Division of Environmental Remediation

Sump Discharge Pipe Investigation Report

Former Gastown MGP Site
City of Tonawanda, Erie County, New York
Registry Number 915171

April 2015

New York State Department of Environmental Conservation
Region 9
270 Michigan Avenue
Buffalo, New York 14203

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1.0 INTRODUCTION AND BACKGROUND

1.1 General

In September 1998 the New York State Department of Environmental Conservation (NYSDEC) installed a groundwater/NAPL extraction and treatment system at the Former Gastown Manufactured Gas Plant (MGP) Site in response to the presence of coal tar (non-aqueous phase liquids or NAPL) in the basement sumps of the nearby Gastown Sportsmen's Club. This system was installed as an Emergency Response Action to address potential adverse health impacts to members of the club by capturing NAPL and contaminated groundwater before they enter the two basement sumps of the club. The NYSDEC, through a standby response contractor, conducts operation, maintenance and monitoring activities at the Site in accordance with the Operation and Maintenance Manual dated September 2001.

1.2 Site Description

The Former Gastown Manufactured Gas Plant, located at 126 East Niagara Street in the City of Tonawanda, Erie County, New York, occupied a total area of approximately 3.5 acres. The Site is bordered by railroad tracks to the west and south, the Gastown Sportsmen's Club, residential properties and Carney Street to the east, and East Niagara Street and Tonawanda Creek to the north (Figure 1-1). The property was formerly operated as a manufactured gas plant under various ownership, but is now rented to several local companies. Adjacent property to the east is owned by the Niagara Frontier Transportation Authority (NFTA), which leases part of their property to the Gastown Sportsmen's Club (located further east) for parking (Figure 1-2). Residential property is located west of the Site across the railroad tracks, while backyards of residential properties along Carney Street abut the Gastown Sportsmen's Club property to the east. The topography of the Site is relatively flat-lying with a gradual northerly downward slope toward Tonawanda Creek. South of the Gastown Sportsmen's Club parking lot, however, is the berm of a former railroad bed that rises approximately 8.5 feet above the general topography of the Site.

The Site is listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State (Registry) as site number 915171. The Site has been designated a Class 2 site, indicating that the Site presents a significant threat to human health and/or the environment.

1.3 Groundwater/NAPL Extraction and Treatment System

The groundwater/NAPL extraction and treatment system installed at the Former Gastown MGP Site was designed to: (1) capture NAPL and contaminated groundwater before they enter the two basement sumps of the Gastown Sportsmen's Club, and (2) extract dense non-aqueous phase liquid (DNAPL) from the underlying plume. Figure 1-3 shows the general layout of the system, which consists of a single recovery well and a conveyance system that transports extracted fluids to a treatment system. Treated water is discharged directly to Tonawanda Creek and must meet applicable discharge limits as specified by the NYSDEC's Division of Water. Extracted NAPL is collected in 55-gallon drums that are periodically shipped off site for proper disposal. The groundwater/NAPL extraction and treatment system began operation on September 2, 1998 and has operated continuously since that time. Operation, maintenance and monitoring of this system is completed by a NYSDEC contractor from funds allocated in the Emergency Spill Response Program.

1.3.1 Extraction System Components

The groundwater/NAPL extraction system consists of a single, 10-inch diameter, recovery well, two submersible pumps and associated piping. The recovery well, designated PW-1, is located on the eastern portion of the NFTA property leased to the Gastown Sportsmen's Club for parking (Figure 1-3). The recovery well is equipped with two submersible pneumatic pumps, one to pump contaminated groundwater and the second one to pump DNAPL. Both pumps are air driven, with the groundwater pump designed to automatically cycle on and off in response to in-well fluid levels. The DNAPL pump is installed near the bottom of the well and pumps continuously at a low rate to maximize NAPL recovery. Each pump has a pressurized air supply line, a total fluids transfer line and a steel cable from which the pump is suspended. Discharge from the groundwater pump is routed to the treatment shed for phase separation and groundwater treatment, while discharge from the DNAPL pump is sent directly to an 85-gallon storage drum inside the treatment shed.

Water in the basement sumps of the Gastown Sportsmen's Club is contaminated; therefore, discharge from these sumps is directed to the treatment system. Water from the basement sumps is discharged directly to the secondary vault (Figure 1-3), and when reaching a pre-set height, activates a submersible pump that transfers the water through a 2-inch PVC pipe to the treatment

system. During a low-level or high-level fault, electrical power to the submersible pump is automatically shut off. In such cases, water from the secondary vault gravity flows through a 4-inch PVC pipe (the overflow discharge line; Figure 1-3) that was the original discharge pipe for the club's sumps. The discharge point of this pipe is unknown.

1.3.2 Treatment System Components

The groundwater treatment equipment is located inside a shed constructed during installation of the groundwater/NAPL extraction and treatment system (Figure 1-4). Fluids (groundwater and NAPL) are pumped from the recovery well to the treatment shed, where contaminated groundwater is sent directly to an oil/water separator and DNAPL is sent directly to an 85-gallon storage drum. NAPL and sludge are collected in the chambers of the oil/water separator, which are manually drained when necessary and poured into 55-gallon drums for later disposal. DNAPL collected in the 85-gallon drum is also manually drained and poured into 55-gallon drums. When water in the effluent chamber of the oil/water separator reaches a preset level (as determined by a float), a transfer pump activates and pumps water from the chamber through three granular activated carbon (GAC) drums (Figure 1-4) to remove organic contaminants. Treated water is discharged through a 4-inch PVC pipe to a catch basin along East Niagara Street (Figure 1-3). From this catch basin water is discharged directly into Tonawanda Creek.

1.4 Statement of Problem

The NYSDEC is currently investigating the presence of petroleum product that was discovered in the sanitary sewer system by the City of Tonawanda in April 2014. Historically, coal tar was present in the basement sumps of the Gastown Sportsmen's Club, and was pumped by the sumps to the discharge pipe. Since the discharge point of this pipe is unknown, coal tar formerly pumped into this pipe is a potential source of the petroleum product discovered in the sewer. As a result, the discharge point of this pipe needs to be elucidated.

1.5 Report Organization

Following this introductory section (Section 1.0), the remaining sections of this report are organized as follows:

- **Section 2.0, Site History and Background:** This section briefly describes the historic use of the Site, and discusses the remedial history of the NYSDEC's involvement since 1993;

- **Section 3.0, Study Objectives and Assessment Activities:** This section describes the objectives of the Sump Discharge Pipe Investigation and lists the activities that were completed during the investigation;

- **Section 4.0, Investigation Activities:** This section describes in detail the field activities completed during the Sump Discharge Pipe Investigation;

- **Section 5.0, Investigation Results:** This section presents the analytical results obtained during the Sump Discharge Pipe Investigation;

- **Section 6.0, Discussion and Recommendations:** This section summarizes the findings of the Sump Discharge Pipe Investigation as they relate to the objectives presented in Section 3.0. Recommendations for future activities regarding the Site are also discussed; and

- **Section 7.0, References:** This section contains a list of references utilized or cited in the report.

Figures, tables and appendices follow Section 7.0.

2.0 SITE HISTORY AND BACKGROUND

2.1 Historic Site Use

The Former Gastown MGP Site was historically operated as a manufactured gas plant under the ownership of the Tonawanda Gas Light Company; the Niagara Light, Heat & Power Company; the Republic Light, Heat & Power Company; and the Iroquois Gas Corporation. Initially, gas was manufactured using the coal carbonization process. The carbureted water gas process was added in 1910, and the plant produced gas using both processes until 1921. Both processes produced an oily byproduct, commonly known as coal tar, as the gas was cooled prior to distribution. The tar typically accumulated in the bottom of a circular gas storage vessel known as a relief gas holder. This tar is the principal waste found at the Site today.

In 1964 the property was purchased from Iroquois Gas by Mr. Wilbert Holler and incorporated into the Holler and Schenk Building Company in 1968. The property was transferred to Mr. Jack Holler in 1986 under corporate dissolution. The property is currently utilized by Mr. Holler's son as rental income, and houses several local companies.

