for solving existing contamination problems. Based on trends, it is believed that the well field has reached a steady state condition, whereby contamination levels are not expected to increase at the well field in the future and are expected to decrease.

2.1.2 On-Site Groundwater Treatment System

The current GWTS at the Site was installed in 2007 by Aztech and is located to the east of the Brewster Subaru (formerly Smith Cairns Subaru/Jeep dealership) as shown on Figure 2. The GWTS consists of three extraction wells (EW-5, EW-6 and EW-7) located in front of Brewster Subaru and a shallow tray air stripper located within a trailer further east of the dealership. In the current system, one air blower provides the air stream to the air stripper and the three individual well pumps provide the combined influent to the system. The effluent line flows by gravity to the nearby stormwater swale that discharges to the Croton River.

The GWTS contains and treats the volatile organic compound (VOC) plume coming from under the Brewster Subaru building, the former location of the Alben Dry Cleaners that was the source of the contamination. This air stripper and extraction wells have been in operation since February 2008. Weekly monitoring of system parameters and monthly sampling of the GWTS is being conducted by Aztech. Samples are collected monthly from each extraction well, the combined influent, and the treated effluent.

In August 2008, Aztech installed a variable frequency drive on the blower motor and a ProControl system on the Product Level Control (PLC) so that the treatment system could be remotely monitored. The ProControl system began failing to send fax reports in September 2014. The issue was rectified and reports were received between May 1 and June 21, 2015. The fax reports have failed from June 21, 2015 through January 2016.

Flow meter paddle wheels have been replaced on EW-6 due to wear and fouling with iron. Reducing the flow in EW-6 by closing down the valve only increases the amount of iron fouling. Monitoring well EW-6 was abandoned and replaced in June 2013. The new extraction well was installed to 35 feet below ground surface (ft bgs) and construction of 6-inch-diameter stainless steel casing and screen to prevent corrosion. A problem with the electrical conduit prevented bringing the well on-line within the GTWS until April 2014. The level transducer in EW-6 was

replaced on November 5, 2015. New, heavier-insulated wiring was pulled through existing conduit on November 16, 2015 to fix electrical issues.

The wiring was pulled from the conduit and replaced for EW-5 and EW-7 on October 2, 2015. The system continues to experience shut downs due to inclement weather.

2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, the remedial processes would be considered to be completed when monitoring indicates that the remedy has achieved the remedial action objectives identified in the ROD. However, the specific determination of when the following remedial processes are complete will be made in compliance with Section 6.4 Remedial Process Closure Requirements of NYSDEC Technical Guidance for Site Investigation and Remediation (NSYDEC DER-10 Section 6.4).

2.2.1 Groundwater Treatment System at Brewster Village Well Field

The operation of the GWTS at the Brewster Village well field will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the air stripper system is no longer required, a proposal to discontinue the system will be submitted by the property owner. O&M of the groundwater treatment system shall continue until monitoring indicates that the remedy has fully achieved the remedial action objectives identified by the OU1 ROD. This assessment will be based in part on post-remediation contaminant levels in groundwater collected from monitoring wells located throughout the Site and groundwater concentrations at the well field.

2.2.2 On-Site Groundwater Treatment System

The on-site GWTS operation will continue until prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the remedial objectives have been achieved and the GWTS is no longer required, a proposal to discontinue the system will be submitted to the NYSDEC. O&M of the groundwater treatment system shall continue until monitoring indicates that the remedy has fully achieved the remedial action objectives identified by the OU1 ROD. This assessment will be based in part on post-remediation contaminant levels in groundwater collected from the treatment system and monitoring wells located throughout the Site. Systems will remain in place and operational until permission to discontinue their use is granted in writing by the NYSDEC.

Section 3
Institutional Controls

A series of ICs is required by the ESD to prevent future public exposure to the remaining contamination. Adherence to these ICs on the Site is required by the ESD and will be implemented under this EC/IC. ICs may not be discontinued without an amendment to or extinguishment of the ESD. The ICs that apply to the Controlled Property are:

- New wells installed in Putnam County require a permit from the Putnam County Department of Health, which prevents the installation of new wells in the contaminated plume for the purpose of drinking water supply;
- And the local planning board shall contact the EPA prior to the approval of any construction on the Brewster Subaru property or any planned development in the general vicinity of the Site.

Section 4
Excavation Work Plan

The site remedy allows for commercial use. Any future intrusive work that will penetrate, encounter or disturb the remaining contamination will be performed in compliance with this Excavation Work Plan (EWP). Intrusive construction work must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared by the contractor.

The parties preparing the remedial documents submitted to the NYSDEC, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations such as building foundations and footings.

The Site owner will ensure that Site development activities will not interfere with, or otherwise impair or compromise, remedial activities ongoing in this EC/IC. Mechanical processing of historical fill and contaminated soil on-site is prohibited.

4.1 Notification

At least 10 days prior to the start of any activity that is reasonably anticipated to encounter remaining contamination, the Site owner or their representative will notify the NYSDEC, who will notify the EPA of the plans. Currently, this notification will be made to:

Mr. Carl Hoffman, Project Manager
NYSDEC
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7017

This notification will include:

- A detailed description of the work to be performed, including the location and extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover, or any work that may impact an engineering control;
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A statement that the work will be performed in compliance with this EWP and Occupational Safety and Health Standards for Hazardous Waste Operations and Emergency Response (29 CFR 1910.120);

- A copy of the contractor's HASP, in electronic format;
- Identification of disposal facilities for potential waste streams;
- Identification of sources of any anticipated backfill, along with all required chemical testing results;
- A groundwater handling plan for treatment and discharge of groundwater.

