

**SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

**2018 Annual Groundwater
Data and Evaluation Report**

Prepared for:

**U.S. Environmental Protection Agency
Region II
New York, New York**

Dated:

November 9, 2018

Prepared by:



**Amec E&E, PC
1090 Elm Street, Suite 201
Rocky Hill, Connecticut**



November 9, 2018

Mr. Kevin Willis
Remedial Project Manager
New York/Caribbean Superfund Branch
Emergency and Remedial Response Division
U.S. Environmental Protection Agency - Region II
290 Broadway, 20th Floor
New York, NY 10007-1866

**RE: Sarney Farm Superfund Site
2018 Annual Groundwater Data and Evaluation Report**

Dear Mr. Willis:

On behalf of Cytec Industries, Inc. and Pitney Bowes Inc., a copy of the 2018 Annual Groundwater Data and Evaluation Report for the Sarney Farm Superfund Site prepared by Amec E&E, PC (Amec) is enclosed. The report discusses data collected during the August 2018 sampling event. The 2018 sampling was performed in accordance with the additional response action required by USEPA's September 8, 2016 letter regarding the Sarney Farm Site on Benson Hill Road in Dover Plains, Amenia, New York. The attached report documents that the identified low level Volatile Organic Compounds (VOCs) in monitoring wells continue to exhibit decreasing concentrations and are attenuating due to ongoing natural processes.

Consistent with the USEPA approved Quality Assurance Project Plan (QAPP), VOCs in Site monitoring wells and private residential water supply wells have been analyzed by USEPA Method 8260. In addition, 1,4-dioxane and Monitored Natural Attenuation parameters have been analyzed for groundwater monitoring wells. Under separate cover, and consistent with prior monitoring events, individual homeowners have been provided the laboratory results of water samples collected from their wells and you have been copied on these transmittals.

As a result of two decades of groundwater monitoring since the completion of soil remediation in 1997, it is well understood that VOC concentrations are decreasing as a result of natural attenuation processes. Additionally, approximately 30 years of sampling potable water supply wells near the site have demonstrated that no complete exposure pathway for the identified low-level VOCs exists.

Mr. Kevin Willis
U.S. Environmental Protection Agency
11/9/2018

If you should have any questions regarding this report, please do not hesitate to contact Michael Cote at 860-257-5539.

Sincerely,

Amec E&E, PC



Michael S. Cote
Project Manager



Alexander Howe
Staff Geologist

cc: Laura Sarney
Donald MacMath for Cytec Industries
Brian Quillia for Pitney Bowes
Jenelle Gaylord, NYSDEC
Angela Carpenter, John La Padula, USEPA (w/o enclosure)



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Amec Project No. 3610-17-0146

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November 9, 2018
Date

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November 9, 2018
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GLOSSARY OF ACRONYMS

ARCS Amec	Assessment and Remediation of Contaminated Sediments Amec E&E, PC
CERCLA CLP COC	Comprehensive Environmental Response, Compensation, and Liability Contract Laboratory Program Constituents-of-Concern
1,2-DCA DO DCHD	1,2-Dichloroethane Dissolved Oxygen Dutchess County Health Department
FS	Feasibility Study
LTTD	Low-Temperature Thermal Desorption
MACTEC MCL MIBK	MACTEC Engineering and Consulting, Inc. Maximum Contaminant Level 4-methyl-2-pentanone
NPL NYSDEC	National Priorities List New York State Department of Environmental Conservation
Order ORP	Unilateral Administrative Order Oxidation/Reduction Potential
PCOR PRGE	Preliminary Close-Out Report Post-ROD Groundwater Evaluation
QA/QC QAPP	Quality Assurance/Quality Control Quality Assurance Project Plan
RA RI ROD	Remedial Action Remedial Investigation Record of Decision
Site	Sarney Farm Superfund Site
TCE	Trichloroethylene
µg/L µg/kg USACE USEPA	Micrograms per Liter Micrograms per Kilogram U.S. Army Corps of Engineers U.S. Environmental Protection Agency
VOCs	Volatile Organic Constituents

1.0 INTRODUCTION

On behalf of Cytec Industries, Inc. and Pitney Bowes Inc., this 2018 Annual Groundwater Data and Evaluation Report has been prepared by Amec E&E, PC (Amec). This report presents the data for the August 2018 groundwater sampling event at the Sarney Farm Superfund Site (Site), located on Benson Hill Road in Dover Plains, Amenia, New York (Figure 1). This work has been completed pursuant to the requirements of U.S. Environmental Protection Agency (USEPA) Unilateral Administrative Order (Order), Index Number II Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 96-0214 for the Sarney Farm Superfund Site (USEPA, 2003), and the additional response action required by USEPA's September 8, 2016 letter regarding the Sarney Farm Site on Benson Hill Road in Dover Plains, Amenia, New York. Field work, laboratory analyses, and data validation discussed in this report were completed in accordance with the USEPA approved Quality Assurance Project Plan (QAPP, Amec, 2017).

For the August 2018 sampling event, the applicable modifications to the sampling program requested by the USEPA in September 2016 are described below:

- Beginning in 2017, five annual sampling rounds that include the eight monitoring wells and the residential wells in the vicinity of the Site;
- The Groundwater Data and Evaluation Report for these sampling events is to be submitted to the USEPA within 45 days of receipt of final lab data (Final Lab Data for 2018 received October 5, 2018);
- Modification of the laboratory analytical method so that the reporting limit is lower than the applicable standards;
- Addition of 1,4-dioxane for the 2017 sampling event and addition of natural attenuation parameters to the groundwater analytical suite during all five required sampling events.

As presented below, the findings of these analyses demonstrate that natural attenuation processes are degrading VOCs in groundwater at the Site.

1.1 SITE CHRONOLOGY

In the late 1960s, a 5-acre portion of the Site was permitted by the Dutchess County Health Department (DCHD) as a sanitary landfill. Non-permitted industrial waste

disposal was reported to have occurred at the Site over a two-year period between 1968 and 1969. The disposal of industrial waste at the Site led to its inclusion on the New York State Department of Environmental Conservation (NYSDEC) Suspected Hazardous Waste Sites Inventory in 1980, and eventually on USEPA's National Priorities List (NPL) in June 1986. Remedial Investigation (RI) and Feasibility Study (FS) reports were completed on behalf of USEPA in the 1980s, the findings of which resulted in the issuance of a Record of Decision (ROD) for the Site in September 1990. The ROD detailed the selected remedy for the Site, which included the following:

Drum Removal and Soil Remediation

- Drum and container removal activities
- Excavation and on-site treatment of impacted soil by low-temperature thermal desorption (LTTD).

Groundwater Remediation

- No Further Action that included a long-term program to monitor the distribution of contaminants in the bedrock aquifer underlying the Site.

Drum Removal

The drum removal phase of the remedy was completed between 1992 and 1995. The work began under the direction of TAMS Consultants (TAMS, an Assessment and Remediation of Contaminated Sediments [ARCS] contractor) on behalf of the USEPA. IT Corporation performed the remedial work under subcontract to TAMS. During 1993, U.S. Army Corps of Engineers (USACE) assumed the lead role on behalf of USEPA. IT Corporation was subcontracted by USACE to complete the work. Drum removal and disposal was completed by March 1995.

Soil Remediation

The remedial design for the soil remedy was completed by CDM Federal Programs in August 1995 for the USACE. In May 1996, USEPA issued a Special Notice Letter to Pitney Bowes requesting that Pitney Bowes perform the soil remediation work. Pitney Bowes retained MACTEC Engineering and Consulting, Inc. (MACTEC, formerly ESE New York, P.C.) to complete the Remedial Action (RA) for soil. MACTEC proposed minor modifications to the existing design specifications in November 1996, which were subsequently approved by USEPA and NYSDEC in January 1997. MACTEC retained Williams Environmental Services, Inc. to undertake the excavation and on-site thermal

treatment of soils. Soil remediation work plans were submitted to USEPA and NYSDEC in June 1997. Approvals were received September/August 1997, and mobilization to the Site began in September 1997. On-site thermal treatment of soil to remove VOCs including 2-butanone, trichloroethylene (TCE), 4-methyl-2-pentanone (MIBK), toluene, 1,2-dichloroethane (1,2-DCA), chloroform, and total xylenes was conducted from August through December 1997. Following a winter shut-down, Site restoration was completed between May and September 1998. Activities related to the treatment of impacted soil were completed by Pitney Bowes in accordance with the 1996 Administrative Order (USEPA, 1996) that was issued by USEPA and documented in the RA Report dated August 1998 (QST, 1998).

Based on the successful completion of the drum/debris removal efforts, the completion of on-site LTTD treatment of soil, and the findings of the Post-ROD Groundwater Evaluation (PRGE) Report (QST, 2001), USEPA issued a Preliminary Close-Out Report (PCOR) for the Site (USEPA, 2002). The PCOR included a complete discussion of remedial activities completed at the Site (including additional groundwater investigation) and concluded that all RAs at the Site have been completed in accordance with Close Out Procedures for National Priorities List Sites (OSWER Directive 9320.2-09 A-P).

Groundwater Remediation

During 1997, CDM installed two overburden monitoring wells, six piezometers, and one bedrock monitoring well in downgradient of Area 4 in Area 6 (Figure 2). At that time, the monitoring network was comprised of 22 monitoring wells (12 overburden and 10 bedrock) and six piezometers. Two rounds of groundwater samples were collected during that year (May and August). Nineteen wells/piezometers were sampled during the first round (seven overburden and ten bedrock monitoring wells and two piezometers), and 12 monitoring wells/piezometers were sampled during the second round (five overburden and four bedrock monitoring wells and three piezometers).

Additional groundwater investigation was required by USEPA and completed on behalf of Pitney Bowes and Cytex Industries by MACTEC between 1999 and 2000 (referred to as Phase 1 and Phase 2, respectively), and included sediment sampling, the installation of additional multi-level bedrock monitoring wells and piezometers, groundwater

pumping tests, and groundwater sampling, including nearby residential wells. Sampling locations are shown in Figure 2.

Upon review of groundwater data collected during the Phase 1 and Phase 2 investigations, USEPA required additional rounds of groundwater sampling in 2001 and 2002. The first 2001 sampling event was completed during June, and included monitoring wells MW-7D, MW-9D, MW-10D, MW-11D, MW-14D, MW-15D, EW-4D, and five nearby residential wells (Figure 2). The sampling of residential wells commenced in 1985, and included sampling events in 1985, 1986, 1990, 1992, 1993, 1994, 1995, 1996, 1997, and 1998. The November 2001 PRGE states that the results from these residential well sampling events showed that no well had ever exhibited VOC concentrations at or above New York or Federal drinking water standards. Additionally, no subsequent potable water sampling events have identified exceedances of these drinking water standards.

The findings of these June 2001 investigations were presented to USEPA in the PRGE Report (QST, 2001) that was approved by USEPA and finalized on November 13, 2001. The PRGE Report concluded that constituents-of-concern (COCs), primarily 1,2-DCA, generally exhibited a steady decrease in concentration since routine sampling was initiated in the late 1990s. However certain COCs were still present in a small area of the Site at concentrations in excess of current USEPA Region II groundwater Maximum Contaminant Level (MCL) standards. The overall decrease in 1,2-DCA concentration in groundwater was attributed to the completion of drum removal and on-site LTDD treatment of impacted soil, and the attenuation of contaminants through natural physical and chemical degradation processes. In addition, ongoing sampling and analysis of groundwater collected from down gradient residential supply wells continued to confirm that Site-related constituents have not impacted, nor are they expected to impact, nearby private supply wells. A second 2001 sampling event was completed in December and included monitoring wells MW-7D, MW-9D, and MW-10D.

Revised Groundwater Monitoring Program

Between 1999 and 2002, groundwater sampling had been conducted at approximately six-month intervals at selected monitoring wells at the Site. Specifically, sampling events were performed in July and November 1999, May and November 2000, June and December 2001, and June 2002. The results of sampling events, up to and including the June 2001 sampling event, were included in the PRGE Report (QST, 2001). The results of the December 2001 sampling event were provided to USEPA as an attachment to the Monthly Progress Report Number 65 dated March 11, 2002. The findings of the June 2002 sampling event were included in a Groundwater Evaluation Report (MACTEC, 2002).

In addition to presenting the findings of the June 2002 sampling event, the November 2002 report included a recommendation that future groundwater sampling events at the Site be conducted on an annual basis. The rationale for reducing the sampling frequency was that a continued, steady decrease in groundwater concentrations had been observed during each subsequent sampling event during the period between 1997 and 2002. USEPA approved this recommendation and has required annual sampling for a period of five years beginning in 2003. Subsequently, groundwater sampling has been completed in the summer of 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2017, and 2018 with reports describing the results of the sample analyses being submitted for each year. This report documents the 2018 groundwater sampling event.

As stated in the 2006 Groundwater Monitoring Report (MACTEC, 2006), the steady and predictable rate of decrease of contaminant concentrations in wells monitored over the previous nine years supports groundwater sampling of the current list of wells (MW-7D, MW-9D, MW-10D, and five residences) every two years to provide data at a frequency that will be suitable to demonstrate a continuation in the observed decreasing trend in concentrations. In response to the request for changing the sampling frequency to biennial, USEPA correspondence dated August 8, 2008 directed that annual sampling for four additional years is required.

The current USEPA specified groundwater monitoring program requires annual sampling, which is generally conducted in the third quarter of each year, of monitoring

wells MW-7D (shallow and deep), MW-9D (zones 1 [deep], 2 [intermediate], and 3 [shallow]), MW-10D (zones 1 [deep], 2 [intermediate], and 3 [shallow]), and five private residential water supply wells (Sarney, Emerson, Lienert [formerly Taylor], Gray-Morantz [a.k.a. 151 BHR], and Hurlburt). Note that MW-7D was repaired/replaced consistent with an USEPA approved workplan in 2012 due to damage that occurred subsequent to the 2011 groundwater sampling at this location.

Beginning in 2017, the USEPA requested the following modifications of the Sarney Farm sampling program:

- Beginning in 2017, five annual sampling rounds that include the eight monitoring wells and the five residential wells in the vicinity of the Site;
- The Groundwater Data and Evaluation Report for these sampling events is to be submitted to the USEPA within 45 days of receipt of final lab data (Final Lab Data for 2018 was received October 5, 2018);
- Modification of the laboratory analytical method so that the reporting limit is lower than the applicable standards;
- Sampling Cleaver Swamp surface water and sediment during the 2017 sampling event;
- Addition of 1,4-dioxane for the 2017 sampling event and addition of natural attenuation parameters to the groundwater analytical suite during all five required sampling events;
- Submit a modified Quality Assurance Project Plan (QAPP) that identifies proposed analytical methods and associated reporting limits (completed and USEPA approved, dated July 20, 2017).

2.0 GROUNDWATER SAMPLING

Groundwater sampling during the August 2018 sampling event included five residential wells near the Site and the multi-level bedrock monitoring wells located downgradient of Area 4 (MW-7D and MW-9D) and west of Areas 1 and 2 (MW-10D) as shown on Figure 2. The residential wells as described as follows:

- Gray-Morantz (a.k.a. 151 BHR and formerly referred to in prior reports as “Chamberlin”)
- Lienert (formerly known as Taylor)
- Emerson
- Hurlburt
- Sarney

Prior to sampling groundwater monitoring wells, water level measurements were collected from the multi-level wells included in this sampling event (MW-7D, MW-9D, and MW-10D). Samples were collected on August 20 and 28, 2018. Groundwater sampling was completed in accordance with USEPA Groundwater Sampling Procedure for Low-Stress (Low-Flow) Purging and Sampling procedures.

The two discrete sampling zones at MW-7D, MW-7D-S (shallow) and MW-7D-D (deep) were purged and sampled using a conventional bladder pump equipped with dedicated Teflon discharge tubing. The purging process at MW-7D included low-flow pumping to minimize drawdown in the well, and monitoring of various groundwater parameters (e.g., pH, temperature, dissolved oxygen (DO), Oxidation/Reduction Potential (ORP), turbidity and conductivity) to confirm that the wells were hydraulically connected to the formation, and that valid groundwater samples would be collected. Once the parameters stabilized over three consecutive readings, the wells were considered sufficiently purged and samples were collected by directing the pump discharge into laboratory prepared sample containers.

Monitoring wells MW-9D and MW-10D are equipped with Solinst multi-level sampling devices that include dedicated, nitrogen-driven, stainless steel/Teflon bladder sampling pumps set at three discrete intervals. Both MW-9D and MW-10D include three discrete depth sampling ports/pump assemblies that are referred to as zones 1 (deep), 2

(medium) and 3 (shallow). Purging at these wells is required mainly to flush stagnant water from the dedicated sampling tubes since the design of the multi-level sampling system, which includes the use of permanent packers, precludes the presence of standing casing water. The 0.25-inch diameter sampling tubes contain approximately 0.003 gallons of water per foot. The saturated length of the sampling tubes ranges from approximately 142 feet (deep zone at MW-9D-1) to approximately 47 feet in shallow zone at the same well location. The volume of stagnant tubing water in the longest sampling tube is therefore approximately 0.4 gallons. To adequately purge stagnant sampling tube water at MW-9D and MW-10D, the water was pumped for between approximately 20 minutes and 65 minutes at flow rates of approximately 0.03 to 0.06 gallons/minute, resulting in the removal of approximately 1 to 2 gallons of water or more. Once the dedicated bladder pumps have purged the standing water in the tubing and the purge parameters (e.g., pH, temperature, etc.) had stabilized, the samples were collected. Consistent with the QAPP, groundwater monitoring well samples were submitted to TestAmerica Laboratories for analysis of VOCs and 1,4-dioxane by USEPA Method 8260 (low level) and for Monitored Natural Attenuation (MNA) parameters by various approved methods.

Residential water samples were collected from five locations identified as Sarney, Emerson, Leinert, 151 BHR (Gray-Morantz), and Hurlburt on August 20, 2018. The residential water samples were collected from an outside spigot. Before the samples were collected, the water was allowed to run for approximately 15 minutes to clear the plumbing system of standing water. Residential samples were submitted for laboratory analysis for VOCs by USEPA Method 8260 (low level).

All of the groundwater samples were collected, stored, and delivered to the laboratory under standard chain-of-custody protocols. The samples were collected in laboratory-prepared sample containers and stored on ice in secure coolers until being hand-delivered to the laboratory for analysis. Quality assurance/quality control (QA/QC) samples (field duplicates/trip blanks/equipment blank) were also collected and submitted for laboratory analyses. Backup documentation for laboratory deliverables is maintained at both the TestAmerica archives and in the central project files at Amec offices. Analytical laboratory data reports are provided in Appendix A.

The VOC analytical data were validated in accordance with USEPA data validation guidelines as presented in the QAPP by Amec chemists. The data validation report is included in Appendix B.

3.0 SAMPLING RESULTS AND DATA INTERPRETATION

Sections 3.1 through 3.4 below discuss the findings of the laboratory analyses for the groundwater monitoring wells, residential potable water supply wells, and QA/QC samples.

3.1 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES (QA/QC)

Three trip blanks, two associated with the monitoring wells samples of August 20 and August 28, 2018, one associated with the residential well samples of August 20, 2018 were collected. In addition, one equipment blank (EB-1), one field blank (FB01), and one duplicate groundwater monitoring well sample (MW-7D-D DUP) were collected during the 2018 sampling event. Regarding trip blanks, acetone and methylene chloride (common laboratory cleaning agents) were detected in the trip blank associated with the residential well samples (TB-2) and trip blank TB-1, associated with the monitoring wells sampled on August 20, 2018 (MW-10D-1, 2, and 3). Methylene chloride was also detected in the trip blank associated with the monitoring wells sampled on August 28, 2018. Acetone was reported in the field blank collected during the monitoring well sampling. 1,4-Dioxane was detected at low levels in the equipment blank and field blank samples. The correlation between groundwater sample MW-7D-D and its duplicate was good.

3.2 RESIDENTIAL WELL SAMPLING RESULTS

During the 2018 sampling, consistent with previous 28 sampling events completed in 1985, 1986, 1990, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, and 2017, in 2018 no VOCs were detected in excess of State or Federal guidelines. A summary of the 2018 Residential Well Sampling Results is presented in Table 1.

3.3 GROUNDWATER MONITORING WELL SAMPLING RESULTS

Section 3.3.1 below presents the findings of the field measured parameters collected during low flow sampling at the groundwater monitoring wells, Section 3.3.2 discusses the findings for the VOC analyses at the monitoring wells, and Section 3.3.3 presents the findings of the MNA analytical results.