2.2 Remedial History

In March 1993 the NYSDEC's Spill Unit responded to a spill complaint at the Gastown Sportsmen's Club where an unknown petroleum product was entering the basement sumps of the clubhouse. Spill Unit investigations revealed that the material found in the sumps was likely coal tar related to the former coal gas manufacturing operations. Remedial and investigative actions completed by the Spill Unit include the following:

- Records search revealing the former Site use and owners/operators;
- Sampling of NAPL and water from the basement sumps of the Gastown Sportsmen's Club for chemical analysis;
- Completion of test pits/trenches to facilitate sampling of contaminated soil and groundwater;

- Completion of a push probe investigation and groundwater sampling to determine groundwater flow direction, the magnitude of groundwater contamination, and the areal extent of NAPL in the subsurface environment;

- Removal and disposal of contaminated soil where coal tar had surfaced in the club's parking lot due to blockage of the club's sump discharge line;

- Replacement of the sump discharge line (Figure 1-3) following the removal action; and

- Construction of a wooden shroud around the club's basement sumps and installation of a fan to vent potentially hazardous organic vapors to the outside atmosphere.

A sample of NAPL from the club's basement sumps was collected on February 12, 1998 and submitted for TCLP analysis. The result of this analysis revealed that the NAPL was a characteristic hazardous waste for benzene (D018). Based upon this finding, the Site was referred to the Hazardous Waste Remediation Unit in March 1998 for follow-up action.

Following an initial inspection of the Site, the Hazardous Waste Remediation Unit contacted the New York State Department of Health (NYSDOH) to express its concern over potential health impacts from contamination within the Gastown Sportsmen's Club. The NYSDOH subsequently conducted an indoor air evaluation of the clubhouse on April 13, 1998 and found elevated levels (2-4 times above background) of volatile organics in the basement (sump and game rooms). Since this was not a residential property, an evacuation or restricted use was not imposed. The NYSDOH assessment confirmed, however, that volatile organics existed in the clubhouse at levels of concern relative to public health. Based upon verbal discussions with the NYSDOH, which were subsequently expressed in writing, timely action to mitigate exposures was determined to be necessary.

The Hazardous Waste Remediation Unit subsequently designed and installed the groundwater/NAPL extraction and treatment system described in Section 1.3.

In October 1998, the NYSDEC listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York.

In December 1999 the NYSDEC began a Site Investigation to: (1) fully evaluate the

effectiveness of the groundwater/NAPL extraction and treatment system; and (2) determine the areal extent to which NAPL and contaminated groundwater has migrated under the Gastown Sportsman's Club toward nearby residences on East Niagara and Carney streets. Activities completed to meet these objectives included a soil boring program, monitoring well installation, water level measurements, and environmental sampling and analysis. Field activities for this investigation were completed in September 2000. The Site Investigation Report was issued by the NYSDEC in January 2001.

The Site Investigation revealed that groundwater near the Gastown Sportsman's Club was contaminated with elevated concentrations of benzene, toluene, ethylbenzene and xylenes (BTEX), and that NAPL extended under the NFTA and Gastown Sportsman's Club properties. The Site Investigation, however, did not fully delineate the downgradient extent of NAPL or the contaminated groundwater plume.

The Site Investigation Report recommended that a Remedial Investigation/Feasibility Study (RI/FS) be completed to fully delineate the nature and extent of contamination associated with the Site for the purpose of selecting a long-term remedy. A State funded RI was completed in 2004 and the FS was completed in 2005. Coal tar was found to have migrated off site to the east, west and north.

In March 2007 a Record of Decision (ROD) was issued by the NYSDEC that required: (1) installation of sub-slab depressurization systems in several nearby structures; (2) excavation of source areas; (3) installation of collection trenches to control migration of contaminated groundwater and NAPL; and (4) sediment removal from Tonawanda Creek.

In July 2008 National Fuel Gas signed a consent order with the NYSDEC to implement the ROD. Sub-slab depressurization systems have been installed and are operating. An underground storage tank that contained NAPL residue was removed in late 2009.

In April 2013 an amended Record of Decision was issued by the NYSDEC that required: (1) shallow soil excavation to 6 feet depth in the west yard, east yard, the NFTA property between the east yard and the fiber optic line, and under the demolished buildings to create a clean, below grade, utility zone; (2) removal of the relief holder and underlying material to the top of clay; (3) in-situ solidification/stabilization into the top of the underlying silty clay in the west yard, east

yard, the NFTA property to within 10 feet of the AT&T fiber optic cable, under the demolished buildings, and around the relief holder. The Remedial Design is complete, with remediation scheduled to begin in April 2015.

2.3 Sportsmen's Club Sump Discharge Pipe

As stated in Section 1.4, the discharge point of the overflow pipe in the secondary vault (the former Gastown Sportsmen's Club sump discharge pipe) is unknown. In 1998, the President of the Sportsmen's Club informed NYSDEC personnel that the City of Tonawanda did not allow the club to tie-in this pipe to the sanitary sewer system because perforated pipe had been used. The implication was that the discharge pipe was capped, with the water allowed to leach into the ground through the perforations.

3.0 STUDY OBJECTIVE AND ASSESSMENT ACTIVITIES

3.1 Objective

The overall objective of the Sump Discharge Pipe Investigation was to determine if the discharge pipe could be a source of the petroleum product discovered in the sanitary sewer by the City of Tonawanda. This objective was evaluated by determining the discharge point of the sump discharge pipe, and by evaluating the analytical results of samples collected during the investigation.

3.2 Assessment Activities

To meet the study objective, the following activities were completed during the Sump Discharge Pipe Investigation: (1) metal tracing the sump discharge pipe; (2) a potable water discharge test; (3) evaluation of the catch basin along East Niagara Street for the presence of sediment; (4) sampling and analysis of water flowing from the sump discharge pipe into the catch basin along East Niagara Street; and (5) dye testing the sump discharge pipe. These activities are described in detail in Section 4.0. All field work was completed by NYSDEC personnel in conjunction with GES, the NYSDEC's standby contractor that operates and maintains the groundwater/NAPL extraction and treatment system.

4.0 INVESTIGATION ACTIVITIES

This section describes in detail the field activities completed during the Sump Discharge Pipe Investigation. All activities are presented in the order in which they were completed.

4.1 Metal Tracing the Sump Discharge Pipe from the Secondary Vault

On June 5, 2014 GES and NYSDEC personnel attempted to trace the former Gastown Sportsmen's Club sump discharge pipe. A metal tracer line was pushed from the secondary vault into the discharge pipe as far as it would go, the power source was turned on, and a metal detector was utilized to trace the pipe. The pipe ran parallel to the Sportsmen's Club building from the secondary vault to the first asphalt driveway, where it made a 45^{o} turn to the east (Figure 4-1). Another 45^{o} turn was made to the north (Figure 4-1), with the pipe following the eastern edge of the berm that separates the club's parking lot from the driveway (Figure 1-3). The trace ended near the Gastown Sportsmen's Club sign near the sidewalk along east Niagara Street.

To verify these results, the tracer line was marked at the discharge pipe in the secondary vault so that the length of the line in the pipe could be compared to the distance where the trace ended. When pulled, however, only 29 feet of tracer line was in the pipe, far less than the distance traced. A subsequent measurement from the secondary vault indicated that 29 feet was the location of the first 45^{o} turn in the pipe. This suggested that the electric current through the tracer line "jumped" to the nearby natural gas line, and that it was this line that was traced to East Niagara Street.

The tracer line was fed back into the discharge pipe from the secondary vault with the same results. With an ear to the ground the NYSDEC representative could hear the tracer line hitting the pipe at the first 45^{o} turn. The power source was turned back on and the original results were duplicated. With the power source off, nothing was detected, indicating that the unit was working, and confirming that the electric current had "jumped" to the natural gas line.

4.2 Potable Water Test

Following the failure of the metal trace, GES and NYSDEC personnel decided to feed a

garden hose through the discharge pipe as far as it would go and turn on the potable water source (an outside faucet on the Gastown Sportsmen's Club building). The initial thought was that if the pipe was capped, it would eventually fill with water and flow back into the secondary vault. Thirty minutes later, however, water was observed flowing into a catch basin along East Niagara Street from a shallow, 4" PVC pipe (Figure 4-2). This is the catch basin that receives the treated water from the treatment system (Figure 1-3). The faucet was turned off and within 30 minutes water had stopped flowing into the catch basin.

4.3 Catch Basin Sediment Evaluation

On June 13, 2014 GES and NYSDEC personnel evaluated the catch basin along East Niagara Street for the presence of sediment, recognizing that coal tar and contaminated water pumped from the club's sumps into the discharge pipe could have adversely impacted sediment in the catch basin. No sediment was found, so no samples were collected.

4.4 Metal Tracing the Sump Discharge Pipe from the Catch Basin

On June 13, 2014 GES and NYSDEC personnel traced a portion of the sump discharge line from the catch basin along East Niagara Street (Figures 4-3 and 4-4). The pipe was traced as far as a bubbler near the road (Figure 4-5), where it appeared to make a 90^{o} turn back towards the Gastown Sportsmen's Club.