4.2 Soil Screening Methods

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is executed and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

4.3 Stockpile Methods

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points. Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and will be available for inspection by the NYSDEC.

4.4 Materials Excavation and Load Out

A qualified environmental professional or an individual under their supervision will oversee all invasive work and the excavation and load-out of all excavated material. The owner of the property and its contractors are solely responsible for the safe execution of all invasive and other work performed under this EWP.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this EWP is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, and local requirements (and all other applicable transportation requirements). Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived

from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

4.5 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including New York Codes, Rules and Regulations, Title 6 Department of Environmental Conservation, Part 364 Waste Transporter Permits (6 NYCRR Part 364). Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes will be identified that will: (a) limit transport through residential areas and past sensitive sites; (b) use city-mapped truck routes; (c) minimize off-site queuing of trucks entering the facility; (d) limit total distance to major highways; and (e) promote safety in access to highways. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during site remediation and development.

4.6 Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed of in accordance with all local, State (including New York Codes, Rules and Regulations, Title 6 Department of Environmental Conservation, Part 360 Solid Waste Management Facilities ((NYCRR Part 360)) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this Site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the PRR. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at a minimum, as a Municipal Solid Waste pursuant to 6 NYCRR Part 360 General Provisions Definitions (6NYCRR Part 360-1.2). Material that does not meet the lower of the Soil Cleanup Guidance values (SCGs) for residential use or groundwater protection will not be taken to a NYS recycling facility per 6NYCRR Part 360 Construction and Demolition Debris Processing Facilities (6NYCRR Part 360-16) without a beneficial use determination issued by the NYSDEC.

4.7 Fluids Management

All liquids to be removed from the Site, including excavation dewatering, will be handled, transported and disposed of in accordance with applicable local, State, and Federal regulations.

4.8 Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the qualified environmental professional and will be in compliance with applicable regulations (6NYCRR 375-6.7(d)) and guidance (DER-10) prior to receipt at the Site. Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site. All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Soils that meet 'exempt' fill requirements under 6NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by the NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

4.9 Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition. Sampling will be performed on product, sediment and surrounding soils, etc., as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes ((TAL) metals; (TCL) volatiles and semi-volatiles, TCL pesticides and Polychlorinated Biphenyls (PCBs)), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in daily and periodic electronic media reports.

4.10 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.

Section 5

Inspections and Notifications

5.1 Periodic Inspections

Periodic inspections of all remedial components installed at the Site will be conducted monthly by Aztech. A comprehensive site-wide inspection will be conducted annually, regardless of the frequency of the PRR. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this EC/IC and the ESD;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date;
- And changes, or needed changes, to the remedial or monitoring system.

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the Site will be conducted within five (5) days of the event to verify the effectiveness of the EC/ICs implemented at the Site by a qualified environmental professional as determined by the NYSDEC.

5.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the ROD, 6NYCRR Part 375, and/or Environmental Conservation Law;
- 10-day advance notice of any proposed ground-intrusive activities;
- Notice within 48-hours of any damage or defect to the foundations of structures that reduces or has the potential to reduce the effectiveness of other ECs and likewise any action to be taken to mitigate the damage or defect;
- Notice within 48-hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public;

- And follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Notifications will be made to:

Mr. Carl Hoffman, Project Manager
NYSDEC
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7017

In the event that the NYSDEC develops a centralized notification system, that system will be used instead.

5.2 Evaluation and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Site Monitoring Plan (SMP) is being implemented;
- Operation and Maintenance (O&M) activities are being conducted properly and as outlined in the SMP and EC/IC;
- And the site remedy continues to be protective of public health and the environment and is performing as designed.

Section 6

Reporting Plan

6.1 Periodic Review Report

A PRR is submitted annually to the NYSDEC Central Office in Albany, New York. The report is submitted within 45 days of the end of each certification period. The PRR is prepared in accordance with NYSDEC DER-10. The frequency of submittal of the PRR may be modified with the approval of the NYSDEC.

Other reports, such as groundwater analytical data and O&M logs, will be submitted monthly for the year, and as determined by NYSDEC thereafter. Media sampling results will also be incorporated into the PRR. The report will include:

- EC/IC certification;
- All applicable inspection forms and other records generated for the Site during the reporting period as specified in the SMP and O&M Manual;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data sufficient for the NYSDEC to evaluate contaminant concentration trends;
- Results of all laboratory analyses and the required data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A performance summary for all treatment systems at the Site during the calendar year, including information such as:
    - The number of days the system was run for the reporting period;
    - The average, high, and low flows per day;
    - The contaminant mass removed;
    - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
    - A description of the resolution of performance problems;
    - A summary of the performance and/or effectiveness monitoring; and

- Comments, conclusions, and recommendations based on data evaluation.

- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific ROD;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the SMP;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan;
  - And the overall performance and effectiveness of the remedy.

6.2 Certification of Engineering and Institutional Controls

Inspection of the EC/ICs will occur at the frequency as requested by the NYSDEC Project Manager. After the last inspection of the reporting period, a Professional Engineer licensed to practice in NYS will prepare a PRR which certifies that:

- On-site ECs/ICs are unchanged from the previous certification;
- They remain in-place and are effective;
- The systems are performing as designed;
- Nothing has occurred that would impair the ability of the controls to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with the O&M plan for such controls;
- Access is available to the Site by the NYSDEC and the New York State Department of Health (NYSDOH) to evaluate continued maintenance of such controls;
- And Site use is compliant with the ESD.