3.3.1 Groundwater Monitoring Well Field Measured Parameters

Field measured parameters were collected during low-flow sampling at the monitoring wells using a YSI SSC flow-through cell and a Hach turbidity meter calibrated according to manufactures specifications. Table 2 summarizes the MNA parameter analysis findings and the final pre-sampling field measured parameters.

3.3.2 Groundwater Monitoring Well VOC Sampling Results

The results of bedrock groundwater VOC analyses are summarized and provided in Table 3, Summary of Detected VOCs in Bedrock Wells. This table includes groundwater data back to well installation and initial sampling (1997 for MW-7D; 1999 for MW-9 and MW-10D). The table is organized by well, with data presented in chronological order from the earliest to the latest sampling events. For convenience, columns for the current sampling event data are shaded in blue. Additionally, the concentration of any compound detected above its respective USEPA MCL is darkly shaded and shown in bold font.

During the 2018 sampling event, 1,2-DCA was detected at concentrations above the USEPA MCL (5 µg/L) in the shallow and deep zones of MW-7D, in the three zones (shallow, intermediate, deep) in MW-9D, and two zones (deep and intermediate) in monitoring well MW-10D. Predominantly declining concentrations of 1,2-DCA were identified in the sampled wells. Figures 3, 5, and 7 present a graphical depiction of the groundwater concentration data for 1,2-DCA from 2007 through 2018, and Figures 4, 6, and 8 present a graphical depiction of the groundwater concentration data for 1,2-DCA from the late 1990s through 2018.

In 2018, the highest concentration of 1,2-DCA was detected at the intermediate zone of MW-9D, at 59 µg/L. The concentrations of 1,2-DCA detected in the sampled wells predominantly decreased compared to 2017 testing results.

The following summarizes the 1,2-DCA detections in 2015, 2016, 2017, and 2018:

Summary of Recent 1,2-DCA Analytical Results					
Well Depth Zone	Monitoring Well	2015 1,2-DCA (µg/L)	2016 1,2-DCA (µg/L)	2017 1,2-DCA (µg/L)	2018 1,2-DCA (µg/L)
Shallow	MW-7D-S	61	50	59	53
Deeper	MW-7D-D	79	75	72	35
Shallow	MW-9D-3	86	92	79	58
Intermediate	MW-9D-2	92	87	85	59
Deep	MW-9D-1	73	69	70	52
Shallow	MW-10D-3	0.58	ND	0.60	0.89
Intermediate	MW-10D-2	37	35	32	23
Deep	MW-10D-1	31	29	27	21
1,2-DCA = 1,2-Dichloroethane MW = Monitoring Well					

Other than 1,2-DCA, the only other VOCs detected during the 2018 sampling event were:

VOCs Other Than 1,2-DCA Detected			
Parameter	Maximum Concentration Detected in 2018 (µg/L)	Parameter	Maximum Concentration Detected in 2018 (µg/L)
1,4-Dioxane	13	1,1-Dichloroethane	0.57
Benzene	3.3	Tetrachloroethene	0.34
Trichloroethene	3.9	cis-1,2-Dichloroethene	6.1

Each of these VOCs was identified at concentrations lower than their respective USEPA MCLs, when available.

3.3.3 Monitored Natural Attenuation Parameter Analytical Results

As required by the USEPA, evaluation of MNA at the Site has been completed. Based on MNA evaluation activities conducted in 2011, select MNA parameters were incorporated into the 2018 annual monitoring program for additional analysis. MNA data collected included contaminant concentrations, electron donors and acceptors, metabolic byproducts, and general water quality parameters. During the 2018 monitoring event, MNA parameters were evaluated using accepted laboratory test methods specified in the QAPP for the Site by TestAmerica Laboratories except for the following field parameters: dissolved oxygen (DO), Oxidation-Reduction Potential (i.e., ORP or Eh), pH, and temperature which were field measured. In general, this evaluation

has identified predominantly decreasing 1,2-DCA concentrations and groundwater conditions conducive to natural attenuation as discussed below.

Decreases in contaminant concentrations are a primary line of evidence used to support MNA as an implemented remedial strategy. As presented in past annual groundwater monitoring reports prepared for the Site, concentrations of 1,2-DCA (the primary Site contaminant) have decreased significantly since site characterization in 1997. However, in recent years, the rate of this observed decline has appeared to decrease based on graphical depictions of the data. Therefore, the Mann-Kendall Test, a common non-parametric statistical approach used in MNA evaluations, was employed to assess current plume stability and the level of confidence in 1,2-DCA concentration decreases. In the Mann-Kendall Test, contaminant data collected over time from a specific monitoring location are tabulated, compared, and used to calculate a test statistic referred to as the S-statistic (Wiedemeier et al., 2000). The magnitude of the S-statistic indicates the direction and statistical level of confidence in the trend. Positive S-statistics suggest an increasing trend while negative S-statistics suggest a decreasing trend. The Mann-Kendall analysis indicates that 1,2-DCA concentrations in all monitored intervals except MW-9-D2, MW-10D-3, and MW-10D-2 are decreasing with at least 90% confidence. At all three of the monitoring wells, a negative S-statistics suggest concentrations declining, but with less than 90% confidence. The data from MW-10D-3 and MW-10D-2 appear only marginally lower than 90% confidence in declining concentrations, and the data from MW-9D-2 exhibits the lowest confidence in decreasing concentrations.

To assess the level of confidence in trends over time, the Mann-Kendall Test derived S-statistics for each of the Mann-Kendall Tests from 2011 and through 2018 were graphed and correlated to evaluate how the trends in concentrations have changed over time. Decreasing trends in the S-statistic with time, suggesting more confidence in the declining trend in 1,2-DCA concentrations, were evident at monitoring wells MW7D-S, MW9-D1, and MW10-D1. Increasing trends in the S-statistic over time, suggesting less confidence in the declining trend in 1,2-DCA concentrations, were evident at monitoring wells MW-10D-2 and MW9-D2. At monitoring wells MW7D-D, MW9-D3, and MW10-D3, linear interpolation of S-statistic values suggested poor correlation with time. In consideration of the currently stable trend in 1,2-DCA concentrations indicated by the

Mann-Kendall test at MW9-D2, these results suggest that future application of the test may also identify the trends in 1,2-DCA concentrations as generally stable.

The primary electron donor that has been evaluated at the Site to date is organic carbon indicated by groundwater Total Organic Carbon (TOC) concentrations. Recent TOC concentrations are lower than observed during initial rounds of sampling conducted in 1999 and 2000. Under methanotrophic conditions, methane can also serve as an electron donor. Methane concentrations were lower in August 2018 than during initial rounds of sampling conducted in 1999 and 2000. However, methane concentrations were higher and more prevalent in August 2018 than in August 2011 and showed increases from August 2017 to August 2018. This increase may be associated with the production of methane as a metabolic byproduct of methanogenesis which suggests that highly reducing conditions are present, indicating conditions appropriate for contaminant natural attenuation.

The evaluation of MNA data collected in August 2018 suggests that:

a) Concentrations of 1,2-DCA are attenuating in Site monitoring wells.

Concentrations have declined at MW10-D3 to a concentration only slightly higher than the New York State water quality standard for 1,2-DCA, and generally decreasing 1,2-DCA concentrations are noted throughout the monitoring array.

b) The level of confidence in observed declines is greatest in the deep intervals of MW9 and MW10 (i.e., MW9-D1 and MW10-D1) and the shallow intervals of MW7D and MW9 (i.e., MW7D-S and MW9-D3).

1,2-DCA concentrations at monitoring well MW9-D2 currently appear to be stable and based on an assessment of Mann-Kendall S-statistics over time, will likely remain stable in the near term. The distribution of both contaminant levels and stability of 1,2-DCA concentrations with depth may provide insight into the mechanisms of attenuation occurring at the Site. It is possible that interactions with the surface are promoting declines in the shallow interval (possibly due to dilution and/or supply of organic carbon) and that the isolation of depth may be promoting declines in the deep interval (due to relatively stronger reducing conditions).

- c) Geochemical data continue to suggest that conditions conducive to reductive dechlorination are present in most of the Site monitoring wells (i.e., low oxygen concentrations, low Eh readings, the presence of ferrous iron, and the presence of methane).

This MNA data suggests that the annual frequency of monitoring has been sufficient to evaluate trends but may be reduced further without significant impact to future evaluations.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following section of this report summarizes the findings and conclusions of the 2018 groundwater sampling event and provides applicable recommendations.

CONCLUSIONS AND RECOMMENDATIONS

1. In the residential wells, in 2018 no VOCs were detected, and none have been detected above State or Federal guidelines during 29 sampling events since monitoring began in 1985.
2. Groundwater monitoring of select bedrock and residential wells has been conducted on an annual basis for 16 years (2002 through 2018) with previous semi-annual sampling having been conducted from 1999 through 2001. Periodic sampling and analysis of the nearby residential wells has been conducted since 1985. The data continue to suggest that reducing the groundwater monitoring frequency would be adequate to continue to demonstrate the attenuation of VOCs at the Site.

Data collected during the 2018 sampling event from the Site monitoring wells indicate that concentrations of 1,2-DCA remain above the USEPA MCL on the Site. The impacted area of the aquifer remains relatively small, with the concentrations of 1,2-DCA in groundwater continuing to show generally decreasing trends since source removal activities and treatment of contaminated soils was completed in 1997.

1,4-dioxane was detected at low concentrations not exceeding 13 µg/L in each of the sampled groundwater monitoring wells.

RECOMMENDATION: The data suggests that USEPA approval of a Technical Impracticability (TI) Waiver is appropriate. At this time, Amec is preparing a TI Evaluation Report for the Site and recommends that the frequency of groundwater monitoring be reduced. The data from the private wells and the groundwater monitoring wells is supported by the USEPA statement in the Third Five-Year Review (2016) "since there have been no historic detections in the residential wells, it is indicative that these wells are not in hydraulic connection with contaminated fractures in the bedrock." Therefore, there are no complete exposure pathways for the Site groundwater contamination.

3. Mann-Kendall statistical evaluation and graphical depictions of trends demonstrate that low level 1,2-DCA concentrations are continuing to attenuate due to ongoing natural processes.

Though the rate of VOC degradation may slow, VOCs at the Site continue to attenuate. As a result, reducing the groundwater monitoring frequency at the Site will not adversely impact human health or the environment.

The area of impacted Site groundwater is remote and difficult to access. If the Site were to be re-developed, the DCHD would restrict the installation of potable water supply wells in this area. In the Third Five Year Review for the Site, the USEPA stated that “EPA believes that the DCDH requirement for installation of new wells currently provides adequate control to ensure that this localized portion of the aquifer is not utilized for drinking water. The DCDH requires that a plan (including the specific location) for drilling a well be submitted for review and approval prior to the well installation. DCDH reviews this drilling plan against the NYSDEC list of inactive hazardous waste disposal sites to determine if there may be any groundwater quality concerns in the vicinity prior to issuing a permit for well installation.”

Based on these factors, the absence of contaminants exceeding regulatory criteria in surface water and in potable water supply wells for nearly thirty years, Amec concludes that the No Further Action remedy for groundwater selected by the USEPA in the ROD continues to be protective and appropriate, and no further response actions are necessary.

5.0 REFERENCES

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TABLES

**TABLE 1
POTABLE WATER SAMPLE RESULTS**

**AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

Sample Delivery Group	Location	151BHR		EMERSON		HURLBERT		LIENERT		SARNEY	
		460-163028-1	460-163028-1	460-163028-1	460-163028-1	460-163028-1	460-163028-1	460-163028-1	460-163028-1		
Sample Date	Sample ID	8/20/2018		8/20/2018		8/20/2018		8/20/2018		8/20/2018	
Parameter	Units	151 BHR		EMERSON		HURLBURT		LEINERT		SARNEY	
		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trimethylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-Trimethylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Butanone	µg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
2-Hexanone	µg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
4-Methyl-2-pentanone	µg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Acetone	µg/L	1.6	J	1.6	J	2.2	J	1.4	J	1.6	J
Benzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon disulfide	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cis-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Propylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Xylene, o	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Xylenes (m&p)	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Xylenes, Total	µg/L	1	U	1	U	1	U	1	U	1	U

Notes:

U = Not detected above the presented Reporting Limit

J = Estimated Concentration

µg/L = micrograms per liter

TABLE 2
SUMMARY OF 1,2-DCA CONCENTRATIONS, EVALUATED MNA PARAMETERS OVER TIME, AND
FINAL FIELD MEASURED PARAMETERS
Sarney Farm Superfund Site - Amenia, New York

Parameter Name	Units	Date	Parameter Concentration by Location								
			MW7D-S 39-72 ft	MW7D-D 72-101 ft	MW7D-D (Duplicate) 72-101 ft	MW9-D3 38-55 ft	MW9-D2 55-102 ft	MW9-D1 102 -147 ft	MW10-D3 48-68 ft	MW10-D2 68-110 ft	MW10-D1 110-144 ft
1,2-DCA	µg/L	Nov-99	390	600	NA	450	360	400	14	67	70
		May-00	250	490	NA	350	300	320	6	69	86
		Jul-06	8	190	190	130	160	100	NA	30	44
		Aug-11	130	48	50	110	73	89	0.9	43	36
		Aug-17	59	72	58	79	85	70	0.6	32	27
		Aug-18	53	35	36	58	59	52	0.89	23	21
Ethane	µg/L	Nov-99	8.3	7.3	NA	<5.0	8.0	35	<5.0	<5.0	6.4
		May-00	NA	6.4	NA	NA	NA	31	NA	<4.0	NA
		Aug-11	<4	<4	<4	<4	<4	<4	<4	<4	<4
		Aug-17	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethene	µg/L	Nov-99	<6.0	<6.0	NA	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
		May-00	NA	<3.0	NA	NA	NA	3.3	NA	<3.0	NA
		Aug-11	<3	<3	<3	<3	<3	<3	<3	<3	<3
		Aug-17	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC	mg/L	Nov-99	17.3	16.1	NA	15	16.5	15.9	12.7	12.8	10.9
		May-00	NA	15.9	NA	NA	NA	NA	NA	12.4	NA
		Aug-11	<1	<20.98	<1	<1	0.41J	0.7J	<1	<1	0.47J
		Aug-17	1.2	1.1	1.2	1.1	1.1	1.4	0.86	0.84	0.87
		Aug-18	<1	0.66	<1	<1	<1	0.75	<1	<1	<1
Dissolved Oxygen (Field Measured)	mg/L	Nov-99	0.91	0.91	NA	0.3	0.37	0.36	2.54	0.34	0.33
		May-00	NA	0.35	NA	NA	NA	2.57	NA	2.04	NA
		Aug-11	0.69	0.25	NA	1.43	0.48	0.9	3.82	0.81	0.47
		Aug-17	0.61	0.94	NA	0.5	0.5	0.6	2.5	0.9	0.6
		Aug-18	0.47	1.1	NA	1.0	1.1	1.2	4.2	0.84	0.75
Nitrogen as Nitrate-Nitrite	mg/L	Nov-99	<0.2	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
		May-00	NA	<0.2	NA	NA	NA	<0.2	NA	<0.2	NA
		Aug-17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
		Aug-18	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.17	<0.05	<0.05
Nitrate as N	mg/L	Aug-11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.15	<9.25	0.062
Nitrite as N	mg/L	Aug-11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<11.27	<0.01
Manganese	µg/L	Nov-99	235	98.2	NA	120	94.5	24.2	21.2	64.8	36.6
		May-00	NA	63	NA	NA	NA	13.8B	NA	61.9	NA

TABLE 2
SUMMARY OF 1,2-DCA CONCENTRATIONS, EVALUATED MNA PARAMETERS OVER TIME, AND
FINAL FIELD MEASURED PARAMETERS
Sarney Farm Superfund Site - Amenia, New York

Parameter Name	Units	Date	Parameter Concentration by Location								
			MW7D-S 39-72 ft	MW7D-D 72-101 ft	MW7D-D (Duplicate) 72-101 ft	MW9-D3 38-55 ft	MW9-D2 55-102 ft	MW9-D1 102 -147 ft	MW10-D3 48-68 ft	MW10-D2 68-110 ft	MW10-D1 110-144 ft
Iron, Total	µg/L	Nov-99	5.3B	609	NA	678	623	75.6B	7B	16B	352
		May-00	NA	672	NA	NA	NA	131	NA	<10.7	NA
		Aug-11	430	395	406	891	673	296	4240	187J	245J
		Aug-17	860	750	190	1000	700	460	3800	69	340
		Aug-18	640	290	290	1000	680	320	4200	110	370
Iron, Ferrous (Dissolved)	mg/L	Aug-11	2	<1	NA	1	4	<1	<1	<1	2
		Aug-17	0	0	NA	0.3	0.2	0	0	0	0.12
		Aug-18	0.47	0.3	0.28	0.95	0.66	0.27	0.069	0.083	0.36
Sulfate	mg/L	Nov-99	23	23	NA	25	26	17	20	23	19
		May-00	NA	24	NA	NA	NA	18	NA	24	NA
		Aug-11	33.8	28.3	28.4	35.2	29.8	20.3	22.1	224.1	22.9
		Aug-17	26.7	26.9	27.6	27.4	31.5	22.9	19.9	28	26.3
		Aug-18	28.1	27.1	27.2	28.3	30.8	22.9	21.9	31.5	28.5
Sulfide	mg/L	Nov-99	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	0.28
		May-00	NA	<0.1	NA	NA	NA	0.4	NA	<0.1	NA
		Aug-11	<1	<1	<1	<1	<1	1	<1	<1	1
		Aug-17	<1	<1	<1	<1	<1	<1	<1	<1	<1
		Aug-18	<1	<1	<1	<1	<1	0.8 J	<1	<1	<1
Alkalinity	mg/L	Nov-99	334	343	NA	334	334	356	260	260	251
		May-00	NA	377	NA	NA	NA	291	NA	272	NA
		Aug-11	345	279	269	330	275	247	319	256	239
		Aug-17	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	Nov-99	5.7	17.1	NA	6.6	8.6	5.7	5.7	4.8	3.8
		May-00	NA	9.6	NA	NA	NA	<5.0	NA	<5.0	NA
		Aug-11	3.1	3.4	3.4	2.8	3.9	4.1	1.8	113.1	4
		Aug-17	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Dioxide	µg/L	Nov-99	<350	<350	NA	<350	<350	<350	<350	<350	<350
		May-00	NA	<350	NA	NA	NA	<350	NA	<350	NA
		Aug-11	4800	3000	3200	6200	4000	4900	4600	3200	2000
		Aug-17	NA	NA	NA	NA	NA	NA	NA	NA	NA

**TABLE 2
SUMMARY OF 1,2-DCA CONCENTRATIONS, EVALUATED MNA PARAMETERS OVER TIME, AND
FINAL FIELD MEASURED PARAMETERS
Sarney Farm Superfund Site - Amenia, New York**

Parameter Name	Units	Date	Parameter Concentration by Location								
			MW7D-S 39-72 ft	MW7D-D 72-101 ft	MW7D-D (Duplicate) 72-101 ft	MW9-D3 38-55 ft	MW9-D2 55-102 ft	MW9-D1 102 -147 ft	MW10-D3 48-68 ft	MW10-D2 68-110 ft	MW10-D1 110-144 ft
Methane	µg/L	Nov-99	110	88	NA	85	81	15	<2	8.6	21
		May-00	NA	90	NA	NA	NA	24	NA	7.2	NA
		Aug-11	<2	<2	<2	<2	<2	4.2	<2	<2	16
		Aug-17	5.1	8.2	22	1.3	4.4	14	0.19 J	0.61	19
		Aug-18	11	51	49	2	15	33	<.58	1.8	43
pH (Field Measured)	std. units	Nov-99	7.4	7.3	NA	7.3	7.3	7.4	7.4	7.4	7.1
		May-00	NA	7.3	NA	NA	NA	7.5	NA	7.2	NA
		Aug-11	7.0	7.1	NA	7.1	7.4	7.0	7.0	6.9	7.2
		Aug-17	7.4	7.5	NA	7.4	7.6	7.7	7.1	7.5	7.6
		Aug-18	7.3	7.1	NA	5.7	5.7	5.7	7.4	7.4	7.3
Eh* (Field Measured)	mV	Nov-99	99.7	-52.2	NA	-91	-107	-127	-51	-111	-101
		May-00	NA	-128	NA	NA	NA	-184.9	NA	-52.9	NA
		Aug-11	71	78	NA	-87	-148	-89	46	67	-145
		Aug-17	-77	-54	NA	-160	-220	-210	80	-39	-120
		Aug-18	-9.4	36.8	NA	-134	-190	-200	34.4	-44.3	-89.3
Temp. (Field Measured)	°C	Nov-99	5.7	7.4	NA	9.4	9.4	9.4	10	10	10
		May-00	NA	11	NA	NA	NA	10	NA	11	NA
		Aug-11	12	11	NA	Anomolous	13	14	13	13	13
		Aug-17	22	16	NA	15	13	15	12	12	13
		Aug-18	13	13	NA	14	14	15	10	11	11

Notes:

* Eh is a measurement of Oxidation-Reduction Potential (ORP) using a hydrogen electrode.

