City of North Tonawanda
Department of Engineering
City HalL 216 Payne Avenue
North Tonawanda, NY 14120-5493
www.northtonawanda.org

Dale W. Marshall, P. E.
Cit; Engineer
Phone: **(716) 695-8565**
Fax: **(716) 695-8568**

September 14, 2012

Reference No. 007987

Mr. Brian Sadowski
Project Manager
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, NY 14203-2999

Dear Mr. Sadowski:

Re: Site Management Periodic Review Report
Gratwick-Riverside Park Site, North Tonawanda, New York

Pursuant to the New York State Department of Environmental Conservation (NYSDEC) letter dated July 13,2012, enclosed are one hard copy and one PDF copy on CD of the report entitled "Annual Operation and Monitoring Report, June 2011to May 2012". This report is being submitted as the Site Management Periodic Review Report (PRR) for the Gratwick-Riverside Park Site (Site) located in North Tonawanda, New York. This PRR documents the implementation of and compliance with the requirements of the Operation and Maintenance Manual (O&M Manual) dated March 2002 (revised January 2004 and May 2009). The O&M Manual includes the performance monitoring for the constructed remedy. NYSDEC approval for the O&M Manual was given on April20, 2005. This is the eleventh year of reporting for the Site since the implementation of the O&M program. Pursuant to the data presented in the PRR, the constructed remedy is achieving the remedial action objectives.

Also attached is the completed Institutional and Engineering Controls Certification Form which certifies that the NYSDEC listed institutional and engineering controls (ICs/ECs) are accurate as shown and are functioning properly. A PDF copy of the Form and this letter are also included on the CD.

The Site covers approximately 52.9 acres located adjacent to the Niagara River in the City of North Tonawanda, New York. The Site is bordered by River Road to the north, a private marina to the east, the River to the south, and a private residential area to the west. The Site is currently a public park with unrestricted access.

Construction of the remedial action was completed in June 2001with final inspection performed in November 2001. Groundwater pumping began in May 2001. The description of the constructed remedy is presented in the report entitled "Remedial Action Construction Implementation" dated July 2002. The July 2002 report addressed comments received from the NYSDEC on the Remedial Action Construction Implementation Report submitted in June 2002. Repairs to address shoreline erosion that was observed in 2003 were performed in

November 2004 and are documented in the report entitled "Remedial Action Construction Implementation- Addendum No. 1, Repair of Shoreline Erosion" dated March 2005. NYSDEC acceptance of the Addendum was given on April20, 2005.

The Certificate of Completion dated March 17,2008 was accepted by the NYSDEC on March 19, 2008, signifying that all remedial work has been completed.

The purpose and primary objective of the groundwater withdrawal system is to collect groundwater that would otherwise migrate into the Niagara River by creating a hydraulic gradient from the River to the groundwater withdrawal system. The post-RA system performance monitoring program is conducted to collect the hydraulic and groundwater chemical data necessary to evaluate the effectiveness of the barrier slurry wall and groundwater withdrawal system and to track long-term trends in the groundwater chemistry.

The remedial action system components at the Site that have associated O&M activities are as follows:

- Landfill cap
- Barrier slurry wall
- Groundwater withdrawal and discharge system
- Sloped-bank stabilization
- Post-RA system performance monitoring

Inspections of the landfill cap and sloped bank stabilization are performed monthly by CRA. Any observed items requiring corrective actions are reported typically within three business days to the City of North Tonawanda which is responsible for the operation and maintenance of the Site. Performance monitoring of the barrier slurry wall is performed monthly by measuring river and groundwater levels to ensure that a gradient from the river to the groundwater withdrawal system is maintained. Performance monitoring of the groundwater discharge system is performed in accordance with the City of North Tonawanda Industrial Wastewater Discharge Permit Number 2628011 which requires semi-annual collection and analyses of samples of the water that is discharged to the City of North Tonawanda WWTP. Groundwater samples are currently collected and analyzed annually from seven wells and from an additional five wells once every two years in accordance with the schedule in the modified O&M Manual to track the long-term trends in the groundwater concentrations.

If you have any questions, please do not hesitate to contact the undersigned at 716-695-8565.

Yours truly,

Dale Marshall, P.E.
City Engineer

KDS/lp/4
Encl.

cc: Greg Sutton, NYSDEC Region 9
Krista Anders, NYSDOH (electronic copy)
C. Babcock, GSHI
J.P. Moreau/W. Jones (National Grid)

b.c.c.: J. Kay
P. Sattelberg (City of North Tonawanda)

Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. **932060**

Site Name Gratwick - Riverside Park

Site Address: River Road Zip Code: 14120
City/Town: North Tonawanda
County: Niagara
Site Acreage: 52.9

Reporting Period: ~~August 25~~ June 1, 2011 to ~~August 25~~ May 31, 2012

	YES	NO
1. Is the information above correct?	☐	☒
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☒
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☒
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☒
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☒

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Closed Landfill	☒	☐
7. Are all ICs/ECs in place and functioning as designed?	☒	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

David W. Marshall
Signature of Owner, Remedial Party or Designated Representative

9/19/12
Date

SITE NO. 932060

Box 3

Description of Institutional Controls

Parcel	Owner	Institutional Control
175.19-1-28	City of North Tonawanda	Building Use Restriction
		Ground Water Use Restriction
		Landuse Restriction
		Monitoring Plan
		O&M Plan

Box 4

Description of Engineering Controls

Parcel	Engineering Control
175.19-1-28	Cover System
	Groundwater Containment
	Groundwater Treatment System
	Leachate Collection

Control Description for Site No. 932060

Parcel: 175.19-1-28

Deed Restriction. Sloped Bank Stabilization in addition to the ICEC listed above.

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☒	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☒	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Dave W Marshall — Signature of Owner, Remedial Party or Designated Representative

9/19/12 — Date

IC CERTIFICATIONS
SITE NO. 932060

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Dale W. Marshall (print name) at 216 Payne Ave NT/KM 14120 (print business address),

am certifying as North Tonawanda City Engineer (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Dale W Marshall PE
Signature of Owner, Remedial Party, or Designated Representative Rendering Certification

9/19/12
Date

IC/EC CERTIFICATIONS

Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Dale W. Marshall at 216 Payne Ave, N Tonawanda NY 14120
print name print business address

am certifying as a Professional Engineer for the City of North Tonawanda
(Owner or Remedial Party)

Dale W. Marshall PE
Signature of Professional Engineer, for the Owner or Remedial Party, Rendering Certification

Stamp (Required for PE)

9/19/12
Date

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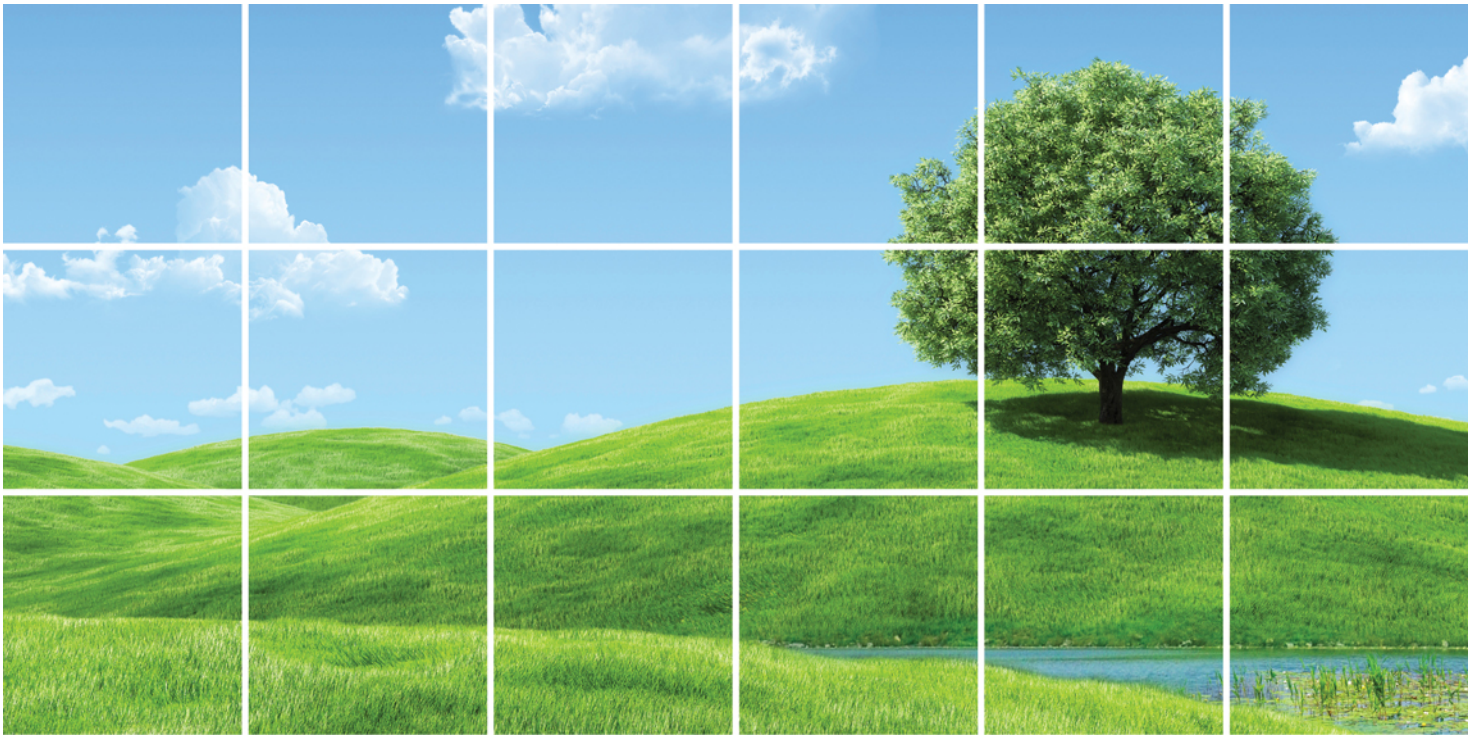

OPERATION AND MONITORING REPORT

JUNE 2011 TO MAY 2012
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

Prepared for: CITY OF NORTH TONAWANDA

Conestoga-Rovers & Associates
651 Colby Drive
Waterloo, Ontario N2V 1C2

September 2012 • #007987
Report Number:40

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1.0 INTRODUCTION

This report is the eleventh annual Operation and Monitoring Report (O&M Report) for the remedial actions constructed at the Gratwick-Riverside Park Site (Site) located in North Tonawanda, New York. This report covers the period from June 2011 to May 2012 and was prepared pursuant to Section 7.0 of the report entitled "Operation and Maintenance Manual" (O&M Manual) dated March 2002 (revised January 2004 and May 2009). It is noted that New York State Department of Environmental Conservation (NYSDEC) approval for the O&M Manual was given on April 20, 2005. All O&M activities have been performed in accordance with the methods and frequencies specified in the O&M Manual and as modified in previous annual reports and approved by NYSDEC. In accordance with the approved monitoring changes, the groundwater is now monitored annually in seven wells and an additional five wells are monitored once every two years. The surface water quality of the Niagara River adjacent to the Site is no longer monitored. The collected groundwater that is discharged from the Site is monitored semi-annually in accordance with the City of North Tonawanda Wastewater Discharge Permit.

2.0 GROUNDWATER WITHDRAWAL SYSTEM (GWS)

Full-time operation of the Groundwater Withdrawal System (GWS) at the Site started on May 4, 2001. The objectives of the GWS are to:

i) Achieve and maintain an inward gradient from the Niagara River toward the GWS

ii) Achieve and maintain an upward gradient from the fill alluvium layer beneath the GWS

In order to determine whether the objectives are being met, hydraulic and chemical monitoring programs have been developed. These programs include Site groundwater and GWS effluent. Sampling of the River water was approved for elimination in 2008. The wells, manholes, wet wells, and storm sewer outfalls that comprise the monitoring network are shown on Figure 2.1. The monitoring programs are described in the following subsections.

2.1 HYDRAULIC MONITORING

Hydraulic monitoring consists of the collection of water levels in monitoring wells and manholes, and River water levels at the storm sewer outfalls. These data are then used to determine the vertical and horizontal gradients for the groundwater.

The water levels in four GWS manholes and in the River were monitored to confirm that an inward gradient exists. The water levels in five GWS manholes and in four monitoring wells installed near the GWS alignment in the materials directly overlying the confining unit were monitored to confirm that an upward gradient exists. The specific manholes and monitoring wells used to determine the horizontal and vertical gradients are listed in Table 2.1.

Groundwater elevations are measured on a monthly basis. The measured water levels for the time period January 2011 through May 2012 are provided in Table 2.2. The horizontal and vertical gradients for this reporting period are provided in Tables 2.3 and 2.4, respectively. The water levels and horizontal and vertical gradients to January 2011 were previously provided and thus are not provided in this report.

The results for the horizontal gradient evaluation show that:

i) Inward horizontal gradients were achieved by May 11, 2001, within one week of the start of pumping the GWS

ii) The inward gradients were maintained for the remainder of the first 11 years except for a few short intervals in isolated areas. There were no exceptions in the June 2011 through May 2012 reporting period.

Short periods of outward gradient do not adversely affect the effectiveness of the remedy because:

i) The gradients were outward for only short periods of time

ii) The outward gradients occurred over only a portion of the barrier wall

iii) The 36-inch barrier wall is six inches thicker than the design thickness thereby providing extra protection

iv) Any outward migration of Site groundwater into the barrier wall during the short periods of outward gradient is more than offset by the inward migration of river water into the barrier wall during the long periods of inward gradient

The results for the vertical gradient evaluation showed that the vertical gradients during the June 2011 through May 2012 reporting period were continually upward for all four monitoring locations.

2.2 GROUNDWATER QUALITY MONITORING

Groundwater quality monitoring consists of the collection of water samples from on-Site overburden monitoring wells (OGC-1 through OGC-8 and MW-6 through MW-9) and the analysis of these samples to determine the concentrations of chemicals in the groundwater. The purpose of the groundwater quality monitoring program is to monitor the anticipated improvement in the quality of the overburden groundwater:

i) Between the barrier wall and the River (OGC-1 through OGC-4)

ii) In the fill/alluvium beneath the GWS (MW-6 through MW-9)

The MWs are located on the inside of the barrier wall and the OGCs are located between the barrier wall and the river.

Groundwater quality monitoring locations are presented on Figure 2.1 and the analytical parameters and frequency are listed in Table 2.5.

Groundwater sampling was performed on an annual basis between May 2004 and May 2008. As approved in the NYSDEC letter dated February 23, 2009 the sampling frequency for May 2009 through May 2012 was:

Annual	*Once Every Two Years (2010 and 2012)*
MW-8	MW-6
MW-9	MW-7
OGC-3	OGC-1
OGC-4	OGC-2
OGC-6	OGC-5
OGC-7	
OGC-8	

2.2.1 SAMPLE RESULTS

A summary of compounds detected in the groundwater samples for this reporting period is provided in Table 2.6 and pH levels are provided in Table 2.7.

To evaluate the trends in the groundwater chemistry and evaluate the appropriate frequency of future sampling, the VOCs and SVOCs were summed and plotted on Figures 2.2 through 2.13 for each of the 12 monitoring wells included in the program. It is believed that the sum of the VOCs (i.e., TVOCs) and SVOCs (i.e., TSVOCs) best represent the trends in the groundwater chemistry.

Review of the TVOC and TSVOC concentrations for the 12 wells sampled in 2012 show the following trends since May 2008:

i) TVOCs:

- Decreasing concentrations in 5 of the 12 wells (MW-8, MW-9, OGC-3, OGC-6 and OGC-7)
- Relatively constant concentrations with random fluctuations in the remaining 7 wells

ii) TSVOCs:

- Decreasing concentrations in 3 of the 12 wells (MW-6, MW-8 and OGC-4)
- Relatively constant concentrations with random fluctuations in the remaining 9 wells

All the wells had only low level TVOC concentrations in this reporting period, except for MW-8 (65 µg/L) and OGC-6 (226 µg/L). With regard to TSVOC concentrations, three wells had higher concentrations, MW-8 (78 µg/L), MW-9 (300 µg/L), and OGC-3 (105 µg/L). All of the remaining wells had TSVOC concentrations <20 µg/L.

In summary, the number of wells with decreasing or constant but fluctuating low level concentrations and considering that no wells had increasing concentrations, shows that the groundwater is being remediated.

Additional description of the TVOC and TSVOC concentrations is provided in the following paragraphs.

Monitoring Wells On-Site - Inside Barrier Wall

The TVOC concentrations for MW-6 shown on Figure 2.2 have been less than 5 µg/L since May 2007. The TSVOC concentrations were low level (i.e., <5 µg/L) since May 2004 until May 2010 when they increased slightly to 20 µg/L. In May 2012 the TSVOC concentration had reduced to 10 µg/L.

The TVOC and TSVOC concentrations for MW-7 on Figure 2.3 show that both TVOC and TSVOC have remained low level. TVOC concentrations ranged from non-detect to 4 µg/L since May 2006. TSVOC concentrations ranged from non-detect to 1 µg/L since May 2004.

The TVOC concentrations for MW-8 on Figure 2.4 show that the TVOC concentration for the May 2012 sample decreased to 65 µg/L from the May 2011 sample concentration of 107 µg/L. The TSVOC concentrations since May 2006 increased slightly from 31 µg/L to 117 µg/L in the May 2009 sample and since then have continually decreased since that time to 78 µg/L in the May 2012 sample.

The TVOC concentrations for MW-9 on Figure 2.5 show that the TVOC concentrations ranged between 9 and 30 µg/L for the entire record period. The TSVOC concentrations have fluctuated between 150 to 440 µg/L since August 2002.

All MWs are located on the inside of the barrier wall and a net inward gradient has always been maintained in the vicinity of these wells. Thus, the TVOCs and TSVOCs are not migrating to the Niagara River.

Monitoring Wells Between Barrier Wall and River

The TVOC concentrations for OGC-1 on Figure 2.6 show that the concentrations since November 2003 ranged between 0.5 and 4 µg/L. The TSVOC concentrations since November 2003 have fluctuated between non-detect and 3 µg/L.

The TVOC concentrations for OGC-2 on Figure 2.7 have been non-detect since May 2006. The TSVOC concentrations were all non-detect since monitoring of the remedy started.

The TVOC concentrations for OGC-3 shown on Figure 2.8 have been non-detect since May 2008. The TSVOC concentrations have decreased from 300 µg/L in November 2003 to 95 µg/L in May 2011. The TSVOC concentration increased slightly to 105 µg/L in May 2012.

The TVOC concentrations for OGC-4 shown on Figure 2.9 fluctuated between non-detect and 6 µg/L for the time period from November 2002 to May 2012 and have been non-detect since May 2010. The TSVOC concentrations have fluctuated widely but have continually decreased since May 2004 with a concentration of 3.8 µg/L in the May 2012 sample. The single compound responsible for the higher historic concentrations was phenol.

The TVOC concentrations for OGC-5 shown on Figure 2.10, ranged from non-detect to 5 µg/L since November 2003 (except for May 2008 at 5.8 µg/L). The TSVOC concentrations ranged from non-detect to 2 µg/L since February 2003.