Export Data

Import Sys Data

Periodic Operations Visit Form

☐ Check box if new sys info

System ID: **SDS-1**

Date of Visit: **May 3, 2018**

Owner Name: Dwight McGuirk

Date Installed:

System Address: 1021 NY-22

Telephone:

City: Brewster Zip: 10509

Alt. Telephone:

Performed By: Alison Rielly and Colleen Meehan

Site No: 0012

Company: CDM Smith

Site Name: Brewster Well Field

EXTERIOR

Fan Operation Confirmation

	Fan #1	Fan #2	Fan #3
Fan Model No(s).	Radon Away HS-200		
Is Fan Operating (arrival)?	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No
Confirmation Method	Sound		
Is Fan Operating (departure)?	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No

Requested to inspect interior system components? ○ Yes ○ No

If yes, when and by whom? Nelson DeMello Date: April 30, 2018

INTERIOR

			Notes
Structural Review			
Change in building footprint since last inspection?	○ Yes	○ No	
Basement occupied (>4 hrs per day)?	○ Yes	○ No	No basement
Heating/ventilation system modifications?	○ Yes	○ No	
Crawlspace inspected?	○ Yes	○ No	No crawlspace
Large cracks in floor or near sumps?	○ Yes	○ No	
Wall penetrations or cracks noted?	○ Yes	○ No	
Piping, Slab & Wall			
Are system suction points sealed?	○ Yes	○ No	
Is piping system in need of repair?	○ Yes	○ No	
Miscellaneous			
Are manometer levels equal?	○ Yes	○ No	
Are system labels accurate and applied correctly?	○ Yes	○ No	

Maintenance completed (check all that apply): ☐ Replace fan ☐ Seal pipe ☐ Electrical ☐ Other

Describe repairs made and any proposed actions requiring a subsequent visit (if necessary):

Print Form

Submit by Email

Export Data

Import Sys Data

Periodic Operations Visit Form

☐ Check box if new sys info

System ID: **SDS-2**

Date of Visit: **May 3, 2018**

Owner Name: Dwight McGuirk

Date Installed:

System Address: 1021 NY-22

Telephone:

City: Brewster Zip: 10509

Alt. Telephone:

Performed By: Alison Rielly and Colleen Meehan

Site No: 0012

Company: CDM Smith

Site Name: Brewster Well Field

EXTERIOR

Fan Operation Confirmation

	Fan #1	Fan #2	Fan #3
Fan Model No(s).	Radon Away HS-200		
Is Fan Operating (arrival)?	○ Yes ◉ No	○ Yes ◉ No	○ Yes ◉ No
Confirmation Method	Sound		
Is Fan Operating (departure)?	○ Yes ◉ No	○ Yes ◉ No	○ Yes ◉ No

Requested to inspect interior system components? ○ Yes ◉ No

If yes, when and by whom? Nelson DeMello Date: April 30, 2018

INTERIOR

			Notes
Structural Review			
Change in building footprint since last inspection?	○ Yes	◉ No	
Basement occupied (>4 hrs per day)?	○ Yes	◉ No	No basement
Heating/ventilation system modifications?	○ Yes	◉ No	
Crawlspace inspected?	○ Yes	◉ No	No crawlspace
Large cracks in floor or near sumps?	◉ Yes	○ No	
Wall penetrations or cracks noted?	○ Yes	◉ No	
Piping, Slab & Wall			
Are system suction points sealed?	○ Yes	◉ No	
Is piping system in need of repair?	○ Yes	◉ No	
Miscellaneous			
Are manometer levels equal?	○ Yes	◉ No	
Are system labels accurate and applied correctly?	○ Yes	◉ No	

Maintenance completed (check all that apply): ☐ Replace fan ☐ Seal pipe ☐ Electrical ☐ Other

Describe repairs made and any proposed actions requiring a subsequent visit (if necessary):

Print Form

Submit by Email

Export Data

Import Sys Data

Periodic Operations Visit Form

☐ Check box if new sys info

System ID: **SDS-3**

Date of Visit: **May 3, 2018**

Owner Name: Dwight McGuirk

Date Installed:

System Address: 1021 NY-22

Telephone:

City: Brewster Zip: 10509

Alt. Telephone:

Performed By: Alison Rielly and Colleen Meehan

Site No: 0012

Company: CDM Smith

Site Name: Brewster Well Field

EXTERIOR

Fan Operation Confirmation

	Fan #1	Fan #2	Fan #3
Fan Model No(s).	Radon Away HS-200		
Is Fan Operating (arrival)?	○ Yes ◉ No	○ Yes ◉ No	○ Yes ◉ No
Confirmation Method	Sound		
Is Fan Operating (departure)?	○ Yes ◉ No	○ Yes ◉ No	○ Yes ◉ No

Requested to inspect interior system components? ○ Yes ◉ No

If yes, when and by whom? Nelson DeMello Date: April 30, 2018

INTERIOR

			Notes
Structural Review			
Change in building footprint since last inspection?	○ Yes	◉ No	
Basement occupied (>4 hrs per day)?	○ Yes	◉ No	No basement
Heating/ventilation system modifications?	○ Yes	◉ No	
Crawlspace inspected?	○ Yes	◉ No	No crawlspace
Large cracks in floor or near sumps?	◉ Yes	○ No	
Wall penetrations or cracks noted?	○ Yes	◉ No	
Piping, Slab & Wall			
Are system suction points sealed?	○ Yes	◉ No	
Is piping system in need of repair?	○ Yes	◉ No	
Miscellaneous			
Are manometer levels equal?	○ Yes	◉ No	
Are system labels accurate and applied correctly?	○ Yes	◉ No	

Maintenance completed (check all that apply): ☐ Replace fan ☐ Seal pipe ☐ Electrical ☐ Other

Describe repairs made and any proposed actions requiring a subsequent visit (if necessary):

Print Form

Submit by Email

Export Data

Import Sys Data

Periodic Operations Visit Form

☐ Check box if new sys info

System ID: **SDS-4**

Date of Visit: **May 3, 2018**

Owner Name: Dwight McGuirk

Date Installed:

System Address: 1021 NY-22

Telephone:

City: Brewster Zip: 10509

Alt. Telephone:

Performed By: Alison Rielly and Colleen Meehan

Site No: 0012

Company: CDM Smith

Site Name: Brewster Well Field

EXTERIOR

Fan Operation Confirmation

	Fan #1	Fan #2	Fan #3
Fan Model No(s).	Radon Away HS-200		
Is Fan Operating (arrival)?	○ Yes ◉ No	○ Yes ◉ No	○ Yes ◉ No
Confirmation Method	Sound		
Is Fan Operating (departure)?	○ Yes ◉ No	○ Yes ◉ No	○ Yes ◉ No

Requested to inspect interior system components? ○ Yes ◉ No

If yes, when and by whom? Nelson DeMello Date: April 30, 2018

INTERIOR

			Notes
Structural Review			
Change in building footprint since last inspection?	○ Yes	◉ No	
Basement occupied (>4 hrs per day)?	○ Yes	◉ No	No basement
Heating/ventilation system modifications?	○ Yes	◉ No	
Crawlspace inspected?	○ Yes	◉ No	No crawlspace
Large cracks in floor or near sumps?	◉ Yes	○ No	
Wall penetrations or cracks noted?	○ Yes	◉ No	
Piping, Slab & Wall			
Are system suction points sealed?	○ Yes	◉ No	
Is piping system in need of repair?	○ Yes	◉ No	
Miscellaneous			
Are manometer levels equal?	○ Yes	◉ No	
Are system labels accurate and applied correctly?	○ Yes	◉ No	

Maintenance completed (check all that apply): ☐ Replace fan ☐ Seal pipe ☐ Electrical ☐ Other

Describe repairs made and any proposed actions requiring a subsequent visit (if necessary):

Print Form

Submit by Email

Export Data

Import Sys Data

Periodic Operations Visit Form

☐ Check box if new sys info

System ID: **SDS-5**

Date of Visit: **May 3, 2018**

Owner Name: Dwight McGuirk

Date Installed:

System Address: 1021 NY-22

Telephone:

City: Brewster Zip: 10509

Alt. Telephone:

Performed By: Alison Rielly and Colleen Meehan

Site No: 0012

Company: CDM Smith

Site Name: Brewster Well Field

EXTERIOR

Fan Operation Confirmation

	Fan #1	Fan #2	Fan #3
Fan Model No(s).	Radon Away HS-200		
Is Fan Operating (arrival)?	○ Yes ◉ No	○ Yes ◉ No	○ Yes ◉ No
Confirmation Method	Sound		
Is Fan Operating (departure)?	○ Yes ◉ No	○ Yes ◉ No	○ Yes ◉ No

Requested to inspect interior system components? ○ Yes ◉ No

If yes, when and by whom? Nelson DeMello Date: April 30, 2018

INTERIOR

			Notes
Structural Review			
Change in building footprint since last inspection?	○ Yes	◉ No	
Basement occupied (>4 hrs per day)?	○ Yes	◉ No	No basement
Heating/ventilation system modifications?	○ Yes	◉ No	
Crawlspace inspected?	○ Yes	◉ No	No crawlspace
Large cracks in floor or near sumps?	◉ Yes	○ No	
Wall penetrations or cracks noted?	○ Yes	◉ No	
Piping, Slab & Wall			
Are system suction points sealed?	○ Yes	◉ No	
Is piping system in need of repair?	○ Yes	◉ No	
Miscellaneous			
Are manometer levels equal?	○ Yes	◉ No	
Are system labels accurate and applied correctly?	○ Yes	◉ No	

Maintenance completed (check all that apply): ☐ Replace fan ☐ Seal pipe ☐ Electrical ☐ Other

Describe repairs made and any proposed actions requiring a subsequent visit (if necessary):

Print Form

Submit by Email

5/2/18

JC Meehan + A. Rielly on site (1 of 2 field books)
Weather 64° and Clear
710 MOB TO DGC1 + 12
0800 Begin pumping DGC-IT, purging to stabilize

	+/- 10%	+/- 0.1	+/- 10	+/- 3%	+/- 10%	+/- 10
Time	Temp °C	pH	Redox (mV)	Spec Cond (mS/cm)	Turbidity NTU	DO mg/L
815	10.75	7.84	76	1.53	98.0	14.32
820	10.87	7.95	126	1.58	86.1	10.52
826	11.06	7.17	146	to 2.20	79.5	0.0
830	11.12	6.76	119	2.55	75.6	0.0
835	11.16	6.54	88	2.79	70.1	0.0
840	11.22	6.44	80	2.88	63.1	0
845	11.25	6.41	81	2.89	62.4	0

845 Sampled DGC-IT-20180502 (VOCs)
0900 MOB to TH-11A
910 Begin purging TH-11A, DTW = 1.65' bgs

Time	Temp	pH	Redox	Spec Cond	Turbidity	DO
911	10.10	7.39	115	0.39	11.4	0.0
915	10.37	6.99	97	0.379	22.8	0.00
920	10.51	6.69	-63	0.438	354	0.0
925	10.60	6.62	-77	0.449	187	0.0
930	10.66	6.60	-81	0.452	147	0.0
935	10.82	6.60	-85	0.453	117	0.0
940	10.83	6.61	-88	0.455	91.2	0.0

Time	Temp	pH	Redox	Spec. Cond.	Turb	DO
945	11.01	6.62	-90	0.452	65.3	0
950	11.06	6.65	-92	0.452	54.6	0
955	11.57	6.70	-97	0.449	51.5	0