1,2-DCA = 1,2-Dichloroethane

B = data qualifier indicating the analyte was present in the associated laboratory blank

J = data qualifier indicating the analyte concentration is estimated

NA = not analyzed

°C = degrees Celsius

µg/L = micrograms per Liter

mg/L = milligrams per Liter

mV = millivolts

std. units = Standard Units

**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-7D 05/28/97 50 ft.	MW-7D 08/06/97 50 ft.	MW-7DD 08/06/97 89 ft.	MW-7D-D 9/15/1999 72 - 101 ft.	MW-7D-D-DUP 9/15/1999 72 - 101 ft.	MW-7D-D 11/16/1999 72 - 101 ft.	MW-7D-D 5/25/2000 72 - 101 ft.	MW-7D-D 11/14/2000 72 - 101 ft.	MW-7D-D-DP 11/14/2000 72 - 101 ft.	MW-7D-D 6/19/2001 72 - 101 ft.	MW-7D-DUP 6/19/2001 72 - 101 ft.
Analyte (ug/L)													
Chloromethane		5			9								
Vinyl Chloride	2	2											
Chloroethane		5											
Methylene Chloride	5	5	25					0.5 J					
Acetone		50				3 J	5 J						
Carbon Disulfide		60											
1,1-Dichloroethene	7	5											
1,1-Dichloroethane		5	46			4 J	4 J	4.1	3 J	3 J	2 J	3 J	3 J
Chloroform		7											
1,2-Dichloroethane	5	0.6	6400	760	910	640 D	680 D	600 D	490	600	540	460	490
2-Butanone		50											
1,1,1-Trichloroethane	200	5											
Carbon Tetrachloride	5	5											
1,2-Dichloropropane	5	1											
Trichloroethene	5	5				2 J	3 J	3.3	2 J	3 J	3 J	2 J	2 J
Benzene	5	1	100	17	17	14	15	14	11	12	12	11	10
4-Methyl-2-Pentanone		5											
2-Hexanone		50											
Tetrachloroethene	5	5											
Toluene	1000	5											
Chlorobenzene	100	5											
Ethylbenzene	700	5											
Styrene	100	5											
P & M Xylenes		5											
O Xylene		5											
Xylenes (total)	10000	5											
1,1,2-Trichloroethane	5	1											
Dichlorodifluoromethane		5											
Trichlorofluoromethane		5											
cis-1,2-Dichloroethene	70	5				31	33	47 JD	36	41	40	35	34
trans-1,2-Dichloroethene	100	5	140	16	27								
N-Propylbenzene		5											
1,3,5-Trimethylbenzene		5											
1,2,4-Trimethylbenzene		5											
1,3-Dichlorobenzene		3											
1,4-Dichlorobenzene	75	3											
1,2-Dichlorobenzene	600	3											
1,2,4-Trichlorobenzene	70	5											
Naphthalene		10											
1,2,3-Trichlorobenzene		5											
1,4-Dioxane		5											

Notes:
1997 and Sept. 1999 data have NOT been validated.
Bold/Shaded = Exceedance of the applicable EPA MCL
Most recent sampling events are blue shaded columns
MCL = Maximum Contaminant Level

ft. = foot
USEPA = U.S. Environmental Protection Agency
NYSDEC = New York State Department of Environmental Conservation

Data Qualifiers:
B = Analyte detected in blank.
D = Value obtained through secondary dilution.
E = Value exceeded instrument calibration range.
J = Indicates an estimated value.
Blank = Not detected.

**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-7D-D 12/12/2001 72 - 101 ft.	MW-7D-DUP 12/12/2001 72 - 101 ft.	MW-7D-D 6/20/2002 72 - 101 ft.	MW-7D-DUP 6/20/2002 72 - 101 ft.	MW-7D 7/24/2003 72 - 101 ft.	MW-7D-DUP 7/24/2003 72 - 101 ft.	MW-7D 7/13/2004 72 - 101 ft.	MW-7D-DUP 7/13/2004 72 - 101 ft.	MW-7D-D 8/10/2005 72 - 101 ft.	MW-7D-D-DP 8/10/2005 72 - 101 ft.	MW-7D-D 7/25/2006 72 - 101 ft.
Analyte (ug/L)													
Chloromethane		5											
Vinyl Chloride	2	2											
Chloroethane		5											
Methylene Chloride	5	5											
Acetone		50		4 J									
Carbon Disulfide		60											
1,1-Dichloroethene	7	5											
1,1-Dichloroethane		5	2 J	2 J	3 J	3 J	2 J	1 J	1 J	1 J	1 J	1 J	1 J
Chloroform		7											
1,2-Dichloroethane	5	0.6	510	520	380	360	250	250	290 J	280 J	290	270	190
2-Butanone		50											
1,1,1-Trichloroethane	200	5											
Carbon Tetrachloride	5	5											
1,2-Dichloropropane	5	1											
Trichloroethene	5	5	2 J	2 J	3 J	3 J	2 J	2 J	2 J	2 J	2 J	2 J	2 J
Benzene	5	1	8 J	8 J	11	12	5 J	5 J			7 J	7 J	5 J
4-Methyl-2-Pentanone		5											
2-Hexanone		50											
Tetrachloroethene	5	5											
Toluene	1000	5											
Chlorobenzene	100	5											
Ethylbenzene	700	5											
Styrene	100	5											
P & M Xylenes		5											
O Xylene		5											
Xylenes (total)	10000	5											
1,1,2-Trichloroethane	5	1											
Dichlorodifluoromethane		5											
Trichlorofluoromethane		5											
cis-1,2-Dichloroethene	70	5	32	31	37	38	30	30	34 J	32 J	32	32	27
trans-1,2-Dichloroethene	100	5								3 J			
N-Propylbenzene		5											
1,3,5-Trimethylbenzene		5											
1,2,4-Trimethylbenzene		5											
1,3-Dichlorobenzene		3											
1,4-Dichlorobenzene	75	3											
1,2-Dichlorobenzene	600	3											
1,2,4-Trichlorobenzene	70	5											
Naphthalene		10											
1,2,3-Trichlorobenzene		5											
1,4-Dioxane		5											

Notes:
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**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-7D-D-DP 7/25/2006 72 - 101 ft.	MW-7D-D 7/18/2007 72 - 101 ft.	MW-7D-D 9/3/2008 72 - 101 ft.	MW-7D-D-DP 9/3/2008 72 - 101 ft.	MW-7D-D 8/18/2009 72-101 ft.	MW-7D-D-DP 8/18/2009 72-101 ft.	MW-7D-D 08/24/10 72-101 ft.	MW-7D-DUP 08/24/10 72-101 ft.	MW-7D-D 08/23/11 72-101 ft.	MW-7D-DUP 08/23/11 72-101 ft.	MW-7D-D 08/28/12 72-101 ft.
Analyte (ug/L)													
Chloromethane		5											
Vinyl Chloride	2	2											
Chloroethane		5					0.14 J						
Methylene Chloride	5	5											
Acetone		50											
Carbon Disulfide		60											
1,1-Dichloroethene	7	5											
1,1-Dichloroethane		5	1 J	1.2 J	0.76 J	0.74 J	0.71 J	0.71 J	0.6 J	0.61 J	0.47 J	0.48 J	0.54 J
Chloroform		7											
1,2-Dichloroethane	5	0.6	190	130	150	160	80	82	60	60	48	50	130 J
2-Butanone		50											
1,1,1-Trichloroethane	200	5											
Carbon Tetrachloride	5	5											
1,2-Dichloropropane	5	1											
Trichloroethene	5	5	2 J	1.8 J	1.5 J	1.6 J	0.82 J	0.85 J	0.51 J	0.53 J			
Benzene	5	1	5 J	3.7 J	4.8 J	5.1 J			0.23 J	0.24 J			5.3
4-Methyl-2-Pentanone		5											
2-Hexanone		50											
Tetrachloroethene	5	5					0.11 J						
Toluene	1000	5											
Chlorobenzene	100	5											
Ethylbenzene	700	5											
Styrene	100	5											
P & M Xylenes		5											
O Xylene		5											
Xylenes (total)	10000	5											
1,1,2-Trichloroethane	5	1											
Dichlorodifluoromethane		5											
Trichlorofluoromethane		5											
cis-1,2-Dichloroethene	70	5	26	20	22	24	6 J	5.8 J	3.6 J	3.6 J	2.9	2.8	10
trans-1,2-Dichloroethene	100	5					0.56 J	0.47 J					
N-Propylbenzene		5											
1,3,5-Trimethylbenzene		5											
1,2,4-Trimethylbenzene		5											
1,3-Dichlorobenzene		3											
1,4-Dichlorobenzene	75	3											
1,2-Dichlorobenzene	600	3											
1,2,4-Trichlorobenzene	70	5											
Naphthalene		10											
1,2,3-Trichlorobenzene		5											
1,4-Dioxane		5											

Notes:
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VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-7D-DUP 08/28/12 72-101 ft.	MW-7D-D 08/21/13 72-101 ft.	MW-7D-DUP 08/21/13 72-101 ft.	MW-7D-D 08/19/14 72-101 ft.	MW-7D-DUP 08/19/14 72-101 ft.	MW-7D-D 08/19/15 72-101 ft.	MW-7D-DUP 08/19/15 72-101 ft.	MW-7D-D 08/23/16 72-101 ft.	MW-7D-DUP 08/23/16 72-101 ft.	MW-7D-D 08/22/17 72-101 ft.	MW-7D-DUP 08/22/17 72-101 ft.	MW-7D-D 08/28/18 72-101 ft.	MW-7D-DUP 08/28/18 72-101 ft.	MW-7D-S 11/16/1999 39 - 72 ft.
Analyte (ug/L)																
Chloromethane		5														
Vinyl Chloride	2	2														
Chloroethane		5														
Methylene Chloride	5	5														
Acetone		50														
Carbon Disulfide		60														
1,1-Dichloroethene	7	5														
1,1-Dichloroethane		5	0.59 J									0.50	0.39	0.37 J	0.4 J	3.6
Chloroform		7														
1,2-Dichloroethane	5	0.6	130 J	86	81	78	78	79 J	81 J	75	79	72 J	58 J	35	36	390 D
2-Butanone		50														
1,1,1-Trichloroethane	200	5														
Carbon Tetrachloride	5	5														
1,2-Dichloropropane	5	1														
Trichloroethene	5	5	1.6 J							1.2	1.2	1.3	0.94	0.60	0.61	4.6
Benzene	5	1	5.4									0.94	0.63	0.48 J	0.47 J	12
4-Methyl-2-Pentanone		5														
2-Hexanone		50														
Tetrachloroethene	5	5														
Toluene	1000	5														
Chlorobenzene	100	5														
Ethylbenzene	700	5														
Styrene	100	5														
P & M Xylenes		5														
O Xylene		5														
Xylenes (total)	10000	5														
1,1,2-Trichloroethane	5	1														
Dichlorodifluoromethane		5														
Trichlorofluoromethane		5														
cis-1,2-Dichloroethene	70	5	11	9.5	9.2	6.5	6.3	5.5	5.6	7.3	7.7	6.2	4.1	2.5	2.6	45 JD
trans-1,2-Dichloroethene	100	5														
N-Propylbenzene		5														
1,3,5-Trimethylbenzene		5														
1,2,4-Trimethylbenzene		5														
1,3-Dichlorobenzene		3														
1,4-Dichlorobenzene	75	3														
1,2-Dichlorobenzene	600	3														
1,2,4-Trichlorobenzene	70	5														
Naphthalene		10														
1,2,3-Trichlorobenzene		5														
1,4-Dioxane		5										2.4 J	4.2 J	5.8	5.6	

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VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-7D-S-DUP 11/16/1999 39 - 72 ft.	MW-7D-S 5/25/2000 39 - 72 ft.	MW-7D-S 11/14/2000 39 - 72 ft.	MW-7D-S 6/19/2001 39 - 72 ft.	MW-7D-S 12/12/2001 39 - 72 ft.	MW-7D-S 6/20/2002 39 - 72 ft.	MW-7D-S 7/24/2003 39 - 72 ft.	MW-7D-S 7/13/2004 39 - 72 ft.	MW-7D-S 8/10/2005 39 - 72 ft.	MW-7D-S 7/25/2006 39 - 72 ft.	MW-7D-S 7/17/2007 39 - 72 ft.	MW-7D-S/DP 7/17/2007 39 - 72 ft.
Analyte (ug/L)														
Chloromethane		5												
Vinyl Chloride	2	2												
Chloroethane		5												
Methylene Chloride	5	5												
Acetone		50					3 J							
Carbon Disulfide		60												
1,1-Dichloroethene	7	5											0.12 J	0.1 J
1,1-Dichloroethane		5	3.6	6 J	5 J	4 J	3 J	5 J		2 J		0.5 J	2.2	2.2
Chloroform		7												
1,2-Dichloroethane	5	0.6	410 D	250	280	190	340	170	2 J	2 J	1 J	8 J	110	120
2-Butanone		50												
1,1,1-Trichloroethane	200	5												
Carbon Tetrachloride	5	5												
1,2-Dichloropropane	5	1												
Trichloroethene	5	5	4	4 J	2 J	1 J	2 J	2 J		1 J		0.6 J	1.5 J	1.6 J
Benzene	5	1	10	12	12	9 J D	8 J	9 J					1.3 J	1.4 J
4-Methyl-2-Pentanone		5												
2-Hexanone		50												
Tetrachloroethene	5	5												
Toluene	1000	5												
Chlorobenzene	100	5												
Ethylbenzene	700	5												
Styrene	100	5												
P & M Xylenes		5												
O Xylene		5												
Xylenes (total)	10000	5												
1,1,2-Trichloroethane	5	1												
Dichlorodifluoromethane		5												
Trichlorofluoromethane		5												
cis-1,2-Dichloroethene	70	5	44 JD	31	16	9 J	19 J	13	3 J	11 J	4 J	7 J	9.5 J	9.5 J
trans-1,2-Dichloroethene	100	5												
N-Propylbenzene		5												
1,3,5-Trimethylbenzene		5												
1,2,4-Trimethylbenzene		5												
1,3-Dichlorobenzene		3												
1,4-Dichlorobenzene	75	3												
1,2-Dichlorobenzene	600	3												
1,2,4-Trichlorobenzene	70	5												
Naphthalene		10												
1,2,3-Trichlorobenzene		5												
1,4-Dioxane		5												

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VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-7D-S 9/3/2008 39 - 72 ft.	MW-7D-S 8/18/2009 39 - 72 ft.	MW-7D-S 08/24/10 39 - 72 ft.	MW-7D-S 08/23/11 39 - 72 ft.	MW-7D-S 08/28/12 39 - 72 ft.	MW-7D-S 08/21/13 39 - 72 ft.	MW-7D-S 08/19/14 39 - 72 ft.	MW-7D-S 08/19/15 39 - 72 ft.	MW-7D-S 08/23/16 39 - 72 ft.	MW-7D-S 08/22/17 39 - 72 ft.	MW-7D-S 08/28/18 39 - 72 ft.
Analyte (ug/L)													
Chloromethane		5											
Vinyl Chloride	2	2											
Chloroethane		5		0.15 J									
Methylene Chloride	5	5											
Acetone		50											
Carbon Disulfide		60											
1,1-Dichloroethene	7	5	0.1 J	0.32 J	0.29 J								
1,1-Dichloroethane		5	1.4 J	2 J	1.7 J	0.5 J	0.55 J					0.42	0.57
Chloroform		7											
1,2-Dichloroethane	5	0.6	110	110	110	130	100	44	65	61	50	59	53
2-Butanone		50											
1,1,1-Trichloroethane	200	5											
Carbon Tetrachloride	5	5											
1,2-Dichloropropane	5	1											
Trichloroethene	5	5	1.4 J	1.6 J	1.4 J	2.4	1.7		1.1 J	1.2 J		0.98	1.1
Benzene	5	1	2.2 J	2.6 J	0.28 J		3.4		1.4 J	1.1 J		0.91	0.97
4-Methyl-2-Pentanone		5											
2-Hexanone		50											
Tetrachloroethene	5	5											
Toluene	1000	5											
Chlorobenzene	100	5											
Ethylbenzene	700	5											
Styrene	100	5											
P & M Xylenes		5											
O Xylene		5											
Xylenes (total)	10000	5											
1,1,2-Trichloroethane	5	1											
Dichlorodifluoromethane		5											
Trichlorofluoromethane		5											
cis-1,2-Dichloroethene	70	5	12	8.3 J	7.7 J	20	7.6	2.3	6.4	5.3	4.5	5.2	4.9
trans-1,2-Dichloroethene	100	5		0.13 J									
N-Propylbenzene		5											
1,3,5-Trimethylbenzene		5											
1,2,4-Trimethylbenzene		5											
1,3-Dichlorobenzene		3											
1,4-Dichlorobenzene	75	3											
1,2-Dichlorobenzene	600	3											
1,2,4-Trichlorobenzene	70	5											
Naphthalene		10											
1,2,3-Trichlorobenzene		5											
1,4-Dioxane		5										2.6	3.4

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SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

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Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-9D-1 09/15/99 102 - 147 ft.	MW-9D-1 11/15/99 102 - 147 ft.	MW-9D-1 05/24/00 102 - 147 ft.	MW-9D-1 11/14/00 102 - 147 ft.	MW-9D-1 06/19/01 102 - 147 ft.	MW-9D-1 12/12/01 102 - 147 ft.	MW-9D-1 06/20/02 102 - 147 ft.	MW-9D-1 07/24/03 102 - 147 ft.	MW-9D-1 07/13/04 102 - 147 ft.	MW-9D-1 08/10/05 102 - 147 ft.	MW-9D-1 07/25/06 102 - 147 ft.
Analyte (ug/L)													
Chloromethane		5											
Vinyl Chloride	2	2											
Chloroethane		5											
Methylene Chloride	5	5	2 J	1.1 J									
Acetone		50	5 J					3 J					
Carbon Disulfide		60											
1,1-Dichloroethene	7	5											
1,1-Dichloroethane		5	4 J	3.3	2 J	2 J	1 J	1 J	2 J	1 J	0.9 J		0.5 J
Chloroform		7										2 J	1 J
1,2-Dichloroethane	5	0.6	510 D	400 D	320	290	240	200	160	200	150 J	93	100
2-Butanone		50											
1,1,1-Trichloroethane	200	5											
Carbon Tetrachloride	5	5											
1,2-Dichloropropane	5	1											
Trichloroethene	5	5	3 J	2.8	1 J	1 J		1 J	2 J	2 J	2 J		0.5 J
Benzene	5	1	17	15	10 J	9 J	8 J	7 J	7 J	7 J		4 J	4 J
4-Methyl-2-Pentanone		5											
2-Hexanone		50											
Tetrachloroethene	5	5											
Toluene	1000	5											
Chlorobenzene	100	5											
Ethylbenzene	700	5											
Styrene	100	5											
P & M Xylenes		5											
O Xylene		5											
Xylenes (total)	10000	5											
1,1,2-Trichloroethane	5	1											
Dichlorodifluoromethane		5											
Trichlorofluoromethane		5											
cis-1,2-Dichloroethene	70	5		24	16	13	10	13	13	16	12 J	7 J	7 J
trans-1,2-Dichloroethene	100	5	23										
N-Propylbenzene		5											
1,3,5-Trimethylbenzene		5											
1,2,4-Trimethylbenzene		5											
1,3-Dichlorobenzene		3											
1,4-Dichlorobenzene	75	3											
1,2-Dichlorobenzene	600	3											
1,2,4-Trichlorobenzene	70	5											
Naphthalene		10											
1,2,3-Trichlorobenzene		5											
1,4-Dioxane		5											

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VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

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Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-9D-1 07/17/07 102 - 147 ft.	MW-9D-1 09/04/08 102 - 147 ft.	MW-9D-1 08/18/09 102 - 147 ft.	MW-9D-1 08/24/10 102 - 147 ft.	MW-9D-1 08/23/11 102 - 147 ft.	MW-9D-1 08/28/12 102 - 147 ft.	MW-9D-1 08/21/13 102 - 147 ft.	MW-9D-1 08/19/14 102 - 147 ft.	MW-9D-1 08/19/15 102 - 147 ft.	MW-9D-1 08/23/16 102 - 147 ft.	MW-9D-1 08/22/17 102 - 147 ft.	MW-9D-1 08/28/18 102 - 147 ft.
Analyte (ug/L)														
Chloromethane		5												
Vinyl Chloride	2	2												
Chloroethane		5												
Methylene Chloride	5	5												
Acetone		50												
Carbon Disulfide		60	7.1 J											
1,1-Dichloroethene	7	5												
1,1-Dichloroethane		5	0.59 J	0.47 J	0.52 J	0.49 J	0.42 J	0.42 J					0.43 J	0.35 J
Chloroform		7	0.78 J		0.23 J									
1,2-Dichloroethane	5	0.6	110	110	93 J	90	89	78	78	71	73	69	70	52
2-Butanone		50												
1,1,1-Trichloroethane	200	5												
Carbon Tetrachloride	5	5												
1,2-Dichloropropane	5	1												
Trichloroethene	5	5	0.86 J	0.69 J	0.83 J	0.83 J		0.68 J					0.60	0.48 J
Benzene	5	1	4.6 J	4.6 J	3.6 J	3.6 J	4.3	3.8		3.1 J	3.4 J	3.2	3.5	3.3
4-Methyl-2-Pentanone		5												
2-Hexanone		50												
Tetrachloroethene	5	5			0.11 J									
Toluene	1000	5				0.13 J								
Chlorobenzene	100	5												
Ethylbenzene	700	5												
Styrene	100	5												
P & M Xylenes		5												
O Xylene		5												
Xylenes (total)	10000	5												
1,1,2-Trichloroethane	5	1												
Dichlorodifluoromethane		5												
Trichlorofluoromethane		5												
cis-1,2-Dichloroethene	70	5	8.6 J	8.2 J	7.1 J	6.6 J	5.6	6.4	5.9	4.8 J	4.9 J	5.7	5.3	4.5
trans-1,2-Dichloroethene	100	5												
N-Propylbenzene		5												
1,3,5-Trimethylbenzene		5												
1,2,4-Trimethylbenzene		5												
1,3-Dichlorobenzene		3												
1,4-Dichlorobenzene	75	3												
1,2-Dichlorobenzene	600	3												
1,2,4-Trichlorobenzene	70	5												
Naphthalene		10												
1,2,3-Trichlorobenzene		5												
1,4-Dioxane		5											11	13

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B = Analyte detected in blank.

