

C.T. MALE ASSOCIATES

Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.

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October 18, 2019

Whiteman Osterman & Hanna LLP
One Commerce Plaza, Suite 1900
Albany, New York 12260

Re: *Allied Healthcare Products, Inc. – Stuyvesant Falls, NY Facility*
Report on Environmental Review

This report presents the findings of an Environmental Review conducted by C.T. Male Associates Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C. (C.T. Male) at the Allied Healthcare site (the “Site”) located at 46 New Street, Stuyvesant Falls, New York. This work was requested by legal counsel and completed as part of environmental due diligence activity related to a potential real estate transaction.

This report presents a summary of the historical use of the Site and previous and current environmental investigations that have been performed by others and most recently by C.T. Male. The intent of the report is to establish a baseline regarding the environmental status of the Site from which further environmental related review may be warranted. The historical information (Site occupants, uses and environmental investigations/actions) presented herein has been summarized and developed based on various documents provided to C.T. Male for review. C.T. Male has not verified the accuracy of this historical information.

Site Background

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

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

C.T. MALE ASSOCIATES

October 18, 2019

Page - 2

when it began to be used for the purpose of manufacturing nickel alkali storage batteries until 1946.

Circa 1948 the Site was purchased by Thomas A. Edison Inc. for the manufacturing of medical gases (oxygen, nitrogen and nitrous oxide), including anesthetics (cyclopropane), Baralyme (CO₂ absorbent powder) and trimethylene chlorobromide (a product to ease labor pains during childbirth), as well as machines for administering these products. In 1959 Thomas A. Edison Inc. merged with McGraw Electric to become McGraw-Edison. In 1965, McGraw-Edison sold its medical gas division (and the Site) to Chemetron Medical Products. Chemetron Medical Products phased out the production of oxygen, nitrogen and nitrous oxide, cyclopropane and trimethylene chlorobromide such that by 1967 it was only producing Baralyme. In 1977 Chemetron Medical Products was purchased by Allegheny International who eventually changed its entity name to Allied Healthcare Products, Inc. in 1980. In 1985 Allegheny International sold much of its assets, but not all of its Allied Healthcare Products division to the Harbour Group. Harbour Group retained the Allied Healthcare Products name and took the company public in 1992.

During the period when cyclopropane was produced at the facility (c. 1947 to 1967), waste from this production was pumped from the plant to a lagoon. The lagoon was located west of Building C. This lagoon area was remediated in 1977 shortly after the Site's purchase by Allegheny International and the waste pump area at Building C was later referred to as the waste pit.

A prior Phase I ESA report indicated that, on June 4, 1981, the Site was added to the EPA CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System) discovery list and was further investigated throughout the 1980's (today, CERCLIS is re-defined as the Superfund Enterprise Management System (SEMS) under the National Priorities List (NPL)). A preliminary assessment was reportedly performed by EPA in mid-June 1987. EPA also conducted an inspection of the Site from July 1 through September 1990. The company was purchased from Allegheny International by the Harbour Group in 1985 and conducted additional remediation of the area located west of Building C at this time.

In September 2004 the production of Baralyme (a carbon dioxide gas scrubbing compound used in closed circuit anesthetic systems) ceased after Allied Healthcare began the development of Litholyme (a CO₂ scrubber alternative) with production beginning in 2010.

Prior Investigations and Remedial Actions

In connection with the 1985 transaction, according to a letter from IT Corporation to Allegheny International, Inc., dated June 6, 1985, IT Corporation, under contract to Allied Healthcare Products, Inc. and Allegheny International, Inc., completed the environmental cleanup of the Site. Waste materials associated with the formerly utilized pit and evaporation pond were removed. Sampling and analysis for the excavations indicated no RCRA hazardous wastes remained, and that soil underlying and adjacent to the removed wastes was expected to cause no significant adverse environmental impact in the future. Records on government oversight were not available.¹

In 1995, a limited Phase II investigation was completed by Environmental Operations, Inc. for Mr. Eric Miller of Boatmen's Bank (St. Louis, Missouri) which consisted of collecting three surface soil samples. The samples were collected in the vicinity of areas suspected to have been environmentally impacted by the historical industrial use of the Site. Two samples were collected in the vicinity of electrical transformers to identify if there had been PCBs related impacts to the soils. PCBs were not detected above 10 ppm and therefore did not require remediation. One sample was collected from the area near the southwest corner of 'Building C' and analyzed for metals to determine if soils had been impacted by fugitive dust from the manufacturing process. Barium, chromium, mercury and lead were all detected at elevated levels.