4.5 Discharge Pipe Water Sampling

Due to the potential for coal tar to be in the section of discharge pipe that was not replaced by the NYSDEC's Spill Unit, GES and NYSDEC personnel decided to collect a sample of water flowing from the discharge pipe into the catch basin along East Niagara Street. Because water pumped from the club's sumps into the secondary vault is contaminated (Tables 4-1 and 4-2), this water could not be used to conduct the test. Instead, potable water from the Gastown Sportsmen's Club was utilized. Because potable water in Erie County is chlorinated during the treatment process, water from the garden hose was sampled prior to its placement into the discharge pipe in the secondary vault. Water was allowed to flow from the hose for at least a minute before it was sampled.

The garden hose was then fed into the sump discharge pipe from the secondary vault. Power to the vault was left on so that any water discharged from the club's sumps would be pumped to the treatment system and not discharged down the discharge pipe. Thirty minutes later water was observed flowing into the catch basin along East Niagara Street. After flowing for 5 minutes, water from the discharge pipe was sampled. Both samples were submitted to TestAmerica Laboratories in Amherst, New York for chemical analysis of TCL volatile organic compounds using USEPA method 8260. The laboratory reports are included in Appendix A.

4.6 Dye Testing

On June 13, 2014 GES and NYSDEC personnel conducted a dye test of the sump discharge pipe to further confirm that this pipe discharges to the catch basin along East Niagara Street. The dye test was conducted following the sampling described in Section 4.5. Power to the secondary vault was turned off and powdered dye was poured into the vault (Figure 4-6). Potable water from the garden hose was discharged into the vault to allow the dyed water to flow down the discharge pipe. Dyed water was subsequently observed flowing from the shallow, 4" PVC pipe in the catch basin along East Niagara Street (Figures 4-7 and 4-8).

5.0 INVESTIGATION RESULTS

The field activities completed during the Sump Discharge Pipe Investigation were described in detail in Section 4.0. This section presents the analytical results from samples collected during the investigation.

5.1 Basement Sump Analytical Results

Water from the basement sumps of the Gastown Sportsmen's Club have been collected on numerous occasions since June 1995 and analyzed for volatile organic compounds (VOCs) by various laboratories. The analytical results for these samples are summarized in Table 4-1.

Fourteen volatile organic compounds were detected in these samples with concentrations of thirteen exceeding the NYSDEC surface water standards or guidance values (Table 4-1). The principle VOCs detected in these samples include benzene (350 to 25,000 µg/L), ethylbenzene (94.0 to 2,100 µg/L), toluene (580 to 7,400 µg/L), and xylenes (153 to 1,800 µg/L).

5.2 Secondary Vault Analytical Results

Water from the secondary vault outside of the Gastown Sportsmen's Club have been collected fifteen times since December 2013. This vault receives water directly from the basement sumps of the club. All samples were submitted to TestAmerica Laboratories in Amherst, New York for chemical analysis of volatile organic compounds by USEPA Method 8021B. The analytical results for these samples are summarized in Table 4-2.

Ten volatile organic compounds were detected in these samples with concentrations of eight VOCs exceeding the NYSDEC surface water standards or guidance values (Table 4-2). The principle VOCs detected in these samples include benzene (740 to 14,000 µg/L), ethylbenzene (150 to 1,500 µg/L), toluene (250 to 2,700 µg/L), and xylenes (160 to 720 µg/L).

5.3 Potable Water Analytical Results

Potable water from a garden hose was collected on June 13, 2014 and submitted to TestAmerica Laboratories in Amherst, New York for chemical analysis of volatile organic

compounds by USEPA Method 8260C. The analytical results for this sample are summarized in Table 5-1. This water was sampled for comparison to the water collected from the sump discharge pipe at the catch basin along east Niagara Street.

Five volatile organic compounds were detected in this sample including acetone, bromodichloromethane, bromoform, chloroform, and dibromochloromethane. Chloroform, and the three other trihalomethanes detected (bromodichloromethane, dibromochloromethane, and bromoform), are by-products commonly produced when naturally-occurring organic and inorganic materials in the water react with the disinfectants chlorine and chloramine during the chlorination process (Ivahnenko and Zogorski, 2006; EPA, 2013). Acetone is a common laboratory contaminant. No MGP related contaminants were detected in this sample.

5.4 Discharge Pipe Analytical Results

Water flowing from the sump discharge pipe at the catch basin along east Niagara Street was collected on June 13, 2014 and submitted to TestAmerica Laboratories in Amherst, New York for chemical analysis of volatile organic compounds by USEPA Method 8260C. The analytical results for these samples are summarized in Table 5-1.

Bromodichloromethane, chloroform and dibromochloromethane were detected in this sample but at lower concentrations than detected in the potable water sample (Table 5-1). Bromoform was not detected. This reduction was likely due to volatilization as water flowed through the pipe.

This sample, however, also contained contaminants associated with the Former Gastown MGP Site. The principle MGP contaminants include benzene (630 µg/L), ethylbenzene (46.0 µg/L), toluene (200 µg/L), and xylenes (47.0 µg/L). These concentrations exceeded the NYSDEC surface water standards or guidance values (Table 5-1). Trimethylbenzenes (1,2,4- and 1,3,5-) were also detected in this sample, with concentrations of 1,2,4-trimethylbenzene exceeding the NYSDEC surface water standard for this contaminant (Table 5-1). These results indicate that coal tar (or a coal tar residue) is present in the discharge pipe.

6.0 CONCLUSIONS

The overall objective of the Sump Discharge Pipe Investigation was to determine if the discharge pipe could be a source of the petroleum product discovered in the sanitary sewer by the City of Tonawanda. This objective was evaluated by determining the discharge point of the sump discharge pipe, and by evaluating the analytical results of samples collected during the investigation.

Historically, contaminated water and coal tar collected in the basement sumps of the Gastown Sportsmen's Club was pumped into this pipe. Although a portion of this pipe was remediated by the NYSDEC's Spill Unit in 1998, it was unknown prior to this investigation if coal tar residue was present in the remaining section of the pipe, nor where this pipe discharged. Discussions with the President of the Sportsmen's Club revealed that perforated pipe had been used so it could not be tied-in to the sanitary sewer system. The implication was that the discharge pipe was capped, with the water allowed to leach into the ground through the perforations. This suggested also that coal tar in the pipe could leach into the ground through the perforations.

Through a combination of metal tracing, potable water testing and dye testing, it was determined that the former sump discharge pipe discharges into the catch basin along East Niagara Street (Figure 4-7). This is the same catch basin that receives treated water from the Gastown treatment system (Figure 1-3). From this catch basin water is discharged directly into Tonawanda Creek.

Water collected by the basement sumps of the Sportsmen's Club is significantly contaminated with MGP related volatile organic compounds. The principle VOCs detected in this water include benzene, ethylbenzene, toluene, and xylenes. The principle VOCs are also detected in water samples collected from the secondary vault, but at generally lower concentrations. This suggests that volatilization of these contaminants is occurring inside the vault. The secondary vault receives water directly from the club's sumps in the primary chamber that was designed to settle out any coal tar entrained in the water. The water then flows over a weir into the secondary chamber, and at a preset level is pumped to the groundwater treatment system.

During a power failure or other system shutdown, water in the secondary vault will flow

through the overflow pipe (the former sump discharge pipe) instead of flooding onto the ground surface. This had occurred in the past before the secondary vault was installed. Contaminated water from the secondary vault would ultimately be discharged to Tonawanda Creek.

A sample of potable water flowing through the sump discharge pipe revealed that coal tar (or a coal tar residue) is present in the pipe. The potable water "picked up" significant concentrations of benzene (630 µg/L), ethylbenzene (46.0 µg/L), toluene (200 µg/L), and xylenes (47.0 µg/L). The discharge pipe entering the catch basin along east Niagara Street did not appear to be perforated (Figure 4-7), while the riser pipe on the bubbler was (Figure 4-5). It is unknown if perforated pipe is present between the bubbler and the exposed portion of the pipe in the catch basin.

7.0 REFERENCES

EPA, 2013, Basic Information about Disinfection Byproducts in Drinking Water: Total Trihalomethanes, Haloacetic Acids, Bromate, and Chlorite: United States Environmental Protection Agency website at: http://water.epa.gov/drink/contaminants/basicinformation/disinfectionbyproducts.cfm.

Ivahnenko, T. and Zogorski, J.S., 2006, Sources and Occurrence of Chloroform and Other Trihalomethanes in Drinking-Water Supply Wells in the United States, 1986–2001: U.S. Geological Survey, Reston, Virginia, 13 p.