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E = Value exceeded instrument calibration range.

J = Indicates an estimated value.

Blank = Not detected.

Prepared by / Date: **ATH 10/03/18**

Checked by / Date:

**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-9D2 09/15/99 55 - 102 ft.	MW-9D2 11/15/99 55 - 102 ft.	MW-9D2 05/24/00 55 - 102 ft.	MW-9D2 11/14/00 55 - 102 ft.	MW-9D2 06/19/01 55 - 102 ft.	MW-9D2 12/12/01 55 - 102 ft.	MW-9D2 06/20/02 55 - 102 ft.	MW-9D2 07/24/03 55 - 102 ft.	MW-9D2 07/13/04 55 - 102 ft.	MW-9D2 08/10/05 55 - 102 ft.	MW-9D2 07/25/06 55 - 102 ft.
Analyte (ug/L)													
Chloromethane		5											
Vinyl Chloride	2	2											
Chloroethane		5											
Methylene Chloride	5	5											
Acetone		50	3 J					3 J					
Carbon Disulfide		60											
1,1-Dichloroethene	7	5											
1,1-Dichloroethane		5	5 J	5.3	3 J	3 J	3 J	2 J	2 J	2 J	1 J	1 J	0.8 J
Chloroform		7											
1,2-Dichloroethane	5	0.6	610 D	360 D	300	310	300	280	260	200	160 J	140	160
2-Butanone		50											
1,1,1-Trichloroethane	200	5		1.6									
Carbon Tetrachloride	5	5											
1,2-Dichloropropane	5	1											
Trichloroethene	5	5	5 J	9.3	2 J	8 J	4 J	6 J	7 J	3 J	3 J	5 J	2 J
Benzene	5	1	12	11	7 J	7 J	8 J	6 J	6 J	2 J			0.6 J
4-Methyl-2-Pentanone		5											
2-Hexanone		50											
Tetrachloroethene	5	5					0.5						
Toluene	1000	5											
Chlorobenzene	100	5											
Ethylbenzene	700	5											
Styrene	100	5											
P & M Xylenes		5											
O Xylene		5											
Xylenes (total)	10000	5											
1,1,2-Trichloroethane	5	1											
Dichlorodifluoromethane		5											
Trichlorofluoromethane		5											
cis-1,2-Dichloroethene	70	5	30	38 D	18	33	27	28	26	19	15 J	16	16
trans-1,2-Dichloroethene	100	5											
N-Propylbenzene		5											
1,3,5-Trimethylbenzene		5											
1,2,4-Trimethylbenzene		5											
1,3-Dichlorobenzene		3											
1,4-Dichlorobenzene	75	3											
1,2-Dichlorobenzene	600	3											
1,2,4-Trichlorobenzene	70	5											
Naphthalene		10											
1,2,3-Trichlorobenzene		5											
1,4-Dioxane		5											

Notes:
1997 and Sept. 1999 data have NOT been validated.
Bold/Shaded = Exceedance of the applicable EPA MCL
Most recent sampling events are blue shaded columns
MCL = Maximum Contaminant Level
ug/L = Micrograms per Liter

ft. = foot
USEPA = U.S. Environmental Protection Agency
NYSDEC = New York State Department of Environmental Conservation

Data Qualifiers:
B = Analyte detected in blank.
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**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-9D2 07/17/07 55 - 102 ft.	MW-9D2 09/03/08 55 - 102 ft.	MW-9D2 08/18/09 55 - 102 ft.	MW-9D2 08/24/10 55 - 102 ft.	MW-9D2 08/30/11 55 - 102 ft.	MW-9D2 8/28/2012 55 - 102 ft.	MW-9D2 8/21/2013 55 - 102 ft.	MW-9D2 8/19/2014 55 - 102 ft.	MW-9D2 8/19/2015 55 - 102 ft.	MW-9D2 8/23/2016 55 - 102 ft.	MW-9D2 8/22/2017 55 - 102 ft.	MW-9D2 8/28/2018 55 - 102 ft.
Analyte (ug/L)														
Chloromethane		5												
Vinyl Chloride	2	2												
Chloroethane		5												
Methylene Chloride	5	5												
Acetone		50												
Carbon Disulfide		60												
1,1-Dichloroethene	7	5												
1,1-Dichloroethane		5	0.68 J	0.67 J	0.59 J	0.59 J		0.6 J					0.41 J	0.36 J
Chloroform		7												
1,2-Dichloroethane	5	0.6	140	130	110	120	73	74	98	96	92	87	85	59
2-Butanone		50												
1,1,1-Trichloroethane	200	5												
Carbon Tetrachloride	5	5												
1,2-Dichloropropane	5	1												
Trichloroethene	5	5	2.1 J	2.2 J	1.6 J	2 J		3.1			1.5 J	1.8	1.2	0.94
Benzene	5	1	1 J	0.76 J		1.3 J		2.2				1.3	0.87	0.78
4-Methyl-2-Pentanone		5												
2-Hexanone		50												
Tetrachloroethene	5	5			0.14 J	0.21 J								
Toluene	1000	5				0.11 J								
Chlorobenzene	100	5												
Ethylbenzene	700	5												
Styrene	100	5												
P & M Xylenes		5												
O Xylene		5												
Xylenes (total)	10000	5												
1,1,2-Trichloroethane	5	1												
Dichlorodifluoromethane		5												
Trichlorofluoromethane		5												
cis-1,2-Dichloroethene	70	5	14	12	10	11	9.2	5.3	7.3	6.9	6.0	8.4	6.9	6.1
trans-1,2-Dichloroethene	100	5												
N-Propylbenzene		5												
1,3,5-Trimethylbenzene		5												
1,2,4-Trimethylbenzene		5												
1,3-Dichlorobenzene		3												
1,4-Dichlorobenzene	75	3												
1,2-Dichlorobenzene	600	3												
1,2,4-Trichlorobenzene	70	5												
Naphthalene		10												
1,2,3-Trichlorobenzene		5												
1,4-Dioxane		5											7.2	10

Notes:

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ug/L = Micrograms per Liter

ft. = foot

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NYSDEC = New York State Department of Environmental Conservation

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**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-9D3 09/15/99 38 - 55 ft.	MW-9D3 11/15/99 38 - 55 ft.	MW-9D3 05/24/00 38 - 55 ft.	MW-9D3 11/14/00 38 - 55 ft.	MW-9D3 06/19/01 38 - 55 ft.	MW-9D3 12/12/01 38 - 55 ft.	MW-9D3 06/20/02 38 - 55 ft.	MW-9D3 07/24/03 38 - 55 ft.	MW-9D3 07/13/04 38 - 55 ft.	MW-9D3 08/10/05 38 - 55 ft.	MW-9D3 07/25/06 38 - 55 ft.
Analyte (ug/L)													
Chloromethane		5											
Vinyl Chloride	2	2											
Chloroethane		5											
Methylene Chloride	5	5											
Acetone		50	4 J										
Carbon Disulfide		60											
1,1-Dichloroethene	7	5		4.5									
1,1-Dichloroethane		5	4 J		3 J	2 J	2 J	2 J	2 J	2 J	1 J		0.8 J
Chloroform		7											
1,2-Dichloroethane	5	0.6	540 D	450 D	350	330	310	360	270	200	190 J	150	130
2-Butanone		50											
1,1,1-Trichloroethane	200	5		1.5	1 J								
Carbon Tetrachloride	5	5											
1,2-Dichloropropane	5	1											
Trichloroethene	5	5	4 J	9.1	8 J	7 J	8 J	7 J	8 J	6 J	5 J	5 J	5 J
Benzene	5	1	10	9.3	8 J	7 J	7 J	6 J	5 J	2 J			0.6 J
4-Methyl-2-Pentanone		5											
2-Hexanone		50											
Tetrachloroethene	5	5							0.9 J				
Toluene	1000	5											
Chlorobenzene	100	5											
Ethylbenzene	700	5											
Styrene	100	5											
P & M Xylenes		5											
O Xylene		5											
Xylenes (total)	10000	5											
1,1,2-Trichloroethane	5	1											
Dichlorodifluoromethane		5											
Trichlorofluoromethane		5											
cis-1,2-Dichloroethene	70	5	24	39 JD	37	33	32	32	27	21	18 J	15	13
trans-1,2-Dichloroethene	100	5											
N-Propylbenzene		5											
1,3,5-Trimethylbenzene		5											
1,2,4-Trimethylbenzene		5											
1,3-Dichlorobenzene		3											
1,4-Dichlorobenzene	75	3											
1,2-Dichlorobenzene	600	3											
1,2,4-Trichlorobenzene	70	5											
Naphthalene		10											
1,2,3-Trichlorobenzene		5											
1,4-Dioxane		5											

Notes:
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**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-9D3 07/17/07 38 - 55 ft.	MW-9D3 09/03/08 38 - 55 ft.	MW-9D3 08/18/09 38 - 55 ft.	MW-9D3 08/24/10 38 - 55 ft.	MW-9D3 08/23/11 38 - 55 ft.	MW-9D3 08/28/12 38 - 55 ft.	MW-9D3 08/21/13 38 - 55 ft.	MW-9D3 08/19/14 38 - 55 ft.	MW-9D3 08/19/15 38 - 55 ft.	MW-9D3 08/23/16 38 - 55 ft.	MW-9D3 08/22/17 38 - 55 ft.	MW-9D3 08/28/18 38 - 55 ft.
Analyte (ug/L)														
Chloromethane		5					0.44 J							
Vinyl Chloride	2	2												
Chloroethane		5												
Methylene Chloride	5	5												
Acetone		50												
Carbon Disulfide		60												
1,1-Dichloroethene	7	5				0.1 J								
1,1-Dichloroethane		5	0.58 J	0.5 J	0.46 J	0.46 J	0.4 J	0.55 J					0.32 J	0.27 J
Chloroform		7												
1,2-Dichloroethane	5	0.6	110	120	100	120	110	110	90	78	86	92	79	58
2-Butanone		50												
1,1,1-Trichloroethane	200	5												
Carbon Tetrachloride	5	5												
1,2-Dichloropropane	5	1												
Trichloroethene	5	5	4.5 J	4 J	4.6 J	4.1 J	5.3 J	3.1		4	3.8 J	3.3	3.4	3.90
Benzene	5	1	0.24 J			0.19 J		2.6					0.56	0.88
4-Methyl-2-Pentanone		5												
2-Hexanone		50												
Tetrachloroethene	5	5	0.36 J		0.57 J	0.56 J							0.29 J	0.34 J
Toluene	1000	5				0.1 J								
Chlorobenzene	100	5												
Ethylbenzene	700	5												
Styrene	100	5												
P & M Xylenes		5												
O Xylene		5												
Xylenes (total)	10000	5												
1,1,2-Trichloroethane	5	1												
Dichlorodifluoromethane		5												
Trichlorofluoromethane		5												
cis-1,2-Dichloroethene	70	5	9.7 J	9.4 J	8.6 J	8.1 J	6.8 J	5.7		6	5.6	5.2	6.7	5.7
trans-1,2-Dichloroethene	100	5												
N-Propylbenzene		5												
1,3,5-Trimethylbenzene		5												
1,2,4-Trimethylbenzene		5												
1,3-Dichlorobenzene		3												
1,4-Dichlorobenzene	75	3												
1,2-Dichlorobenzene	600	3												
1,2,4-Trichlorobenzene	70	5												
Naphthalene		10												
1,2,3-Trichlorobenzene		5												
1,4-Dioxane		5											1.1	1.2

Notes:

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SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-10D1 09/15/99 110 - 144 ft.	MW-10D1 11/15/99 110 - 144 ft.	MW-10D1 05/24/00 110 - 144 ft.	MW-10D1 11/14/00 110 - 144 ft.	MW-10D1 06/19/01 110 - 144 ft.	MW-10D1 12/12/01 110 - 144 ft.	MW-10D1 06/19/02 110 - 144 ft.	MW-10D1 07/24/03 110 - 144 ft.	MW-10D1 07/13/04 110 - 144 ft.	MW-10D1 08/10/05 110 - 144 ft.	MW-10D1 07/25/06 110 - 144 ft.
Analyte (ug/L)													
Chloromethane		5											
Vinyl Chloride	2	2											
Chloroethane		5											
Methylene Chloride	5	5											
Acetone		50	6 J										
Carbon Disulfide		60											
1,1-Dichloroethene	7	5											
1,1-Dichloroethane		5											
Chloroform		7	1 J	0.9 J									
1,2-Dichloroethane	5	0.6	47	70 D	86	61	74	67	56	62	61 J	40	44
2-Butanone		50											
1,1,1-Trichloroethane	200	5											
Carbon Tetrachloride	5	5											
1,2-Dichloropropane	5	1											
Trichloroethene	5	5											
Benzene	5	1											
4-Methyl-2-Pentanone		5											
2-Hexanone		50											
Tetrachloroethene	5	5											
Toluene	1000	5											
Chlorobenzene	100	5											
Ethylbenzene	700	5											
Styrene	100	5											
P & M Xylenes		5											
O Xylene		5											
Xylenes (total)	10000	5											
1,1,2-Trichloroethane	5	1											
Dichlorodifluoromethane		5											
Trichlorofluoromethane		5											
cis-1,2-Dichloroethene	70	5	1 J	2	1 J	1 J	1 J	2 J	2 J	2 J	2 J	1 J	1 J
trans-1,2-Dichloroethene	100	5											
N-Propylbenzene		5											
1,3,5-Trimethylbenzene		5											
1,2,4-Trimethylbenzene		5											
1,3-Dichlorobenzene		3											
1,4-Dichlorobenzene	75	3											
1,2-Dichlorobenzene	600	3											
1,2,4-Trichlorobenzene	70	5											
Naphthalene		10											
1,2,3-Trichlorobenzene		5											
1,4-Dioxane		5											

Notes:

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Bold/Shaded = Exceedance of the applicable EPA MCL

Most recent sampling events are blue shaded columns

MCL = Maximum Contaminant Level

ug/L = Micrograms per Liter

ft. = foot

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B = Analyte detected in blank.

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**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-10D1 07/17/07 110 - 144 ft.	MW-10D1 09/04/08 110 - 144 ft.	MW-10D1 08/19/09 110 - 144 ft.	MW-10D-1 08/25/10 110 - 144 ft.	MW-10D-1 08/30/11 110 - 144 ft.	MW-10D-1 08/29/12 110 - 144 ft.	MW-10D-1 08/21/13 110 - 144 ft.	MW-10D-1 08/20/14 110 - 144 ft.	MW-10D-1 08/20/15 110 - 144 ft.	MW-10D-1 08/24/16 110 - 144 ft.	MW-10D-1 08/23/17 110 - 144 ft.	MW-10D-1 08/20/18 110 - 144 ft.
Analyte (ug/L)														
Chloromethane		5												
Vinyl Chloride	2	2												
Chloroethane		5												
Methylene Chloride	5	5												
Acetone		50												1.2 J
Carbon Disulfide	60	60					0.41 J							
1,1-Dichloroethene	7	5												
1,1-Dichloroethane		5				0.14 J								
Chloroform		7	0.36 J	0.34 J			0.28 J							
1,2-Dichloroethane	5	0.6	40	41	43	41	36	34	27	29	31	29	27	21
2-Butanone		50												
1,1,1-Trichloroethane	200	5												
Carbon Tetrachloride	5	5												
1,2-Dichloropropane	5	1												
Trichloroethene	5	5												
Benzene	5	1	0.15 J	0.14 J		0.21 J	0.18 J						0.13 J	0.1 J
4-Methyl-2-Pentanone		5												
2-Hexanone		50												
Tetrachloroethene	5	5												
Toluene	1000	5	0.43 J	0.35 J		0.37 J								
Chlorobenzene	100	5												
Ethylbenzene	700	5												
Styrene	100	5												
P & M Xylenes		5												
O Xylene		5												
Xylenes (total)	10000	5												
1,1,2-Trichloroethane	5	1												
Dichlorodifluoromethane		5												
Trichlorofluoromethane		5												
cis-1,2-Dichloroethene	70	5	1.3 J	1.3 J	1.5 J	1.4 J	1.6	1.2 J		0.98 J	0.95 J	1.3	1.1	1.2
trans-1,2-Dichloroethene	100	5												
N-Propylbenzene		5												
1,3,5-Trimethylbenzene		5												
1,2,4-Trimethylbenzene		5												
1,3-Dichlorobenzene		3												
1,4-Dichlorobenzene	75	3												
1,2-Dichlorobenzene	600	3												
1,2,4-Trichlorobenzene	70	5												
Naphthalene		10												
1,2,3-Trichlorobenzene		5												
1,4-Dioxane		5											1.3	1.2

Notes:
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**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-10D2 09/15/99 68 - 110 ft.	MW-10D2 11/15/99 68 - 110 ft.	MW-10D2 05/24/00 68 - 110 ft.	MW-10D2 11/14/00 68 - 110 ft.	MW-10D2 06/19/01 68 - 110 ft.	MW-10D2 12/12/01 68 - 110 ft.	MW-10D2 06/19/02 68 - 110 ft.	MW-10D2 07/24/03 68 - 110 ft.	MW-10D2 07/13/04 68 - 110 ft.	MW-10D2 08/10/05 68 - 110 ft.	MW-10D2 07/25/06 68 - 110 ft.
Analyte (ug/L)													
Chloromethane		5											
Vinyl Chloride	2	2						2 J					
Chloroethane		5											
Methylene Chloride	5	5											
Acetone		50	3 J										
Carbon Disulfide		60											
1,1-Dichloroethene	7	5											
1,1-Dichloroethane		5											
Chloroform		7											
1,2-Dichloroethane	5	0.6	48	67 D	69	91	82	88	87	73	69 J	55	30
2-Butanone		50											
1,1,1-Trichloroethane	200	5											
Carbon Tetrachloride	5	5											
1,2-Dichloropropane	5	1											
Trichloroethene	5	5											
Benzene	5	1											
4-Methyl-2-Pentanone		5											
2-Hexanone		50											
Tetrachloroethene	5	5											
Toluene	1000	5											
Chlorobenzene	100	5											
Ethylbenzene	700	5											
Styrene	100	5											
P & M Xylenes		5											
O Xylene		5											
Xylenes (total)	10000	5											
1,1,2-Trichloroethane	5	1											
Dichlorodifluoromethane		5											
Trichlorofluoromethane		5											
cis-1,2-Dichloroethene	70	5	1 J	2.3		1 J		3 J	3 J	2 J	1 J	1 J	0.8 J
trans-1,2-Dichloroethene	100	5											
N-Propylbenzene		5											
1,3,5-Trimethylbenzene		5											
1,2,4-Trimethylbenzene		5											
1,3-Dichlorobenzene		3											
1,4-Dichlorobenzene	75	3											
1,2-Dichlorobenzene	600	3											
1,2,4-Trichlorobenzene	70	5											
Naphthalene		10											
1,2,3-Trichlorobenzene		5											
1,4-Dioxane		5											

Notes:
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Bold/Shaded = Exceedance of the applicable EPA MCL
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B = Analyte detected in blank.
D = Value obtained through secondary dilution.
E = Value exceeded instrument calibration range.
J = Indicates an estimated value.
Blank = Not detected.