In December 2004, a Limited Phase II Environmental Site Assessment ("ESA") was conducted by SCS Engineers for Greensfelder, Hemker & Gale (St. Louis, Missouri). The Phase II ESA included the collection of seventeen soil samples ranging from 0 to 8 feet below ground surface (as shallow bedrock was encountered throughout the Site), one water sample from boring C-2 (although it is noted it would be inappropriate to characterize the water as groundwater) and one groundwater sample from the on-site water supply well. Three soil samples were collected in the vicinity of Buildings A and B, four soil samples were collected in the vicinity of Building C, two soil sample were collected in the vicinity of historic Underground Storage Tanks (USTs), two soil samples were collected in the vicinity of the septic tank and leaching bed, three samples were

¹ In 1988, the NYS Attorney General's Office and NYSDEC conducted a document seizure of myriad environmental records at the Site. Interoffice correspondence at the time indicates that documents related to the described remediation event are among those seized and not returned. C.T. Male has not reached out to NYSDEC for this information.

C.T. MALE ASSOCIATES

October 18, 2019

Page - 4

collected from the waste pit (WP) area, and three soil samples were collected off-site for the purpose of determining background concentrations.

A variety of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals were detected in the soil samples collected from each of the selected areas of the Site. The samples collected from the waste pit area exhibited elevated levels of VOCs including acetone and methyl chloride, and the sample from WP-3 contained elevated levels of SVOCs including various benzene compounds and chrysene above New York Technical and Administrative Guidance Memorandum #4046 (TAGM 4046). It is noted that 1-chloropropane was detected in the waste pit samples, however, no cleanup standards were established by New York or the USEPA at that time. The water sample collected from C-2 contained acetone, methyl ethyl ketone (MEK), methylene chloride and several metals.

The groundwater sample from the water supply well (DW-1) contained elevated levels of acetone, 1,2-dichloropropane, methylene chloride and a variety of metals.

In January 2005, a Phase I Environmental Site Assessment was conducted by SCS Engineers for Greensfelder, Hemker & Gale. The Phase I ESA identified three Recognized Environmental Conditions (RECs) as follows:

1. Historic Site use caused Baralyme dust, in addition to other various chemicals used in the production of anesthetics, to be historically deposited around 'Building C', particularly on the southern side. Additionally, various manufacturing operations took place within some of the Site buildings which may have used products containing heavy metals and other hazardous materials.
2. The septic tank and leaching bed on the Site may have received drainage from the buildings which may have contained Baralyme as well as other chemicals and products containing heavy metals.
3. Liquid wastes from previous operations were deposited in the 'waste pit' area west of the Site buildings, which included various chemicals for anesthetics production.

In addition to these RECs, several items were identified which posed an increased potential for environmental risks including leakage from previously closed USTs, two stormwater discharge pipes with an unknown source, steel drums filled with solid waste

C.T. MALE ASSOCIATES

October 18, 2019

Page - 5

storage, water quality from the on-site supply well and a leak from the electrical transformer located in the water pump building.

In July 2010, a Limited Phase II Environmental Site Assessment was completed by SCS Engineers for Greensfelder, Hemker & Gale. The investigation included a total of fifty (50) borings from 0 to 15 feet below ground surface and one shallow groundwater sample from the boring location C-SP5. It is noted within the report that samples are compared to standards established by the NYS Brownfield Cleanup Program including the Protection of Public Health Standard, the Protection of Groundwater Standard and the Protection of Ecological Resources Standard. According to the report the following conclusions were made with respect to the analytical findings.

- Priority metals, except silver, were present in the soil at the Site above one or more of the applicable cleanup standards, including zinc, lead, mercury, copper and nickel which were most pronounced in the near surface soils.
- Seventeen of the Priority VOCs were identified in soil at the Site at concentrations above one or more of the applicable cleanup standards, the most widespread being vinyl chloride. Other contaminants of concern were reported to include acetone, trichloroethane, tetrachloroethene, xylenes, 1,2-dichloropropane, 1,3-dichloropropane, toluene and methyl ethyl ketone.
- Shallow groundwater immediately west of 'Building C' contains trichloroethene and lead above groundwater standards.
- Deep groundwater appears to contain lead and 1,2-dichloropropane (as per the 2004 investigation which included a sample of the water supply well) at concentrations above applicable groundwater standards.
- An apparent release from an electrical transformer in the old water pump building does not contain PCBs.
- Volatile organic chemicals and possibly mercury contamination in soil at the Site may present a threat of vapor intrusion to 'Building B' and 'Building C'.