NYSDEC, 1995, Identification and Listing of Hazardous Wastes, New York State Codes, Rules and Regulations Title 6, Part 371: New York State Department of Environmental Conservation, Division of Hazardous Substances Regulation, Albany, New York.

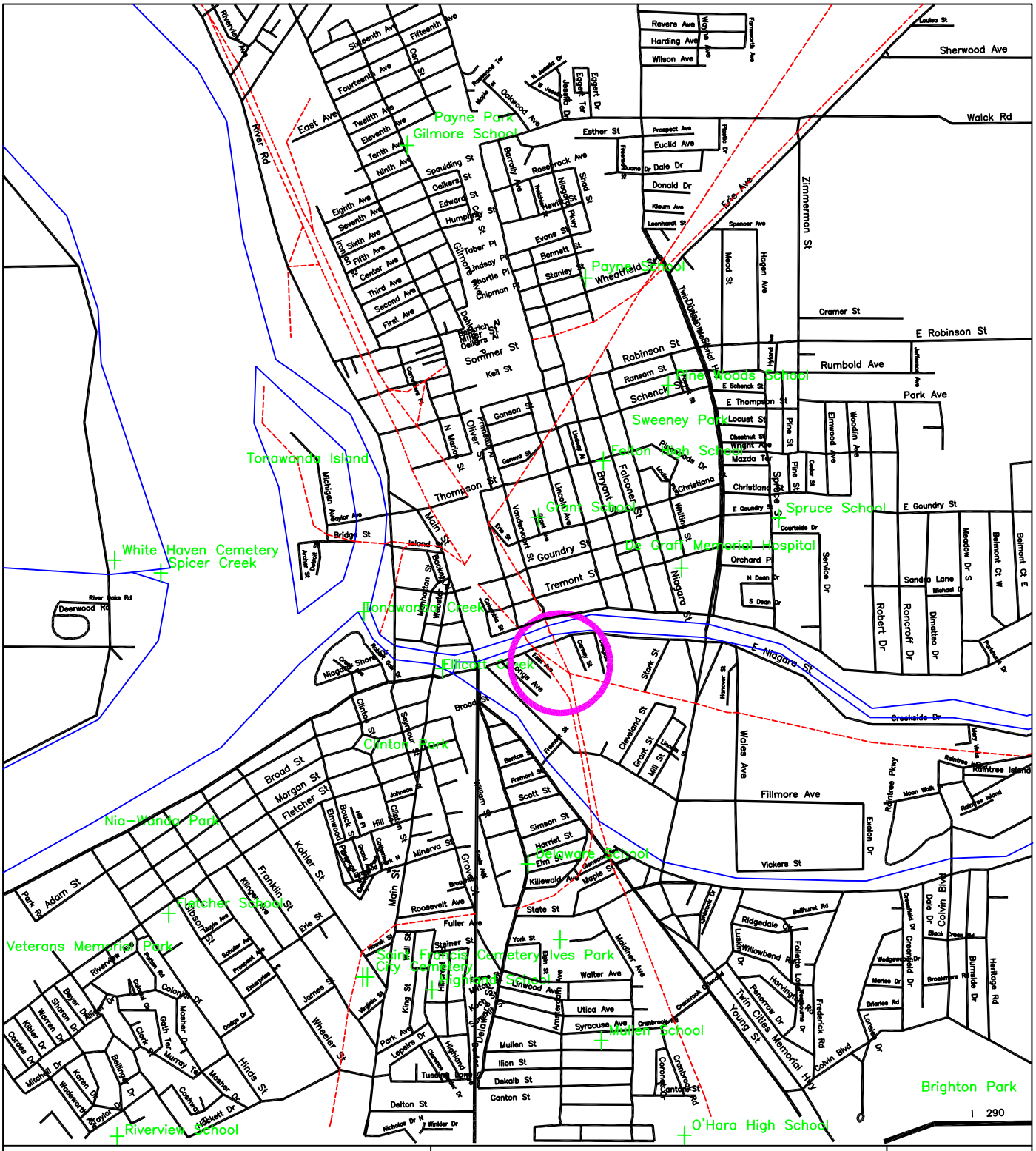
NYSDEC, 1998, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations: New York State Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series (1.1.1), Albany, New York.

NYSDEC, 2006, 6 NYCRR Part 375: Environmental Remediation Programs, Soil Cleanup Objectives: New York State Department of Environmental Conservation, Division of Environmental Remediation, Albany, New York.

NYSDEC, 2007, Record of Decision, Former Gastown MGP Site: New York State Department of Environmental Conservation, Division of Environmental Remediation, Albany, New York.

NYSDEC, 2013, Record of Decision Amendment, Gastown MGP Site: New York State Department of Environmental Conservation, Division of Environmental Remediation, Albany, New York.

FIGURES



Tonawanda East Quadrangle &
Tonawanda West Quadrangle

Scale Depends on Final Plotted Size

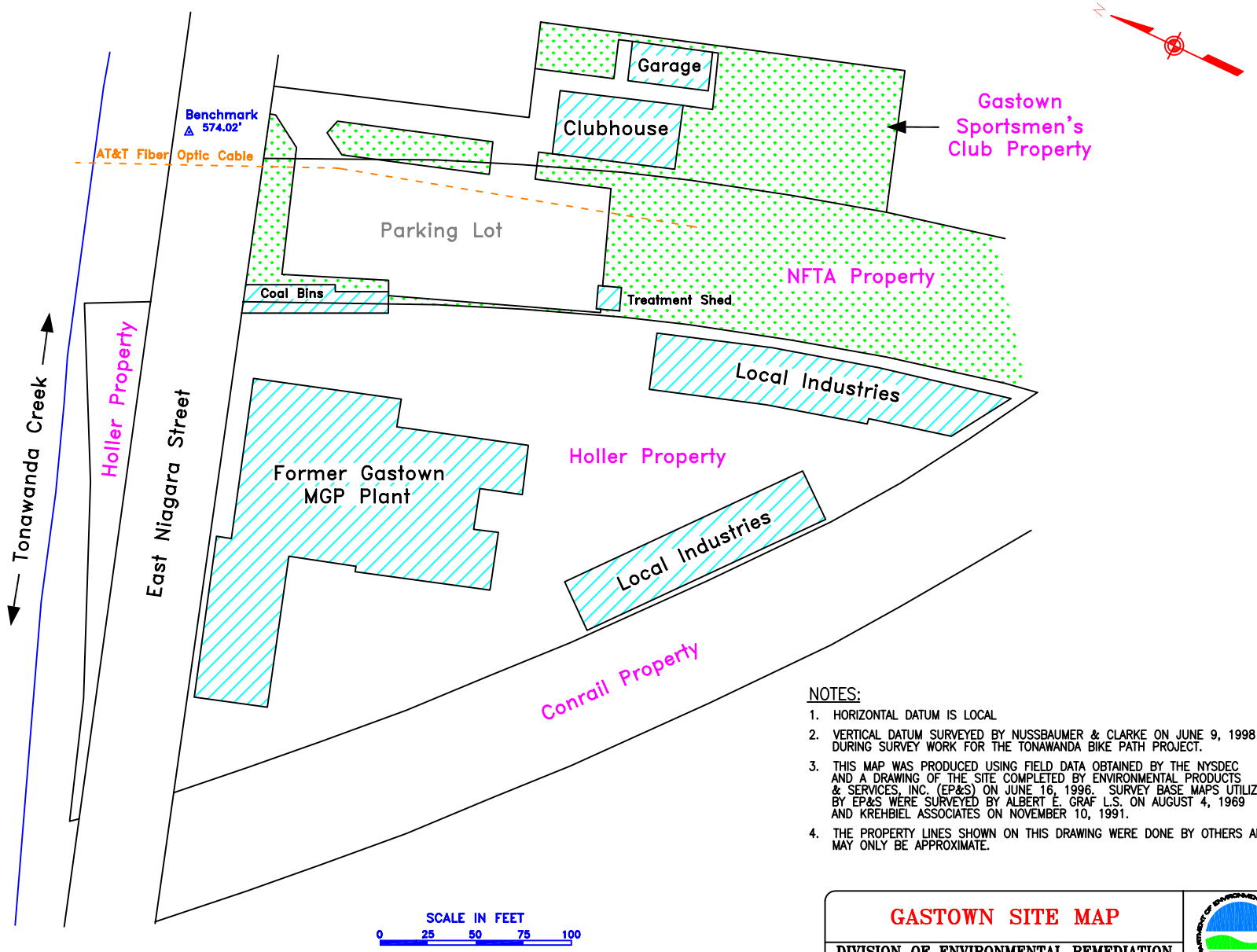
SITE LOCATION MAP

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 09/19/00 | DRAWING: Location.dwg