1000 Sample TH-11A-20180502
1015 MOB CDM-2
DTW - 18.8'
1018 Begin purge CDM-2

Time	Temp	pH	Redox	Spec Cond	Turb	DO
1020	12.66	7.09	13	1.01	28.7	2.12
1025	12.81	7.10	13	1.03	18.2	0
1030	13.30	7.13	18	1.03	16.0	0
1035	15.08	7.15	24	1.01	10.2	0
1040	15.50	7.16	32	1.06	16.8	0
1045	13.87	7.17	40	1.04	12.7	0
1050	14.07	7.17	42	1.03	12.7	0

1055 Sample CDM-2-20180502
1055 MOB CDM-3 DTW - 21.0'
1058 Begin purging CDM-3

Time	Temp	pH	Redox	Spec Cond	Turb	DO
1105	13.25	7.30	75	0.911	110	0
1110	13.11	7.22	70	0.930	88.9	0
1115	12.93	7.17	64	0.938	46.1	0
1120	12.92	7.16	61	0.937	31.1	0

Rite in the Rain

Time	Temp	pH	Redox	Spec. Cond	Turb	DO
1125	13.14	7.16	58	0.934	25.2	0
1130	13.15	7.16	57	0.939	23.4	0

~~1205~~ 1130 Sample GDM-3-20180502

1200 MoB to DGC-6I

1220 Had problems getting pump started. Begin purging DGC-6I

Time	Temp	pH	Redox	Cond	Turb	DO
1225	24.62	6.98	105	1.54	45.7	1.72
1230	22.74	6.90	105	1.61	41.9	0
1235	Pump turned off - restarted 19.73	6.82	105	1.71	37.4	0
1240	17.56	6.81	104	1.77	33.6	0
1245	16.61	6.80	103	1.78	20.8	0
1250	16.11	6.79	102	1.74	12.6	0
1255	17.02	6.78	101	1.70	9.3	0
1300	17.65	6.78	100	1.70	8.2	0

1300 Sampled DGC-6I-20180502

1310 MoB to DGC-7I

1320 Begin purging DGC-7I

Time	Temp	pH	Redox	Cond.	Turb	DO
1325	16.69	7.23	99	1.37	7.9	4.47
1330	13.41	7.00	98	1.46	3.9	0.0
1335	12.63	6.95	94	1.47	3.5	0.0
1340	12.28	6.92	968	1.47	3.5	0
1343	12.43	6.95	~~943~~	1.48	2.6	0

Time	Temp	pH	Redox	Cond	Turb	DO
1350	12.83	6.92	-24	1.48	0.6	0
1355	13.51	6.83	-34	1.48	0.1	0

1400 Sample DGC-7I-20180502

1420 Collected ~~Equip~~ Blank-20180502

1430 CM & AR begin prepping samples, COC and ice.

1445 MoB to ERT-EW 5, 6, and 7 (inside trailer.)

1500 Collected EW-6 & EW-7

1505 Collected EW-5, ~~Filed~~ Field DUP and collected parameters for EW-5

1520 Had problems closing door to sheet.

1530 Door closed and locked CMeeks & A. Reilly offsite.

CMeeks 5/2/18

Rite in the Rain

5/3/18

0700 CM + AR onsite
MOB to ERT-31, ERT-25, ERT-21 area in Subaru dealership

0730 MOB to ERT-6I

0740 Begin purging ERT-6I

Time	Temp	pH	Redox	Cond	TURB	DO
745	12.83	7.25	57	1.49	444	10.16
750	12.78	6.85	64	1.76	423	0.0
755	12.26	6.75	66	1.85	414	0.0
800	11.87	6.70	66	1.91	368	0.0
805	11.84	6.64	68	1.95	38.0	0.0
810	11.88	6.61	68	1.97	39.8	0.0

810 collected sample ERT-6I-20180503

815 MOB TO ERT-1S

0830 Begin purging ERT-1S

Time	Temp	pH	Redox	Cond	TURB	DO
840	10.75	6.53	-73	1.77	113	0
845	10.29	6.44	-75	1.77	26.7	0
850	10.25	6.41	-77	1.78	14.2	0
855	10.29	6.40	-79	1.77	20.3	0
900	10.22	6.39	-80	1.77	30.6	0
905	10.22	6.39	-81	1.77	17.9	0
910	10.26	6.39	-82	1.77	18.5	0

910 collected ERT-1S-20180503

915 Collected FD-02-20180503

5/3/18

920 MOB TO DGC-3I

935 Begin purging DGC-3I

Time	Temp	pH	Redox	Cond	TURB	DO
935	14.51	6.95	-37	1.99	70.9	11.10
940	11.55	6.94	-11	2.37	70.1	0
945	11.70	6.74	10	2.82	41.5	0
950	11.84	6.71	19	2.85	189	0
955	11.84	6.69	26	2.86	13.4	0
1000	12.14	6.68	29	2.84	10.1	0
1005	13.12	6.67	35	2.82	6.1	0
1010	13.49	6.67	38	2.80	5.9	0

1010 collect DGC-3I-20180503

1020 Rancat finishing for last well GMS-02
This well was added late to sampling plan b/c ERT-8I was not accessible due to construction. Spoke w/ K. Reepmyer and decided to not sample GMS-02.

1030 collect FieldBlank-2-20180503

1100 Pack samples for TA & drop off

1110 Walk & inspect system at Subaru.

1130 offsite.

5/3/18

Rite in the Rain

5/1/18

5/1/18 BREWSTER ANNUAL GW SAMPLING

10:00 A. Reilly and C. Meehan (CDM Smith) on site.