All of the RECs and prior investigation findings appear related to the historic industrial operations at the Site prior to the current owner's operations.

C.T. MALE ASSOCIATES

October 18, 2019

Page - 6

Recent Investigations

On July 15, 2019, C.T. Male collected a groundwater sample from the water supply well. The sample was collected in the basement of 'Building C' from a spigot just after the pressure tank system. The well water was purged to waste for approximately five minutes at a moderate flow prior to the collection of a sample. The samples were submitted to Alpha Analytical Labs for volatile organic compound analysis by the EPA Method 8260. The analytical results were then validated by Environmental Data Services Inc. 1,2-dichloropropane was detected at a concentration of 5.7 ppb. The New York State Ambient Water Quality Standard for this compound is 1 ppb.

The on-site water well was drilled in 2000 and is 405 feet deep. Bedrock was encountered at a depth of 13 feet and 40 feet of steel casing was installed. Shale bedrock was encountered to a depth of 125 feet and limestone to a depth of 405 feet. The well yield when installed was approximately 2 gallons per minute (gpm). In 2007 the well was yielding 1.2 gpm which prompted it to be hydro-fractured and increased the yield to 4 gpm.

Based on the above analytical result, C.T. Male was requested to collect additional water samples from the Site. The samples were collected on September 12, 2019 from four locations as further described below and shown in Figure 1 (attached). The samples were analyzed for VOCs by EPA Method 8260 and the Target Analyte List of metals by standard methods. Table 1 (attached) presents the analytical results for these samples and well as the results for the July 15th sampling event.

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

As shown in Table 1, 1,2-dichloropropane was detected in each of the samples collected on September 12, 2019. The highest concentration of 1,2-dichloropropane was detected in the Pre-Aerator sample which is considered to be representative of the on-site well

C.T. MALE ASSOCIATES

October 18, 2019

Page - 7

water. TCE, Methylene Chloride and Acetone were also in three of the four samples (Pre-Aerator, Post Aerator and Sink) at various concentrations. Acetone and TCE were not detected in the Pre-Production sample. The concentrations of 1,2-dichloropropane in each of the four samples are greater than the New York State Ambient Water Quality Standard. Acetone exceeded its regulatory standard in the Pre-Aerator, Post-Aerator and Sink samples. Concentrations of Methylene Chloride were above the New York State Ambient Water Quality Standard in the Pre-Aerator and Post-Aerator.

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

Discussion

The Site has been used for manufacturing since circa 1925. The use and manufacturing of various volatile organic compounds within the Site has documented through records and reports made available for review.

The source of 1,2-dichloropropane, TCE, Acetone and Methylene Chloride in the current water supply system is likely related to the historic manufacturing of anesthetic gases or other products at the Site from circa 1947 to 1967 by Chemetron Medical Products and its predecessors.

The historic manufacturing of Baralyme and current manufacturing of Litholyme/Carbolime did not involve the use of 1,2-dichloropropane or other volatile organic compounds.

The Site has never been connected to a municipal sanitary wastewater conveyance service. Sanitary wastes are handled via a septic tank and leach field. The former manufacturing of Baralyme and current production of Litholyme/Carbolime do not generate any liquid wastes. Water used in the process is fully consumed during production. The product solution tanks are periodically rinsed out. The residual solution is captured and transferred to a 250-gallon polyethylene tote which is periodically removed for proper disposal by Univar (formerly by Nexeo).

C.T. MALE ASSOCIATES

October 18, 2019

Page - 8

Drinking water is provided from an outside bottled water delivery service. In addition to the manufacturing process, the on-site water supply well is used only for sanitary purposes (toilets and hand washing).

Groundwater samples collected from the on-site water supply well in 2004 detected 1,2-dichloropropane at a concentration of 33 parts per billion (ppb). Additionally, 1,2-dichloropropane was again detected in the water from the well in July 2019 at a concentration of 5.7 ppb. The reduction in the concentration of 1,2-dichloropropane in the well water between 2004 and July 2019 may be related to natural attenuation (degradation, migration, dilution); or dilution as related to the hydro-fracturing of the supply well in 2007 (clean water entering the well bore from newly developed fractures in the bedrock formation). The noted increase in samples collected on September 12, 2019 was potentially due to the low amount of rainfall over the summer months coupled with a maintenance operation requiring an increased volume of water that was conducted shortly before the samples were collected.