SITE: FORMER GASTOWN MGP SITE

FIGURE 1-1



NOTES:

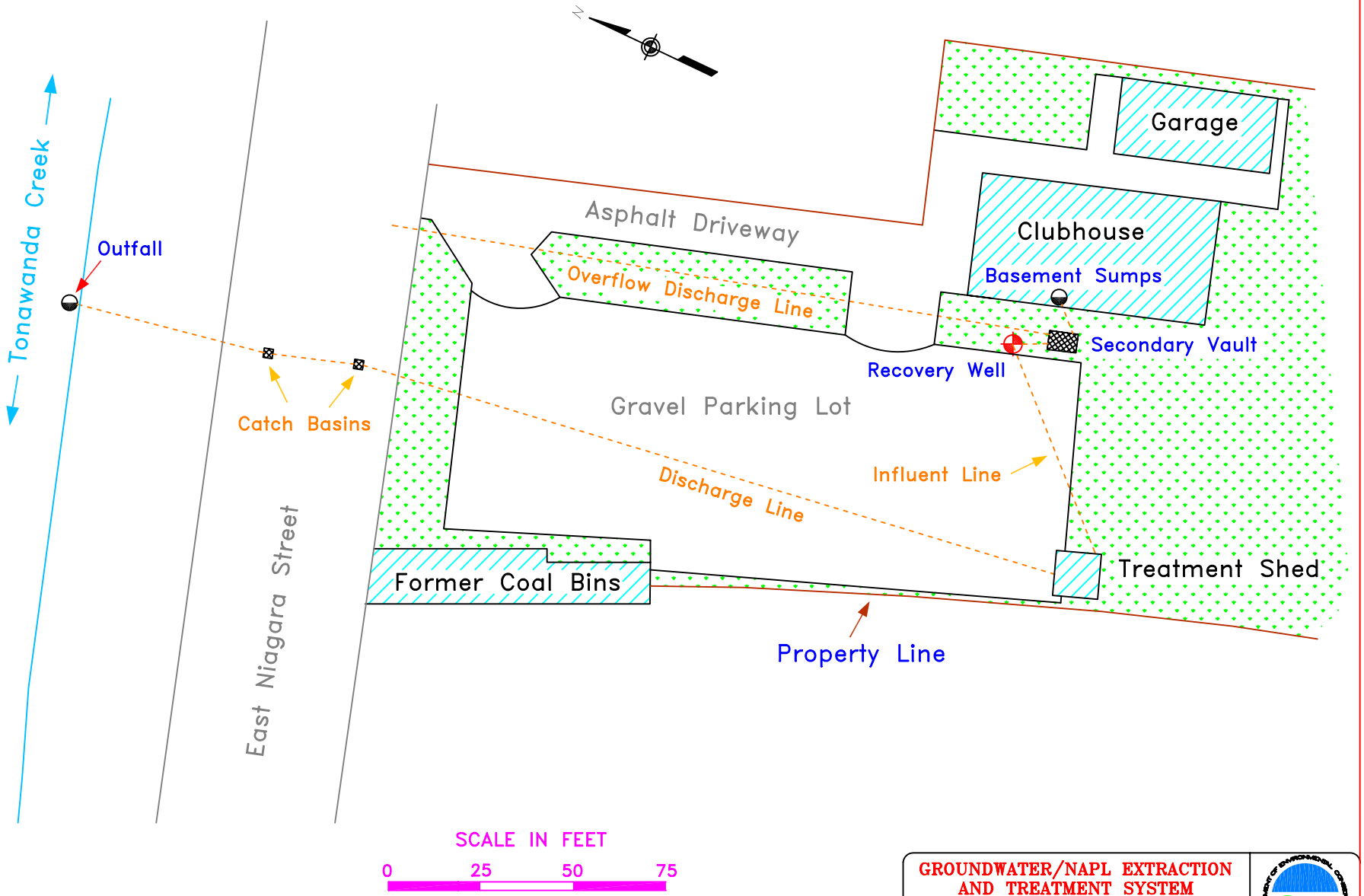
1. HORIZONTAL DATUM IS LOCAL
2. VERTICAL DATUM SURVEYED BY NUSSBAUMER & CLARKE ON JUNE 9, 1998 DURING SURVEY WORK FOR THE TONAWANDA BIKE PATH PROJECT.
3. THIS MAP WAS PRODUCED USING FIELD DATA OBTAINED BY THE NYSDEC AND A DRAWING OF THE SITE COMPLETED BY ENVIRONMENTAL PRODUCTS & SERVICES, INC. (EP&S) ON JUNE 16, 1996. SURVEY BASE MAPS UTILIZED BY EP&S WERE SURVEYED BY ALBERT E. GRAF L.S. ON AUGUST 4, 1969 AND KREHBIEL ASSOCIATES ON NOVEMBER 10, 1991.
4. THE PROPERTY LINES SHOWN ON THIS DRAWING WERE DONE BY OTHERS AND MAY ONLY BE APPROXIMATE.

GASTOWN SITE MAP

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 10/12/99 DRAWING: Sitemap.dwg

SITE: FORMER GASTOWN MGP SITE FIGURE 1-2



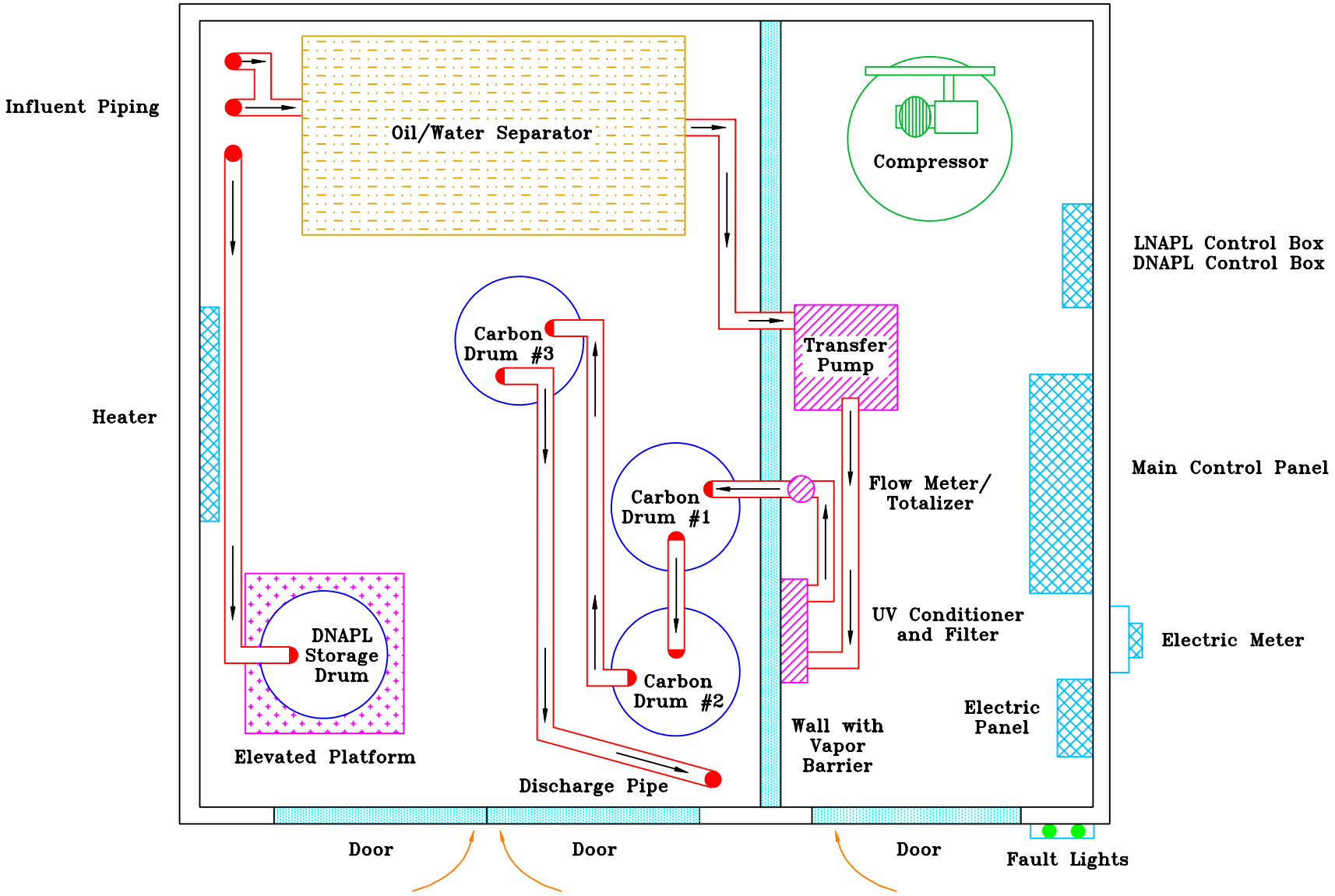
GROUNDWATER/NAPL EXTRACTION AND TREATMENT SYSTEM