The TVOC concentrations for OGC-6 shown on Figure 2.11 increased continually from 3 µg/L in May 2001 to 4,200 µg/L in May 2006, then decreased to 68 µg/L by May 2008 before increasing to 1,130 µg/L in the May 2010 sample. The TVOC concentrations have since continually decreased with a concentration of 226 µg/L in the May 2012 sample. The primary compounds detected are PCE and TCE. The TSVOC concentrations have continually decreased from 157 µg/L in May 2008 to 20 µg/L in May 2012.

The TVOC concentrations for OGC-7 shown on Figure 2.12, have continually decreased since November 2003 and were 17 µg/L in the May 2012 sample. The TSVOC concentrations have been non-detect since August 2002 except for May 2008 (0.9 µg/L) and May 2011 (0.45 µg/L).

The TVOC concentrations for OGC-8 shown on Figure 2.13 decreased from 460 µg/L in May 2001 to 84 µg/L in May 2003 and have ranged from non-detect to 29 µg/L since that time. The TSVOC concentrations decreased from 139 µg/L in August 2001 to 54 µg/L in August 2002 and have ranged from non-detect to 11 µg/L since that time.

The QA/QC review of the May 2012 groundwater results is included in Appendix B.

2.3 EFFLUENT MONITORING PROGRAM

Groundwater from the GWS is discharged to the POTW without the need for pretreatment. The monitoring performed during the construction phase of the remedy clearly showed that the minimal chemical presence in the groundwater collected in the GWS is easily treated at the POTW and therefore no on-Site pretreatment is necessary. The effluent samples are collected at the monitoring station (meter building), which is located at the south end of the Site as shown on Figure 2.1. The analytical parameters for the time period from June 2001 to February 2007, inclusive, are listed in Table 2.8 and the parameters monitored since 2007 are listed in Table 2.9.

2.3.1 SAMPLE RESULTS

Effluent samples are collected semi-annually and consist of a 24-hour composite sample collected for SVOCs, metals, and wet chemistry parameters. Three grab samples are also collected for VOCs at 8-hour intervals and the measured concentrations are averaged to give a 24-hour concentration.

QA/QC reviews of the discharge results to May 2011 have already been submitted to the NYSDEC. Thus, these reviews are not being resubmitted with this O&M Report. The QA/QC reviews of the discharge results from September 2011 and March 2012 are provided in Appendix B.

The effluent sample results for this reporting period are provided in Table 2.10. To assist in evaluating the chemical concentration trends in the effluent discharge from the GWS, the measured concentrations for the following parameters are plotted: TVOCs, TSVOCs, pH, total suspended solids (TSS), and biochemical oxygen demand (BOD) (see Figures 2.14 through 2.17). It is believed that these parameters are representative of the trends in the chemistry of the water discharged to the POTW and, as such, can also be used to determine an appropriate monitoring frequency for the effluent.

As shown on Figure 2.14, the TVOCs generally peak in the spring and then decline reaching a trough in the fall. This pattern may be attributable to additional flushing during the spring snow melt. The long-term trend of the TVOC concentrations show a continual decrease with time. The TVOC concentration in the March 2012 sample was 74 μg/L. The effluent TSVOC results on Figure 2.14 show no apparent seasonal pattern but the TSVOC concentrations show the same decreasing trend with time as the TVOC concentrations. The TSVOC concentration in the March 2012 sample was 16 μg/L.

The pH levels are presented on Figure 2.15. As shown on Figure 2.15, the pH levels range between 7.3 and 11.6. An apparent trend in the pH levels is higher pH levels in the winter/spring and lower pH levels in the summer/fall.

The TSS concentrations presented on Figure 2.16 show higher concentrations occurring in the early spring and late summer/fall with elevated concentrations (maximum of 278 mg/L) in the spring of 2005. Because TSS may be related to the discharge flow rate, the monthly discharge volume (see Table 2.11) is plotted on Figure 2.18. Comparison of the results presented on these two figures shows an apparent correlation between higher flows and greater TSS concentrations except for the 2005 spring results.

The BOD concentrations are presented on Figure 2.17. As shown on Figure 2.17, BOD concentrations randomly ranged from 6 to 29 mg/L since May 2002. The BOD concentrations were compared with the discharge volume but showed no apparent correlation.

In summary, the trends and low level TVOC and TSVOC concentrations described above support the semi-annual sampling frequency in the current City of North Tonawanda Industrial Wastewater Discharge Permit.

2.4 SURFACE WATER MONITORING PROGRAM

To determine that the River sediment remediation and enhancement is working properly, surface water samples were collected from May 2001 to May 2008 at locations upstream of, adjacent to, and at the downstream end of the Site (see Figure 2.1 for locations). Pursuant to the NYSDEC approval received on February 23, 2009, no further sampling or analyses of the River water is needed or being performed.

2.5 GWS OPERATIONS

The volume of water pumped on a monthly basis from the Site to the City POTW for treatment is presented in Table 2.11 and plotted on Figure 2.18. The monthly volumes show that during the time period of initial dewatering of the Site (i.e., May and June 2001) the monthly volumes ranged from 2,300,000 to 2,900,000 gallons. For the time period from June 2007 to May 2012, the monthly volumes ranged from 23,800 to 2,661,000 gallons except for March 2009 which had a volume of 4,239,000 gallons.

The total measured volume of water discharged from the Site for the time period from May 2001 to May 2012 was 92,954,500 gallons with 5,401,900 gallons (10.3 gpm average) pumped during the last 12 months.

Section 5.0 of the O&M Manual describes the procedures to be followed in case pumping of the GWS needs to be stopped to prevent the discharge of untreated water from the Site by the City POTW (i.e., wet weather shutdown). No wet weather shutdown occurred in the time period from June 2011 to May 2012.

The treatment of the Site groundwater by the City POTW did not require any modifications to the standard operations of the City POTW and did not cause any operational upsets of the City POTW.

2.6 GWS MAINTENANCE

This section describes the GWS maintenance activities performed during the June 2011 through May 2012 time period. A copy of the maintenance log is provided in Appendix A.

The entries in the maintenance log show that the breaker for Pump #1 (MH-3) tripped on January 25, 2012. The breaker was reset and the pump was restarted. The breaker for Pump #2 (MH-9) tripped on February 10, 2012. The pump was removed from the manhole, cleaned in an acid bath, reinstalled and restarted. The breaker for Pump #3 (MH-15) tripped on May 27, 2012. Inspection of the pump showed that the pump needed to be replaced. A replacement has been ordered and will be installed when received.

3.0 SITE INSPECTIONS

Site inspections were performed on a monthly basis. Copies of the Inspection Logs for the time period to May 2011 were previously submitted and thus are not being resubmitted with this O&M Report. The Monthly Inspection Logs for June 2011 through May 2012 are included in Appendix A. In summary, the June 2011 through May 2012 inspections identified:

i) Higher water levels in MH-15 from December 2011 through May 2012. The higher water levels are believed due to the pump not functioning properly prior to its removal in May 2012.

ii) Soil erosion approximately 20 feet south of OGC-7

iii) Soil erosion north and south of the River Middle and North pipe outlets

iv) Large dead trees partially blocked the River North outlet from October 2011 through May 2012. The trees were removed in June 2012.

The schedule for repair of the erosion is to be determined by the City of North Tonawanda.

4.0 CONCLUSIONS/RECOMMENDATIONS

4.1 OPERATION AND MAINTENANCE

The constructed remedy is achieving the remedial action objectives.

4.2 MONITORING

The groundwater TVOC and TSVOC concentrations are either decreasing or are relatively consistent with time with 10 of 12 wells having TVOC and/or TSVOC concentrations ≤20 µg/L for the 2012 event.

In summary, the groundwater sample collection frequency from May 2009 up to and including May 2012 was:

Annual	*Once Every 2 Years (2010 and 2012)*
MW-8	MW-6
MW-9	MW-7
OGC-3	OGC-1
OGC-4	OGC-2
OGC-6	OGC-5
OGC-7	
OGC-8	

Based on the low TVOC and TSVOC concentrations in the May 2012 samples, it is recommended that the annual sampling for the next 5-year period (through May 2017) continue for five of the wells (MW-8, MW-9, OGC-3, OGC-6 and OGC-7) which were sampled annually from May 2009 through May 2012. It is proposed that wells OGC-4 and OGC-8 be sampled once every two years. The reasons for this are as follows:

i) The TVOC concentrations in OGC-4 were non-detect in May 2010, May 2011 and May 2012

ii) The TSVOC concentrations in OGC-4 have continually decreased from 2400 µg/L in May 2004 to 3.8 µg/L in May 2012

iii) For OGC-8, the TVOC and TSVOC concentrations have been <10 µg/L for the last three sampling events

Thus, the recommended sampling program for the next 5-year period is:

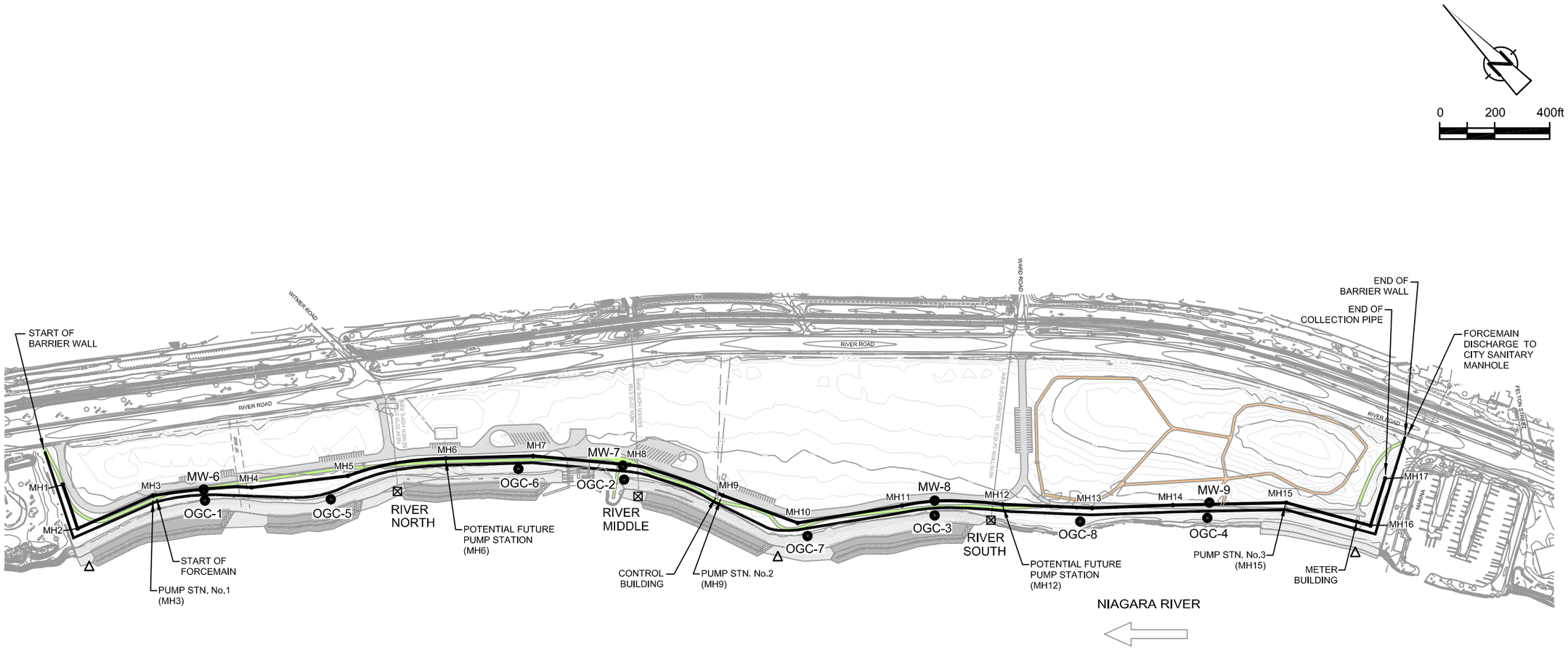
Annual	*Once Every Two Years (2014 and 2016)*
MW-8	MW-6
MW-9	MW-7
OGC-3	OGC-1
OGC-6	OGC-2
OGC-7	OGC-4
	OGC-5
	OGC-8

As previously stated, no further sampling of the river water is required.

Pursuant to the discharge permit effective January 31, 2007 (renewed March 1, 2010 and effective until February 28, 2013), semi-annual monitoring commenced in September 2007. The trends in the effluent from the GWS to the POTW support the continuation of the sampling frequency at semi-annual. Flow monitoring will continue to be performed monthly as a check on the operation of the GWS.

4.3 NOTIFICATIONS TO CITY OF NORTH TONAWANDA

Notifications of anomalies in the discharge volumes and/or groundwater levels will continue to be provided to the City of North Tonawanda Public Works Engineering and Wastewater Treatment Department within a few days of measurement of the anomaly to ensure timely maintenance.



LEGEND

- BARRIER WALL
- MH11 — GROUNDWATER COLLECTION SYSTEM
- ● OGC-1 MW-1 — MONITORING WELL LOCATION
- ⊠ RIVER SOUTH — SURFACE WATER LEVEL MONITORING LOCATION
- △ — SURFACE WATER CHEMICAL MONITORING LOCATION (NO SAMPLING AFTER APRIL 2008)

figure 2.1

MONITORING NETWORK
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA001 JUN 28/2012