Recommendations

Based on the information reviewed, the Site was the subject of previous environmental oversight by both the USEPA and NYSDEC dating back to at least 1981. Remedial actions are reported to have taken place in 1977 and 1985; however, documents related to these efforts were not available for review, apparently due the seizure of environmental files by the NYS Attorney General's Office and NYSDEC in 1988. Site investigations subsequent to the 1985 remedial action identified limited residual contamination in and around the area remediated in 1985, primarily related to metals and volatile organic compounds, including 1,2-dichloropropane. This historic contamination is the likely source of residual contamination in groundwater beneath the Site. There was no indication in any of the materials reviewed of a release from current operations and as noted, the identified contaminants are no longer utilized in current operations.

In the event further investigation and/or remedial actions are required, the Site is a likely candidate for the NYSDEC Brownfields Cleanup Program (BCP). If accepted into the BCP, a remedial investigation would likely be required, followed by remedial action to address any remaining contamination. To facilitate the potential real estate transaction, it is recommended that this report be provided to NYSDEC for review followed by a meeting with the Department to determine the appropriate program best suited for the Site.

C.T. MALE ASSOCIATES

October 18, 2019

Page - 9

If you have questions, please contact the undersigned at your convenience.

Sincerely,

C.T. MALE ASSOCIATES

A handwritten signature in black ink, appearing to read "K. Moline". The signature is fluid and cursive, written over a faint, light-colored rectangular stamp or watermark.