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/25/01 DRAWING: System.dwg

SITE: FORMER GASTOWN MGP SITE

FIGURE 1-3



TREATMENT SYSTEM LAYOUT

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/25/01 DRAWING: Treatment Shed.dwg

SITE: FORMER GASTOWN MGP SITE FIGURE 1-4

TABLES

Table 4-1

Former Gastown MGP Site, Site No. 915171

Summary of Water Analytical Results from the Basement Sumps Inside the Gastown Sportsman's Club

Parameter	Surface Water Standards +	Sample Date				
		06/08/95	11/06/95	04/13/98	04/23/98 *	04/24/98 **
Volatile Organic Compounds (µg/L)						
Benzene	1.0	**10,500**	**6,200**	**4,535**	**3,964**	**12,000**
Ethylbenzene	5.0	**120.0**	**250.0**	ND (100)	ND (5.0)	**460.0**
Toluene	5.0	**1,390**	**1,200**	**1,767**	**1,117**	**5,200**
1,2,4-Trimethylbenzene	5.0	ND (210)	**240.0**	**267.6**	**89.5**	
1,3,5-Trimethylbenzene	5.0	ND (160)	ND (200)	**126.2**	**24.2**	
Isopropylbenzene	5.0 G	ND (240)	ND (200)	ND (100)	**1,552**	
m&p-Xylene	5.0	**97.6 J**	**560.0**	**613.1**	ND (10)	
MTBE	NS	ND (1000)	ND (200)	ND (1000)	202.0	
n-Butylbenzene	5.0	ND (320)	ND (200)	**499.1**	**1,120**	
n-Propylbenzene	5.0	ND (280)	ND (200)	ND (100)	**1,507**	
o-Xylene	5.0	**493.0**	**330.0**	**298.9**	ND (5.0)	
p-Isopropyltoluene	5.0	ND (190)	ND (200)	**222.9**	**209.0**	
sec-Butylbenzene	5.0	ND (650)	ND (200)	**306.4**	**168.0**	
Xylenes - Total	5.0	**590.6**	**890.0**	**912.0**	ND (10)	**1,800**

Table 4-1

Former Gastown MGP Site, Site No. 915171

Summary of Water Analytical Results from the Basement Sumps Inside the Gastown Sportsman's Club

Parameter	Surface Water Standards +	Sample Date				
		12/16/99	10/25/13	09/10/14	02/18/15	
Volatile Organic Compounds (µg/L)						
Benzene	1.0	**350.0**	**15,000**	**7,300**	**25,000**	
Ethylbenzene	5.0	**94.0**	**1,900**	**670.0**	**2,100**	
Toluene	5.0	**580.0**	**6,400**	**1,900**	**7,400**	
1,2,4-Trimethylbenzene	5.0	**45.0**	**99.0**	**41.0**	**120.0**	
1,3,5-Trimethylbenzene	5.0	4.3	**29.0**	**13.0**	**35 J**	
Isopropylbenzene	5.0 G	0.54	**16.0**	**5.1**	**15 J**	
m&p-Xylene	5.0	**95.0**	**860.0**	**320.0**	**1,200**	
MTBE	NS	ND (5.0)	ND (2.0)	19.0	ND (80)	
n-Butylbenzene	5.0	**320.0**	ND (1.0)	ND (2.0)	ND (40)	
n-Propylbenzene	5.0	0.43	4.1	ND (2.0)	ND (40)	
o-Xylene	5.0	**58.0**	ND (100)	ND (2.0)	ND (40)	
p-Isopropyltoluene	5.0	3.7	ND (1.0)	ND (2.0)	ND (40)	
sec-Butylbenzene	5.0	ND (0.4)	ND (1.0)	ND (2.0)	ND (40)	
Xylenes - Total	5.0	**153.0**	**1,300**	**320.0**	**1,200**	

Notes:

+ **NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998; April 2000 amendment.**

***** **Kanti Technologies, Inc.**

****** **Recra Labnet.**

G **Guidance value.**

NS **No standard.**

ND **Indicates that the compound was not detected at the method detection limit specified in parentheses.**

J **Estimated concentration that is less than the sample quantitation limit but greater than zero.**

Shaded values equal or exceed the surface water standards or guidance values.

Table 4-2

Former Gastown MGP Site, Site No. 915171

Summary of Water Analytical Results from the Secondary Vault Outside the Gastown Sportsman's Club

Parameter	Surface Water Standards +	Sample Date				
		12/19/13	01/15/14	02/12/14	03/14/14	04/09/14
Volatile Organic Compounds (µg/L)						
Benzene	1.0	**740.0**	**4,300**	**8,200**	**6,000**	**4,400**
Ethylbenzene	5.0	**590.0**	**450.0**	**830.0**	**600.0**	**360.0**
Toluene	5.0	**250.0**	**1,400**	**2,500**	**1,900**	**1,400**
1,2,4-Trimethylbenzene	5.0	ND (4.0)	**33.0**	**56.0**	**56 J**	**38 J**
1,3,5-Trimethylbenzene	5.0	ND (4.0)	ND (20)	**16.0**	ND (100)	ND (100)
Isopropylbenzene	5.0 G	3.3 J	ND (20)	2.0 J	ND (100)	ND (100)
m&p-Xylene	5.0	**83.0**	**250.0**	**440.0**	**300.0**	**210.0**
MTBE	NS	37.0	ND (40)	5.1 J	ND (200)	ND (200)
n-Butylbenzene	5.0	ND (4.0)	ND (20)	ND (10)	ND (100)	ND (100)
n-Propylbenzene	5.0	ND (4.0)	ND (20)	ND (10)	ND (100)	ND (100)
o-Xylene	5.0	**130.0**	ND (20)	ND (10)	**120.0**	ND (100)
p-Isopropyltoluene	5.0	ND (4.0)	ND (20)	ND (10)	ND (100)	ND (100)
sec-Butylbenzene	5.0	ND (4.0)	ND (20)	ND (10)	ND (100)	ND (100)
Xylenes - Total	5.0	**210.0**	**250.0**	**440.0**	**420.0**	**210 J**

Table 4-2

Former Gastown MGP Site, Site No. 915171

Summary of Water Analytical Results from the Secondary Vault Outside the Gastown Sportsman's Club

Parameter	Surface Water Standards +	Sample Date				
		05/15/14	06/11/14	07/18/14	08/13/14	09/10/14
Volatile Organic Compounds (µg/L)						
Benzene	1.0	**5,600**	**7,400**	**9,900**	**6,900**	**1,600**
Ethylbenzene	5.0	**530.0**	**690.0**	**770.0**	**790.0**	**150.0**
Toluene	5.0	**1,900**	**2,600**	**2,700**	**2,300**	**370.0**
1,2,4-Trimethylbenzene	5.0	**61 J**	**94 J**	**39 J**	**41 J**	ND (100)
1,3,5-Trimethylbenzene	5.0	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Isopropylbenzene	5.0 G	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
m&p-Xylene	5.0	**360.0**	**510.0**	**300.0**	**330.0**	ND (200)
MTBE	NS	ND (200)	53 J	ND (200)	ND (200)	ND (200)
n-Butylbenzene	5.0	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
n-Propylbenzene	5.0	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
o-Xylene	5.0	ND (100)	ND (100)	**210.0**	**160.0**	ND (100)
p-Isopropyltoluene	5.0	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
sec-Butylbenzene	5.0	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Xylenes - Total	5.0	**360.0**	**510.0**	**510.0**	**490.0**	ND (200)

Table 4-2

Former Gastown MGP Site, Site No. 915171

Summary of Water Analytical Results from the Secondary Vault Outside the Gastown Sportsman's Club

Parameter	Surface Water Standards +	Sample Date				
		10/16/14	11/12/14	12/19/14	01/21/15	03/18/15
Volatile Organic Compounds (µg/L)						
Benzene	1.0	**10,000**	**14,000**	**4,800**	**7,900**	**3,800**
Ethylbenzene	5.0	**950.0**	**1,500**	**580.0**	**880.0**	**330.0**
Toluene	5.0	**2,300**	**3,200**	**1,400**	**2,100**	**1,000**
1,2,4-Trimethylbenzene	5.0	**37 J**	**49 J**	**82 J**	**41 J**	**23 J**
1,3,5-Trimethylbenzene	5.0	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Isopropylbenzene	5.0 G	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
m&p-Xylene	5.0	**330.0**	**460.0**	**300.0**	**340.0**	**160 J**
MTBE	NS	ND (200)	ND (200)	ND (200)	98 J	ND (200)
n-Butylbenzene	5.0	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
n-Propylbenzene	5.0	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
o-Xylene	5.0	ND (100)	**260.0**	ND (100)	**170.0**	ND (100)
p-Isopropyltoluene	5.0	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
sec-Butylbenzene	5.0	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Xylenes - Total	5.0	**330.0**	**720.0**	**300.0**	**510.0**	**160 J**

Notes:

+ NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998; April 2000 amendment.