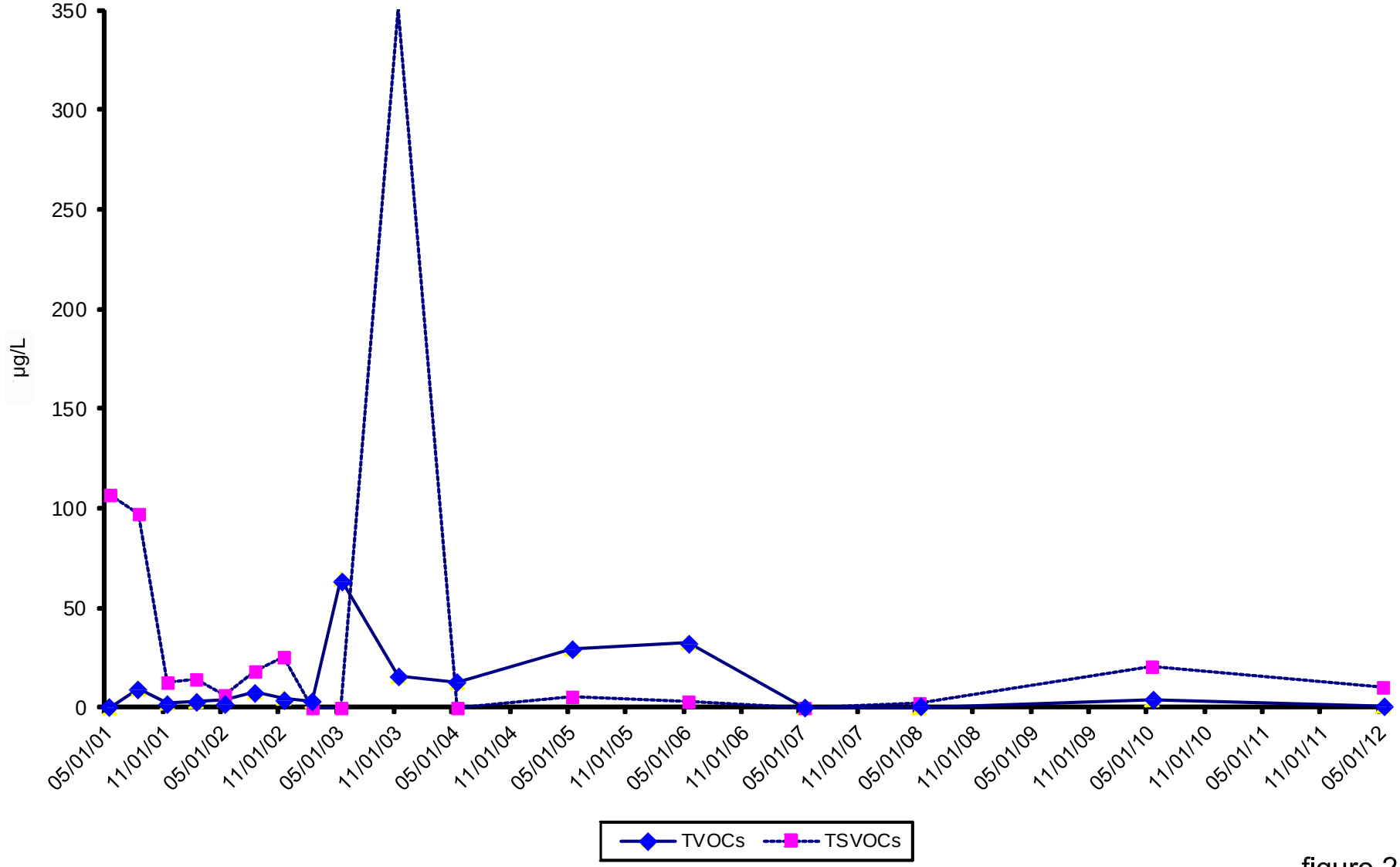


figure 2.2

MW-6 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA002 JUL 3/2012

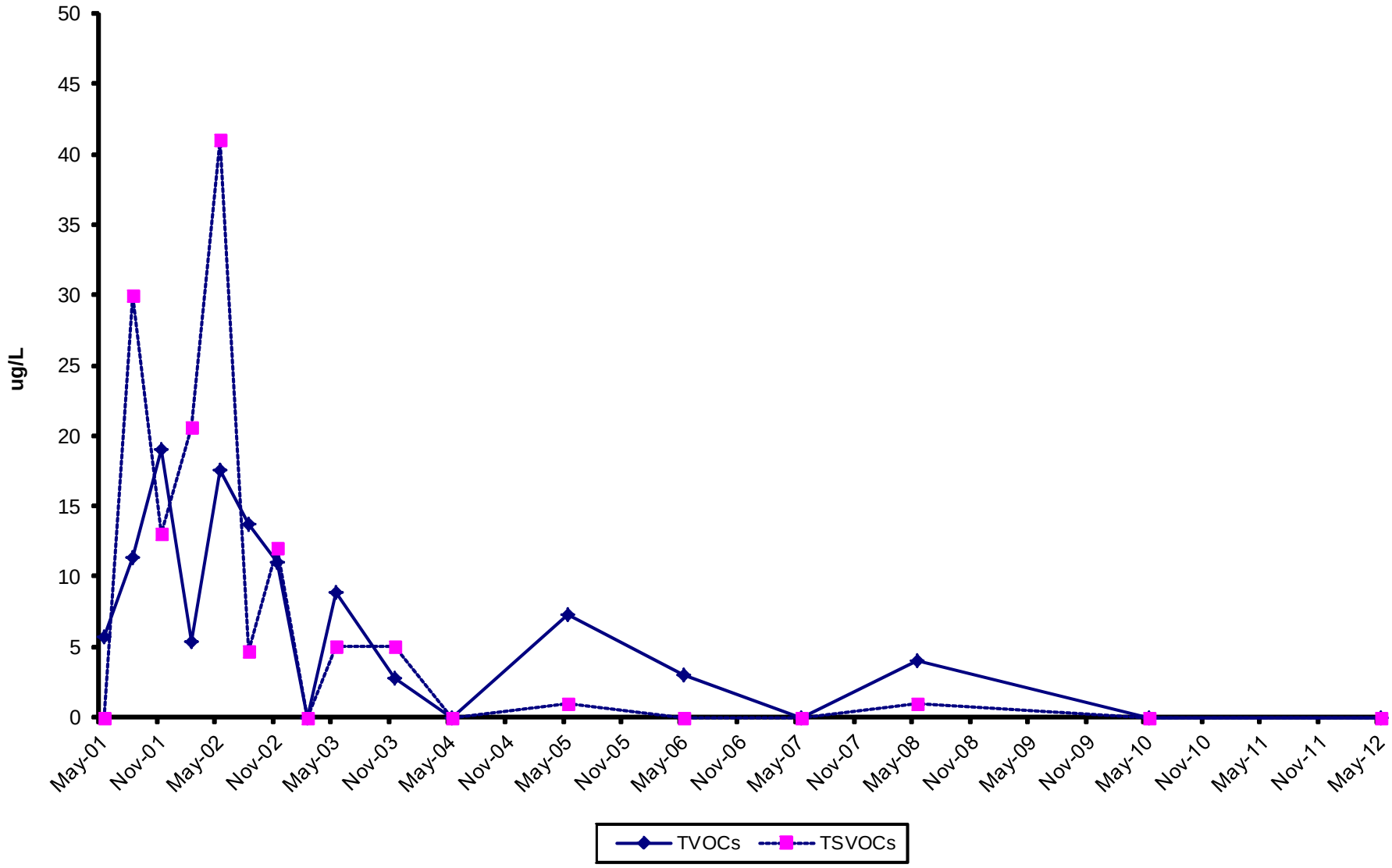


figure 2.3

MW-7 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA003 JUL 3/2012

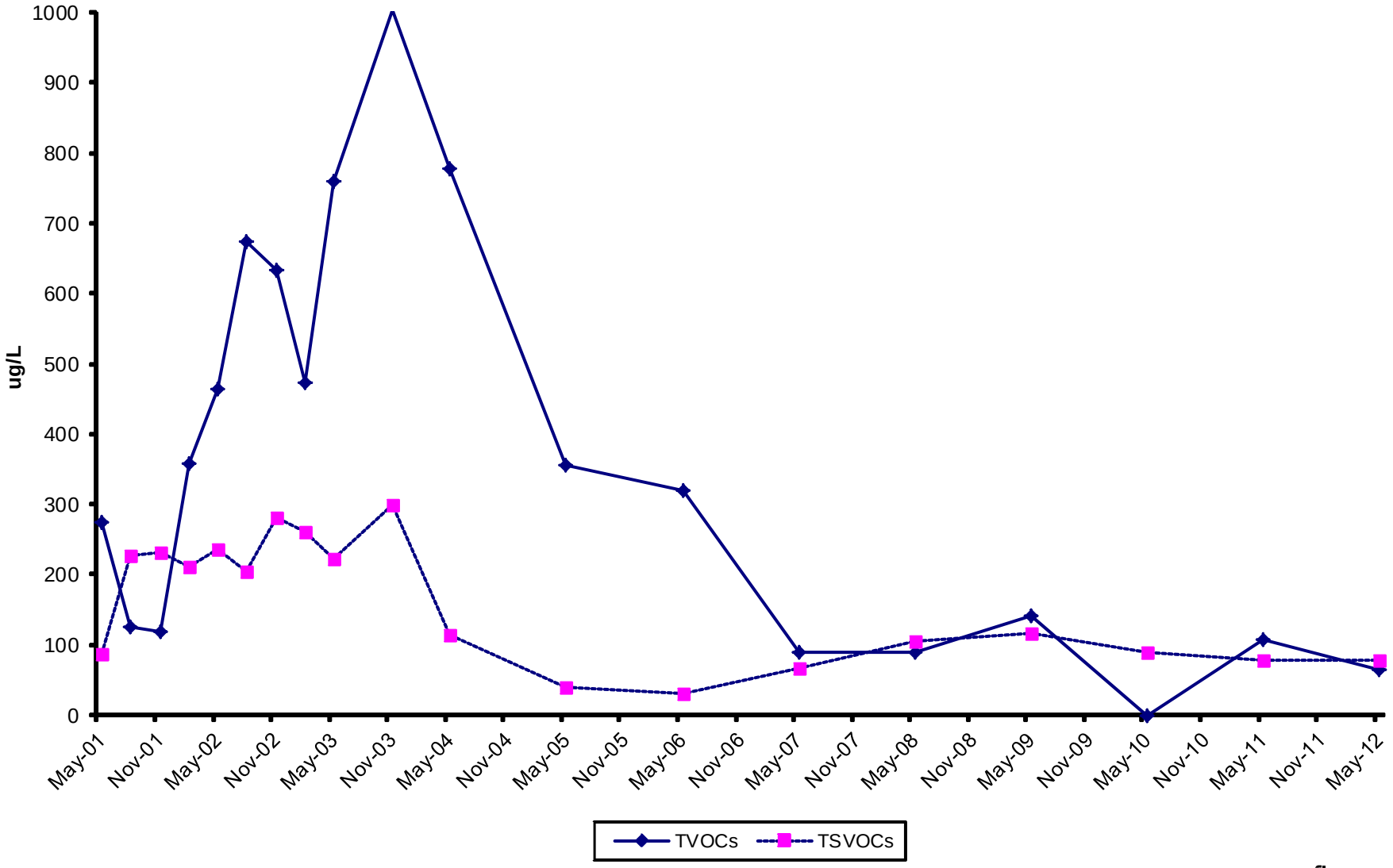


figure 2.4

MW-8 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA004 JUL 3/2012

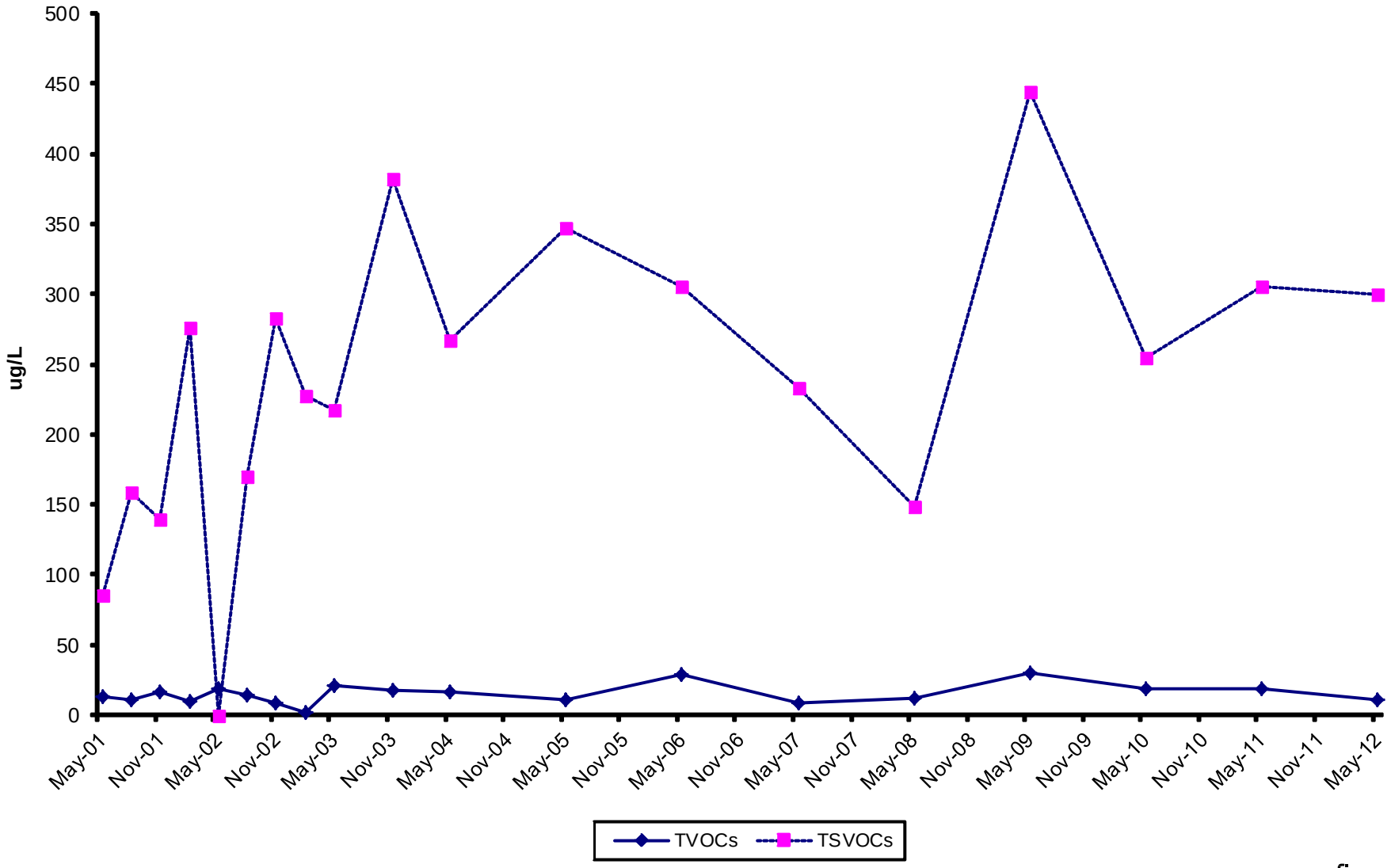


figure 2.5

MW-9 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA005 JUL 3/2012

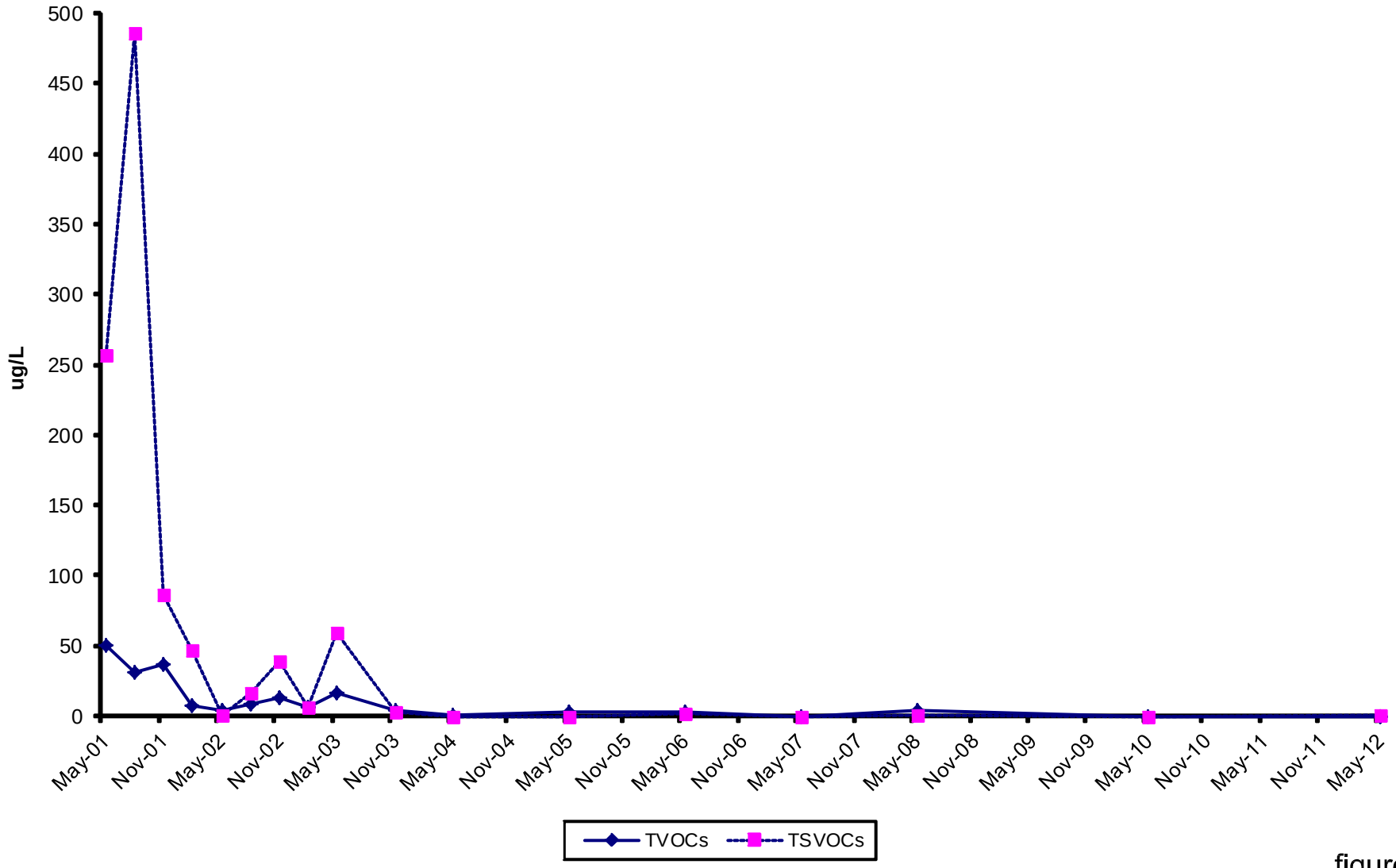


figure 2.6

OGC-1 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA006 JUL 3/2012

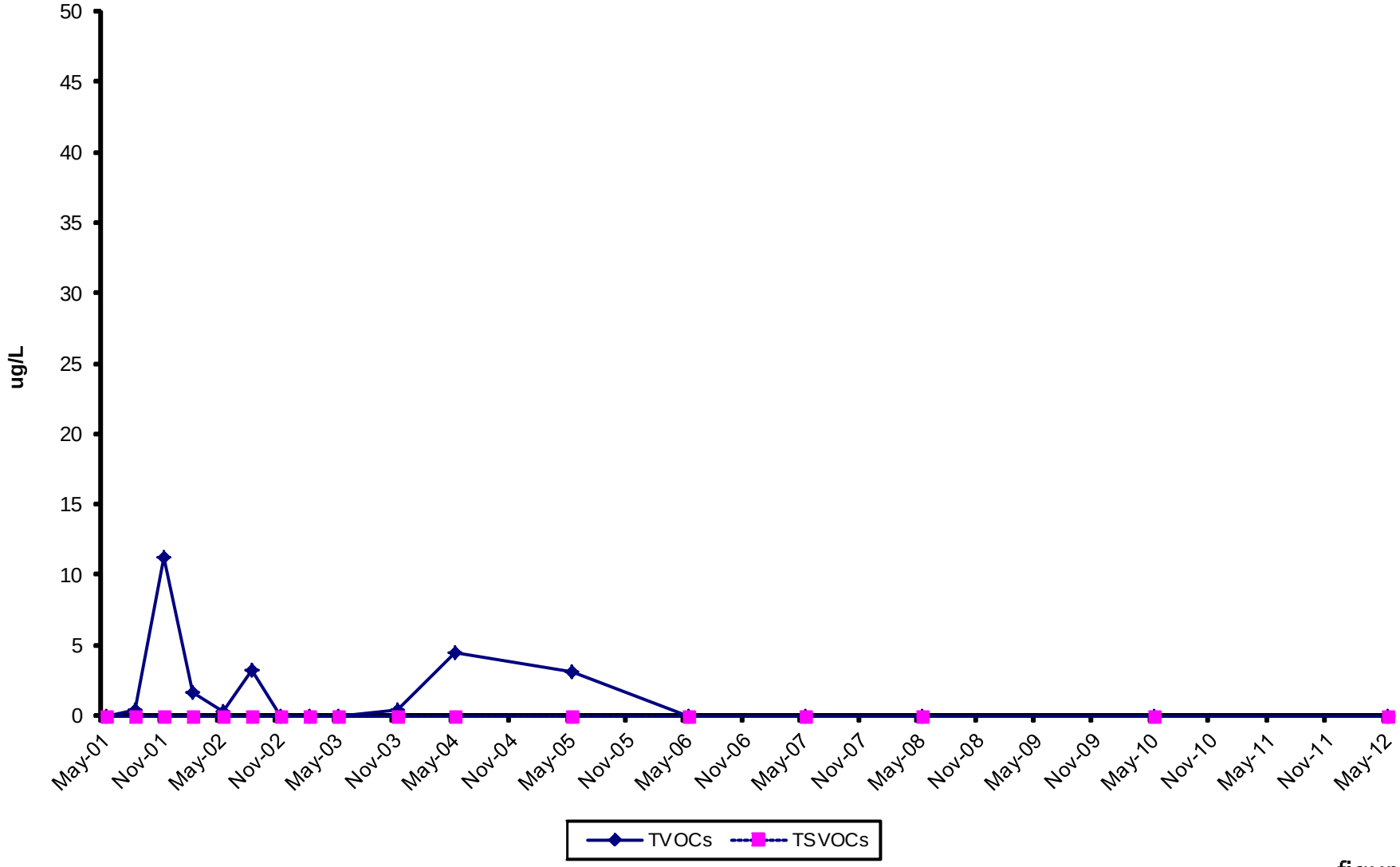


figure 2.7

OGC-2 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA007 JUL 3/2012