**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-10D2 07/17/07 68 - 110 ft.	MW-10D2 09/04/08 68 - 110 ft.	MW-10D2 08/19/09 68 - 110 ft.	MW-10D-2 08/25/10 68 - 110 ft.	MW-10D-2 08/24/11 68 - 110 ft.	MW-10D-2 08/29/12 68 - 110 ft.	MW-10D-2 08/22/13 68 - 110 ft.	MW-10D-2 08/20/14 68 - 110 ft.	MW-10D-2 08/20/15 68 - 110 ft.	MW-10D-2 08/24/16 68 - 110 ft.	MW-10D-2 08/23/17 68 - 110 ft.	MW-10D-2 08/20/18 68 - 110 ft.
Analyte (ug/L)														
Chloromethane		5												
Vinyl Chloride	2	2												
Chloroethane		5												
Methylene Chloride	5	5												
Acetone		50												
Carbon Disulfide		60												
1,1-Dichloroethene	7	5												
1,1-Dichloroethane		5												
Chloroform		7												
1,2-Dichloroethane	5	0.6	52	46	8.3 J	48	43	43	11	28	37	35	32	23
2-Butanone		50												
1,1,1-Trichloroethane	200	5												
Carbon Tetrachloride	5	5												
1,2-Dichloropropane	5	1												
Trichloroethene	5	5			0.3 J	0.24 J							0.33 J	
Benzene	5	1												0.44 J
4-Methyl-2-Pentanone		5												
2-Hexanone		50												
Tetrachloroethene	5	5												
Toluene	1000	5				0.17 J								
Chlorobenzene	100	5												
Ethylbenzene	700	5												
Styrene	100	5												
P & M Xylenes		5												
O Xylene		5												
Xylenes (total)	10000	5												
1,1,2-Trichloroethane	5	1												
Dichlorodifluoromethane		5												
Trichlorofluoromethane		5												
cis-1,2-Dichloroethene	70	5	0.91 J	0.31 J	0.46 J	0.84 J		0.7 J	0.51 J	0.58 J			0.77	0.55
trans-1,2-Dichloroethene	100	5												
N-Propylbenzene		5												
1,3,5-Trimethylbenzene		5												
1,2,4-Trimethylbenzene		5												
1,3-Dichlorobenzene		3												
1,4-Dichlorobenzene	75	3												
1,2-Dichlorobenzene	600	3												
1,2,4-Trichlorobenzene	70	5												
Naphthalene		10												
1,2,3-Trichlorobenzene		5												
1,4-Dioxane		5												0.33 J

Notes:

1997 and Sept. 1999 data have NOT been validated.

Bold/Shaded = Exceedance of the applicable EPA MCI

Most recent sampling events are blue shaded columns

MCL = Maximum Contaminant Level

ug/L = Micrograms per Liter

ft. = foot

USEPA = U.S. Environmental Protection Agency

NYSDEC = New York State Department of Environmental Conservation

Data Qualifiers:

B = Analyte detected in blank.

D = Value obtained through secondary dilution.

E = Value exceeded instrument calibration range.

J = Indicates an estimated value.

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**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-10D3 09/15/99 40 - 68 ft.	MW-10D3 11/15/99 40 - 68 ft.	MW-10D3 05/24/00 40 - 68 ft.	MW-10D3 11/14/00 40 - 68 ft.	MW-10D3 06/19/01 40 - 68 ft.	MW-10D3 12/12/01 40 - 68 ft.	MW-10D3 06/19/02 40 - 68 ft.	MW-10D3 07/24/03 40 - 68 ft.	MW-10D3 07/13/04 40 - 68 ft.	MW-10D3 08/10/05 40 - 68 ft.	MW-10D3 07/25/06 40 - 68 ft.
Analyte (ug/L)													
Chloromethane		5								3 J			
Vinyl Chloride	2	2											
Chloroethane		5											
Methylene Chloride	5	5											
Acetone		50	3 J										
Carbon Disulfide		60											
1,1-Dichloroethene	7	5											
1,1-Dichloroethane		5											
Chloroform		7											
1,2-Dichloroethane	5	0.6	3 J	14	6 J		19	5 J	3 J	6 J	6 J	5 J	
2-Butanone		50											
1,1,1-Trichloroethane	200	5											
Carbon Tetrachloride	5	5											
1,2-Dichloropropane	5	1											
Trichloroethene	5	5	1 J				1 J						
Benzene	5	1											
4-Methyl-2-Pentanone		5											
2-Hexanone		50											
Tetrachloroethene	5	5											
Toluene	1000	5											
Chlorobenzene	100	5											
Ethylbenzene	700	5											
Styrene	100	5											
P & M Xylenes		5											
O Xylene		5											
Xylenes (total)	10000	5											
1,1,2-Trichloroethane	5	1											
Dichlorodifluoromethane		5											
Trichlorofluoromethane		5											
cis-1,2-Dichloroethene	70	5		0.8 J									
trans-1,2-Dichloroethene	100	5											
N-Propylbenzene		5											
1,3,5-Trimethylbenzene		5											
1,2,4-Trimethylbenzene		5											
1,3-Dichlorobenzene		3											
1,4-Dichlorobenzene	75	3											
1,2-Dichlorobenzene	600	3											
1,2,4-Trichlorobenzene	70	5											
Naphthalene		10											
1,2,3-Trichlorobenzene		5											
1,4-Dioxane		5											

Notes:

1997 and Sept. 1999 data have NOT been validated.

Bold/Shaded = Exceedance of the applicable EPA MCL

Most recent sampling events are blue shaded columns

MCL = Maximum Contaminant Level

ug/L = Micrograms per Liter

ft. = foot

USEPA = U.S. Environmental Protection Agency

NYSDEC = New York State Department of Environmental Conservation

Data Qualifiers:

B = Analyte detected in blank.

D = Value obtained through secondary dilution.

E = Value exceeded instrument calibration range.

J = Indicates an estimated value.

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**TABLE 3
SUMMARY OF DETECTED
VOCS IN BEDROCK WELLS
1997 THROUGH 2018 SAMPLING EVENTS**

**2018 Annual Groundwater Monitoring Report
Sarney Farm Superfund Site, Amenia, New York**

Well No. Date Sampled Sample/Zone Depth	EPA MCL (ug/L)	NYSDEC Class GA (ug/L)	MW-10D3 07/17/07 40 - 68 ft.	MW-10D3 09/04/08 40 - 68 ft.	MW-10D3 08/19/09 40 - 68 ft.	MW-10D3 08/24/10 40 - 68 ft.	MW-10D3 08/24/11 40 - 68 ft.	MW-10D3 08/29/12 40 - 68 ft.	MW-10D3 08/22/13 40 - 68 ft.	MW-10D3 08/20/14 40 - 68 ft.	MW-10D3 08/20/15 40 - 68 ft.	MW-10D3 08/24/16 40 - 68 ft.	MW-10D3 08/23/17 40 - 68 ft.	MW-10D3 08/23/17 40 - 68 ft.
Analyte (ug/L)														
Chloromethane		5												
Vinyl Chloride	2	2												
Chloroethane		5												
Methylene Chloride	5	5												
Acetone		50												1.6 J
Carbon Disulfide		60												
1,1-Dichloroethene	7	5												
1,1-Dichloroethane		5												
Chloroform		7												
1,2-Dichloroethane	5	0.6	10 U	1.1 J	2.1 J	0.16 J	0.9 J			0.75 J	0.58 J		0.6	0.89
2-Butanone		50												
1,1,1-Trichloroethane	200	5												
Carbon Tetrachloride	5	5												
1,2-Dichloropropane	5	1												
Trichloroethene	5	5	0.52 J	0.39 J	0.36 J	0.5 J	0.28 J			0.34 J	0.63 J		0.71	0.68
Benzene	5	1												
4-Methyl-2-Pentanone		5												
2-Hexanone		50												
Tetrachloroethene	5	5												
Toluene	1000	5				0.27 J								
Chlorobenzene	100	5												
Ethylbenzene	700	5												
Styrene	100	5												
P & M Xylenes		5												
O Xylene		5												
Xylenes (total)	10000	5												
1,1,2-Trichloroethane	5	1												
Dichlorodifluoromethane		5												
Trichlorofluoromethane		5												
cis-1,2-Dichloroethene	70	5			0.16 J	0.16 J								
trans-1,2-Dichloroethene	100	5												
N-Propylbenzene		5												
1,3,5-Trimethylbenzene		5												
1,2,4-Trimethylbenzene		5												
1,3-Dichlorobenzene		3												
1,4-Dichlorobenzene	75	3												
1,2-Dichlorobenzene	600	3												
1,2,4-Trichlorobenzene	70	5												
Naphthalene		10												
1,2,3-Trichlorobenzene		5												
1,4-Dioxane		5												

Notes:

1997 and Sept. 1999 data have NOT been validated.

Bold/Shaded = Exceedance of the applicable EPA MCL

Most recent sampling events are blue shaded columns

MCL = Maximum Contaminant Level

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Data Qualifiers:

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D = Value obtained through secondary dilution.

E = Value exceeded instrument calibration range.

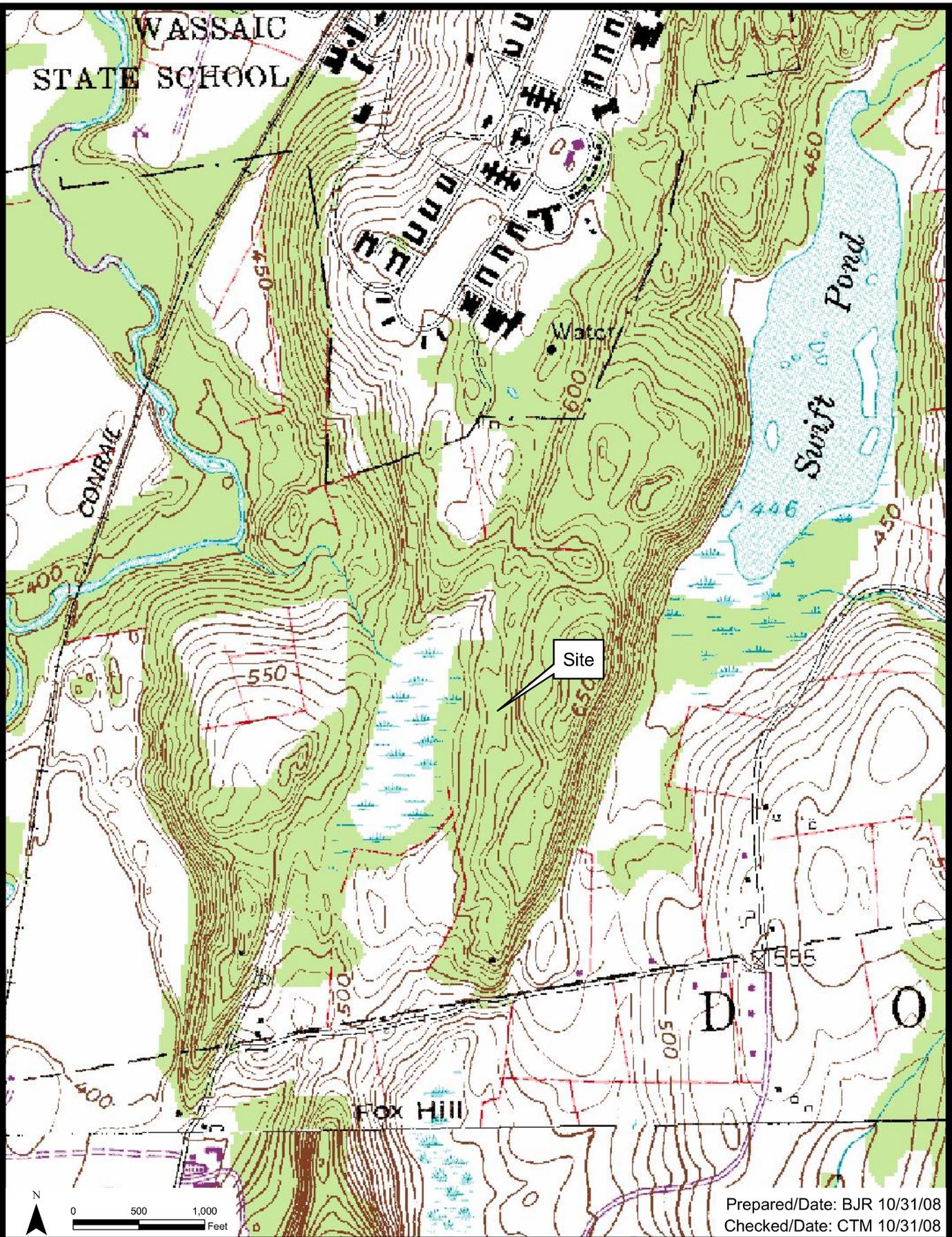
J = Indicates an estimated value.

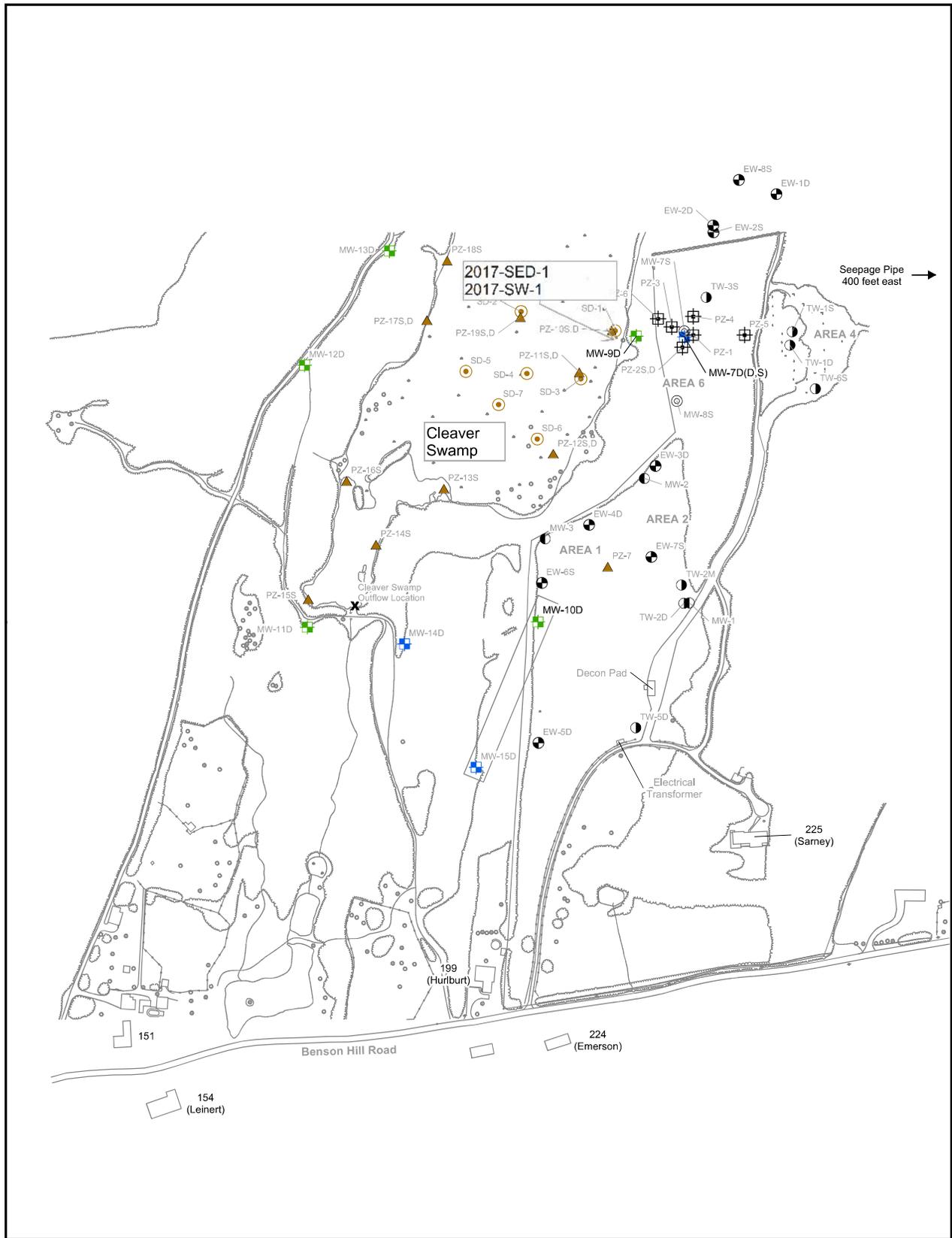
Blank = Not detected.