G Guidance value.

NS No standard.

ND Indicates that the compound was not detected at the method detection limit specified in parentheses.

J Estimated concentration that is less than the sample quantitation limit but greater than zero.

Shaded values equal or exceed the surface water standards or guidance values.

Table 5-1
Former Gastown MGP Site, Site No. 915171
Summary of Analytical Results for Potable Water and Water Flowing from the Discharge Pipe into the Catch Basin Along East Niagara Street

Parameter	Surface Water Standards +	Potable Water 06/13/14	Discharge Water 06/13/14
Volatile Organic Compounds (µg/L)			
Acetone	50 G	4.2 J	11.0
Benzene	1.0	ND (1.0)	**630.0**
Bromodichloromethane	50 G	13.0	7.5
Bromoform	50 G	0.36 J	ND (1.0)
Chloroform	7.0	**37.0**	**22.0**
Dibromochloromethane	50 G	4.7	2.8
Ethylbenzene	5.0	ND (1.0)	**46.0**
Toluene	5.0	ND (1.0)	**200.0**
1,2,4-Trimethylbenzene	5.0	ND (1.0)	**5.5**
1,3,5-Trimethylbenzene	5.0	ND (1.0)	1.3
Isopropylbenzene	5.0 G	ND (1.0)	ND (1.0)
m&p-Xylene	5.0	ND (2.0)	**31.0**
MTBE	NS	ND (1.0)	ND (1.0)
n-Butylbenzene	5.0	ND (1.0)	ND (1.0)
n-Propylbenzene	5.0	ND (1.0)	ND (1.0)
o-Xylene	5.0	ND (1.0)	**16.0**
p-Isopropyltoluene	5.0	ND (1.0)	ND (1.0)
sec-Butylbenzene	5.0	ND (1.0)	ND (1.0)
Xylenes - Total	5.0	ND (2.0)	**47.0**

Notes:

+ **NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998; April 2000 amendment.**

G **Guidance value.**

NS **No standard.**

ND **Indicates that the compound was not detected at the method detection limit specified in parentheses.**

J **Estimated concentration that is less than the sample quantitation limit but greater than zero.**

Yellow shaded values equal or exceed the surface water standards or guidance values.

APPENDIX A

ANALYTICAL RESULTS

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-61906-1
Client Project/Site: NYSDEC-Gastown WWTP: Site# 915171

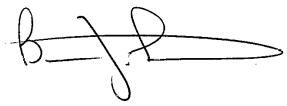
For:
New York State D.E.C.
270 Michigan Avenue
Buffalo, New York 14203

Attn: Mr. Glenn May

Authorized for release by:
6/27/2014 3:43:51 PM

Brian Fischer, Manager of Project Management
(716)504-9835
brian.fischer@testamericainc.com

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed within the body of this report. Release of the data contained in this sample data package and in the electronic data deliverable has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.



Brian Fischer
Manager of Project Management
6/27/2014 3:43:51 PM

Table of Contents

Client: New York State D.E.C.
Project/Site: NYSDEC-Gastown WWTP: Site# 915171

TestAmerica Job ID: 480-61906-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-61906-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-61906-1

Comments
No additional comments.

Receipt
The samples were received on 6/13/2014 3:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
Method(s) 8260C: The continuing calibration verification (CCV) analyzed in batch 189721 was below the method criteria for the following analyte(s): Trichlorofluoromethane. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: (480-62625-1 MS), (480-62625-1 MSD), CATCH BASIN DISCHARGE PIPE (480-61906-2). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: COBB-DWMW12B-60001 (480-62625-1). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client: New York State D.E.C.
Project/Site: NYSDEC-Gastown WWTP: Site# 915171

TestAmerica Job ID: 480-61906-1

Client Sample ID: CITY WATER
Date Collected: 06/13/14 11:55
Date Received: 06/13/14 15:30

Lab Sample ID: 480-61906-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			06/25/14 16:11	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			06/25/14 16:11	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			06/25/14 16:11	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			06/25/14 16:11	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			06/25/14 16:11	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			06/25/14 16:11	1
1,2,4-Trichlorobenzene	ND		1.0	0.41	ug/L			06/25/14 16:11	1
1,2,4-Trimethylbenzene	ND		1.0	0.75	ug/L			06/25/14 16:11	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			06/25/14 16:11	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			06/25/14 16:11	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			06/25/14 16:11	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			06/25/14 16:11	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			06/25/14 16:11	1
1,3,5-Trimethylbenzene	ND		1.0	0.77	ug/L			06/25/14 16:11	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			06/25/14 16:11	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			06/25/14 16:11	1
2-Butanone (MEK)	ND		10	1.3	ug/L			06/25/14 16:11	1
2-Hexanone	ND		5.0	1.2	ug/L			06/25/14 16:11	1
4-Isopropyltoluene	ND		1.0	0.31	ug/L			06/25/14 16:11	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			06/25/14 16:11	1
Acetone	**4.2**	**J**	10	3.0	ug/L			06/25/14 16:11	1
Benzene	ND		1.0	0.41	ug/L			06/25/14 16:11	1
Bromodichloromethane	**13**		1.0	0.39	ug/L			06/25/14 16:11	1
Bromoform	**0.36**	**J**	1.0	0.26	ug/L			06/25/14 16:11	1
Bromomethane	ND		1.0	0.69	ug/L			06/25/14 16:11	1
Carbon disulfide	ND		1.0	0.19	ug/L			06/25/14 16:11	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			06/25/14 16:11	1
Chlorobenzene	ND		1.0	0.75	ug/L			06/25/14 16:11	1
Chloroethane	ND		1.0	0.32	ug/L			06/25/14 16:11	1
Chloroform	**37**		1.0	0.34	ug/L			06/25/14 16:11	1
Chloromethane	ND		1.0	0.35	ug/L			06/25/14 16:11	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			06/25/14 16:11	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			06/25/14 16:11	1
Cyclohexane	ND		1.0	0.18	ug/L			06/25/14 16:11	1
Dibromochloromethane	**4.7**		1.0	0.32	ug/L			06/25/14 16:11	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			06/25/14 16:11	1
Ethylbenzene	ND		1.0	0.74	ug/L			06/25/14 16:11	1
Isopropylbenzene	ND		1.0	0.79	ug/L			06/25/14 16:11	1
m,p-Xylene	ND		2.0	0.66	ug/L			06/25/14 16:11	1
Methyl acetate	ND		2.5	0.50	ug/L			06/25/14 16:11	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			06/25/14 16:11	1
Methylcyclohexane	ND		1.0	0.16	ug/L			06/25/14 16:11	1
Methylene Chloride	ND		1.0	0.44	ug/L			06/25/14 16:11	1
Naphthalene	ND		1.0	0.43	ug/L			06/25/14 16:11	1
n-Butylbenzene	ND		1.0	0.64	ug/L			06/25/14 16:11	1
N-Propylbenzene	ND		1.0	0.69	ug/L			06/25/14 16:11	1
o-Xylene	ND		1.0	0.76	ug/L			06/25/14 16:11	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			06/25/14 16:11	1
Styrene	ND		1.0	0.73	ug/L			06/25/14 16:11	1

Client: New York State D.E.C.
Project/Site: NYSDEC-Gastown WWTP: Site# 915171

TestAmerica Job ID: 480-61906-1

Client Sample ID: CITY WATER
Date Collected: 06/13/14 11:55
Date Received: 06/13/14 15:30