Weather: Sunny 65° F

Collect gw elevations

LOCATION	PID	DTW	DTB	
DGC-18I	0.0	7.0	29.98	
DGC-18S	cannot open, rusted bolt through lock hole			
DGC-14D	0.0	1.5	86.1	
DGC-14I	0.0	8.55	24.50	
DGC-14S	0.0	8.30	12.90	
DGC-12IA	0.0	6.65	43.40	
DGC-12S	0.0	5.73	6.35	(blocked?)
DGC-1I	0.0	5.50	43.28	← concrete pad cracking to the of well
DGC-1D	0.0	5.25	107.75	
DGC-1S	0.0	5.85	10.4	outer cap broken
DGC-13I	0.0	3.28	98.9	
DGC-13S	0.0	4.90	10.25	
TH-11B	0.0	3.95	9.5	stick up ~2' AGS
TH-11A	0.0	1.54	24.2	~ 2" AGS
TH-9	0.0	2.85	27.2	
DGC-11I	0.0	inner casing bent - no reading		
DGC-11S	0.0	inner casing bent - no reading		
TH-6	0.0	5.65	23.45	bent (pic)
DGC-2I	0.0	7.20	20.10	wasps
DGC-2S	0.0	inner casing broken - no reading		

5/1/18

LOCATION	PID	DTW	DTB	
DGC-2D	0.0	4.50	42.20	
CDM-1	0.0	11.20	41.45	
CDM-2	0.0	18.70	49.85	
TH-7	0.0	6.30	28.70	
CDM-3	0.0	20.92	46.90	
DGC-6I	0.0	6.50	40.40	
DGC-17I	0.0	4.10	35.25	
DGC-7S	0.0	3.05	10.15	
DGC-7I	0.0	2.60	40.80	
DGC-9I	0.0	2.15	45.6	no inner cap
DGC-9S	0.0	2.45	10.45	no outer cap
DGC-8S	0.0	3.75	10.30	
DGC-8I	0.0	4.05	76.25	
DGC-16S	0.0	7.73	9.70	cap/collar loose
DGC-16I	0.0	8.0	38.30	
ERT-8S	0.0	5.80	15.05	cover broken
ERT 8I/8D	under equipment, no access, pic			
GMS-02	0.0	7.55	35.60	
ERT-9D	0.0	7.55	41.8	
ERT-9I	0.0	7.45	28.15	cap cracked
DGC-19I	0.0	5.65	22.0	
DGC-19S	287.5	5.58	10.6	odor
DGC-19D	0.0	5.85	34.5	
DGC-3I	0.0	4.65	23.40	

5/2/18

LOCATION	PID	DTW	DTB
PGC-3S	0.0	3.87	10.35
ERT-10D/10I	demolished, construction behind bldg		
GMS-04	0.0	~~5.12~~ 5.15	29.3
ERT-2I	—	6.0	33.7
ERT-2S	—	5.95	~~6.4~~ 6.4
ERT-3I	0.0	6.58	28.80
ERT-1S	0.0	5.64	13.84
ERT-1I	0.0	5.9	33.9
ERT-5I	0.0	6.0	33.20
ERT-4I	0.0	9.1	20.50
ERT-6I	0.0	7.2	26.85
ERT-7I	0.0	7.4	26.40

quonset no cover full of debris

TH-13 Can't locate, may have been hit w/plow

1640 Depart site

5/1/18

5/2/18

700 A. Reilly, C. Meehan on site

Weather: sunny 55°F

750 Set up at PGC-12IA DTW 6.65'

TIME	PH	TEMP(C)	ORP(mV)	cond(mS/cm)	TURB(NTU)	DO mg/L
803	7.07	10.48	78	3.60	51.6	5.26
808	6.91	10.51	78	3.62	110	1.16
813	6.89	10.54	76	3.65	66.7	0.00
818	6.92	10.63	67	3.66	24.0	0.00
821	6.93	10.68	57	3.65	14.1	0.00
824	6.94	10.71	50	3.65	10.8	0.00
827	6.95	10.74	40	3.64	7.9	0.00
830	6.96	10.75	41	3.63	7.4	0.0
833	6.96	10.76	42	3.65	7.2	0.0

835 Collect PGC-12IA-20180502

900 Set up at TH-6 DTW 5.7'

TIME	PH	TEMP	ORP	COND	TURB	DO
905	7.12	11.31	+78	0.360	332	0.00
910	6.94	11.06	+56	0.361	101	0.00
915	6.72	10.90	-43	0.532	29.3	0.00
920	6.74	10.91	-46	0.806	15.5	0.0
925	6.76	11.01	-47	1.26	11.4	0.0
930	6.78	11.12	-47	1.38	14.1	0.0
933	6.76	11.07	-47	1.35	10.8	0.0
936	6.76	11.06	-46	1.36	10.1	0.0

940 Collect TH-6-20180502 + msd

5/2/18

1000 Set up at TH-7, DTW 6.30'

TIME	PH	TEMP	ORP	COND	TURB	DO
1007	7.24	12.44	-134	2.11	57.3	8.35
1012	7.23	11.85	-150	2.15	14.3	6.34
1017	7.26	11.88	-160	2.16	13.3	5.02
1022	7.26	12.12	-166	2.17	7.6	4.5)
1025	7.26	12.20	-167	2.19	5.4	4.33
1028	7.27	12.22	-168	2.20	7.1	3.96
1031	7.27	12.23	-168	2.19	6.3	3.93

1035 SAMPLE TH-7-20180502

1045 Offsite to get ice and garbage bags

1115 Construction vehicles blocking gate to well 6e16. Crew will move ASAP (welding)

1140 Set up at DGC-16I DTW 8.0

TIME	PH	TEMP	ORP	COND	TURB	DO
1155	7.86	15.76	24	3.35	58.7	14.74
1200	8.10	13.12	41	3.48	9.0	7.11
1205	8.11	13.04	48	3.48	5.6	5.46
1210	8.12	12.97	53	3.48	7.3	4.19
1215	7.53	13.14	-30	4.02	2.7	0.00
1220	7.36	13.13	-29	4.07	1.9	0.0
1225	7.34	13.19	-16	4.08	1.3	0.0
1228	7.35	13.16	-15	4.08	1.6	0.0