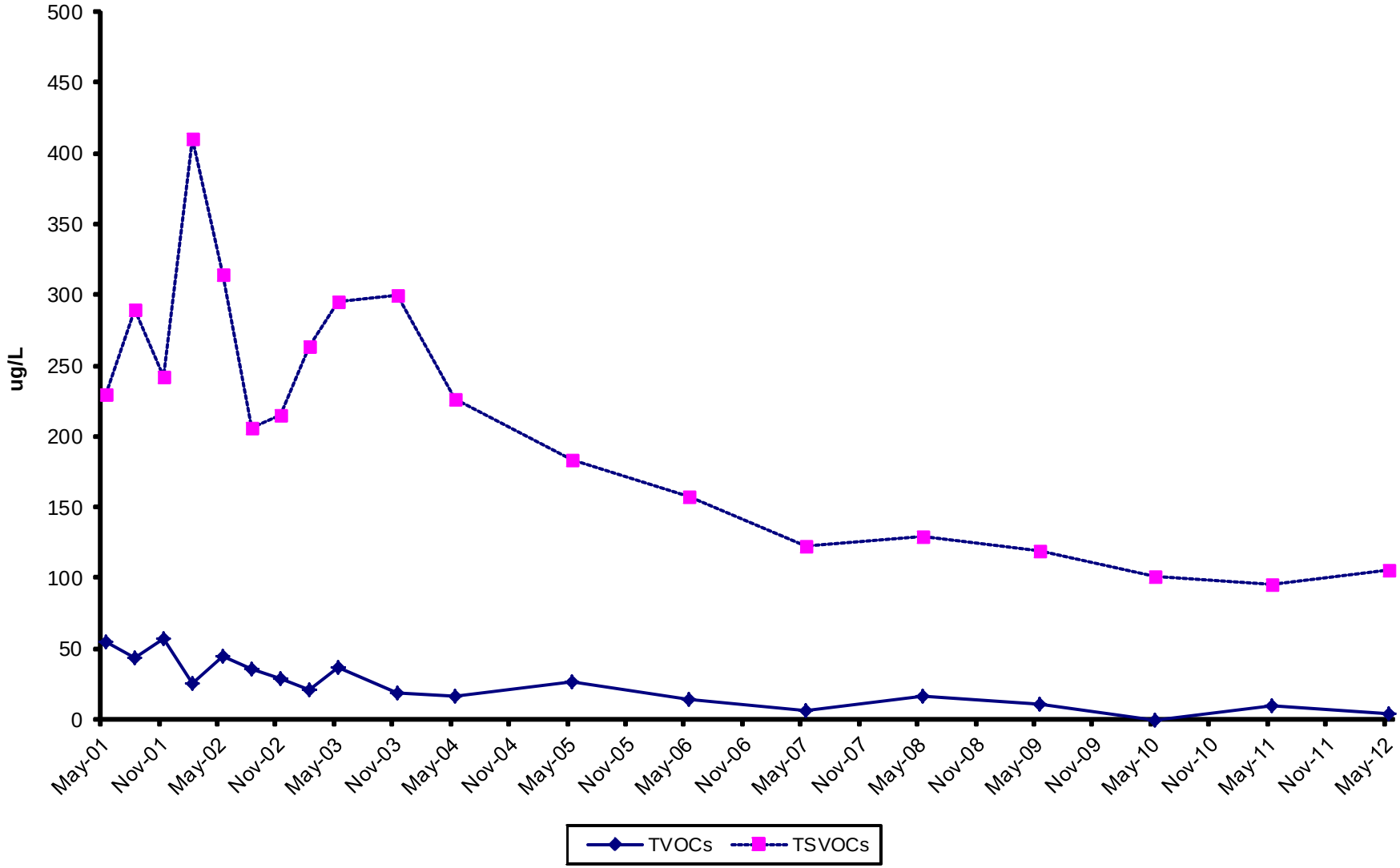


figure 2.8

OGC-3 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA008 JUL 3/2012

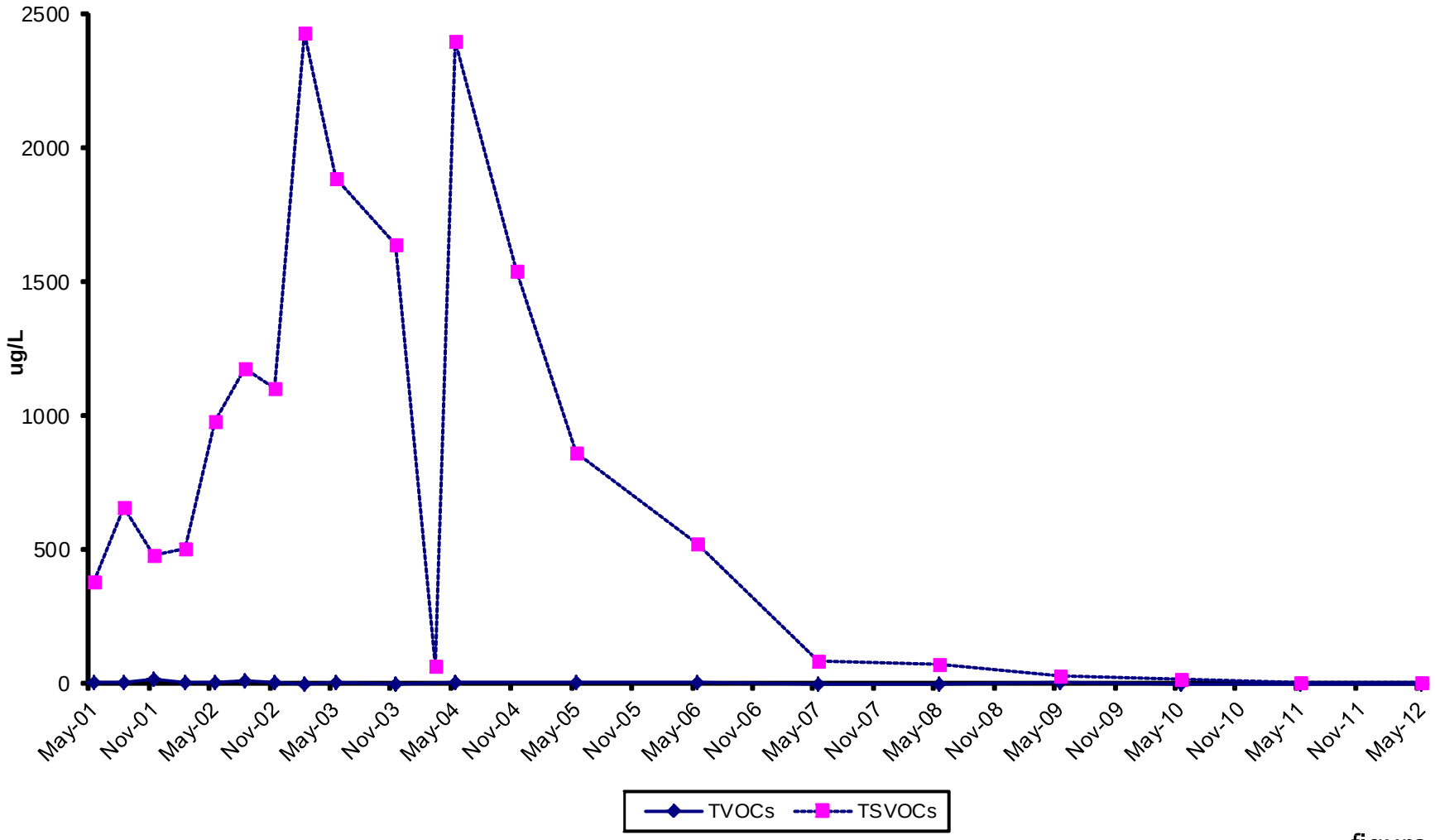


figure 2.9

OGC-4 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA009 JUL 3/2012

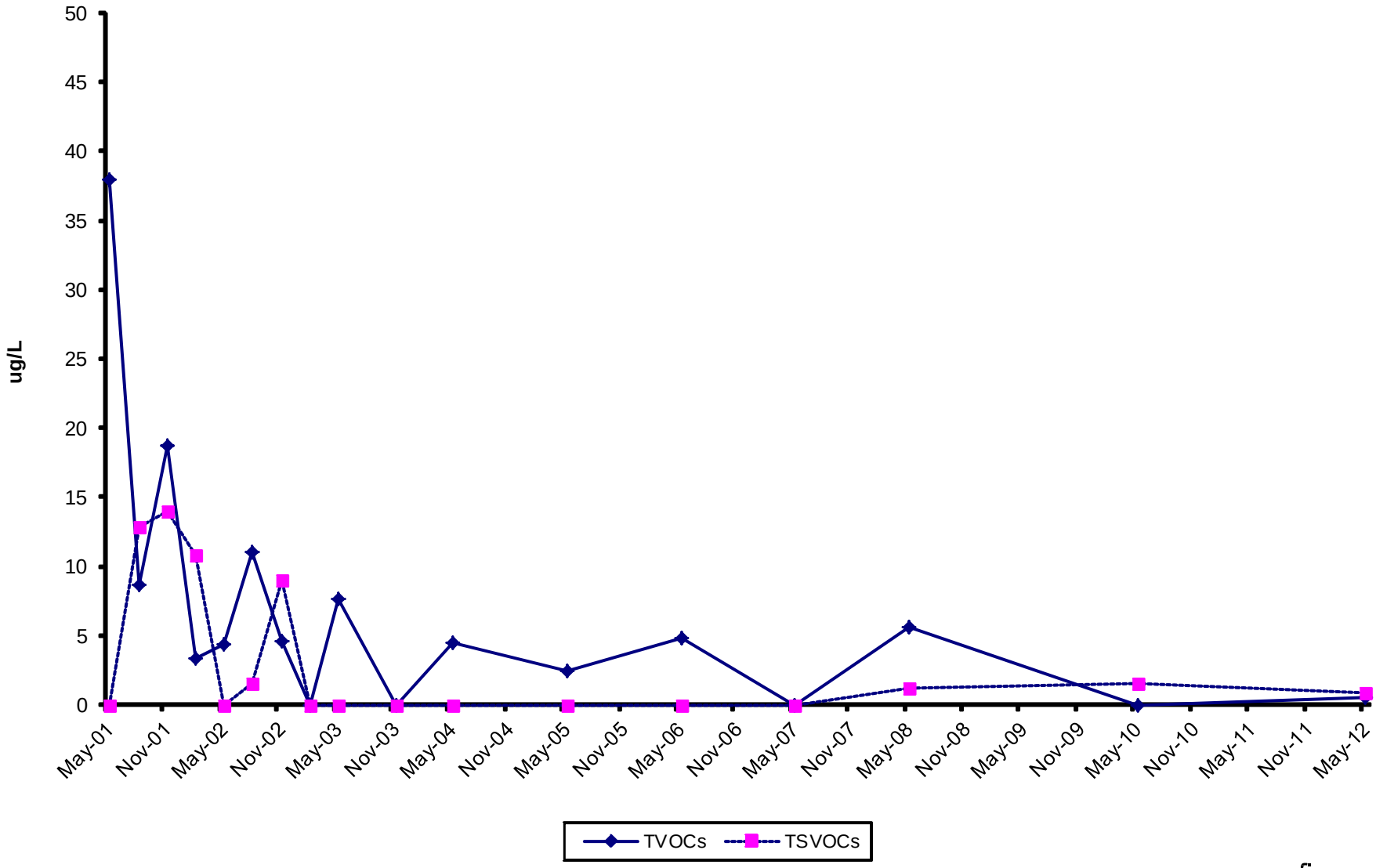


figure 2.10

OGC-5 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA010 JUL 3/2012

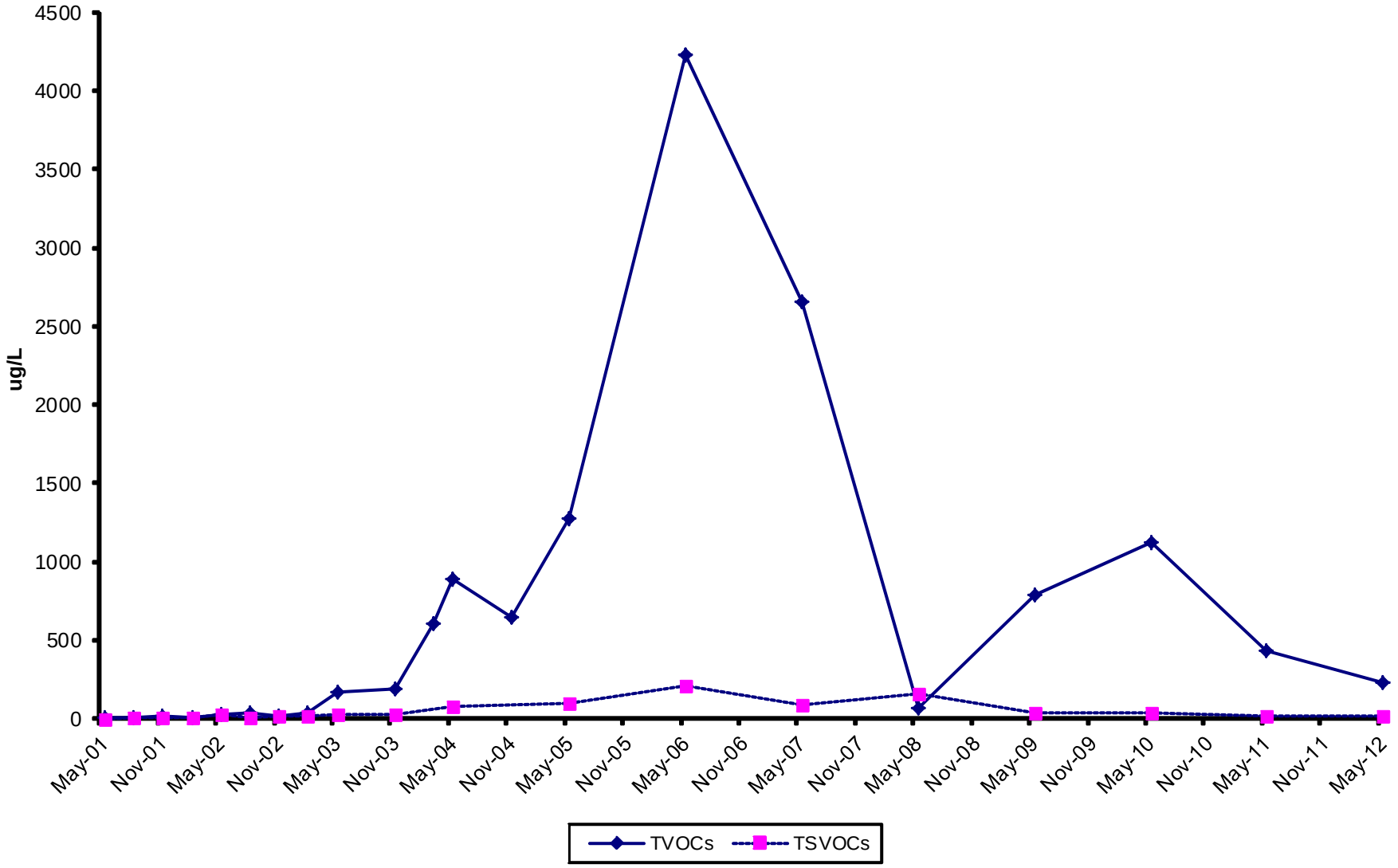


figure 2.11

OGC-6 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA011 JUL 3/2012

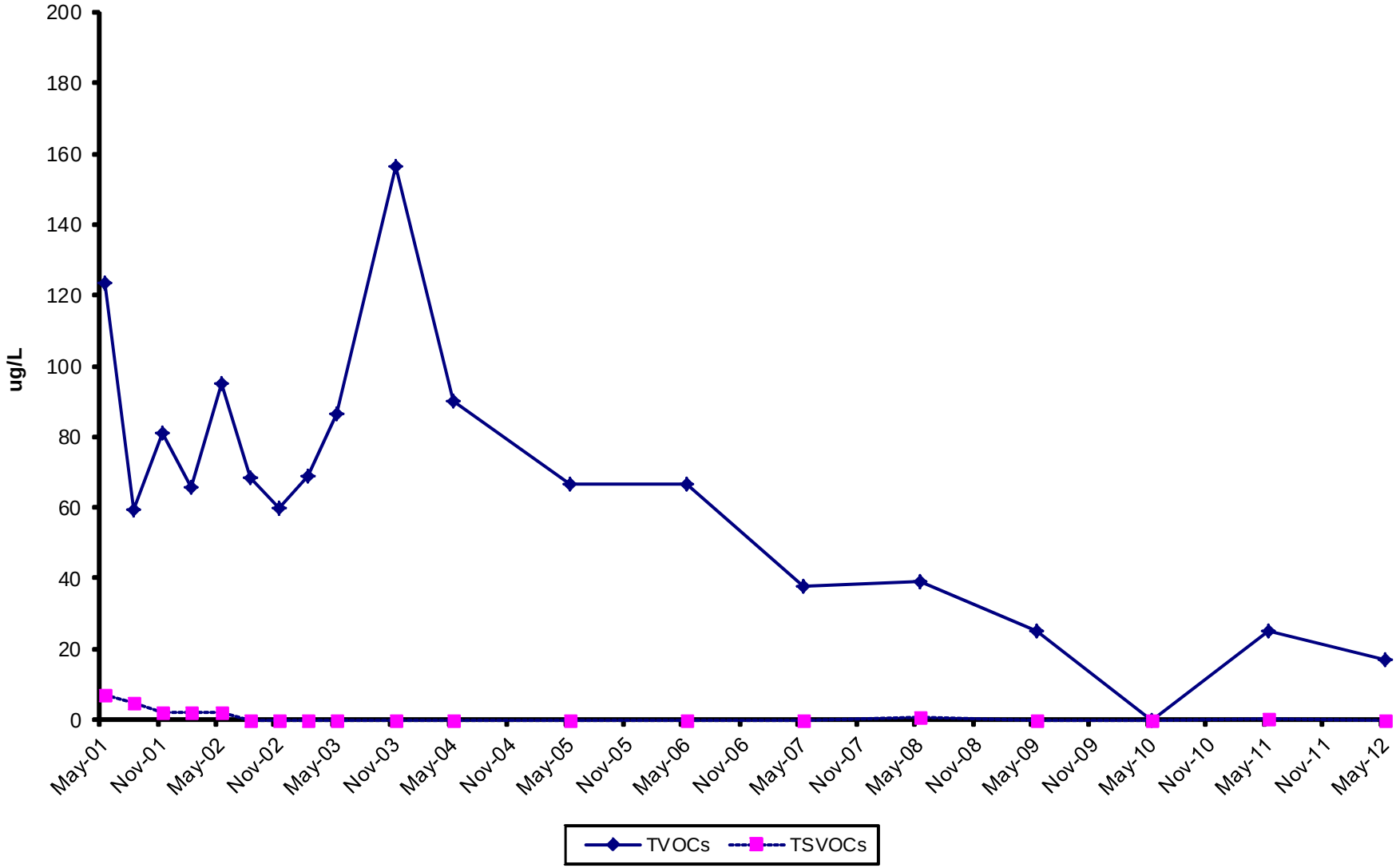


figure 2.12

OGC-7 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA012 JUL 3/2012

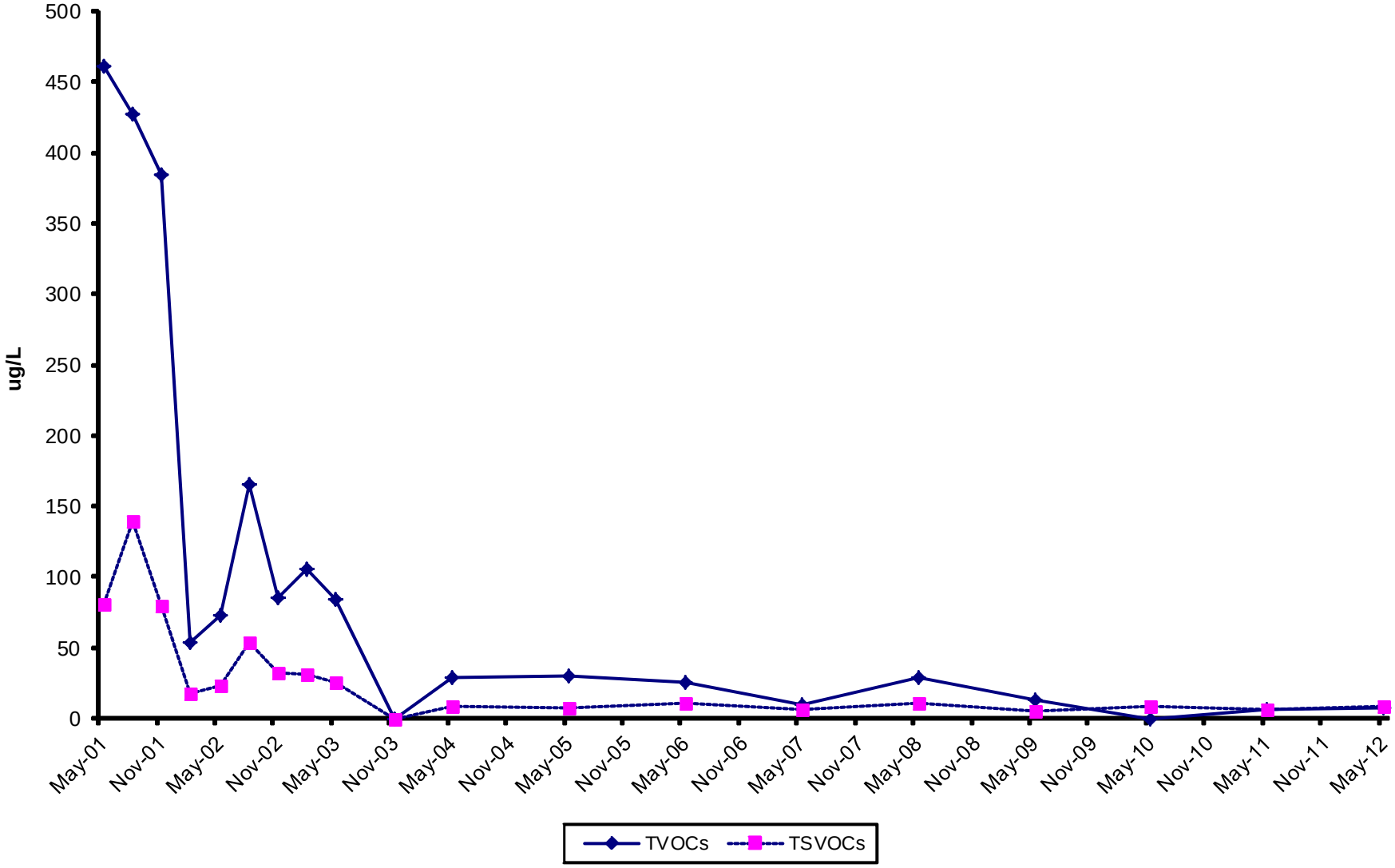


figure 2.13

OGC-8 TVOC AND TSVOC CONCENTRATIONS
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA013 JUL 3/2012