Prepared by / Date: **ATH 10/03/2018**

Checked by / Date: **MSC 11/6/2018**

FIGURES





Legend

- TW-1D - TAMS Deep Monitoring Well (1991)
- TW-1M - TAMS Intermediate Depth Monitoring Well (1991)
- TW-1S - TAMS Shallow Monitoring Well (1991)
- MW-3 - CDM Monitoring Well (1984)
- EW-4D - EBASCO Deep Monitoring Well (1989)
- EW-6S - EBASCO Shallow Monitoring Well (1989)
- MW-7S - CDM Monitoring Well (1997)
- ⊕ PZ-4 - CDM Shallow Piezometer (1997)
- MW-11D - ESE Multi-Level Bedrock Well
- MW-7D - Existing Bedrock Well Modification
- ▲ PZ-16 - ESE Shallow Piezometer
- SD-8 - ESE Sediment Sampling Location (1999)
- ✕ Cleaver Swamp Outflow Location

Figure 2
Site Plan

Annual Groundwater Monitoring Report
Sarney Farm Superfund Site
Amenia, New York

Prepared by BJR | Checked by MSC

amec
AMEC Environment & Infrastructure
1090 Elm St., Suite 201
Rocky Hill, CT 06067

Figure 3
1,2-DCA Concentrations in
Groundwater, Aug 2007 to Aug 2018
MW-7 Series
Sarney Farm Superfund Site
Amenia, New York

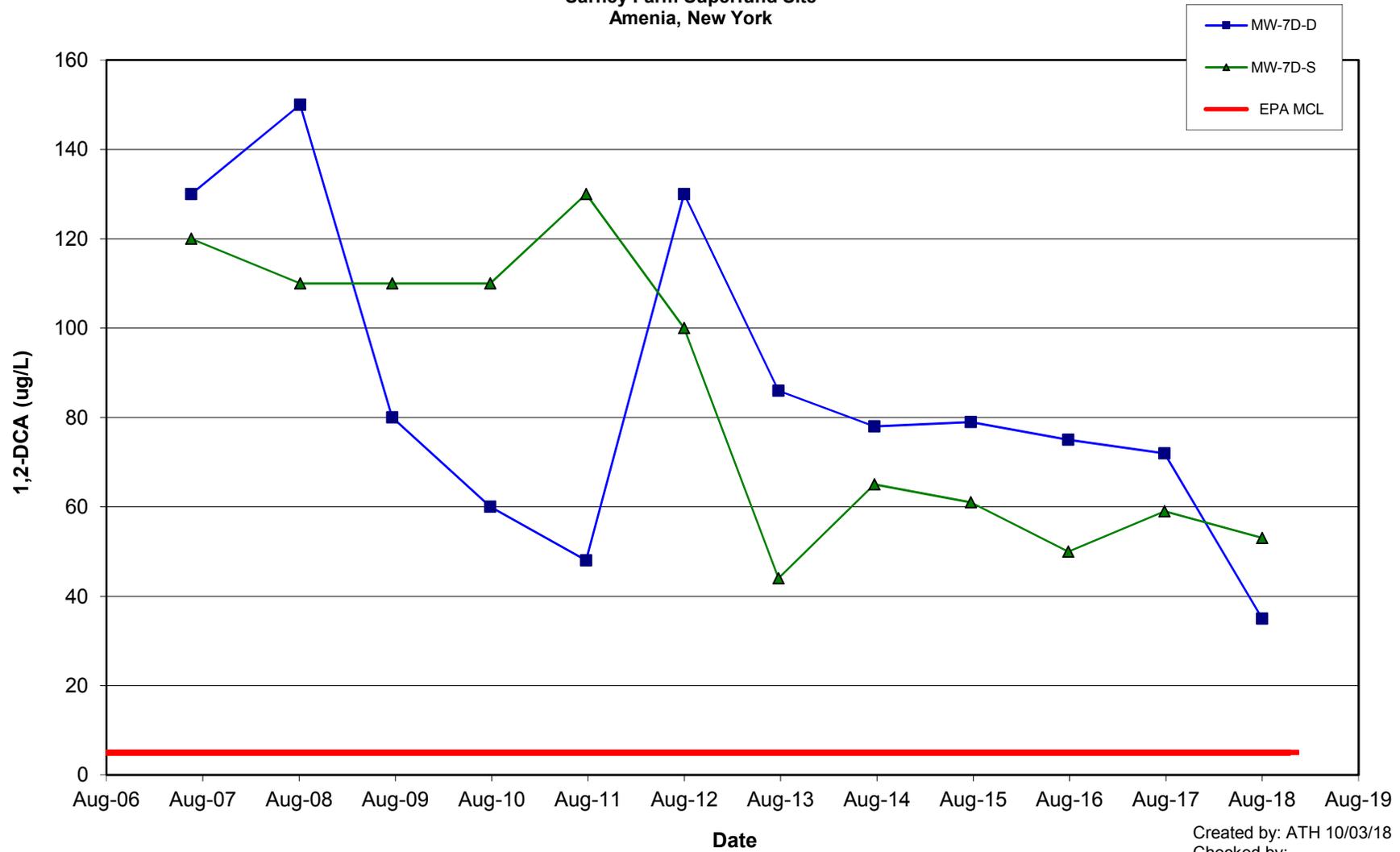


Figure 4
 1,2-DCA Concentrations in
 Groundwater
 MW-7 Series
 Sarney Farm Superfund Site
 Amenia, New York

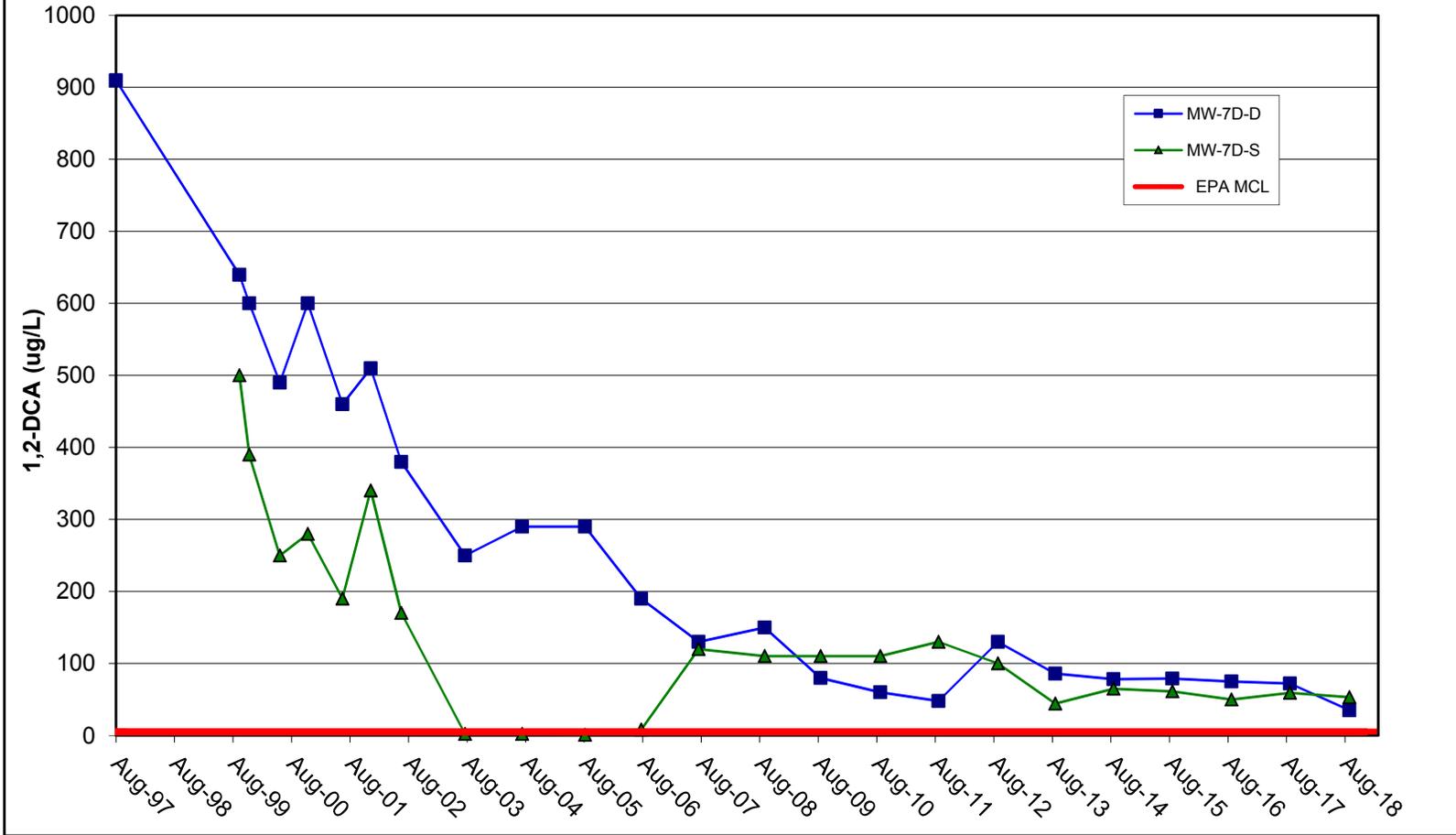


Figure 5
1,2-DCA Concentrations in
Groundwater Aug 2007 to Aug
2018
MW-9 Series
Sarney Farm Superfund Site

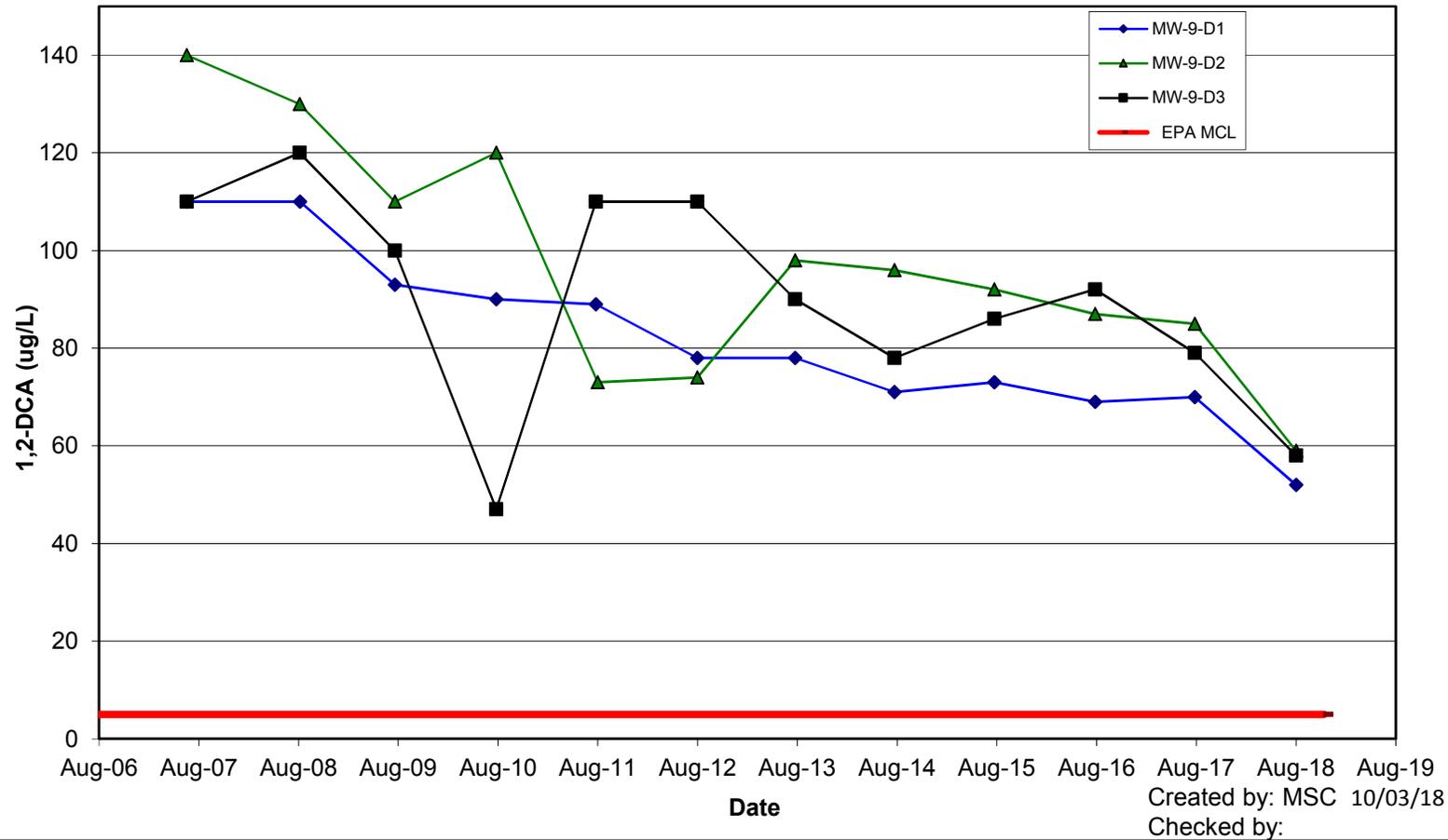


Figure 6
1,2-DCA Concentrations in
Groundwater
MW-9 Series
Sarney Farm Superfund Site
Amenia, New York

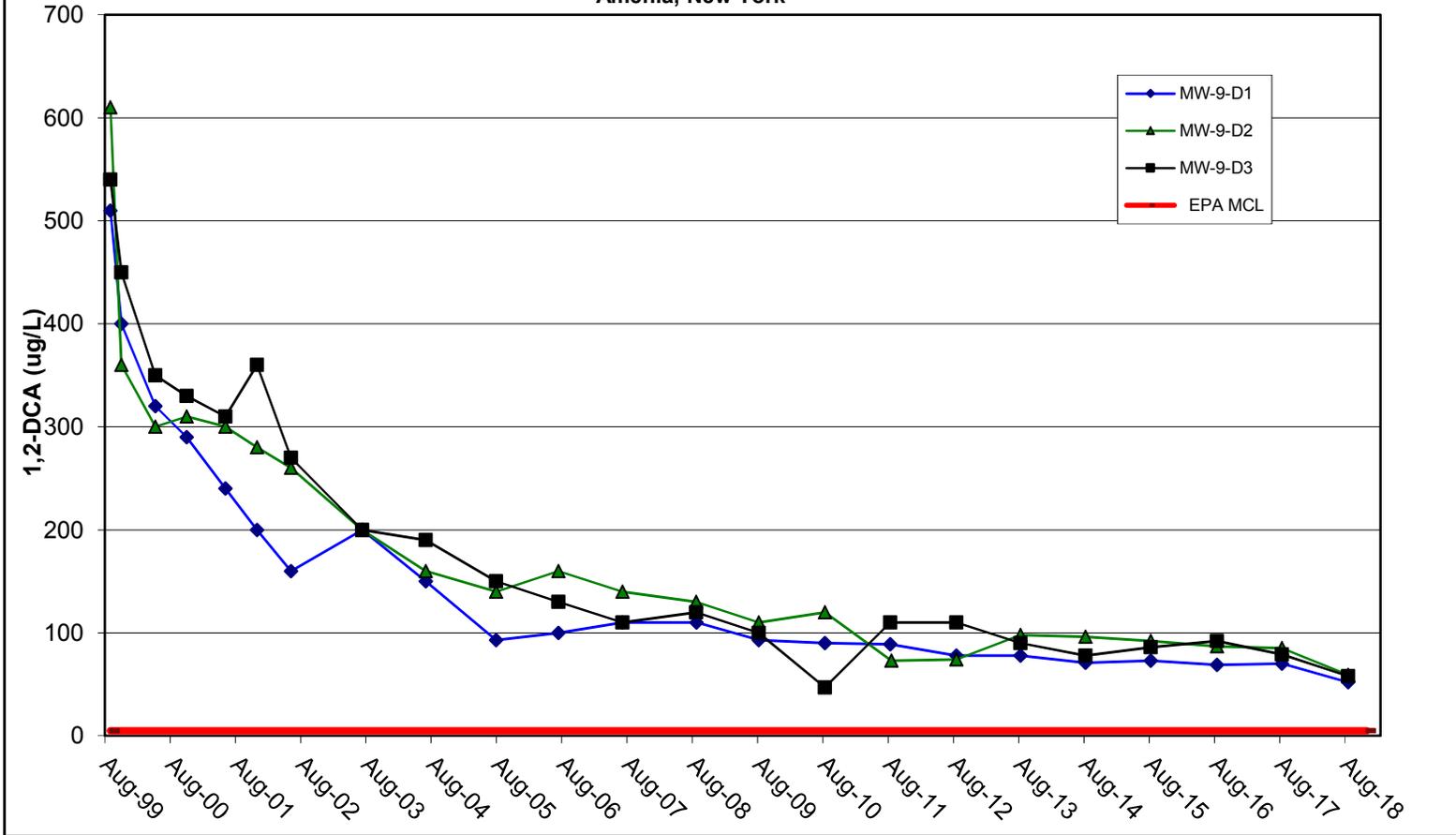


Figure 7
1,2-DCA Concentrations in
Groundwater Aug 2007 to Aug
2018
MW-10 Series
Sarney Farm Superfund Site
Amenia, New York

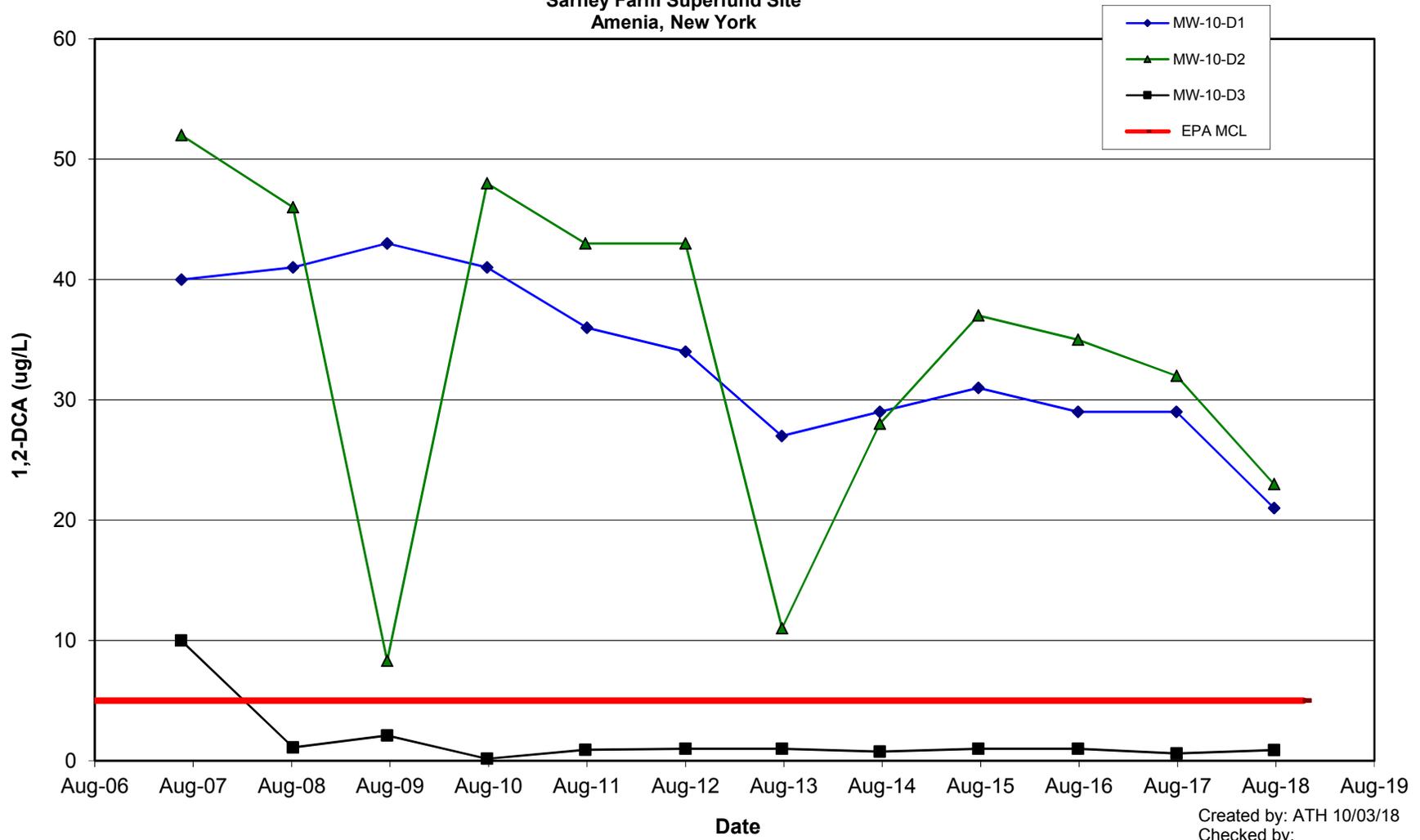
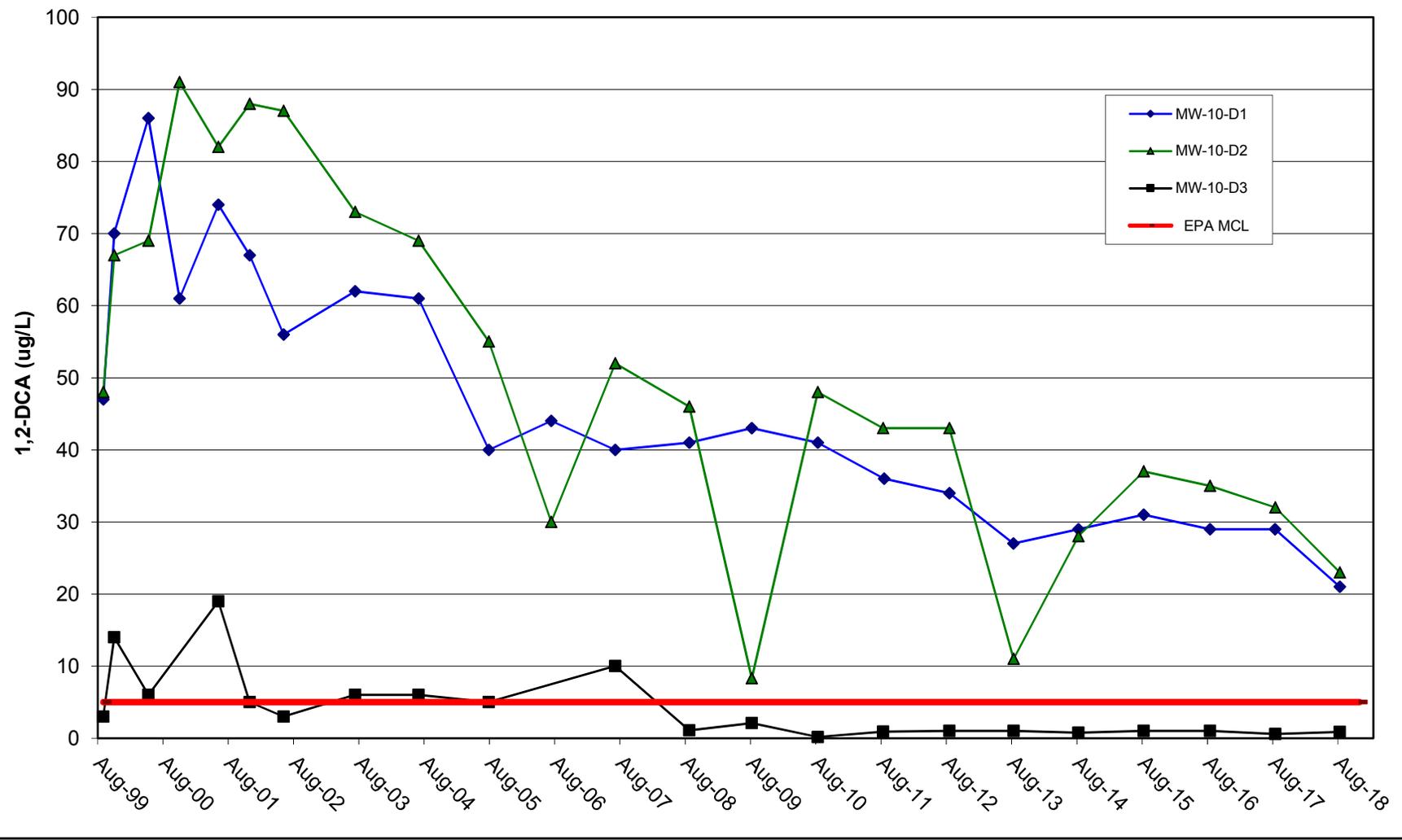