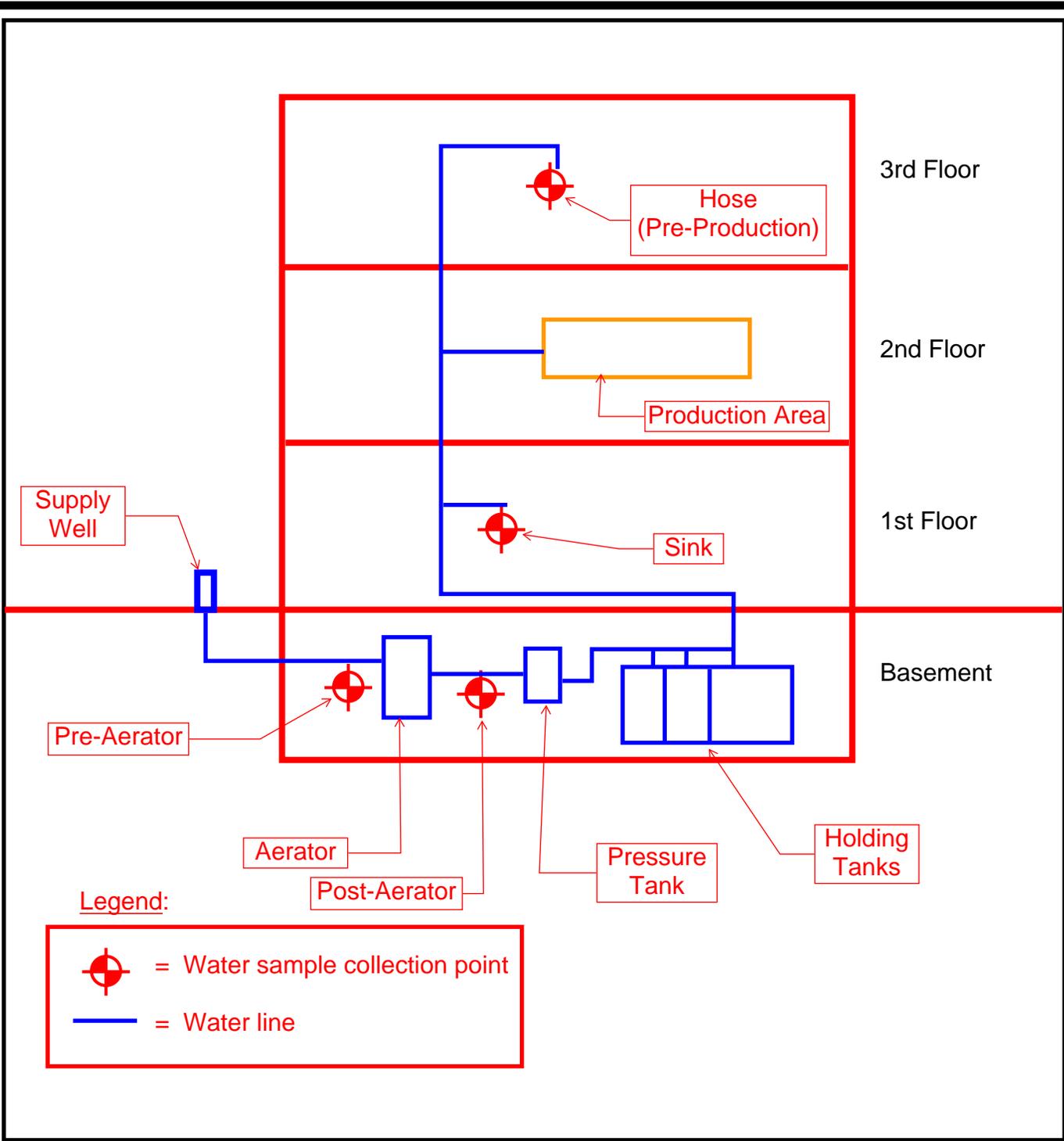
Kirk Moline PG
Managing Geologist

Attachments: Table 1, Water Sample Results
Figure 1, General Water System
References

Table 1
Water Sample Results
Allied Healthcare Products
Stuyvesant Falls, New York

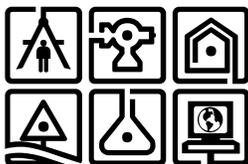
ANALYTE	CAS	SAMPLE ID:		PRE-AERATOR				POST-AERATOR				PRE-PRODUCTION				SINK				SUPPLY WELL				TRIP BLANK				TRIP BLANK						
		LAB ID:		L1941701-02				L1941701-03				L1941701-04				L1941701-05				L1931049-01				L1931049-02				L1941701-01						
		COLLECTION DATE:		9/12/2019				9/12/2019				9/12/2019				9/12/2019				7/15/2019				7/15/2019				9/12/2019						
		SAMPLE MATRIX:		WATER				WATER				WATER				WATER				WATER				WATER				WATER						
		NY-AWQS ⁽¹⁾																																
		(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL				
VOLATILE ORGANICS BY GC/MS																																		
1,2-Dichloropropane	78-87-5	0.6	250		5	0.68	240		2.5	0.34	37		1	0.14	120		2.5	0.34	5.7		1	0.14	ND		1	0.14	ND		1	0.14				
Acetone	67-64-1	50	100		25	7.3	130		12	3.6	6.8		5	1.5	130		12	3.6	13		5	1.5	8.3		5	1.5	5.7		5	1.5				
Methylene chloride	75-09-2	5	5.9	J	12	3.5	5.1	J	6.2	1.8	ND		2.5	0.7	2.8	J	6.2	1.8	ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7				
Trichloroethene	79-01-6	5	3.7		2.5	0.88	2.2		1.2	0.44	ND		0.5	0.18	1.2		1.2	0.44	0.26	J	0.5	0.18	ND		0.5	0.18	ND		0.5	0.18				
TOTAL METALS																																		
		(mg/L)																																
Aluminum, Total	7429-90-5	NS	1.13		0.01	0.00327	0.635		0.01	0.00327	0.258		0.01	0.00327	0.282		0.01	0.00327	-		-	-	-	-		-	-	-	-	-	-			
Arsenic, Total	7440-38-2	0.025	0.00063		0.0005	0.00016	0.00024	J	0.0005	0.00016	0.0004	J	0.0005	0.00016	0.0002	J	0.0005	0.00016	-		-	-	-	-	-	-	-	-	-	-				
Barium, Total	7440-39-3	1	0.442		0.0005	0.00017	0.3291		0.0005	0.00017	0.3084		0.0005	0.00017	0.3241		0.0005	0.00017	-		-	-	-	-	-	-	-	-	-	-				
Beryllium, Total	7440-41-7	0.003	0.00012	J	0.0005	0.0001	ND		0.0005	0.0001	ND		0.0005	0.0001	ND		0.0005	0.0001	-		-	-	-	-	-	-	-	-	-	-				
Calcium, Total	7440-70-2	NS	1.83		0.1	0.0394	1.88		0.1	0.0394	2.56		0.1	0.0394	2.32		0.1	0.0394	-		-	-	-	-	-	-	-	-	-	-				
Chromium, Total	7440-47-3	0.05	0.00129		0.001	0.00017	0.00049	J	0.001	0.00017	ND		0.001	0.00017	ND		0.001	0.00017	-		-	-	-	-	-	-	-	-	-	-				
Cobalt, Total	7440-48-4	NS	0.00056		0.0005	0.00016	0.00028	J	0.0005	0.00016	ND		0.0005	0.00016	ND		0.0005	0.00016	-		-	-	-	-	-	-	-	-	-	-				
Copper, Total	7440-50-8	0.2	0.00109		0.001	0.00038	0.00452		0.001	0.00038	0.01735		0.001	0.00038	0.01456		0.001	0.00038	-		-	-	-	-	-	-	-	-	-	-				
Iron, Total	7439-89-6	0.3	1.49		0.05	0.0191	0.802		0.05	0.0191	0.447		0.05	0.0191	0.48		0.05	0.0191	-		-	-	-	-	-	-	-	-	-	-				
Lead, Total	7439-92-1	0.025	0.00049	J	0.001	0.00034	0.00072	J	0.001	0.00034	0.00046	J	0.001	0.00034	0.0015		0.001	0.00034	-		-	-	-	-	-	-	-	-	-	-				
Magnesium, Total	7439-95-4	35	0.694		0.07	0.0242	0.563		0.07	0.0242	0.577		0.07	0.0242	0.561		0.07	0.0242	-		-	-	-	-	-	-	-	-	-	-				
Manganese, Total	7439-96-5	0.3	0.02092		0.001	0.00044	0.01013		0.001	0.00044	0.00645		0.001	0.00044	0.00718		0.001	0.00044	-		-	-	-	-	-	-	-	-	-	-				
Nickel, Total	7440-02-0	0.1	0.00093	J	0.002	0.00055	0.00061	J	0.002	0.00055	ND		0.002	0.00055	ND		0.002	0.00055	-		-	-	-	-	-	-	-	-	-	-				
Potassium, Total	7440-09-7	NS	3.62		0.1	0.0309	3.49		0.1	0.0309	3.62		0.1	0.0309	3.59		0.1	0.0309	-		-	-	-	-	-	-	-	-	-	-				
Sodium, Total	7440-23-5	20	301		0.1	0.0293	271		0.1	0.0293	278		0.1	0.0293	279		0.1	0.0293	-		-	-	-	-	-	-	-	-	-	-				
Vanadium, Total	7440-62-2	NS	0.00163	J	0.005	0.00157	ND		0.005	0.00157	ND		0.005	0.00157	ND		0.005	0.00157	-		-	-	-	-	-	-	-	-	-	-				
Zinc, Total	7440-66-6	2	0.00377	J	0.01	0.00341	0.01043		0.01	0.00341	0.00726	J	0.01	0.00341	0.00825	J	0.01	0.00341	-		-	-	-	-	-	-	-	-	-	-				