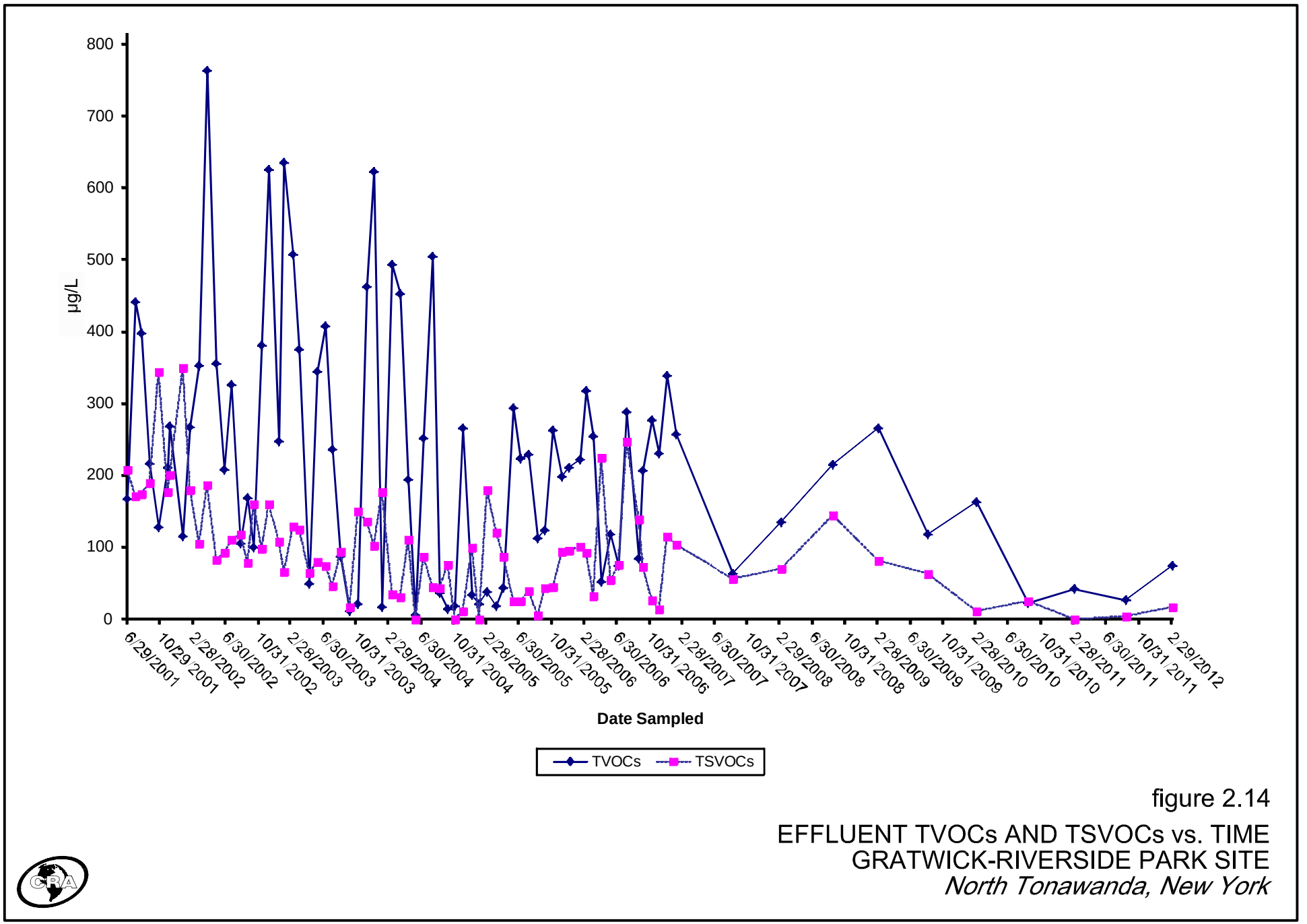


figure 2.14

EFFLUENT TVOCs AND TSVOCs vs. TIME
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA014 JUL 3/2012

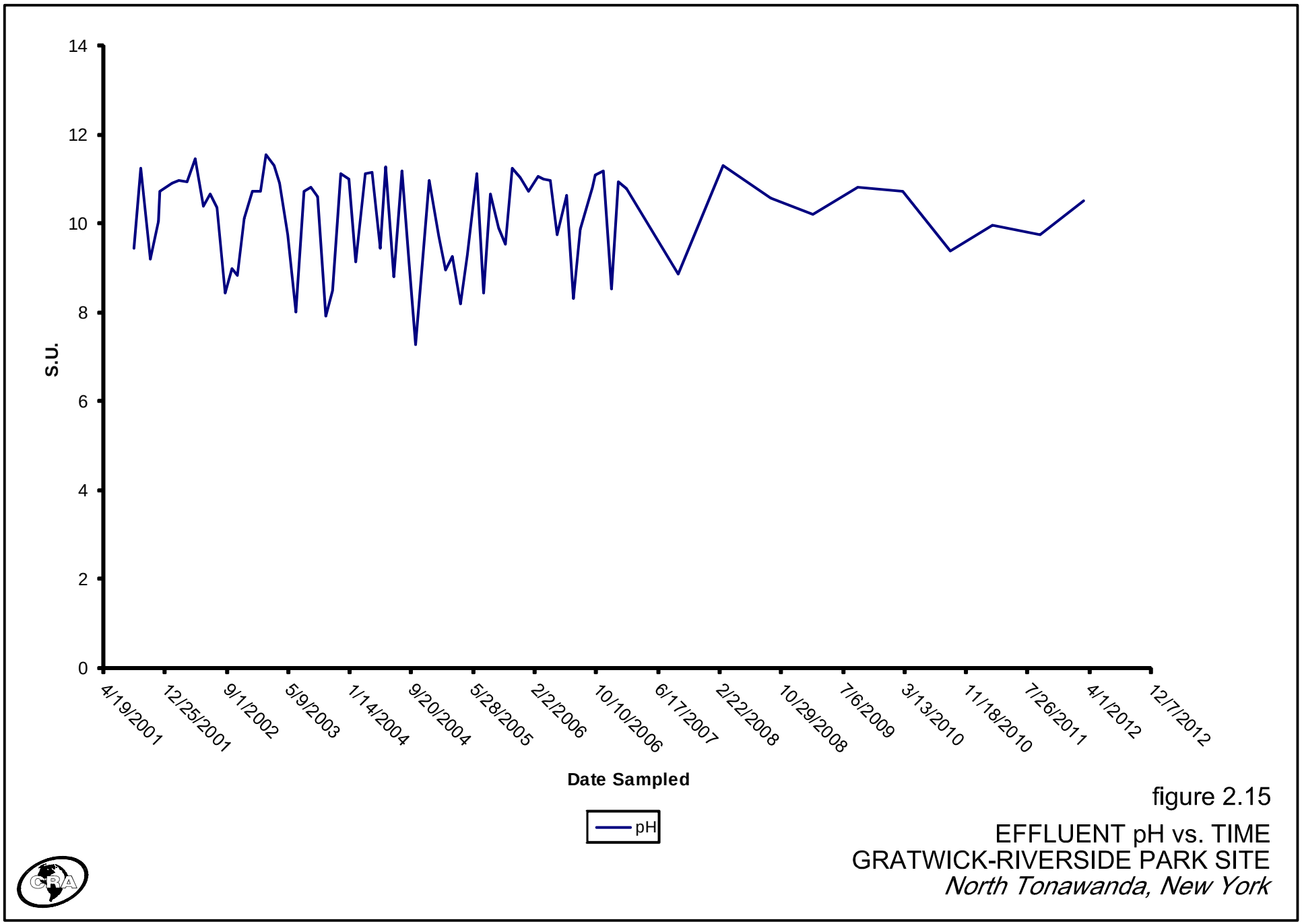


figure 2.15

EFFLUENT pH vs. TIME
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

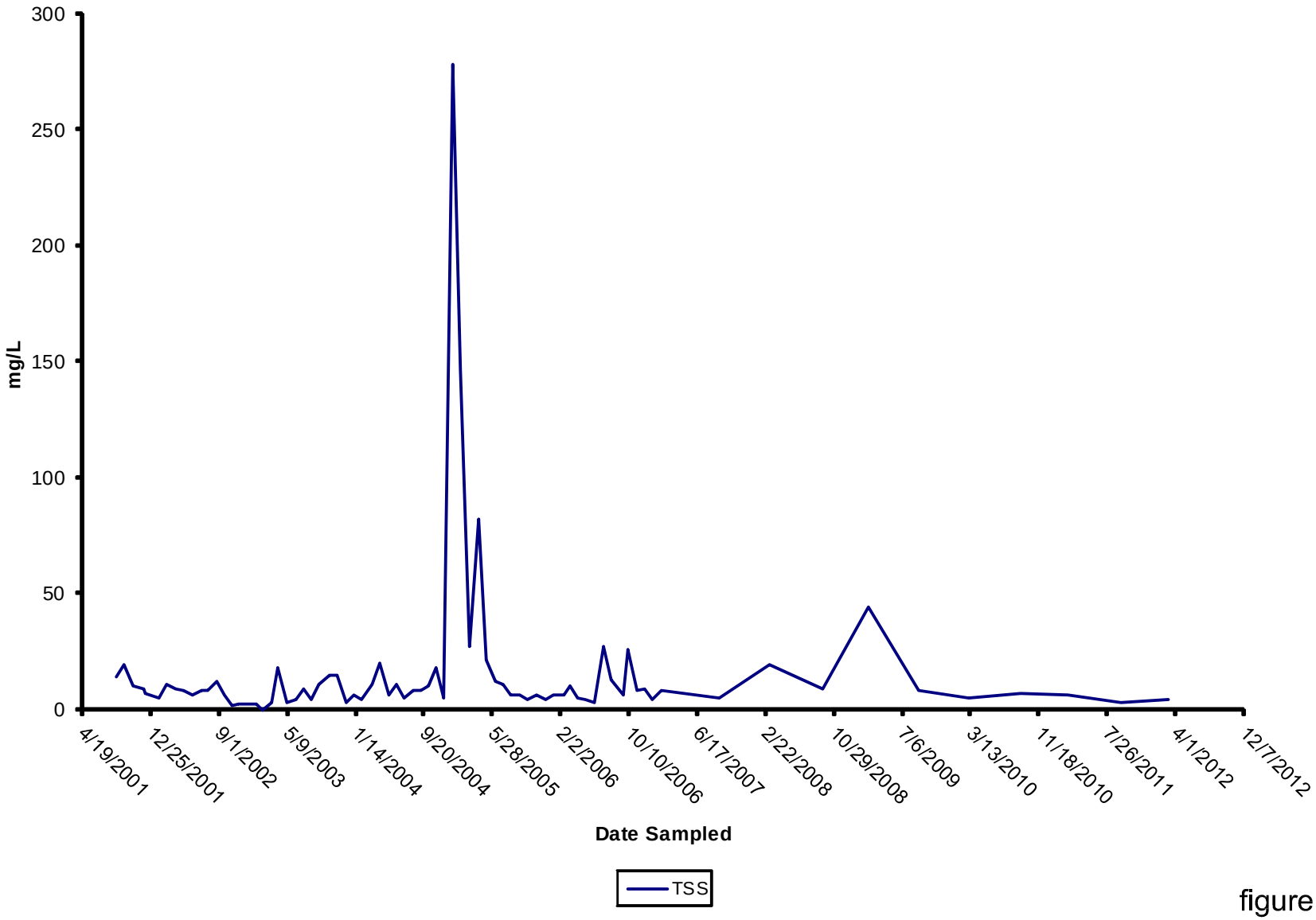


figure 2.16

EFFLUENT TOTAL SUSPENDED SOLIDS vs. TIME
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

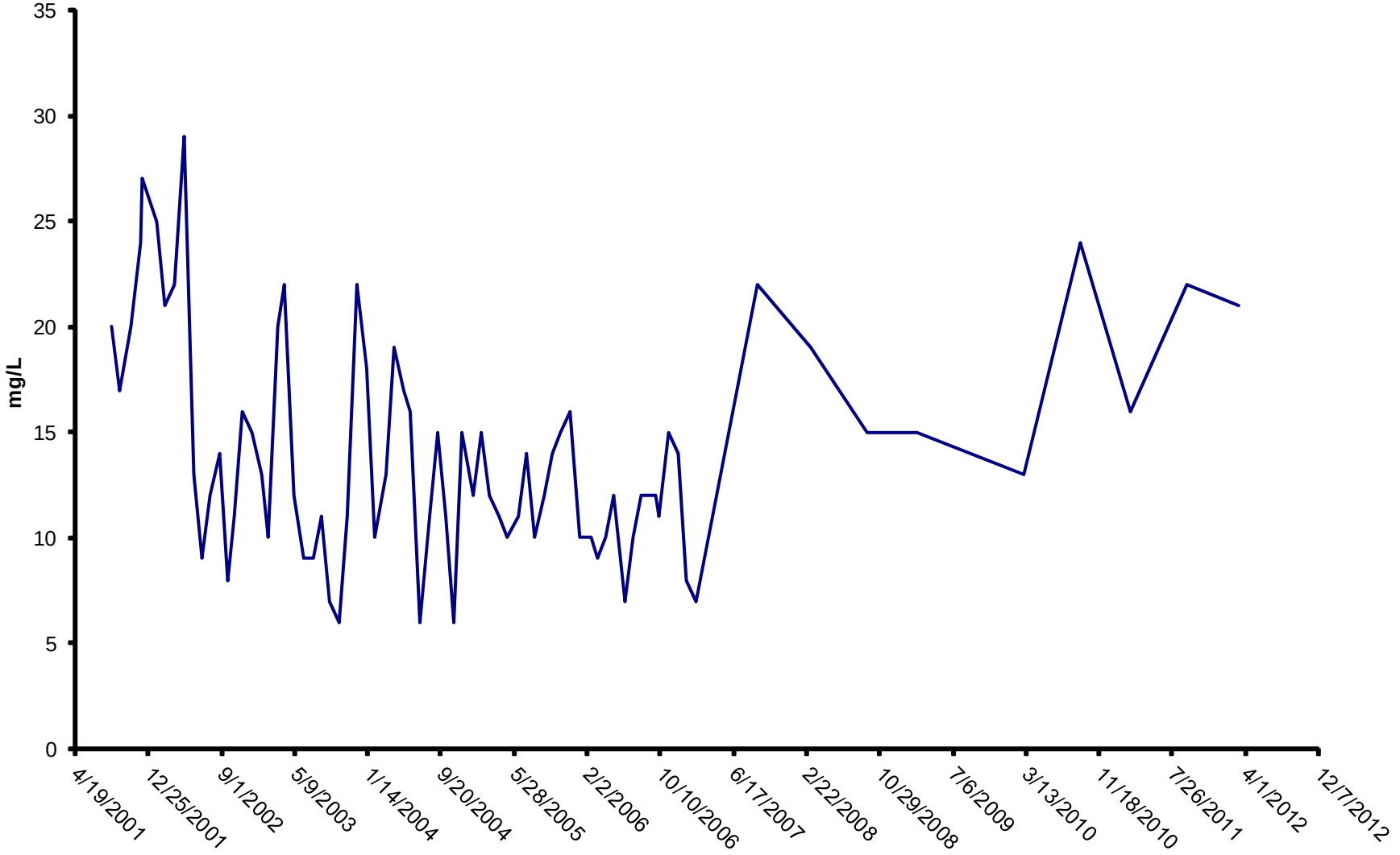


figure 2.17

EFFLUENT BOD vs. TIME
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA017 JUN 29/2012

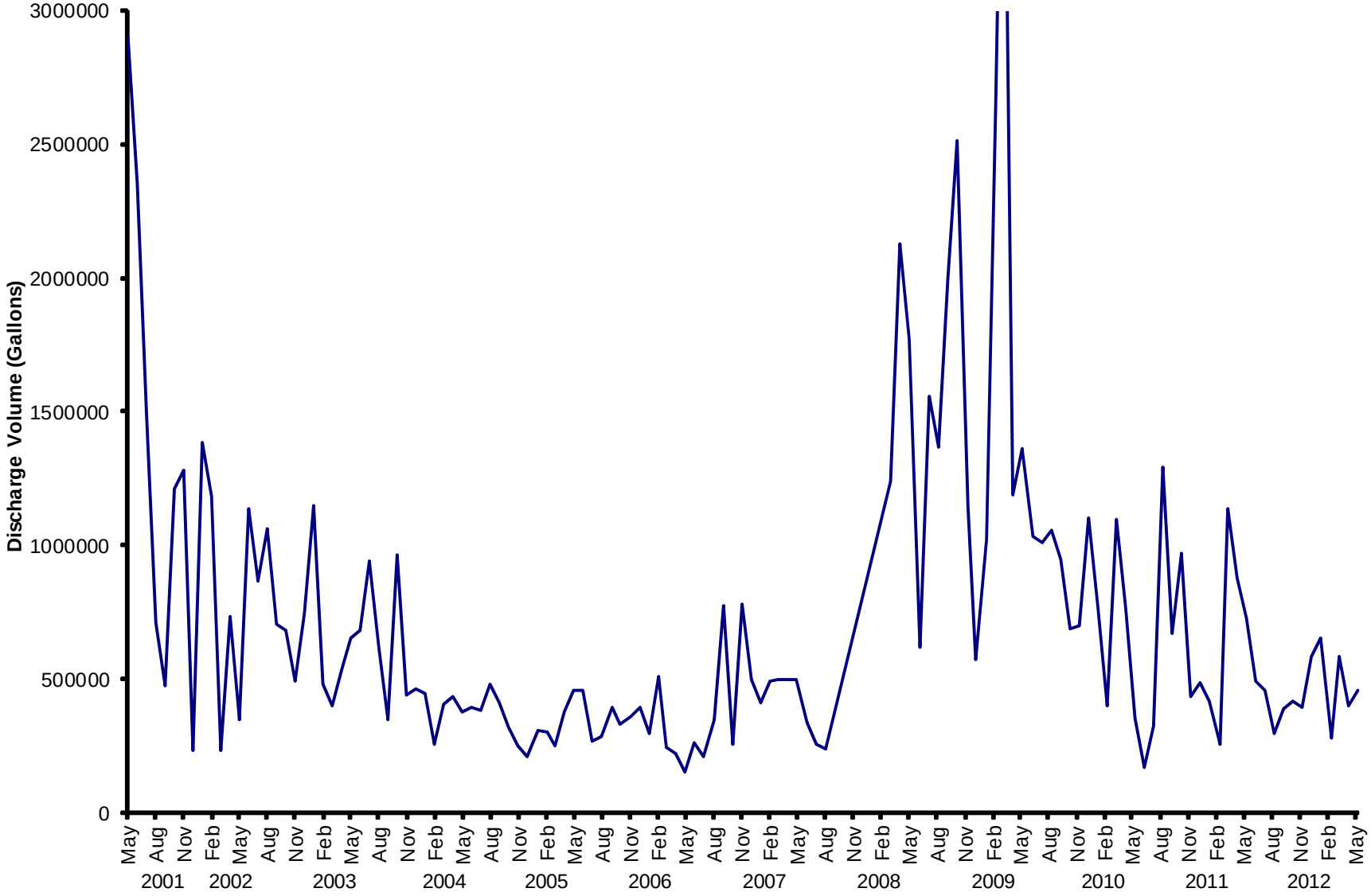


figure 2.18

EFFLUENT VOLUME vs. TIME
GRATWICK-RIVERSIDE PARK SITE
North Tonawanda, New York

07987-00(040)GN-WA018 JUN 29/2012

TABLE 2.1

GROUNDWATER HYDRAULIC MONITORING LOCATIONS
OPERATION AND MAINTENANCE
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

INWARD HYDRAULIC GRADIENT MONITORING LOCATIONS

Inner [1]	Outer
MH2	Niagara River North (Downstream)
MH6	Niagara River North (Downstream)
MH8	Niagara River Middle
MH12	Niagara River South (Upstream)

UPWARD HYDRAULIC GRADIENT MONITORING LOCATIONS

Upper [1]	Lower
MH3	MW-6
MH8	MW-7
MH11	MW-8
MH14/MH15 [2]	MW-9

FREQUENCY

- Weekly following GWS startup until six consecutive inward gradients are achieved; and
- Monthly thereafter for the remainder of the initial 2-year period (review after 2 years).
- 2-Year and 5-Year reviews indicated that the monitoring frequency remain monthly.