Figure 8
1,2-DCA Concentrations in
Groundwater
MW-10 Series
Sarney Farm Superfund Site
Amenia, New York



APPENDIX A

2018 Laboratory Data Reports

(Provided on CD)

APPENDIX B

2018 Data Validation Reports

**DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

1.0 INTRODUCTION

Data validation was completed on the volatile organic compound (VOC) groundwater monitoring well and residential well samples collected in August 2018 at the Sarney Farm Superfund Site in Amenia, New York. Samples were analyzed by TestAmerica Laboratories, Inc., located in Buffalo, New York (TAL-BUF), Edison, New Jersey (TAL-ED), and Savannah, Georgia (TAL-SAV). Results were reported in the following sample delivery groups (SDGs):

- 460-163028-1
- 480-140674-1
- 480-140973-1

Table 1 includes a list of samples included in this data evaluation. Samples were analyzed for the following analytical parameters using the methods listed in Table 1:

- Volatile Organic Compounds (VOCs) using Method 8260C
- 1,4-Dioxane using Method 8260C Selected Ion Monitoring (SIM)
- Monitored Natural Attenuation (MNA) Parameters (see Table 1)

Data validation was completed based on procedures described in the project quality assurance plan *Modified UFP-QAPP Sarney Farm Superfund Site* (AMEC E&E, 2017) and general procedures described in the U. S. Environmental Protection Agency (USEPA) Region II data validation guidelines (USEPA, 2014). Stage 2A validation was completed for all parameters (USEPA, 2009). Professional judgment was used when evaluating data for the analytical methods used during this sampling event. Sample event information included in this data validation summary report is presented in the following Tables:

- Table 1 – Summary of Samples and Analytical Methods
- Table 2 – Summary of Analytical Results
- Table 3 – Summary of Qualification Actions

Laboratory deliverables included:

- Chain of custody records
- Sample receipt logs
- Sample results
- Associated quality control (QC) results

The data validation included the following evaluations. QAPP or laboratory limits, as applicable, were used as control limits for data evaluation.

- Case Narrative and Chain of Custody (COC) Review
- Data Package Completeness
- Holding Times

- Field and Laboratory Blanks
- Laboratory Control Samples (LCS)
- Matrix Spike/Matrix Spike Duplicates (MS/MSD)
- Field Duplicates
- Surrogate Spikes (if applicable)
- Electronic Data Qualification and Verification

Data qualification actions are applied when necessary based on general procedures in USEPA validation guidelines and the judgment of the project chemist. The following laboratory or data review qualifiers are used in the final data presentation:

J = concentration is estimated

U = target analyte is not detected at, or above, the reported detection limit

Results are interpreted to be usable as reported by the laboratory or as qualified in the following section and summarized on Table 3.

2.0 DATA VALIDATION QUALIFICATION ACTION SUMMARY

VOCs

- Acetone (6.1 µg/L) was reported in the field blank associated with the aqueous samples. Low concentration detections of acetone in samples were less than the reporting limit and were qualified non-detect (U) at the reporting limit. Qualified results are summarized on Table 3 with reason code BL2.

1,4-Dioxane

- 1,4-Dioxane (0.34J – 0.36J µg/L) was reported in the equipment blank and field blank associated with the aqueous samples. A low concentration detection of 1,4-dioxane in sample MW-10D-2 was less than the reporting limit and was qualified non-detect (U) at the reporting limit. Low concentration detections of 1,4-dioxane in samples MW-10D-1 and MW-9D-3 were greater than the reporting limit and were reported without qualification. Qualified results are summarized on Table 3 with reason code BL2.

MNA Parameters

- Low concentration detections of total organic carbon in all a subset samples were qualified non-detect (U) at the reporting limit based on detections in the associated method blanks. Qualified results are summarized in Table 3 with reason code BL1.

Reference:

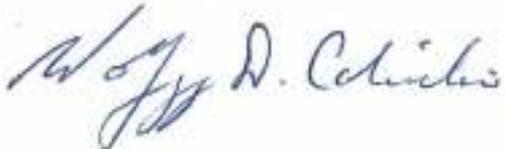
AMEC E&E, 2017. "Quality Assurance Project Plan Sarney Farm Superfund Site Benson Hill Road Dover Plains, Dutchess County, New York;" AMEC E&E, October 2016, Revised February 2017, Revised July 2017.

U.S. Environmental Protection Agency (USEPA), 2009. "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use"; Office of Solid Waste and Emergency Response; EPA-540-R-08-005; January 2009.

USEPA Region 2, 2014. "Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) SW-846 Method 8260B and 8260C"; SOP # HW-24, Revision 4, Hazardous Waste Support Branch; September 2014.

Reviewed by:

QA Chemist: Wolfgang D. Calicchio



September 27, 2018

Senior Review: Christian Ricardi, NRCC-EAC



October 1, 2018

**TABLE 1 - SUMMARY OF SAMPLES AND ANALYTICAL METHODS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

SDG	Location	Sample ID	Sample Date	Media	Class Analysis Method Fraction QC Code	VOCs	1,4-Dioxane	Sulfate	Nitrate/Nitrite	Metals	Metals	TOC	Methane	Sulfide
						8260C N	8260C SIM N	300 T	353.2 T	6010C T	6010C D	9060A T	RSK-175 N	SM 4500 S2 F T
460-163028-1	151BHR	151 BHR	8/20/2018	GW	FS	40								
460-163028-1	EMERSON	Emerson	8/20/2018	GW	FS	40								
460-163028-1	HURLBERT	Hurlburt	8/20/2018	GW	FS	40								
460-163028-1	LIENERT	Lienert	8/20/2018	GW	FS	40								
460-163028-1	SARNEY	Sarney	8/20/2018	GW	FS	40								
460-163028-1	QC	TB-2	8/20/2018	BW	TB	40								
480-140674-1	MW-10D-1	MW-10D-1	8/20/2018	GW	FS	40	1	1	1	1	1	1	1	1
480-140674-1	MW-10D-2	MW-10D-2	8/20/2018	GW	FS	40	1	1	1	1	1	1	1	1
480-140674-1	MW-10D-3	MW-10D-3	8/20/2018	GW	FS	40	1	1	1	1	1	1	1	1
480-140674-1	QC	TB-1	8/20/2018	BW	TB	40	1							
480-140973-1	QC	EB01	8/28/2018	BW	EB	40	1	1	1	1	1	1	1	1
480-140973-1	QC	FB01	8/28/2018	BW	FB	40	1	1	1	1	1	1	1	1
480-140973-1	MW-7D-S	MW-7D-5	8/28/2018	GW	FS	40	1	1	1	1	1	1	1	1
480-140973-1	MW-7D-D	MW-7D-D	8/28/2018	GW	FS	40	1	1	1	1	1	1	1	1
480-140973-1	MW-7D-D	MW-7D-D DUP	8/28/2018	GW	FS	40	1	1	1	1	1	1	1	1
480-140973-1	MW-9D-1	MW-9D-1	8/28/2018	GW	FS	40	1	1	1	1	1	1	1	1
480-140973-1	MW-9D-2	MW-9D-2	8/28/2018	GW	FS	40	1	1	1	1	1	1	1	1
480-140973-1	MW-9D-3	MW-9D-3	8/28/2018	GW	FS	40	1	1	1	1	1	1	1	1
480-140973-1	QC	TB02	8/28/2018	BW	TB	40								

Note:

BW = blank water
D = dissolved
EB = equipment blank
FD = field duplicate
FS = field sample
GW = groundwater
N = normal
T = total
TB = trip blank
Count = number of target analytes reported

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

				SDG	460-163028-1	460-163028-1	460-163028-1		
				Location	151BHR	EMERSON	HURLBERT		
				Sample Date	8/20/2018	8/20/2018	8/20/2018		
				Sample ID	151 BHR	Emerson	Hurlburt		
				QC Code	FS	FS	FS		
Class	Fraction	Parameter	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier
8260C	N	1,1,1-Trichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,1,2-Trichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,1-Dichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,1-Dichloroethene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,3-Trichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,4-Trichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,4-Trimethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2-Dichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2-Dichloropropane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,3,5-Trimethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,3-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,4-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	2-Butanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	2-Hexanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	4-Methyl-2-pentanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	Acetone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	Benzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Carbon disulfide	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Carbon tetrachloride	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloroform	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Cis-1,2-Dichloroethene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Dichlorodifluoromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Ethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Methylene chloride	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Naphthalene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Propylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Styrene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Tetrachloroethene	UG/L	0.5	U	0.5	U	0.5	U

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK

				460-163028-1		460-163028-1		460-163028-1	
				151BHR		EMERSON		HURLBERT	
				8/20/2018		8/20/2018		8/20/2018	
				151 BHR		Emerson		Hurlburt	
				FS		FS		FS	
Class	Fraction	Parameter	SDG Location Sample Date Sample ID QC Code Units	Result	Qualifier	Result	Qualifier	Result	Qualifier
8260C	N	Toluene	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	trans-1,2-Dichloroethene	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Trichloroethene	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Trichlorofluoromethane	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Vinyl chloride	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Xylene, o	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Xylenes (m&p)	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Xylenes, Total	UG/L	1 U		1 U		1 U	
8260C SIM	N	1,4-Dioxane	UG/L						
RSK-175	N	Methane	UG/L						
300	T	Sulfate	MG/L						
353.2	T	Nitrate+Nitrite as N	MG/L						
6010C	T	Iron	MG/L						
6010C	D	Iron	MG/L						
9060A	T	Total Organic Carbon	MG/L						
SM 4500 S2 F	T	Sulfide	MG/L						

Notes:

FS = field sample

FD = field duplicate

TB = trip blank

EB = equipment blank

MG/L = milligram per liter

UG/L = microgram per liter

U = not detected

J = estimated value

T = total

D = dissolved

N = normal

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

				SDG	460-163028-1	460-163028-1	460-163028-1
				Location	LIENERT	QC	SARNEY
				Sample Date	8/20/2018	8/20/2018	8/20/2018
				Sample ID	Lienert	TB-2	Sarney
				QC Code	FS	TB	FS
Class	Fraction	Parameter	Units	Result	Qualifier	Result	Qualifier
8260C	N	1,1,1-Trichloroethane	UG/L	0.5	U	0.5	U
8260C	N	1,1,2-Trichloroethane	UG/L	0.5	U	0.5	U
8260C	N	1,1-Dichloroethane	UG/L	0.5	U	0.5	U
8260C	N	1,1-Dichloroethene	UG/L	0.5	U	0.5	U
8260C	N	1,2,3-Trichlorobenzene	UG/L	0.5	U	0.5	U
8260C	N	1,2,4-Trichlorobenzene	UG/L	0.5	U	0.5	U
8260C	N	1,2,4-Trimethylbenzene	UG/L	0.5	U	0.5	U
8260C	N	1,2-Dichlorobenzene	UG/L	0.5	U	0.5	U
8260C	N	1,2-Dichloroethane	UG/L	0.5	U	0.5	U
8260C	N	1,2-Dichloropropane	UG/L	0.5	U	0.5	U
8260C	N	1,3,5-Trimethylbenzene	UG/L	0.5	U	0.5	U
8260C	N	1,3-Dichlorobenzene	UG/L	0.5	U	0.5	U
8260C	N	1,4-Dichlorobenzene	UG/L	0.5	U	0.5	U
8260C	N	2-Butanone	UG/L	2.5	U	2.5	U
8260C	N	2-Hexanone	UG/L	2.5	U	2.5	U
8260C	N	4-Methyl-2-pentanone	UG/L	2.5	U	2.5	U
8260C	N	Acetone	UG/L	2.5	U	1.7	J
8260C	N	Benzene	UG/L	0.5	U	0.5	U
8260C	N	Carbon disulfide	UG/L	0.5	U	0.5	U
8260C	N	Carbon tetrachloride	UG/L	0.5	U	0.5	U
8260C	N	Chlorobenzene	UG/L	0.5	U	0.5	U
8260C	N	Chloroethane	UG/L	0.5	U	0.5	U
8260C	N	Chloroform	UG/L	0.5	U	0.5	U
8260C	N	Chloromethane	UG/L	0.5	U	0.5	U
8260C	N	Cis-1,2-Dichloroethene	UG/L	0.5	U	0.5	U
8260C	N	Dichlorodifluoromethane	UG/L	0.5	U	0.5	U
8260C	N	Ethylbenzene	UG/L	0.5	U	0.5	U
8260C	N	Methylene chloride	UG/L	0.5	U	0.85	
8260C	N	Naphthalene	UG/L	0.5	U	0.5	U
8260C	N	Propylbenzene	UG/L	0.5	U	0.5	U
8260C	N	Styrene	UG/L	0.5	U	0.5	U
8260C	N	Tetrachloroethene	UG/L	0.5	U	0.5	U

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

Class	Fraction	Parameter	SDG Location Sample Date Sample ID QC Code Units	460-163028-1		460-163028-1		460-163028-1	
				Result	Qualifier	Result	Qualifier	Result	Qualifier
8260C	N	Toluene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	trans-1,2-Dichloroethene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Trichloroethene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Trichlorofluoromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Vinyl chloride	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Xylene, o	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Xylenes (m&p)	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Xylenes, Total	UG/L	1	U	1	U	1	U
8260C SIM	N	1,4-Dioxane	UG/L						
RSK-175	N	Methane	UG/L						
300	T	Sulfate	MG/L						
353.2	T	Nitrate+Nitrite as N	MG/L						
6010C	T	Iron	MG/L						
6010C	D	Iron	MG/L						
9060A	T	Total Organic Carbon	MG/L						
SM 4500 S2 F	T	Sulfide	MG/L						

Notes:

- FS = field sample
- FD = field duplicate
- TB = trip blank
- EB = equipment blank
- MG/L = milligram per liter
- UG/L = microgram per liter
- U = not detected
- J = estimated value
- T = total
- D = dissolved
- N = normal

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

				SDG	480-140674-1	480-140674-1	480-140674-1		
				Location	MW-10D-1	MW-10D-2	MW-10D-3		
				Sample Date	8/20/2018	8/20/2018	8/20/2018		
				Sample ID	MW-10D-1	MW-10D-2	MW-10D-3		
				QC Code	FS	FS	FS		
Class	Fraction	Parameter	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier
8260C	N	1,1,1-Trichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,1,2-Trichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,1-Dichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,1-Dichloroethene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,3-Trichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,4-Trichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,4-Trimethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2-Dichloroethane	UG/L	21		23		0.89	
8260C	N	1,2-Dichloropropane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,3,5-Trimethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,3-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,4-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	2-Butanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	2-Hexanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	4-Methyl-2-pentanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	Acetone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	Benzene	UG/L	0.1	J	0.44	J	0.5	U
8260C	N	Carbon disulfide	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Carbon tetrachloride	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloroform	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Cis-1,2-Dichloroethene	UG/L	1.2		0.55		0.5	U
8260C	N	Dichlorodifluoromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Ethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Methylene chloride	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Naphthalene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Propylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Styrene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Tetrachloroethene	UG/L	0.5	U	0.5	U	0.5	U

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

Class	Fraction	Parameter	SDG Location Sample Date Sample ID QC Code Units	480-140674-1		480-140674-1		480-140674-1	
				Result	Qualifier	Result	Qualifier	Result	Qualifier
8260C	N	Toluene	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	trans-1,2-Dichloroethene	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Trichloroethene	UG/L	0.5 U		0.5 U		0.68	
8260C	N	Trichlorofluoromethane	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Vinyl chloride	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Xylene, o	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Xylenes (m&p)	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Xylenes, Total	UG/L	1 U		1 U		1 U	
8260C SIM	N	1,4-Dioxane	UG/L	1.2 U		0.4 U		0.4 U	
RSK-175	N	Methane	UG/L	43		1.8		0.58 U	
300	T	Sulfate	MG/L	28.5		31.5		21.9	
353.2	T	Nitrate+Nitrite as N	MG/L	0.05 U		0.05 U		0.17	
6010C	T	Iron	MG/L	0.37		0.11		4.2	
6010C	D	Iron	MG/L	0.36		0.083		0.069	
9060A	T	Total Organic Carbon	MG/L	1 U		1 U		1 U	
SM 4500 S2 F	T	Sulfide	MG/L	1 U		1 U		1 U	

Notes:

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- MG/L = milligram per liter
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- T = total
- D = dissolved
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**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

				SDG	480-140674-1		480-140973-1		480-140973-1	
				Location	QC		MW-7D-D		MW-7D-D	
				Sample Date	8/20/2018		8/28/2018		8/28/2018	
				Sample ID	TB-1		MW-7D-D		MW-7D-D DUP	
				QC Code	TB		FS		FD	
Class	Fraction	Parameter	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	
8260C	N	1,1,1-Trichloroethane	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	1,1,2-Trichloroethane	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	1,1-Dichloroethane	UG/L	0.5	U	0.37	J	0.4	J	
8260C	N	1,1-Dichloroethene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	1,2,3-Trichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	1,2,4-Trichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	1,2,4-Trimethylbenzene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	1,2-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	1,2-Dichloroethane	UG/L	0.5	U	35		36		
8260C	N	1,2-Dichloropropane	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	1,3,5-Trimethylbenzene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	1,3-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	1,4-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	2-Butanone	UG/L	2.5	U	2.5	U	2.5	U	
8260C	N	2-Hexanone	UG/L	2.5	U	2.5	U	2.5	U	
8260C	N	4-Methyl-2-pentanone	UG/L	2.5	U	2.5	U	2.5	U	
8260C	N	Acetone	UG/L	1.8	J	2.5	U	2.5	U	
8260C	N	Benzene	UG/L	0.5	U	0.48	J	0.47	J	
8260C	N	Carbon disulfide	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Carbon tetrachloride	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Chlorobenzene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Chloroethane	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Chloroform	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Chloromethane	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Cis-1,2-Dichloroethene	UG/L	0.5	U	2.5		2.6		
8260C	N	Dichlorodifluoromethane	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Ethylbenzene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Methylene chloride	UG/L	0.84		0.5	U	0.5	U	
8260C	N	Naphthalene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Propylbenzene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Styrene	UG/L	0.5	U	0.5	U	0.5	U	
8260C	N	Tetrachloroethene	UG/L	0.5	U	0.5	U	0.5	U	