1230 Collect DGC-16I-20180502

5/2/18

1245 Set up at DGC-17I DTW: 4.1

TIME	PH	TEMP	ORP	COND	TURB	DO
1250	7.33	15.43	66	2.00	50.9	10.76
1255	7.04	14.11	66	2.09	28.7	4.55
1300	6.95	14.10	62	2.12	23.2	2.34
1305	6.99	14.19	60	2.12	14.6	0.44
1310	7.00	13.74	57	2.15	5.9	0.00
1315	7.02	13.58	50	2.16	7.2	0.00
1318	7.03	13.62	47	2.15	7.9	0.00

1320 Collect DGC-17I-20180502

1340 Set up at DGC-9I DTW 2.2 ft

TIME	PH	TEMP	ORP	COND	TURB	DO
1350	8.10	12.14	43	0.606	14.1	2.30
1355	7.42	11.63	58	1.70	2.7	0.00
1400	7.36	11.58	49	1.89	1.0	0.00
1405	7.35	11.52	48	1.90	1.9	0.00
1408	7.36	11.40	47	1.91	1.6	0.00
1411	7.36	11.36	46	1.91	1.4	0.00

1415 Collect DGC-9I-20180502

1500 Collect ERT-EW6 and ERT-EW7

1505 Collect ERT-EW5 + FD01-20180502

ERT-EW5- conductivity: 2.38 mS/cm

pH: 6.90, temp: 20.35°C, ORP -3.0 mV

turbidity: 0.0 NTU

1540 Offsite

5/3/18

7:00 A. Reilly and C. Meehan on site

Weather: sunny 65°F

730 SET up at GMS-04 DTW: 5.2 ft

TIME	PH	TEMP	ORP	COND	TURB	DO
740	8.89	13.41	44	0.328	174	10.1
745	8.11	13.36	27	1.86	152	4.31
750	8.03	13.73	-16	2.25	140	2.79
755	8.03	13.81	-47	2.37	138	1.50
800	8.03	13.76	-42	2.37	135	1.05
803	8.03	13.79	-41	2.41	128	0.59
807	8.03	13.81	-45	2.41	126	0.57

810 Collect GMS-04-20180503

820 Set up at DGC-14I DTW: 8.60'

TIME	PH	TEMP	ORP	COND	TURB	DO
830	8.26	15.20	126	2.08	56.1	1.30
835	7.43	14.94	141	2.79	49.0	0.00
840	7.44	15.06	131	2.81	37.9	0.00
845	7.46	15.32	119	2.81	36.5	0.00
850	7.45	15.51	114	2.81	34.7	0.00
853	7.45	15.55	110	2.80	32.7	0.00
856	7.46	15.57	108	2.80	30.9	0.00

900 Collect DGC-14I-20180503

907 Set up at DGC-18I DTW: 7.0 ft

Pulled two sets of tubing out of well rust colored/stained

5/3/18

TIME	PH	TEMP	ORP	COND	TURB	DO
912	7.46	11.37	-142	4.05	81.9	0.00
917	7.38	11.29	-145	3.93	63.6	0.00
922	7.36	11.22	-145	3.85	44.5	0.00
927	7.33	11.20	-142	3.77	31.1	0.00
932	7.32	11.18	-141	3.71	32.9	0.00
936	7.30	11.33	-141	3.71	29.0	0.00
939	7.30	11.22	-140	3.67	29.7	0.00
942	7.30	11.22	-139	3.63	29.1	0.00

945 Collect DGC-18I-20180503 + MS/MSD

1000 Set up at DGC-19I DTW: 5.85 ft

TIME	PH	TEMP	ORP	COND	TURB	DO
1015	7.36	15.44	-37	2.52	158	1.14
1020	7.33	14.62	-44	2.54	80.6	0.00
1026	7.34	14.59	-57	2.61	35.3	0.00
1031	7.34	14.48	-61	2.68	24.1	0.00
1036	7.35	14.43	-65	2.68	14.7	0.00
1039	7.33	14.76	-67	2.73	11.5	0.0
1042	7.34	15.10	-69	2.72	10.6	0.0

1045 Collect DGC-19I-20180503

1100 Pack coolers, organize samples

1115 Conduct SSOS inspection at Subaru Per dealership manager, no changes to HVAC system or footprint of bldg.

1145 Depart Brewster, A. Reilly to TA Albany to drop samples.

2013

2/6/18 Brewster Clearing
0830 E. Rosenzweig on site from CBM Smith to Clear access to on and off site wells.
- Weather: Clear ≈ 20°
915 - Donemic Consentino on site from the Village of Brewster.
- Walked over site to show existing well locations
- he said they are working to keep wells Accessable.
945 Donemic off Site
1145 Yonkers Construction Company using area under I-84 Bridge as a staging area for Construction on 684 Bridge
1630 Clearing Complete. off Site

2/6/18 E. Rosenzweig

11/6/18 PFAS - 1,4-Dioxane Mon

1000 E. Rosenzweig & Matt Renko on Site from OSM Smith to Collect Groundwater Samples for 1,4-Dioxane & PFAS.

- Weather: 45° Rain
- Domestic on Site With Putnam County Health department to Collect PFAS sample from The Water supply wells