Notes:

(1) These manholes will be monitored twice daily by POTW staff during a wet weather bypass event pursuant to Section 5.0 of the O&M Manual.

(2) Distance weighted averages of water levels used (MH14 - two thirds and MH15 - one third).

TABLE 2.2

WATER LEVELS (ft amsl)
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

Date	*MH2*	*MH3*	***MH6***	***OGC-1***	***MW-6***	***OGC-5***	***River North***	***OGC-6***	*MH8*	***MW-7***	***OGC-2***	***River Middle***	***OGC-7***
RIM Elevation	573.28	573.81	572.03						572.37				
TOC Elevation (ft amsl)				575.01	575.40	573.82	566.80	576.65		575.57	574.08	566.48	572.49
January 3, 2011	561.75	560.81	555.84	563.86	562.64	563.84	(2)	563.73	560.65	561.56	563.89	563.46	563.96
February 28, 2011	562.19	558.86	556.18	564.35	562.47	564.11	(2)	563.89	560.87	561.65	561.19	563.78	564.25
March 30, 2011	563.05	560.98	557.06	564.39	563.57	564.06	(2)	564.12	561.59	562.09	564.28	563.80	564.28
April 27, 2011	563.76	559.28	560.47	565.32	563.84	564.92	564.62	564.89	562.24	562.81	565.08	564.48	565.08
May 26, 2011	563.89	559.04	558.04	565.30	564.05	565.13	(2)	565.03	562.57	562.93	565.18	564.90	565.28
June 22, 2011	563.34	560.50	557.45	565.32	563.59	565.30	565.16	565.13	562.04	562.39	565.36	565.06	565.38
July 27, 2011	563.00	560.69	557.11	565.09	563.29	565.02	564.93	563.96	561.73	562.15	565.24	564.86	565.17
August 26, 2011	562.86	560.58	556.99	565.16	563.09	565.20	565.07	564.97	561.64	562.06	565.19	564.99	565.31
September 27, 2011	562.86	560.49	557.00	564.98	563.02	565.03	564.87	564.80	561.66	562.12	564.97	564.80	565.18
October 28, 2011	563.16	560.12	557.17	565.20	563.21	564.93	(2)	564.84	561.76	562.36	565.00	564.70	565.09
November 30, 2011	562.86	560.99	556.78	565.06	562.99	564.61	(2)	564.54	561.37	562.06	564.82	564.27	564.81
December 29, 2011	563.69	561.38	557.65	565.05	563.81	564.69	(2)	564.77	562.06	562.45	564.90	564.30	564.86
January 26, 2012	563.77	560.53	557.74	564.93	563.88	564.53	(2)	564.69	562.07	562.41	564.88	564.35	564.70
February 28, 2012	563.72	560.12	557.56	564.96	563.81	564.58	(2)	564.69	561.98	562.30	564.86	564.26	564.74
March 29, 2012	563.36	560.20	557.14	564.63	563.53	564.59	(2)	564.52	561.59	561.94	564.69	564.28	564.97
April 26, 2012	563.56	560.58	557.42	565.19	563.51	564.76	(2)	564.74	561.81	562.09	564.96	564.46	564.90
May 30, 2012	563.97	560.57	557.91	564.86	564.12	564.90	(2)	564.78	562.36	562.46	565.05	564.86	565.07

TABLE 2.2

WATER LEVELS (ft amsl)
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

Date	*OGC-3*	*MH11*	*MW-8*	*River South*	*MH12*	*OGC-8*	*OGC-4*	*MW-9*	*MH14*	*MH15*	*MH16*
RIM Elevation		572.11			572.37				574.30	575.84	574.82
TOC Elevation (ft amsl)	573.35		574.37	568.46		574.01	574.66	576.23			
January 31, 2011	564.01	561.22	562.02	563.96	559.59	564.08	564.10	564.39	564.47	563.42	564.43
February 28, 2011	564.33	561.76	562.63	564.31	560.26	564.37	564.37	564.85	564.88	563.84	565.63
March 30, 2011	564.30	562.14	563.15	564.46	560.68	563.87	564.37	565.20	565.21	564.18	565.29
April 27, 2011	565.09	562.68	563.50	564.97	561.06	565.18	565.23	565.40	565.42	564.36	565.46
May 26, 2011	565.45	562.76	563.52	565.37	561.03	565.49	565.35	565.42	565.59	564.52	565.51
June 22, 2011	565.51	562.24	562.95	565.44	560.52	565.50	565.55	565.04	565.11	564.07	565.04
July 27, 2011	565.27	561.80	562.55	565.22	560.13	565.28	565.28	564.71	564.77	563.73	564.71
August 26, 2011	565.43	561.55	562.35	565.43	559.94	565.48	565.40	564.50	564.52	563.47	564.44
September 27, 2011	565.24	561.47	562.28	565.24	559.86	565.28	565.26	564.40	564.39	563.36	564.36
October 28, 2011	565.18	562.13	562.78	565.11	560.37	565.23	565.23	565.02	565.09	564.02	565.03
November 30, 2011	564.86	562.17	562.72	564.80	560.36	564.93	564.94	564.88	564.96	563.88	564.95
December 29, 2011	564.92	562.69	563.34	564.77	560.88	564.90	565.02	565.36	565.34	564.25	565.39
January 26, 2012	564.72	562.97	563.48	564.56	561.06	564.78	564.80	565.61	565.59	564.53	565.63
February 28, 2012	564.72	562.78	563.39	564.58	561.02	564.71	564.88	565.62	565.59	564.53	565.61
March 29, 2012	564.77	562.54	563.15	564.73	560.79	564.85	564.85	565.31	565.32	564.23	565.31
April 26, 2012	564.92	562.37	562.99	564.84	560.61	564.95	565.02	565.17	565.19	564.11	565.16
May 30, 2012	565.21	562.35	562.89	565.27	560.57	565.27	565.20	565.11	565.22	564.11	565.17

TABLE 2.3

SUMMARY OF HORIZONTAL GRADIENTS
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

		06/28/2010		07/27/2010		08/26/2010		09/28/2010		10/27/2010		11/24/2010	
		Water Level (ft amsl)	Gradient Direction	Water Level (ft amsl)	Gradient Direction	Water Level (ft amsl)	Gradient Direction	Water Level (ft amsl)	Gradient Direction	Water Level (ft amsl)	Gradient Direction	Water Level (ft amsl)	Gradient Direction
Monitoring Location													
Outer	River North	564.86 [2]	Inward	564.89 [2]	Outward	564.83 [2]	Outward	564.55 [2]	Outward	564.73 [2]	Inward	563.81 [2]	Inward
Inner	MH2	564.53		566.51		567.98		567.73		562.35		561.87	
Outer	River North	564.86 [2]	Inward	564.89 [2]	Inward	564.83 [2]	Inward	564.55 [2]	Inward	564.73 [2]	Inward	563.81 [2]	Inward
Inner	MH6	559.43		560.28		559.49		559.14		556.52		555.89	
Outer	River Middle	564.68	Inward	564.78	Outward	564.75	Inward	564.49	Inward	564.51	Inward	563.55	Inward
Inner	MH8	564.25		565.12		563.68		563.35		561.26		560.69	
Outer	River South	565.11	Inward	565.14	Inward	565.19	Inward	565.80	Inward	564.98	Inward	564.06	Inward
Inner	MH12	562.32		563.02		559.84		559.33		559.20		559.16	

		12/28/2010		01/31/2011		02/28/2011		03/30/2011		04/27/2011		05/26/2011	
		Water Level (ft amsl)	Gradient Direction	Water Level (ft amsl)	Gradient Direction	Water Level (ft amsl)	Gradient Direction	Water Level (ft amsl)	Gradient Direction	Water Level (ft amsl)	Gradient Direction	Water Level (ft amsl)	Gradient Direction
Monitoring Location													
Outer	River North	564.56 [2]	Inward	563.71	Inward	564.06 [2]	Inward	564.21 [2]	Inward	564.62	Inward	565.12 [2]	Inward
Inner	MH2	562.92		561.75		562.19		563.05		563.76		563.89	
Outer	River North	564.56 [2]	Inward	563.71	Inward	564.06 [2]	Inward	564.21 [2]	Inward	564.62	Inward	565.12 [2]	Inward
Inner	MH6	557.97		555.84		556.18		557.06		560.47		558.04	
Outer	River Middle	564.33	Inward	563.46	Inward	563.78	Inward	563.80	Inward	564.48	Inward	564.90	Inward
Inner	MH8	562.85		560.65		560.87		561.59		562.24		562.57	
Outer	River South	564.81	Inward	563.96	Inward	564.31	Inward	564.46	Inward	564.97	Inward	565.37	Inward
Inner	MH12	561.27		559.59		560.26		560.68		561.06		561.03	

TABLE 2.3

SUMMARY OF HORIZONTAL GRADIENTS
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

		6/22/2011		07/27/2011		08/26/2011		09/27/2011		10/28/2011		11/30/2011	
		Water Level (ft amsl)	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*
Monitoring Location													
Outer	River North	565.16	Inward	564.93	Inward	565.07	Outward	564.87	Inward	564.86 (1)	Inward	564.55 (1)	Inward
Inner	MH2	563.34		563.00		562.86		562.86		563.16		562.86	
Outer	River North	565.16	Inward	564.93	Inward	562.07	Inward	564.87	Inward	564.86 (1)	Inward	564.55 (1)	Inward
Inner	MH6	557.45		557.11		556.99		557.00		557.17		556.78	
Outer	River Middle	565.06	Inward	564.86	Outward	564.99	Inward	564.80	Inward	564.70	Inward	564.27	Inward
Inner	MH8	562.04		561.73		561.64		561.66		561.76		561.37	
Outer	River South	565.44	Inward	565.22	Inward	565.43	Inward	565.24	Inward	565.11	Inward	564.80	Inward
Inner	MH12	560.52		560.13		559.94		559.86		560.37		560.36	

		12/29/2011		01/26/2012		02/28/2012		03/29/2012		04/26/2012		05/30/2012	
		Water Level (ft amsl)	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*
Monitoring Location													
Outer	River North	564.52 (1)	Inward	564.31 (1)	Inward	564.33 (1)	Inward	564.48 (1)	Inward	564.59 (1)	Inward	565.02 (1)	Inward
Inner	MH2	563.69		563.77		563.72		563.36		563.56		563.97	
Outer	River North	564.52 (1)	Inward	564.31 (1)	Inward	564.33 (1)	Inward	564.48 (1)	Inward	564.59 (1)	Inward	565.02 (1)	Inward
Inner	MH6	557.65		557.74		557.56		557.14		557.42		557.91	
Outer	River Middle	564.30	Inward	564.35	Inward	564.26	Inward	564.28	Inward	564.46	Inward	564.86	Inward
Inner	MH8	562.06		562.07		561.98		561.59		561.81		562.36	
Outer	River South	564.77	Inward	564.56	Inward	564.58	Inward	564.73	Inward	564.84	Inward	565.27	Inward
Inner	MH12	560.88		561.06		561.02		560.79		560.61		560.57	

Notes:

(1) River level too low to obtain a measurement. Water level shown is River South water level minus 0.13 feet.
(2) River level too low to obtain a measurement at the monitoring location. Water level shown is River South Water level minus 0.25 feet.

TABLE 2.4

SUMMARY OF VERTICAL GRADIENTS
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

Monitoring		*06/28/2010*		*07/27/2010*		*08/26/2010*		*09/28/2010*		*10/27/2010*		*11/24/2010*	
		Water Level (ft amsl)	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*
Upper	MH3	560.11	Upward	566.05	Downward	570.29	Downward	570.36	Downward	560.87	Upward	560.84	Upward
Lower	MW-6	564.61		565.92		566.27		565.98		563.53		562.97	
Upper	MH8	564.25	Upward	565.12	Upward	563.68	Upward	563.35	Upward	561.26	Upward	560.69	Upward
Lower	MW-7	565.06		565.89		563.89		563.55		562.08		561.80	
Upper	MH11	564.65	Upward	565.40	Upward	561.53	Upward	560.88	Upward	560.16	Upward	560.82	Upward
Lower	MW-8	564.98		565.72		562.41		561.89		561.81		561.76	
Average [1]		564.84	Upward	565.41	Upward	564.12	Upward	563.89	Upward	563.63	Upward	563.69	Upward
Lower	MW-9	565.06		565.68		564.46		564.28		564.00		563.97	

Monitoring		*12/28/2010*		*01/31/2011*		*02/28/2011*		*03/30/2011*		*04/27/2011*		*05/26/2011*	
		Water Level (ft amsl)	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*
Upper	MH3	561.07	Upward	560.81	Upward	558.86	Upward	560.98	Upward	559.28	Upward	559.04	Upward
Lower	MW-6	562.91		562.64		562.47		563.57		563.84		564.05	
Upper	MH8	562.85	Upward	560.65	Upward	560.87	Upward	561.59	Upward	562.24	Upward	562.57	Upward
Lower	MW-7	563.71		561.56		561.65		562.09		562.81		562.93	
Upper	MH11	563.33	Upward	561.22	Upward	561.76	Upward	562.14	Upward	562.68	Upward	562.76	Upward
Lower	MW-8	563.87		562.02		562.63		563.15		563.50		563.52	
Average [1]		564.32	Upward	564.12	Upward	564.53	Upward	564.87	Upward	565.07	Upward	565.23	Upward
Lower	MW-9	564.64		564.39		564.85		565.20		565.40		565.42	

TABLE 2.4

SUMMARY OF VERTICAL GRADIENTS
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

Monitoring		*06/22/2011*		*07/27/2011*		*08/26/2011*		*09/27/2011*		*10/28/2011*		*11/30/2011*	
		Water Level (ft amsl)	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*
Upper	MH3	560.50	Upward	560.69	Upward	560.58	Upward	560.49	Upward	560.12	Upward	560.99	Upward
Lower	MW-6	563.59		563.29		563.09		563.02		563.21		562.99	
Upper	MH8	562.04	Upward	561.73	Upward	561.64	Upward	561.66	Upward	561.76	Upward	561.37	Upward
Lower	MW-7	562.39		562.15		562.06		562.12		562.36		562.06	
Upper	MH11	562.24	Upward	561.80	Upward	561.55	Upward	561.47	Upward	562.13	Upward	562.17	Upward
Lower	MW-8	562.95		562.55		562.35		562.28		562.78		562.72	
Average [1]		564.76	Upward	564.42	Upward	564.17	Upward	564.05	Upward	564.73	Upward	564.60	Upward
Lower	MW-9	565.04		564.71		564.50		564.40		565.02		564.88	

Monitoring		*12/29/2011*		*01/26/2012*		*02/28/2012*		*03/29/2012*		*04/26/2012*		*05/30/2012*	
		Water Level (ft amsl)	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*	*Water Level (ft amsl)*	*Gradient Direction*
Upper	MH3	561.38	Upward	560.53	Upward	560.12	Upward	560.20	Upward	560.58	Upward	560.57	Upward
Lower	MW-6	563.81		563.88		563.81		563.53		563.51		564.12	
Upper	MH8	562.06	Upward	562.07	Upward	561.98	Upward	561.59	Upward	561.81	Upward	562.36	Upward
Lower	MW-7	562.45		562.41		562.30		561.94		562.09		562.46	
Upper	MH11	562.69	Upward	562.97	Upward	562.78	Upward	562.54	Upward	562.37	Upward	562.35	Upward
Lower	MW-8	563.34		563.48		563.39		563.15		562.99		562.89	
Average [1]		564.98	Upward	565.24	Upward	565.24	Upward	564.96	Upward	564.83	Upward	564.85	Upward
Lower	MW-9	565.36		565.61		565.62		565.31		565.17		565.11	

Notes:

NA - Not Applicable.
NM - Not monitored. MH11 was blocked and could not be accessed.
(1) - Distance weighted for MH14 (two thirds) and MH15 (one third).
(2) - Buried with snow.
(3) - Not Monitored - MH14 was buried with snow and could not be accessed.

TABLE 2.5

GROUNDWATER SAMPLING SUMMARY
OPERATION AND MAINTENANCE MANUAL
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

LOCATIONS

OGC1	MW-6
OGC2	MW-7
OGC3	MW-8
OGC4	MW-9
OGC5	OGC6
OGC7	OGC8

FREQUENCY

- quarterly for 2 years following GWS startup.
- semi-annually for Year 3 except for OGC-4 (quarterly for SVOCs) and OGC-6 (quarterly for VOCs).
- annually for Years 4 through 7 (until May 2008).