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



SCHEMATIC REFERENCE

Water System Schematic
 Allied Health
 Stuyvesant Falls, NY
 Drafted: September 30, 2019



C.T. MALE ASSOCIATES
 ENGINEERING, SURVEYING, ARCHITECTURE
 LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C.

50 CENTURY HILL DRIVE
 LATHAM, NY 12110

FIGURE 1 - GENERAL WATER SYSTEM

TOWN OF STUYVESANT FALLS | COLUMBIA COUNTY, NY

SCALE: Not to Scale

DRAFTER: RH

PROJECT No.: 19.9379

The locations and features depicted on this schematic are approximate and do not represent an actual survey.

References

**Allied Healthcare Products
Stuyvesant Falls, NY**

Alpha Analytical. Analytical Report. Lab Number L1931049. July 22, 2019

Alpha Analytical. Analytical Report. Lab Number L1941701. August 19, 2019

Brochure, Allied Healthcare Products, Inc., "Global Support of Life" (historical summary)

Chemetron Inter-Office Correspondence, October 25, 1988

IT Corporation Correspondence, June 6, 1985

Limited Phase II Environmental Site Assessment prepared by SCS Engineering for the Allied Healthcare Products facility dated December 17, 2004.

Limited Phase II Environmental Site Assessment prepared by SCS Engineering for the Allied Healthcare facility dated July 2010.

Phase I Environmental Site Assessment prepared by SCS Engineering for the Allied Healthcare Products facility dated January 31, 2005.

Phase II Environmental Site Assessment prepared by Environmental Operations Inc. dated October 6, 1995.

SDS Data Sheet, Carbolime, Allied Healthcare Products Inc. March 20, 2017

SDS Data Sheet, Litholyme, Allied Healthcare Products Inc. March 20, 2017

Supply Well. Personal Communication with Smith Well Drilling