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

Class	Fraction	Parameter	SDG Location Sample Date Sample ID QC Code Units	480-140674-1		480-140973-1		480-140973-1	
				Result	Qualifier	Result	Qualifier	Result	Qualifier
8260C	N	Toluene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	trans-1,2-Dichloroethene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Trichloroethene	UG/L	0.5	U	0.6		0.61	
8260C	N	Trichlorofluoromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Vinyl chloride	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Xylene, o	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Xylenes (m&p)	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Xylenes, Total	UG/L	1	U	1	U	1	U
8260C SIM	N	1,4-Dioxane	UG/L	0.4	U	5.8		5.6	
RSK-175	N	Methane	UG/L			51		49	
300	T	Sulfate	MG/L			27.1		27.2	
353.2	T	Nitrate+Nitrite as N	MG/L			0.05	U	0.05	U
6010C	T	Iron	MG/L			0.29		0.29	
6010C	D	Iron	MG/L			0.3		0.28	
9060A	T	Total Organic Carbon	MG/L			1	U	1	U
SM 4500 S2 F	T	Sulfide	MG/L			1	U	1	U

Notes:

FS = field sample
FD = field duplicate
TB = trip blank
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MG/L = milligram per liter
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U = not detected
J = estimated value
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DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK

				480-140973-1		480-140973-1		480-140973-1	
				MW-7D-S		MW-9D-1		MW-9D-2	
				8/28/2018		8/28/2018		8/28/2018	
				MW-7D-5		MW-9D-1		MW-9D-2	
				FS		FS		FS	
				QC Code		QC Code		QC Code	
Class	Fraction	Parameter	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier
8260C	N	1,1,1-Trichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,1,2-Trichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,1-Dichloroethane	UG/L	0.57		0.35	J	0.36	J
8260C	N	1,1-Dichloroethene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,3-Trichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,4-Trichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,4-Trimethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2-Dichloroethane	UG/L	53		52		59	
8260C	N	1,2-Dichloropropane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,3,5-Trimethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,3-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,4-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	2-Butanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	2-Hexanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	4-Methyl-2-pentanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	Acetone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	Benzene	UG/L	0.97		3.3		0.78	
8260C	N	Carbon disulfide	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Carbon tetrachloride	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloroform	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Cis-1,2-Dichloroethene	UG/L	4.9		4.5		6.1	
8260C	N	Dichlorodifluoromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Ethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Methylene chloride	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Naphthalene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Propylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Styrene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Tetrachloroethene	UG/L	0.5	U	0.5	U	0.5	U

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

Class	Fraction	Parameter	SDG Location Sample Date Sample ID QC Code Units	480-140973-1		480-140973-1		480-140973-1	
				Result	Qualifier	Result	Qualifier	Result	Qualifier
8260C	N	Toluene	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	trans-1,2-Dichloroethene	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Trichloroethene	UG/L	1.1		0.48 J		0.94	
8260C	N	Trichlorofluoromethane	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Vinyl chloride	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Xylene, o	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Xylenes (m&p)	UG/L	0.5 U		0.5 U		0.5 U	
8260C	N	Xylenes, Total	UG/L	1 U		1 U		1 U	
8260C SIM	N	1,4-Dioxane	UG/L	3.4		13		10	
RSK-175	N	Methane	UG/L	11		33		15	
300	T	Sulfate	MG/L	28.1		22.9		30.8	
353.2	T	Nitrate+Nitrite as N	MG/L	0.05 U		0.05 U		0.05 U	
6010C	T	Iron	MG/L	0.64		0.32		0.68	
6010C	D	Iron	MG/L	0.47		0.27		0.66	
9060A	T	Total Organic Carbon	MG/L	1 U		1 U		1 U	
SM 4500 S2 F	T	Sulfide	MG/L	1 U		0.8 J		1 U	

Notes:

- FS = field sample
- FD = field duplicate
- TB = trip blank
- EB = equipment blank
- MG/L = milligram per liter
- UG/L = microgram per liter
- U = not detected
- J = estimated value
- T = total
- D = dissolved
- N = normal

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

				SDG	480-140973-1	480-140973-1	480-140973-1		
				Location	MW-9D-3	QC	QC		
				Sample Date	8/28/2018	8/28/2018	8/28/2018		
				Sample ID	MW-9D-3	TB02	EB01		
				QC Code	FS	TB	EB		
Class	Fraction	Parameter	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier
8260C	N	1,1,1-Trichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,1,2-Trichloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,1-Dichloroethane	UG/L	0.27	J	0.5	U	0.5	U
8260C	N	1,1-Dichloroethene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,3-Trichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,4-Trichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2,4-Trimethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,2-Dichloroethane	UG/L	58		0.5	U	0.5	U
8260C	N	1,2-Dichloropropane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,3,5-Trimethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,3-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	1,4-Dichlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	2-Butanone	UG/L	2.5	U	2.5	U	2.6	
8260C	N	2-Hexanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	4-Methyl-2-pentanone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	Acetone	UG/L	2.5	U	2.5	U	2.5	U
8260C	N	Benzene	UG/L	0.88		0.5	U	0.5	U
8260C	N	Carbon disulfide	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Carbon tetrachloride	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chlorobenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloroethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloroform	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Chloromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Cis-1,2-Dichloroethene	UG/L	5.6		0.5	U	0.5	U
8260C	N	Dichlorodifluoromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Ethylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Methylene chloride	UG/L	0.5	U	0.41	J	0.5	U
8260C	N	Naphthalene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Propylbenzene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Styrene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Tetrachloroethene	UG/L	0.34	J	0.5	U	0.5	U

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

				SDG	480-140973-1	480-140973-1	480-140973-1		
				Location	MW-9D-3	QC	QC		
				Sample Date	8/28/2018	8/28/2018	8/28/2018		
				Sample ID	MW-9D-3	TB02	EB01		
				QC Code	FS	TB	EB		
Class	Fraction	Parameter	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier
8260C	N	Toluene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	trans-1,2-Dichloroethene	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Trichloroethene	UG/L	3.9		0.5	U	0.5	U
8260C	N	Trichlorofluoromethane	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Vinyl chloride	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Xylene, o	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Xylenes (m&p)	UG/L	0.5	U	0.5	U	0.5	U
8260C	N	Xylenes, Total	UG/L	1	U	1	U	1	U
8260C SIM	N	1,4-Dioxane	UG/L	1.2	U			0.36	J
RSK-175	N	Methane	UG/L	2				0.58	U
300	T	Sulfate	MG/L	28.3				2	U
353.2	T	Nitrate+Nitrite as N	MG/L	0.05	U			0.05	U
6010C	T	Iron	MG/L	1				0.05	U
6010C	D	Iron	MG/L	0.95				0.05	U
9060A	T	Total Organic Carbon	MG/L	1	U			1	U
SM 4500 S2 F	T	Sulfide	MG/L	1	U			1	U

Notes:

- FS = field sample
- FD = field duplicate
- TB = trip blank
- EB = equipment blank
- MG/L = milligram per liter
- UG/L = microgram per liter
- U = not detected
- J = estimated value
- T = total
- D = dissolved
- N = normal

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

				SDG	480-140973-1	
				Location	QC	
				Sample Date	8/28/2018	
				Sample ID	FB01	
				QC Code	FB	
Class	Fraction	Parameter	Units	Result	Qualifier	
8260C	N	1,1,1-Trichloroethane	UG/L	0.5	U	
8260C	N	1,1,2-Trichloroethane	UG/L	0.5	U	
8260C	N	1,1-Dichloroethane	UG/L	0.5	U	
8260C	N	1,1-Dichloroethene	UG/L	0.5	U	
8260C	N	1,2,3-Trichlorobenzene	UG/L	0.5	U	
8260C	N	1,2,4-Trichlorobenzene	UG/L	0.5	U	
8260C	N	1,2,4-Trimethylbenzene	UG/L	0.5	U	
8260C	N	1,2-Dichlorobenzene	UG/L	0.5	U	
8260C	N	1,2-Dichloroethane	UG/L	0.5	U	
8260C	N	1,2-Dichloropropane	UG/L	0.5	U	
8260C	N	1,3,5-Trimethylbenzene	UG/L	0.5	U	
8260C	N	1,3-Dichlorobenzene	UG/L	0.5	U	
8260C	N	1,4-Dichlorobenzene	UG/L	0.5	U	
8260C	N	2-Butanone	UG/L	2.8		
8260C	N	2-Hexanone	UG/L	2.5	U	
8260C	N	4-Methyl-2-pentanone	UG/L	2.5	U	
8260C	N	Acetone	UG/L	6.1		
8260C	N	Benzene	UG/L	0.5	U	
8260C	N	Carbon disulfide	UG/L	0.5	U	
8260C	N	Carbon tetrachloride	UG/L	0.5	U	
8260C	N	Chlorobenzene	UG/L	0.5	U	
8260C	N	Chloroethane	UG/L	0.5	U	
8260C	N	Chloroform	UG/L	0.5	U	
8260C	N	Chloromethane	UG/L	0.5	U	
8260C	N	Cis-1,2-Dichloroethene	UG/L	0.5	U	
8260C	N	Dichlorodifluoromethane	UG/L	0.5	U	
8260C	N	Ethylbenzene	UG/L	0.5	U	
8260C	N	Methylene chloride	UG/L	0.5	U	
8260C	N	Naphthalene	UG/L	0.5	U	
8260C	N	Propylbenzene	UG/L	0.5	U	
8260C	N	Styrene	UG/L	0.5	U	
8260C	N	Tetrachloroethene	UG/L	0.5	U	

**TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

				SDG	480-140973-1	
				Location	QC	
				Sample Date	8/28/2018	
				Sample ID	FB01	
				QC Code	FB	
Class	Fraction	Parameter	Units	Result	Qualifier	
8260C	N	Toluene	UG/L	0.5	U	
8260C	N	trans-1,2-Dichloroethene	UG/L	0.5	U	
8260C	N	Trichloroethene	UG/L	0.5	U	
8260C	N	Trichlorofluoromethane	UG/L	0.5	U	
8260C	N	Vinyl chloride	UG/L	0.5	U	
8260C	N	Xylene, o	UG/L	0.5	U	
8260C	N	Xylenes (m&p)	UG/L	0.5	U	
8260C	N	Xylenes, Total	UG/L	1	U	
8260C SIM	N	1,4-Dioxane	UG/L	0.34	J	
RSK-175	N	Methane	UG/L	0.58	U	
300	T	Sulfate	MG/L	2	U	
353.2	T	Nitrate+Nitrite as N	MG/L	0.05	U	
6010C	T	Iron	MG/L	0.05	U	
6010C	D	Iron	MG/L	0.05	U	
9060A	T	Total Organic Carbon	MG/L	1	U	
SM 4500 S2 F	T	Sulfide	MG/L	1	U	

Notes:

- FS = field sample
- FD = field duplicate
- TB = trip blank
- EB = equipment blank
- MG/L = milligram per liter
- UG/L = microgram per liter
- U = not detected
- J = estimated value
- T = total
- D = dissolved
- N = normal

**TABLE 3 - SUMMARY OF QUALIFICATION ACTIONS
DATA VALIDATION SUMMARY REPORT
AUGUST 2018 WATER SAMPLING
SARNEY FARM SUPERFUND SITE
AMENIA, NEW YORK**

SDG	Analysis Method	Location ID	Lab Sample ID	Field Sample ID	Parameter Name	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier	Val Reason Code	Result Units
480-140674-1	8260C SIM	MW-10D-2	480-140674-2	MW-10D-2	1,4-Dioxane	0.33	J	0.4	U	BL2	UG/L
460-163028-1	8260C	Sarney	460-163028-1	Sarney	Acetone	1.6	J	2.5	U	BL2	UG/L
460-163028-1	8260C	Emerson	460-163028-2	Emerson	Acetone	1.6	J	2.5	U	BL2	UG/L
460-163028-1	8260C	Hurlburt	460-163028-3	Hurlburt	Acetone	2.2	J	2.5	U	BL2	UG/L
460-163028-1	8260C	Lienert	460-163028-4	Lienert	Acetone	1.4	J	2.5	U	BL2	UG/L
460-163028-1	8260C	151 BHR	460-163028-5	151 BHR	Acetone	1.6	J	2.5	U	BL2	UG/L
480-140674-1	8260C	MW-10D-1	480-140674-1	MW-10D-1	Acetone	1.2	J	2.5	U	BL2	UG/L
480-140674-1	8260C	MW-10D-3	480-140674-3	MW-10D-3	Acetone	1.6	J	2.5	U	BL2	UG/L
480-140973-1	9060A	MW-9D-1	480-140973-1	MW-9D-1	Total Organic Carbon	0.75	J B	1	U	BL1	MG/L
480-140973-1	9060A	MW-7D-D	480-140973-2	MW-7D-D	Total Organic Carbon	0.66	J B	1	U	BL1	MG/L

Notes:

BL1 = Method blank qualifier
 BL2 = Field QC Blank Qualifier
 MG/L = milligram per liter
 UG/L = microgram per liter

APPENDIX C

Mann-Kendall Test

TABLE 1
2018 MANN-KENDALL STATISTICAL EVALUATION PER WIEDEMEIER ET AL.

Well ID: MW7D-S										
1,2-DCA Concentration [ug/L] in Groundwater by Date										
	08/23/11	08/28/12	08/21/13	08/19/14	08/20/15	08/24/16	08/23/17	08/28/18	Number of >0 Values	Number of <0 Values
	130	100	44	65	61	50	59	53		
08/23/11	130	-30	-86	-65	-69	-80	-71	-77	0	7
08/28/12	100		-56	-35	-39	-50	-41	-47	0	6
08/21/13	44			21	17	6	15	9	5	0
08/19/14	65				-4	-15	-6	-12	0	4
08/20/15	61					-11	-2	-8	0	3
08/24/16	50						9	3	2	0
08/23/17	59							-6	0	1
08/28/18	53							sum	7	21
<i>Trend with at least 90% Confidence: Decreasing Concentrations</i>									S-statistic:	-14

Well ID: MW7D-D										
1,2-DCA Concentration [ug/L] in Groundwater by Date										
	08/23/11	08/28/12	08/21/13	08/19/14	08/20/15	08/24/16	08/23/17	08/28/18	Number of >0 Values	Number of <0 Values
	48	130	86	78	79	75	72	35		
08/23/11	48	82	38	30	31	27	24	-13	6	1
08/28/12	130		-44	-52	-51	-55	-58	-95	0	6
08/21/13	86			-8	-7	-11	-14	-51	0	5
08/19/14	78				1	-3	-6	-43	1	3
08/20/15	79					-4	-7	-44	0	3
08/24/16	75						-3	-40	0	2
08/23/17	72							-37	0	1
08/28/18	35							sum	7	21
<i>Trend with at least 90% Confidence: Decreasing Concentrations</i>									S-statistic:	-14

Well ID: MW9D-3										
1,2-DCA Concentration [ug/L] in Groundwater by Date										
	08/23/11	08/28/12	08/21/13	08/19/14	08/20/15	08/24/16	08/23/17	08/28/18	Number of >0 Values	Number of <0 Value
	110	110	90	78	86	92	79	58		
08/23/11	110	0	-20	-32	-24	-18	-31	-52	0	6
08/28/12	110		-20	-32	-24	-18	-31	-52	0	6
08/21/13	90			-12	-4	2	-11	-32	1	4
08/19/14	78				8	14	1	-20	3	1
08/20/15	86					6	-7	-28	1	2
08/24/16	92						-13	-34	0	2
08/23/17	79							-21	0	1
08/28/18	58							sum	5	22
<i>Trend with at least 90% Confidence: Decreasing Concentrations</i>									S-statistic:	-17

Well ID: MW9D-2										
1,2-DCA Concentration [ug/L] in Groundwater by Date										
	08/23/11	08/28/12	08/21/13	08/19/14	08/20/15	08/24/16	08/23/17	08/28/18	Number of >0 Values	Number of <0 Value
	73	74	98	96	92	87	85	59		
08/23/11	73	1	25	23	19	14	12	-14	6	1
08/28/12	74		24	22	18	13	11	-15	5	1
08/21/13	98			-2	-6	-11	-13	-39	0	5
08/19/14	96				-4	-9	-11	-37	0	4
08/20/15	92					-5	-7	-33	0	3
08/24/16	87						-2	-28	0	2
08/23/17	85							-26	0	1
08/28/18	59							sum	11	17
<i>Trend : No statistically significant trend indicated</i>									S-statistic:	-6

TABLE 1
2018 MANN-KENDALL STATISTICAL EVALUATION PER WIEDEMEIER ET AL.

Well ID: MW9D-1											
1,2-DCA Concentration [ug/L] in Groundwater by Date											
	08/23/11	08/28/12	08/21/13	08/19/14	08/20/15	08/24/16	08/23/17	08/28/18			
	89	78	78	71	73	69	70	52	Number of >0 Values	Number of <0 Value	
08/23/11	89	-11	-11	-18	-16	-20	-19	-37	0	7	
08/28/12	78		0	-7	-5	-9	-8	-26	0	5	
08/21/13	78			-7	-5	-9	-8	-26	0	5	
08/19/14	71				2	-2	-1	-19	1	3	
08/20/15	73					-4	-3	-21	0	3	
08/24/16	69						1	-17	1	1	
08/23/17	70							-18	0	1	
08/28/18	52							sum	2	25	
Trend with at least 90% Confidence: Decreasing Concentrations									S-statistic: -23		

Well ID: MW10D-3											
1,2-DCA Concentration [ug/L] in Groundwater by Date											
	08/23/11	08/28/12	08/21/13	08/19/14	08/20/15	08/24/16	08/23/17	08/20/18			
	1	0.75	1	0.75	1	1	0.6	0.89	Number of >0 Values	Number of <0 Value	
08/23/11	1	-0.25	0	-0.25	0	0	-0.4	-0.11	0	6	
08/28/12	0.75		0.25	0	0.25	0.25	-0.15	0.14	0	6	
08/21/13	1			-0.25	0	0	-0.4	-0.11	5	0	
08/19/14	0.75				0.25	0.25	-0.15	0.14	3	1	
08/20/15	1					0	-0.4	-0.11	0	3	
08/24/16	1						-0.4	-0.11	0	2	
08/23/17	0.6							0.29	0	1	
08/20/18	0.89							sum	8	19	
Trend : No statistically significant trend indicated									S-statistic: -11		

Well ID: MW10D-2											
1,2-DCA Concentration [ug/L] in Groundwater by Date											
	08/23/11	08/28/12	08/21/13	08/19/14	08/20/15	08/24/16	08/23/17	08/20/18			
	43	43	11	28	37	35	32	23	Number of >0 Values	Number of <0 Value	
08/23/11	43	0	-32	-15	-6	-8	-11	-20	0	6	
08/28/12	43		-32	-15	-6	-8	-11	-20	0	6	
08/21/13	11			17	26	24	21	12	5	0	
08/19/14	28				9	7	4	-5	3	1	
08/20/15	37					-2	-5	-14	0	3	
08/24/16	35						-3	-12	0	2	
08/23/17	32							-9	0	1	
08/20/18	23							sum	8	19	
Trend : No statistically significant trend indicated									S-statistic: -11		

Well ID: MW10D-1											
1,2-DCA Concentration [ug/L] in Groundwater by Date											
	08/23/11	08/28/12	08/21/13	08/19/14	08/20/15	08/24/16	08/23/17	08/20/18			
	36	34	27	29	31	29	27	21	Number of >0 Values	Number of <0 Value	
08/23/11	36	-2	-9	-7	-5	-7	-9	-15	0	7	
08/28/12	34		-7	-5	-3	-5	-7	-13	0	6	
08/21/13	27			2	4	2	0	-6	3	1	
08/19/14	29				2	0	-2	-8	1	2	
08/20/15	31					-2	-4	-10	0	3	
08/24/16	29						-2	-8	0	2	
08/23/17	27							-6	0	1	
08/20/18	21							sum	4	22	
Trend with at least 90% Confidence: Decreasing Concentrations									S-statistic: -18		

Notes:
- Application of Mann-Kendall Test is per Wiedemeier et al. (2000).
- For eight consecutive sampling events, an S-statistic greater than or equal to ±12 indicates a trend with at least 90% confidence. For an S-statistic of less than ±12, the trend is not statistically significant.
- S-statistic>0 = Increasing Trend; S-statistic<0 = Decreasing Trend

Event Data Comparison Key:

	No concentration change between sampling events
	Decrease in concentration between sampling events
	Increase in concentration between sampling events