Could Not locate the DGC-5 cluster or the DGC-15 Cluster

1020 Setup on DGC-1D

DTW: 3.89

Time	temp	ORP mV	cm	turb	DO mg/L	Cond
1040	13.33	152		43.6	19.35	-86
1045	13.26	139		33.6	8.93	-112
1050	13.37	134		28.1	3.75	0.427
1055	13.37	134		20.1	3.15	0.427
1100	13.33	139		14.6	2.43	0.426
1105	13.29	135		12.9	2.19	0.425
1110	13.16	134		11.7	2.08	0.426

E Rosenzweig 11/6/18

11/6/18 PFAS/1,4-Dioxane Mon

Collected Sample @ 1115

1120 Set up on DGC-15

DTW 4.42

Time	temp	pH	ORP	ms/cm	turb	DO
1120	13.09	7.80	157	0.286	19.9	11.49
1125	13.21	7.15	182	0.284	5.0	10.73
1130	13.17	6.92	197	0.282	3.8	9.86
1135	13.17	6.81	205	0.277	2.7	9.10
1140	13.26	6.67	212	0.267	2.4	8.91
1145	13.28	6.56	218	0.256	2.2	8.87

Sample time 1150

1230 Set up on DGC-13S

DTW: 2.81

Time	temp	pH	ORP	ms/cm	Turb	DO
1245	14.48	6.63	205	0.352	9.2	11.11
1250	13.79	6.20	226	0.364	8.9	4.47
1255	13.78	6.09	232	0.369	2.0	3.66
1300	13.79	6.17	228	0.371	2.6	3.32
1305	13.79	6.12	227	0.369	2.3	3.48

Sample time: 1310

☆ Colocated DUP-1 at this location

11/6/18

11/6/18 PFAS/1,4-Dioxane Sampling

1350 set up on DGC-1II

Time	temp	PH	ORP	ms/cm	Turb	DO
1400	13.10	7.70	182	0.632	60.3	3.84
1405	12.87	7.97	178	0.650	22.1	1.67
1410	12.72	8.03	177	0.655	9.5	1.65
1415	12.69	8.03	177	0.664	2.6	2.02
1420	12.75	8.02	176	0670	2.2	2.16
1425	12.77	7.99	176	0.678	2.1	2.21

Sample time: 1430

1445 Set up on DGC-1I

DTW 3.57

Time	temp	PH	ORP	ms/cm	Turb	DO
1450	13.71	7.34	202	3.15	8.6	1.56
1455	12.76	7.05	157	3.34	6.2	0.62
1500	12.59	7.04	128	3.38	4.1	0.01
1505	12.59	7.04	127	3.40	2.2	0.01
1510	12.68	7.04	127	3.41	2.0	0.01

Sample time 1515

1330 Set up on DGC 18I

DTW 5.04

Time	temp	PH	ORP	ms/cm	Turb	DO
1540	14.67	7.02	-108	3.70	53.0	7.89
1545	13.17	6.82	-126	3.91	102	2.61
1550	12.79	6.82	-132	3.90	43.0	0.77
1555	12.64	6.80	-133	3.87	24.7	0.13

11/6/18

11/6/18 PFAS/1,4-Dioxane/ sampling

DGC-18I Cont

Time	Temp	PH	ORP	ms/cm	Turb	DO
1600	12.58	6.80	-132	3.86	9.5	0.01
1605	12.59	6.79	-132	3.83	3.8	0.01
1610	12.58	6.78	-131	3.82	2.9	0.01

Sample time 1615

1620 Set up on DGC-18S DTW: 6.92

Time	temp	PH	ORP	ms/cm	turb	DO
1625	13.88	6.99	-69	1.41	34.2	2.10
1630	14.10	6.82	-3	1.32	7.1	036
1635	14.14	6.80	10	1.27	4.6	0.39
1640	1416	6.79	39	1.23	2.1	0.41
1645	1421	6.78	52	1.20	1.9	0.54
1650	14.18	6.78	60	1.18	1.5	0.64

sample time 1655

1710 Collected FB-110620-18

1725 off Site

11/6/18

11/7/18

0745 E Rosenwald & M. Ranko on site to complete sampling

- Weather: Clear ~45°
- Attempted to sample 7L & 7M - Soft

DTW: 5.59 under water

800 Set up on DGC-2S

Time	temp	pH	ORP	mS/cm	turb	DO
805	13.22	6.87	277	1.89	3.6	6.03
810	13.18	6.79	277	1.94	2.6	5.47
815	13.20	6.70	271	1.99	2.4	4.64
820	13.13	6.68	264	2.02	2.0	3.98
825	13.11	6.70	249	2.04	1.00	3.42
830	13.08	6.68	232	2.06	142	3.24
835	13.02	6.67	174	2.07	135	3.01
840	12.98	6.68	158	2.08	130	3.29
845	12.95	6.67	151	2.08	128	3.17

sample time 850

0855 Set up on DGC-2I

* Obstruction in well
DTW Not Recorded

11/7/18

11/8/18

Time	temp	pH	ORP	mS/cm	turb	DO
900	13.56	6.19	-56	1.37	26.9	0.50
905	13.66	6.19	-59	1.35	20.6	0.26
910	13.79	6.19	-62	1.34	9.1	057
915	Well went dry allowing					
920	to recharge then going to					

Collect samples

sample time 925

0930 Set up on DGC-2D

DTW: 2.94

Time	temp	pH	ORP	mS/cm	turb	DO
920	13.02	6.73	-28	2.03	68.3	2.29
925	12.53	6.74	18	2.06	44.7	2.07
930	12.73	6.74	42	2.08	34.3	1.87
935	12.68	6.74	58	2.11	28.9	1.68
938	12.66	6.73	69	2.12	24.6	1.71
941	12.65	6.72	71	2.12	22.6	1.77

Sample time 945