Lab Sample ID: 480-61906-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
tert-Butylbenzene	ND		1.0	0.81	ug/L			06/25/14 16:11	1
Tetrachloroethene	ND		1.0	0.36	ug/L			06/25/14 16:11	1
Toluene	ND		1.0	0.51	ug/L			06/25/14 16:11	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			06/25/14 16:11	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			06/25/14 16:11	1
Trichloroethene	ND		1.0	0.46	ug/L			06/25/14 16:11	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			06/25/14 16:11	1
Vinyl chloride	ND		1.0	0.90	ug/L			06/25/14 16:11	1
Xylenes, Total	ND		2.0	0.66	ug/L			06/25/14 16:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 137*		*06/25/14 16:11*	*1*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*		*06/25/14 16:11*	*1*
Toluene-d8 (Surr)	*96*		*71 - 126*		*06/25/14 16:11*	*1*

Client: New York State D.E.C.
Project/Site: NYSDEC-Gastown WWTP: Site# 915171

TestAmerica Job ID: 480-61906-1

Client Sample ID: CATCH BASIN DISCHARGE PIPE
Date Collected: 06/13/14 12:50
Date Received: 06/13/14 15:30

Lab Sample ID: 480-61906-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			06/25/14 16:32	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			06/25/14 16:32	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	ug/L			06/25/14 16:32	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			06/25/14 16:32	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			06/25/14 16:32	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			06/25/14 16:32	1
1,2,4-Trichlorobenzene	ND		1.0	0.41	ug/L			06/25/14 16:32	1
1,2,4-Trimethylbenzene	**5.5**		1.0	0.75	ug/L			06/25/14 16:32	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			06/25/14 16:32	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			06/25/14 16:32	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			06/25/14 16:32	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			06/25/14 16:32	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			06/25/14 16:32	1
1,3,5-Trimethylbenzene	**1.3**		1.0	0.77	ug/L			06/25/14 16:32	1
1,3-Dichlorobenzene	ND		1.0	0.78	ug/L			06/25/14 16:32	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			06/25/14 16:32	1
2-Butanone (MEK)	ND		10	1.3	ug/L			06/25/14 16:32	1
2-Hexanone	ND		5.0	1.2	ug/L			06/25/14 16:32	1
4-Isopropyltoluene	ND		1.0	0.31	ug/L			06/25/14 16:32	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			06/25/14 16:32	1
Acetone	**11**		10	3.0	ug/L			06/25/14 16:32	1
Bromodichloromethane	**7.5**		1.0	0.39	ug/L			06/25/14 16:32	1
Bromoform	ND		1.0	0.26	ug/L			06/25/14 16:32	1
Bromomethane	ND		1.0	0.69	ug/L			06/25/14 16:32	1
Carbon disulfide	ND		1.0	0.19	ug/L			06/25/14 16:32	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			06/25/14 16:32	1
Chlorobenzene	ND		1.0	0.75	ug/L			06/25/14 16:32	1
Chloroethane	ND		1.0	0.32	ug/L			06/25/14 16:32	1
Chloroform	**22**		1.0	0.34	ug/L			06/25/14 16:32	1
Chloromethane	ND		1.0	0.35	ug/L			06/25/14 16:32	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			06/25/14 16:32	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			06/25/14 16:32	1
Cyclohexane	ND		1.0	0.18	ug/L			06/25/14 16:32	1
Dibromochloromethane	**2.8**		1.0	0.32	ug/L			06/25/14 16:32	1
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			06/25/14 16:32	1
Ethylbenzene	**46**		1.0	0.74	ug/L			06/25/14 16:32	1
Isopropylbenzene	ND		1.0	0.79	ug/L			06/25/14 16:32	1
m,p-Xylene	**31**		2.0	0.66	ug/L			06/25/14 16:32	1
Methyl acetate	ND		2.5	0.50	ug/L			06/25/14 16:32	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			06/25/14 16:32	1
Methylcyclohexane	ND		1.0	0.16	ug/L			06/25/14 16:32	1
Methylene Chloride	ND		1.0	0.44	ug/L			06/25/14 16:32	1
n-Butylbenzene	ND		1.0	0.64	ug/L			06/25/14 16:32	1
N-Propylbenzene	ND		1.0	0.69	ug/L			06/25/14 16:32	1
o-Xylene	**16**		1.0	0.76	ug/L			06/25/14 16:32	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			06/25/14 16:32	1
Styrene	ND		1.0	0.73	ug/L			06/25/14 16:32	1
tert-Butylbenzene	ND		1.0	0.81	ug/L			06/25/14 16:32	1
Tetrachloroethene	ND		1.0	0.36	ug/L			06/25/14 16:32	1

Client: New York State D.E.C.
Project/Site: NYSDEC-Gastown WWTP: Site# 915171

TestAmerica Job ID: 480-61906-1

Client Sample ID: CATCH BASIN DISCHARGE PIPE
Date Collected: 06/13/14 12:50
Date Received: 06/13/14 15:30

Lab Sample ID: 480-61906-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			06/25/14 16:32	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			06/25/14 16:32	1
Trichloroethene	ND		1.0	0.46	ug/L			06/25/14 16:32	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			06/25/14 16:32	1
Vinyl chloride	ND		1.0	0.90	ug/L			06/25/14 16:32	1
Xylenes, Total	**47**		2.0	0.66	ug/L			06/25/14 16:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 137*		*06/25/14 16:32*	*1*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*		*06/25/14 16:32*	*1*
Toluene-d8 (Surr)	*98*		*71 - 126*		*06/25/14 16:32*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**630**		10	4.1	ug/L			06/26/14 01:55	10
Naphthalene	**360**		10	4.3	ug/L			06/26/14 01:55	10
Toluene	**200**		10	5.1	ug/L			06/26/14 01:55	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 137*		*06/26/14 01:55*	*10*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*06/26/14 01:55*	*10*
Toluene-d8 (Surr)	*105*		*71 - 126*		*06/26/14 01:55*	*10*

Lab Chronicle

Client: New York State D.E.C.
Project/Site: NYSDEC-Gastown WWTP: Site# 915171

TestAmerica Job ID: 480-61906-1

Client Sample ID: CITY WATER

Lab Sample ID: 480-61906-1

Date Collected: 06/13/14 11:55

Matrix: Water

Date Received: 06/13/14 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	189721	06/25/14 16:11	CDC	TAL BUF

Client Sample ID: CATCH BASIN DISCHARGE PIPE

Lab Sample ID: 480-61906-2

Date Collected: 06/13/14 12:50

Matrix: Water

Date Received: 06/13/14 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	189721	06/25/14 16:32	CDC	TAL BUF
Total/NA	Analysis	8260C	DL	10	189885	06/26/14 01:55	RAS	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Certification Summary

Client: New York State D.E.C.
Project/Site: NYSDEC-Gastown WWTP: Site# 915171

TestAmerica Job ID: 480-61906-1

Laboratory: TestAmerica Buffalo

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-15

Method Summary

Client: New York State D.E.C.
Project/Site: NYSDEC-Gastown WWTP: Site# 915171

TestAmerica Job ID: 480-61906-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: New York State D.E.C.
Project/Site: NYSDEC-Gastown WWTP: Site# 915171

TestAmerica Job ID: 480-61906-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-61906-1	CITY WATER	Water	06/13/14 11:55	06/13/14 15:30
480-61906-2	CATCH BASIN DISCHARGE PIPE	Water	06/13/14 12:50	06/13/14 15:30

Chain of Custody Re

480-61906 Chain of Custody

TAL-4124 (1007)

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client: MYSDEC	Project Manager: Glenn May		Date: 6-13-14	Chain of Custody Number: 240870
Address	Telephone Number (Area Code)/Fax Number: (716) 851-7220		Lab Number	Page 1 of 1
City: Buffalo	State: NY	Zip Code	Site Contact: T. Palmer (GES)	Lab Contact: BJF
Project Name and Location (State): Gastown	Carrier/Waybill Number			
Contract/Purchase Order/Quote No.: Project # 48002525				

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis (Attach list if more space is needed): 8260 Full List
City Water	6-13-14	1155		X						X			3
Catch Basin Discharge Pipe	6-13-14	1250		X						X			3

Special Instructions/ Conditions of Receipt

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other STD

QC Requirements (Specify)

1. Relinquished By: (GES)	Date: 6-13-14	Time: 1530	1. Received By: TA	Date: 6/13/14	Time: 1530
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments: 4.0 #1

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: New York State D.E.C.

Job Number: 480-61906-1

Login Number: 61906

List Source: TestAmerica Buffalo

List Number: 1

Creator: Janish, Carl M

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	GES
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	