SAMPLING PROGRAM (MAY 2009 THROUGH MAY 2012)

Annual	*Once Every 2 Years* *(2010 and 2012)*
MW-8	MW-6
MW-9	MW-7
OGC-3	OGC-1
OGC-4	OGC-2
OGC-6	OGC-5
OGC-7	
OGC-8	

PARAMETERS

Volatiles

Acetone	Methylene Chloride
Benzene	Tetrachloroethene
2-Butanone	Toluene
Chlorobenzene	Trichloroethene
1,1-Dichloroethane	Vinyl Chloride
trans-1,2-Dichloroethene	Xylenes (Total)
Ethylbenzene	

Semi-Volatiles

1,2-Dichlorobenzene	4-Methylphenol
1,4-Dichlorobenzene	Naphthalene
2,4-Dimethylphenol	Di-n-octylphthalate
2-Methylphenol	Phenol

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*MW-9*												
Date		*05/18/01*	*08/20/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/30/06*
Volatiles (µg/L)	*Class GA Level*													
Acetone	50	9.4J	4.3J	7.3J/6.7J		4.2J	7.0/7.2			13/12			17	17
Benzene	1		0.24J	0.39J/0.35J		0.44J	0.29J/0.30J	0.29J/0.29J		0.40J/ND0.70				0.54J
2-Butanone	50													2.6J
Chlorobenzene	5		0.50J	0.86J/0.85J		1.3		1.0/1.1		0.91J/0.87J		1.1	1.7	1.5
trans-1,2-Dichloroethene	5			0.22J/ND		0.31J	0.24J/0.24J	0.22J/0.20J						0.42J
Ethylbenzene	5		0.30J	0.46J/0.42J		0.73J	0.44J/0.42J	0.46J/0.46J		0.40J/0.38J				0.83J
Methylene Chloride	5		0.34J	0.33J/ND	4.0J	0.53J						7.2	1.6	
Tetrachloroethene	5	1.6J	1.1J	1.0J/0.92J		1.6	0.92J/0.80J	0.77J/0.74J		0.67J/0.71J				0.57J
Toluene	5		1.6J	3.0J/2.5J	2.8J	2.7	2.1/2.0	2.7/2.7	2.0	2.0/1.9	4.6	3.2	2.6	
Trichloroethene	5	2.2J	1.8J	2.4J/2.2J	3.0J	4.4	2.0/2.0	2.2/2.3		1.8/1.8	9.5	4.9	3.0	1.8
Vinyl Chloride	2									1.7/1.7			3.6	4.0
Total Xylenes	5		1.0J	1.5J/1.5J		2.5J	1.3J/1.3J	1.4J/1.4J		0.98J/1.0J	3.0			2.0J
Semi-Volatiles (µg/L)														
1,2-Dichlorobenzene	3*				0.6J									
1,4-Dichlorobenzene	3*												2J	
2,4-Dimethylphenol	50	12	12	18/17	38		20/22	30/34	30	35/36	36	42	50	58
2-Methylphenol	NL	1J	3J	3J/3J	7J		4J/4J	6J/6J	6J	6J/6J	6J	5J	8J	8J
4-Methylphenol	NL	69	110	97/92	230		100/110	190/230	150	130/130	160	190	260	190
Naphthalene	10													
Di-n-octyl phthalate	50													
Phenol	1	3J	34	28/22	24		38/41	34/35	42	46/46	180	30	27	49

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*MW-9*					
Date		*05/25/07*	*05/29/08*	*05/27/09*	*05/26/10*	*05/26/11*	*05/30/12*
Volatiles (µg/L)	*Class GA Level*						
Acetone	50		5.7	4.8J	5.9	4.3J	
Benzene	1			0.76		0.53J	0.44J
2-Butanone	50						
Chlorobenzene	5	2.8	1.4	5.3	2.5	2.4	2.3
trans-1,2-Dichloroethene	5		0.55J	0.74J			
Ethylbenzene	5			1.2	0.82J	1.1	0.74J
Methylene Chloride	5						
Tetrachloroethene	5			0.82J	0.57J	0.66J	0.54J
Toluene	5	3.1	2.4	3.8	3.8	4.3	3.5
Trichloroethene	5	2.9	1.7	4.7	2.6	2.7	2.3
Vinyl Chloride	2			4.2		1.4	
Total Xylenes	5			3.3	2.2J	2.7	1.5J
Semi-Volatiles (µg/L)							
1,2-Dichlorobenzene	3*	0.9J	0.7J		1.4J	1.0J	1.1J
1,4-Dichlorobenzene	3*	3J	1J	2.3J	1.7J	1.6J	1.8J
2,4-Dimethylphenol	50	46	31	110	41	43	47
2-Methylphenol	NL	6	6	12	9.9J	11	11
4-Methylphenol	NL	170	96	300	180	230	230
Naphthalene	10	0.2J	0.5J				
Di-n-octyl phthalate	50						
Phenol	1	11	13	20	20	17	9.3J

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-4*														
Date		*05/18/01*	*08/20/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*3/04/04*	*05/14/04*	*11/23/04*	*05/27/05*	*05/30/06*
Volatiles (µg/L)	*Class GA Level*											NA		NA		
Acetone	50			7.9J			4.0J									
Benzene	1		0.21J	0.2J												
2-Butanone	50															
Chlorobenzene	5		0.49J	0.66J		0.83J/0.79J		0.46J		0.83J						
trans-1,2-Dichloroethene	5			0.22J												
Ethylbenzene	5		0.41J	0.39J		0.54J/0.53J	0.48J	0.39J		0.77J						0.44J
Methylene Chloride	5				5.1J/4.9J								4.6		2.0	
Tetrachloroethene	5	1.0J	1.2J	0.87J		0.86J/0.84J	1.1	0.78J		0.77J						
Toluene	5			1.0J		1.0/0.98J	1.4	0.72J		1.2						
Trichloroethene	5	1.6J	1.4J	1.5J		1.5/1.4	1.7	0.96J		1.5						0.53J
Vinyl Chloride	2															
Total Xylenes	5		1.0J	0.94J		0.84J/0.82J	1.1J			0.95J						
Semi-Volatiles (µg/L)																
1,2-Dichlorobenzene	3*															
1,4-Dichlorobenzene	3*															
2,4-Dimethylphenol	50	8J	12	6J	8J/6J	7J/7J	8J		7J/7J	8J	4J	6J		4J		
2-Methylphenol	NL	0.9J	2J	35	2J/ND	1J/2J	2J			3J		3J		2J		
4-Methylphenol	NL	64	86	40	58/55	61/67	68		69/68	73	32	55		31	14	15
Naphthalene	10															
Di-n-octyl phthalate	50															
Phenol	1	310	560	400	420/460	710/1100	1100	1100	2400/2300	1800	1600		2400	1500	850	510

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-4*					
Date		*05/25/07*	*05/29/08*	*05/27/09*	*05/26/10*	*05/26/11*	*05/30/12*
Volatiles (µg/L)	*Class GA Level*						
Acetone	50			1.6J			
Benzene	1						
2-Butanone	50						
Chlorobenzene	5						
trans-1,2-Dichloroethene	5						
Ethylbenzene	5						
Methylene Chloride	5						
Tetrachloroethene	5						
Toluene	5						
Trichloroethene	5						
Vinyl Chloride	2						
Total Xylenes	5						
Semi-Volatiles (µg/L)							
1,2-Dichlorobenzene	3*						
1,4-Dichlorobenzene	3*						
2,4-Dimethylphenol	50		0.9J		0.51J/ND		
2-Methylphenol	NL		0.5J	2.7J			
4-Methylphenol	NL	3J	6				2.8J
Naphthalene	10		0.5J		3.4J/3.4J		
Di-n-octyl phthalate	50						
Phenol	1	84	66	25	15/15	5.5	0.97J

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-8*												
Date		*05/18/01*	*08/20/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*05/08/03*	*05/14/04*	*05/27/05*	*05/30/06*
Volatiles (µg/L)	*Class GA Level*													
Acetone	50	78	31/29	19J		4.7J	3.6J				6.2	5.8	4.7J	
Benzene	1	11	14/14	14		2.6	5.3	3.3	3.6	3.1	1.8	1.2	1.1	0.92
2-Butanone	50	4.0J												
Chlorobenzene	5	3.7J	4.1J/4.1J	4.0J		0.87J	1.7	1.1		1.1	0.65J	0.48J	0.43J	0.44J
trans-1,2-Dichloroethene	5	4.3J	3.2J/3.1J	4.0J		0.76J	1.5	0.88J		1.0	0.50J	0.41J	1.0	
Ethylbenzene	5	13	16/16	15	1.6J	2.8	5.8	3.1	3.9	3.1	1.8	1.2		0.99J
Methylene Chloride	5		0.52J/0.48J	0.62J	1.8J									
Tetrachloroethene	5	40	51/52	59	7.7J	9.9	22	12	14	11	7.0	5.0	3.8	4.0
Toluene	5	140	140/140	110	17J	21	53	28	38	27	16	11	8.1	8.3
Trichloroethene	5	120	110/110	110	20J	22	53	27	35	27	17		7.7	7.6
Vinyl Chloride	2	3.7J	3.4/3.6	3.1	1.1J		1.4	0.70J		0.78J				
Total Xylenes	5	43	55/54	46	4.8J	8.3	18	9.5	11	9.9	5.4	3.7	3.0	3.2
Semi-Volatiles (µg/L)														
1,2-Dichlorobenzene	3*													
1,4-Dichlorobenzene	3*													
2,4-Dimethylphenol	50	2J	4J/2J	4J	0.8J	0.8J	3J	1J						
2-Methylphenol	NL	18	30/25	16	4J	5J	13	7J	11	7J	4J	2J	2J	3J
4-Methylphenol	NL	30	51/45	28	8J	10	26	14	20	14J	9	5J	6J	8J
Naphthalene	10	1J	3J/25	1J			0.9J							
Di-n-octyl phthalate	50		0.1J/ND											
Phenol	1	30	49/44	31	5J	8J	11	10		4J	6J	2J		

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-8*					
Date		*05/24/07*	*05/29/08*	*05/27/09*	*05/26/10*	*05/26/11*	*05/30/12*
Volatiles (µg/L)	*Class GA Level*						
Acetone	50		9.9	1.5J			
Benzene	1	0.54J	0.84	0.58J			
2-Butanone	50						
Chlorobenzene	5						
trans-1,2-Dichloroethene	5						
Ethylbenzene	5	0.53J	0.84J	0.50J			
Methylene Chloride	5						
Tetrachloroethene	5	2.0	2.3	1.6		0.94J	1.3
Toluene	5	4.0	6.4	3.7		2.4	2.6
Trichloroethene	5	4.0	6.5	4.0		2.4	2.7
Vinyl Chloride	2						
Total Xylenes	5	1.1J	2.5J	1.5J		0.82J	0.86J
Semi-Volatiles (µg/L)							
1,2-Dichlorobenzene	3*						
1,4-Dichlorobenzene	3*		0.2J				
2,4-Dimethylphenol	50		1J		0.73J		0.52J
2-Methylphenol	NL	2J	2J		2.2J	1.5J	2.0J
4-Methylphenol	NL	6	8	5.7	6.5J	5.3J	6.2J
Naphthalene	10						
Di-n-octyl phthalate	50						
Phenol	1						

Notes:

* Applies to sum of compounds
NL - Not listed
☐ Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*River South*														
Date		*05/18/01*	*09/17/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/30/06*	*05/24/07*	*05/29/08*
Volatiles (µg/L)	*Class GA Level*															
Acetone	50						3.0J						3.2J			12
Benzene	1										0.42J					
2-Butanone	50												3.9J			3.1J
Chlorobenzene	5															
trans-1,2-Dichloroethene	5															
Ethylbenzene	5															
Methylene Chloride	5															
Tetrachloroethene	5						0.30J									
Toluene	5			0.29J			0.72J	0.35J			1.8					
Trichloroethene	5						0.44J									
Vinyl Chloride	2						0.27J									
Total Xylenes	5										1.8J					
Semi-Volatiles (µg/L)																
1,2-Dichlorobenzene	3*															
1,4-Dichlorobenzene	3*															
2,4-Dimethylphenol	50															
2-Methylphenol	NL															
4-Methylphenol	NL															
Naphthalene	10															
Di-n-octyl phthalate	50															
Phenol	1															

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*MW-8*												
Date		*05/18/01*	*08/20/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/30/06*
Volatiles (µg/L)	*Class GA Level*													
Acetone	50	52	12J	11J	75J	67	20			73		28/33	26	16
Benzene	1	6.5	4.3	4.1		8.6	12	12	8.1	12	23/24	10/12	4.2	4.4
2-Butanone	50													
Chlorobenzene	5	1.8J	1.0J	1.0J		3.2	4.9	4.4	3.6	6.2	6.0/6.4	2.7/3.3	2.4	2.4
trans-1,2-Dichloroethene	5	2.2J	1.8J	2.9J	4.8J	7.3	11	16	12	13	10/12	7.3/9.4	7.4	5.3
Ethylbenzene	5	5.7	3.7J	4.4J	8.2J	12	18	18	15	23	30/32	20/24	4.6	5.8
Methylene Chloride	5	1.1J	0.58J	0.66J	4.4J	1.2	1.4	1.6		1.3	2.2/2.2	7.3/9.2	1.7	0.64J
Tetrachloroethene	5	21	12	9.8	23J	32	61	58	54	80	91/100	120/130	62	71
Toluene	5	75	36	31	80	100	140	160	100	120	240/240	97/120	30	33
Trichloroethene	5	82	40	35	110	180	320	280	210	320	460/460	380/390	180	150
Vinyl Chloride	2	5.2	1.6J	3.3	23	12	18	14	12	18	21/21	13/16	5.8	5.1
Total Xylenes	5	22	13	16	30J	40	68	69	58	93	120/120	92/110	32	25
Semi-Volatiles (µg/L)														
1,2-Dichlorobenzene	3*				2J	2J		2J		4J	3J/3J			
1,4-Dichlorobenzene	3*			0.6J	2J	1J	1J	2J		4J	3J/3J	19U/2J	4J	5J
2,4-Dimethylphenol	50	1J	11	16	19	18	15	27	20	27	37/38	15J/14	7J	6J
2-Methylphenol	NL	33	55	41	48	44	38	56	37	35	45/46	18J/18	18J	16
4-Methylphenol	NL	10	32	34	55	60	59	83	64	75	130/130	34/31		
Naphthalene	10				0.7J	0.8J	0.8J	1J			2J/2J			
Di-n-octyl phthalate	50													
Phenol	1	43	130	140	85	110	91	110	140	78	80/80	28/28	11J	4J

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*MW-8*					
Date		*05/24/07*	*05/29/08*	*05/29/09*	*05/26/10*	*05/26/11*	*05/30/12*
Volatiles (µg/L)	*Class GA Level*						
Acetone	50	6.6/7.5	23	2.6J		3.1J	
Benzene	1	1.6/1.5	1.5	2.7		2.7	2.1
2-Butanone	50		4.4J				
Chlorobenzene	5	0.84J/0.82J	0.54J	0.99J		3.8	3.4
trans-1,2-Dichloroethene	5	4.4/3.9	3.6	6.8		3.5	3.3
Ethylbenzene	5	2.5/2.2	1.8	4.2		5.2	4.4
Methylene Chloride	5						
Tetrachloroethene	5	16/14	9.5	12		12	7.7
Toluene	5	12/11	10	26		18	6.5
Trichloroethene	5	40/36	29	68		34	22
Vinyl Chloride	2					3.0	
Total Xylenes	5	9.8/9.1	6.7	19		22	16
Semi-Volatiles (µg/L)							
1,2-Dichlorobenzene	3*		0.4J		1.5J	1.2J	1.3J
1,4-Dichlorobenzene	3*	0.5J/0.4J	0.5J		2.1J	3.3J	6.9J
2,4-Dimethylphenol	50	0.8J/0.6J	14	14	13	14	16
2-Methylphenol	NL	7/7	26	32	22	16	20
4-Methylphenol	NL	18/16	31	29	38	41J	30
Naphthalene	10	22/22	1J				
Di-n-octyl phthalate	50						
Phenol	1	20/21	32	15	13	3.4J	4.0J

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-3*												
Date		*05/18/01*	*08/20/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/30/06*
Volatiles (µg/L)	*Class GA Level*													
Acetone	50	13J / 19J	3.8J	15J		7.1	6.7			5.6			10/8.4	2.8J
Benzene	1	1.6J / 1.6J	1.6	1.8		1.8	1.2	1.5		1.6	1.4		1.2/1.1	0.93J
2-Butanone	50													
Chlorobenzene	5		0.24J	0.28J		0.28J		0.22J						
trans-1,2-Dichloroethene	5	1.6J / 1.6J	1.0J	1.4J	1.1J	1.1	0.98J	0.44J		1.0				
Ethylbenzene	5	1.6J / 1.5J	2.0J	2.3J	1.5J	2.4	1.7	1.8		2.0			1.4/1.3	1.1
Methylene Chloride	5				1.9J							6.3	1.2/1.0	
Tetrachloroethene	5	2.4J / 2.2J	3.0J	2.2J	1.7J	2.2	1.8	1.8		1.5			0.71J/0.63J	0.61J
Toluene	5	5.7 / 5.1	5.9	5.3		5.1	3.7	4.6	4.0	4.3	3.6	2.6	2.6/2.4	
Trichloroethene	5	20 / 20	18	19	14J	17	14	13	12	14	9.8	7.7	6.4/6.1	5.6
Vinyl Chloride	2	ND / 1.0J	0.4	0.72						0.62J				
Total Xylenes	5	5.6J / 5.4J	7.5	8.7	4.8J	7.8	5.8	5.8	5.0	6.6	3.9		3.3/3.0	2.9J
Semi-Volatiles (µg/L)														
1,2-Dichlorobenzene	3*				1J									
1,4-Dichlorobenzene	3*				0.7J		0.5J							
2,4-Dimethylphenol	50	5J / 5J	9	8J	11	11	7J	8J	11	12	10	9J	8J/4J	6J
2-Methylphenol	NL	98 / 96	120	87	160	140	100	100	120	140	150	110	83/73	64
4-Methylphenol	NL	13 / 13	21	17	28	23	14	15	22	23	20	17	14/12	13
Naphthalene	10													
Di-n-octyl phthalate	50													
Phenol	1	120 / 110	140	130J	210	140	85	92	110	120	120	90	78/74	75

Notes:

* Applies to sum of compounds
NL - Not listed
Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-3*					
Date		*05/24/07*	*05/29/08*	*05/27/09*	*05/26/10*	*05/26/11*	*05/30/12*
Volatiles (µg/L)	*Class GA Level*						
Acetone	50	0.76	6.0	2.9J/2.6J		3.7J	
Benzene	1		0.93	0.75/0.78		0.67J	0.45J
2-Butanone	50						
Chlorobenzene	5						
trans-1,2-Dichloroethene	5						
Ethylbenzene	5	0.85J	0.92J	0.69J/0.73J		0.75J	
Methylene Chloride	5						
Tetrachloroethene	5	0.56J					
Toluene	5	1.7	1.8	1.4/1.4		1.2	0.88J
Trichloroethene	5	4.3	4.9	3.3/3.5		2.5	1.8
Vinyl Chloride	2						
Total Xylenes	5	2.1J	2.3J	1.7J/1.7J		1.0J	0.71J
Semi-Volatiles (µg/L)							
1,2-Dichlorobenzene	3*	0.6J	0.7J		0.86J	0.40J	0.61J
1,4-Dichlorobenzene	3*		0.6J		0.58J		
2,4-Dimethylphenol	50		6	6.2/5.9	4.3J	3.7J	5.8J
2-Methylphenol	NL	47	45	44/43	36	33	35
4-Methylphenol	NL	10	11	11/11	9.9	10	11
Naphthalene	10		0.8J				
Di-n-octyl phthalate	50						
Phenol	1	60	65	60/57	50	48	53

Notes:

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NL - Not listed
Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*GW-5S*		*OGC-7*												
Date		*12/17/87*	*08/12/88*	*05/18/01*	*08/20/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/30/06*
Volatiles (µg/L)	*Class GA Level*															
Acetone	50	293		21J	0.25J	8.2J			3.6J							
Benzene	1	2				0.30J		0.28J	0.20J	0.26J				0.34J	0.34J	
2-Butanone	50	27														
Chlorobenzene	5															
trans-1,2-Dichloroethene	5	180	89	6.3	3.1J	5.4	4.9J	4.8J	4.2	4.7	4.0	5.4	5.0	5.9	4.9	5.8
Ethylbenzene	5	9	7J	1.1J	0.80J	1.0J		1.3	0.84J	0.91J		1.4	0.93J	1.5	1.4	1.3
Methylene Chloride	5	1														
Tetrachloroethene	5	11	7J	4.3J	3.6J	3.4J	2.9J	4.0	3.4	2.7	2.8	4.1	2.2	4.1	2.9	2.8
Toluene	5	75	49	12	5.8	6.7	5.7J	6.9	5.2	6.0	6.7	8.6	5.8	9.3	8.3	8.6
Trichloroethene	5	287	220	70	40	48	45	68	44	38	50	56	38	56	37J	37
Vinyl Chloride	2	7	4J	2.6J	0.84	1.7J	3.5J	2.2	1.8	1.8		2.3	2	2.9	3.0	2.9
Total Xylenes	5	54	37	6.0J	4.8J	6.5	3.9J	7.6	5.3	5.3	5.5	8.7	5.4	10	8.6	8.2
Semi-Volatiles (µg/L)																
1,2-Dichlorobenzene	3*		2J													
1,4-Dichlorobenzene	3*															
2,4-Dimethylphenol	50	10	11		2J											
2-Methylphenol	NL	24	24	3J	2J	1.0J	0.8J	1J								
4-Methylphenol	NL	38				0.9J	0.7J	1J								
Naphthalene	10															
Di-n-octyl phthalate	50						0.6J									
Phenol	1	61	92	4J	0.7J											

Notes:

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NL - Not listed
Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-7*				
Date		*05/24/07*	*05/27/09*	*05/26/10*	*05/26/11*	*05/30/12*
Volatiles (µg/L)	*Class GA Level*					
Acetone	50					
Benzene	1					
2-Butanone	50					
Chlorobenzene	5					
trans-1,2-Dichloroethene	5	3.8		2.7	2.7	2.0
Ethylbenzene	5	0.87J	0.84J	0.62J		
Methylene Chloride	5					
Tetrachloroethene	5	1.7	1.2J	0.80J	0.72J	0.69J
Toluene	5	5.0	4.9J	3.3	3.4	2.4
Trichloroethene	5	22	21J	14	12	7.7
Vinyl Chloride	2		2.6J		2.4	1.6
Total Xylenes	5	5.3	5.0J	3.6	4.0	2.8
Semi-Volatiles (µg/L)						0.97J
1,2-Dichlorobenzene	3*					
1,4-Dichlorobenzene	3*					
2,4-Dimethylphenol	50					
2-Methylphenol	NL	0.6J	0.5J		0.45J	
4-Methylphenol	NL	0.6J	0.4J			
Naphthalene	10					
Di-n-octyl phthalate	50					
Phenol	1					

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*River Middle*														
Date		*05/18/01*	*09/17/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/31/06*	*05/24/07*	*05/29/08*
Volatiles (µg/L)	*Class GA Level*															
Acetone	50						3.1J									2.8J
Benzene	1															
2-Butanone	50															
Chlorobenzene	5															
trans-1,2-Dichloroethene	5															
Ethylbenzene	5															
Methylene Chloride	5															
Tetrachloroethene	5														1.3	
Toluene	5															
Trichloroethene	5							0.21J								
Vinyl Chloride	2															
Total Xylenes	5															
Semi-Volatiles (µg/L)																
1,2-Dichlorobenzene	3*															
1,4-Dichlorobenzene	3*															
2,4-Dimethylphenol	50															
2-Methylphenol	NL															
4-Methylphenol	NL															
Naphthalene	10															
Di-n-octyl phthalate	50								0.7J							
Phenol	1															

Notes:

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NL - Not listed
Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*MW-7*														
Date		*05/18/01*	*08/20/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/31/06*	*05/24/07*	*05/29/08*	*05/26/10*
Volatiles (µg/L)	*Class GA Level*																
Acetone	50	5.7J		6.5J		4.3J	5.4			4.8			4.3J	3.0J	3.9J	3.3J/3.4J	
Benzene	1		1.9	2.0		2.0	1.3	1.8		0.90			0.58J				
2-Butanone	50																
Chlorobenzene	5																
trans-1,2-Dichloroethene	5		0.82J	1.1J		0.98J	0.89J	1					0.36J				
Ethylbenzene	5		0.85J	0.81J		1.0	0.61J	0.75J					0.32J				
Methylene Chloride	5				1.6J												
Tetrachloroethene	5			0.27J													
Toluene	5		3.5J	3.6J		3.3	1.9	3		1.1	2.8		0.93J				
Trichloroethene	5		0.55J	0.63J		0.43J	0.45J	0.36J									
Vinyl Chloride	2		1.6J	2.0	3.8J	2.9	1.7	2.2		1.3			0.80J			0.64J/0.61J	
Total Xylenes	5		2.1J	2.1J		2.7J	1.5J	1.9J		0.76J							
Semi-Volatiles (µg/L)																	
1,2-Dichlorobenzene	3*																
1,4-Dichlorobenzene	3*																
2,4-Dimethylphenol	50			2J	2J	3J	0.7J	2J									
2-Methylphenol	NL		3J	2J	4J	6J	1J	2J			2J					0.4J/0.5J	
4-Methylphenol	NL		3J	2J	4J	6J	1J	2J			1J				0.3J	0.5J/0.6J	
Naphthalene	10																
Di-n-octyl phthalate	50				0.6J												
Phenol	1		24	7J	10	26	2J	6J		5J	2J		1J				

Notes:

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NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		***MW-7***
Date		***05/30/12***
Volatiles (µg/L)	***Class GA Level***	
Acetone	50	
Benzene	1	
2-Butanone	50	
Chlorobenzene	5	
trans-1,2-Dichloroethene	5	
Ethylbenzene	5	
Methylene Chloride	5	
Tetrachloroethene	5	
Toluene	5	
Trichloroethene	5	
Vinyl Chloride	2	
Total Xylenes	5	
Semi-Volatiles (µg/L)		
1,2-Dichlorobenzene	3*	
1,4-Dichlorobenzene	3*	
2,4-Dimethylphenol	50	
2-Methylphenol	NL	
4-Methylphenol	NL	
Naphthalene	10	
Di-n-octyl phthalate	50	
Phenol	1	

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-2*															
Date		*05/18/01*	*08/20/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/30/06*	*05/25/07*	*05/29/08*	*05/26/10*
Volatiles (µg/L)	*Class GA Level*																
Acetone	50			11J			3.0J					4.5J	3.1				
Benzene	1																
2-Butanone	50																
Chlorobenzene	5																
trans-1,2-Dichloroethene	5																
Ethylbenzene	5																
Methylene Chloride	5				1.7J												
Tetrachloroethene	5																
Toluene	5										0.37J						
Trichloroethene	5		0.39J														
Vinyl Chloride	2			0.26J		0.25J	0.26J										
Total Xylenes	5																
Semi-Volatiles (µg/L)																	
1,2-Dichlorobenzene	3*																
1,4-Dichlorobenzene	3*																
2,4-Dimethylphenol	50																
2-Methylphenol	NL																
4-Methylphenol	NL																
Naphthalene	10																
Di-n-octyl phthalate	50																
Phenol	1																

Notes:

* Applies to sum of compounds
NL - Not listed
☐ Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-2*
Date		*05/30/12*
Volatiles (µg/L)	*Class GA Level*	
Acetone	50	
Benzene	1	
2-Butanone	50	
Chlorobenzene	5	
trans-1,2-Dichloroethene	5	
Ethylbenzene	5	
Methylene Chloride	5	
Tetrachloroethene	5	
Toluene	5	
Trichloroethene	5	
Vinyl Chloride	2	
Total Xylenes	5	
Semi-Volatiles (µg/L)		
1,2-Dichlorobenzene	3*	
1,4-Dichlorobenzene	3*	
2,4-Dimethylphenol	50	
2-Methylphenol	NL	
4-Methylphenol	NL	
Naphthalene	10	
Di-n-octyl phthalate	50	
Phenol	1	

Notes:

* Applies to sum of compounds
NL - Not listed
☐ Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-6*													
Date		*05/18/01*	*08/20/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*03/04/04*	*05/14/04*	*11/23/04*	*05/27/05*	*05/31/06*
Volatiles (µg/L)	*Class GA Level*															
Acetone	50			6.6J			5.0			3.7J						8.6/8.7
Benzene	1									0.71	0.87	1.4		2.5	5.2	12/12
2-Butanone	50															
Chlorobenzene	5															
trans-1,2-Dichloroethene	5			0.23J	0.23J	0.37J	0.45J	0.55J		1.4	2.0	2.1		3.6	5.3	11/12
Ethylbenzene	5					0.31J				0.85J	1.1	2.0	3.3	3.1	7.4	20/20
Methylene Chloride	5				2.1J								4.4	2.5	2.2	
Tetrachloroethene	5		1.4J	0.73J		6.6	7.4	5	12	49	51	230	300	260	550	2000/2100
Toluene	5			0.55J		2.0	1.6	1.5	2.4	9.3	12	27	40	35	72	240/260
Trichloroethene	5	3.0J	4.7J	3.1J	5.9	16	19	13	26	95	120	330	530	330	610	1800/1800
Vinyl Chloride	2					0.22J	0.25J			0.45J						2.9/2.8
Total Xylenes	5		0.22J	0.53J	0.26J	1.7J	1.2J	1.0J		4.1	4.7	8.6	13	12	28	79/76
Semi-Volatiles (µg/L)												NA		NA		
1,2-Dichlorobenzene	3*															
1,4-Dichlorobenzene	3*															
2,4-Dimethylphenol	50							1J								
2-Methylphenol	NL		2J	2J	32	11	8J	9J	13	22	27		63		85	89/110
4-Methylphenol	NL			1J	0.02J	10							1J		2J	84/100
Naphthalene	10															1J/2J
Di-n-octyl phthalate	50															
Phenol	1		7J	2J	4J	5J	3J	2J		5J	3J		9J		8J	13/16

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-6*					
Date		*05/24/07*	*05/29/08*	*05/27/09*	*05/26/10*	*05/26/11*	*05/30/12*
Volatiles (µg/L)	*Class GA Level*						
Acetone	50			1.6J			
Benzene	1	7.2		3.2	3.6	1.8	1.9
2-Butanone	50						
Chlorobenzene	5						
trans-1,2-Dichloroethene	5	7.1		4.4	8.2	7.6	4.8
Ethylbenzene	5	12		4.8	5.2	2.4	2.0
Methylene Chloride	5						
Tetrachloroethene	5	1400	34	400	640	220	100
Toluene	5	97	2.9	34	38	14	16
Trichloroethene	5	1100	31	320	410	180	92
Vinyl Chloride	2	1.5			1.2		
Total Xylenes	5	46		18	20	9.1	8.9
Semi-Volatiles (µg/L)							
1,2-Dichlorobenzene	3*						
1,4-Dichlorobenzene	3*						
2,4-Dimethylphenol	50		0.9J				
2-Methylphenol	NL	76	76	32	32	15	16
4-Methylphenol	NL	2J	70	1.1J	1.4J	1.2J	1.1J
Naphthalene	10	2J	2J	1.2J	1.4J	1.1J	1.1J
Di-n-octyl phthalate	50						
Phenol	1	8	8				1.5 J

Notes:

* Applies to sum of compounds
NL - Not listed
Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*River North*												
Date		*05/18/01*	*09/17/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/30/06*	*05/31/07*
Volatiles (µg/L)	*Class GA Level*														
Acetone	50						2.4J		NS			3.6J	3.6J		
Benzene	1					0.21J					2.0	0.39J			
2-Butanone	50														
Chlorobenzene	5					1.3						3.2			
trans-1,2-Dichloroethene	5					0.25J						1.0			
Ethylbenzene	5					20						40		2.9	
Methylene Chloride	5				1.6J										
Tetrachloroethene	5					3.8						7.7		1.3	
Toluene	5			0.39J		63				0.96J		130	2.2	14	
Trichloroethene	5			0.35J		4.5						6.4		0.59J	
Vinyl Chloride	2					3.7						9.3			
Total Xylenes	5					80				0.96J		210	3.7	23	
Semi-Volatiles (µg/L)															
1,2-Dichlorobenzene	3*														
1,4-Dichlorobenzene	3*														
2,4-Dimethylphenol	50														
2-Methylphenol	NL														
4-Methylphenol	NL														
Naphthalene	10														
Di-n-octyl phthalate	50														
Phenol	1														

Semi-Volatiles (µg/L)															
1,2-Dichlorobenzene	3*														
1,4-Dichlorobenzene	3*														
2,4-Dimethylphenol	50											1J			
2-Methylphenol	NL														
4-Methylphenol	NL														
Naphthalene	10														
Di-n-octyl phthalate	50														
Phenol	1														

Notes:

* Applies to sum of compounds
NL - Not listed
Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-5*											
Date		*05/20/01*	*08/21/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/30/06*
Volatiles (µg/L)	*Class GA Level*													
Acetone	50	38J		11J			6.4			4.9J		0.61J		3.0J
Benzene	1		1.5	1.4		0.87	0.92	0.87		0.77				0.67J
2-Butanone	50													
Chlorobenzene	5													
trans-1,2-Dichloroethene	5		0.65J	0.76J		0.42J	0.57J	0.52J				0.34J		
Ethylbenzene	5		0.21J	0.23J										
Methylene Chloride	5				3.4J								2.4	
Tetrachloroethene	5		0.38J	0.27J										
Toluene	5		2.5J	2.2J		0.99J	0.87J	1.2		0.80J		0.80J		
Trichloroethene	5		0.87J	0.66J		0.36J	0.41J	0.40J				0.28J		
Vinyl Chloride	2		1.6J	1.2J		1.1	1.5	1.2		1.1		1.4		1.2
Total Xylenes	5		1.0J	1.0J		0.67J	0.37J	0.40J				1.0J		
Semi-Volatiles (µg/L)														
1,2-Dichlorobenzene	3*													
1,4-Dichlorobenzene	3*													
2,4-Dimethylphenol	50		8J	6J	5J			1J				6J		
2-Methylphenol	NL		1J	1J	1J									
4-Methylphenol	NL		2J	5J	4J							2J		
Naphthalene	10		1J	1J				0.5J				1J		
Di-n-octyl phthalate	50			1J	0.8J									
Phenol	1		0.9J											

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-5*			
Date		*05/24/07*	*05/29/08*	*05/26/10*	*05/30/12*
Volatiles (µg/L)	*Class GA Level*				
Acetone	50		3.5J		
Benzene	1	0.54J	0.69J		0.58J
2-Butanone	50				
Chlorobenzene	5				
trans-1,2-Dichloroethene	5				
Ethylbenzene	5				
Methylene Chloride	5				
Tetrachloroethene	5				
Toluene	5				
Trichloroethene	5				
Vinyl Chloride	2	0.95J	1.4		
Total Xylenes	5				
Semi-Volatiles (µg/L)					
1,2-Dichlorobenzene	3*				
1,4-Dichlorobenzene	3*				
2,4-Dimethylphenol	50				
2-Methylphenol	NL	0.5J	0.3J		
4-Methylphenol	NL	0.9J	0.4J		
Naphthalene	10	2J	0.5J	1.6J	0.85J
Di-n-octyl phthalate	50				
Phenol	1				

Notes:

* Applies to sum of compounds
NL - Not listed
Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*GW-6S*		*MW-6*												
Date		*12/15/1987*	*08/10/88*	*05/18/01*	*08/21/01*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/30/06*
Volatiles (µg/L)	*Class GA Level*															
Acetone	50	684	4.9J						4.4J			44		6.7	13	31
Benzene	1	3			0.64J			0.65J	0.59J	0.56J		0.57J				
2-Butanone	50															
Chlorobenzene	5		3.3J		1.5J	1.3J		0.65J		0.54J		0.81J		0.37J		
trans-1,2-Dichloroethene	5	58	4.4J		1.1J			0.37J	0.32J	0.34J		1.4		0.52J		
Ethylbenzene	5	2			0.21J											
Methylene Chloride	5						1.8J								2.1	
Tetrachloroethene	5	43			0.44J							0.67J		0.25J		
Toluene	5	16	3.0J		2.2J	0.29J		1.3	0.91J	1.1		2.1	3.6	0.92J		
Trichloroethene	5	62	5.1J		2.0J		1.2J		1.1	1.5	3.2	14	12	3.7	1.5	1.2
Vinyl Chloride	2	11	1.7J					0.29J	0.24J	0.22J		0.52J				
Total Xylenes	5	7			0.90J	0.44J		0.36J	0.27J							
Semi-Volatiles (µg/L)																
1,2-Dichlorobenzene	3*															
1,4-Dichlorobenzene	3*			1J		0.7J	2J					2J				
2,4-Dimethylphenol	50	5		5J	5J	3J	2J	1J	0.9J	9J		6J				
2-Methylphenol	NL	3		5J	6J	2J	2J	2J	1J	0.9J		5J				
4-Methylphenol	NL	4		15	13	5J	4J	3J	2J	2J		12				1J
Naphthalene	10			67	69		1J		14	13		76			5J	
Di-n-octyl phthalate	50						2J									
Phenol	1	3		14	4J	2J	0.8J					250				2J

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*MW-6*			
Date		*05/24/07*	*05/29/08*	*05/26/10*	*05/30/12*
Volatiles (µg/L)	*Class GA Level*				
Acetone	50				
Benzene	1				
2-Butanone	50				
Chlorobenzene	5				
trans-1,2-Dichloroethene	5				
Ethylbenzene	5				
Methylene Chloride	5				
Tetrachloroethene	5			0.55J	
Toluene	5			0.73J	
Trichloroethene	5	0.97J		2.3J	0.66J
Vinyl Chloride	2				
Total Xylenes	5				
Semi-Volatiles (µg/L)					
1,2-Dichlorobenzene	3*			0.66J	
1,4-Dichlorobenzene	3*	0.8J	0.6J	4.2J	2.9J
2,4-Dimethylphenol	50			1.4J	1.4J
2-Methylphenol	NL	0.5J	0.3J	1.8J	0.71J
4-Methylphenol	NL	1J		2.5J	1.3J
Naphthalene	10	2J	1J	7.8J	3.9J
Di-n-octyl phthalate	50				
Phenol	1	0.6J	0.4J	1.9J	

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-1*												
Date		*05/18/01*	*05/25/07*	*8/21/2001*	*11/27/01*	*02/11/02*	*05/21/02*	*08/06/02*	*11/22/02*	*02/25/03*	*05/08/03*	*11/04/03*	*05/14/04*	*05/27/05*	*05/31/06*
Volatiles (µg/L)	*Class GA Level*														
Acetone	50	20J			11J			4.8J							
Benzene	1			0.64J	0.55J				0.26J						
2-Butanone	50	1.1J													
Chlorobenzene	5	2.2J	2.8	2.0J	1.7J		0.24J		0.78J		0.91J				
trans-1,2-Dichloroethene	5	5.6		3.7J	4.6J	1.8J	0.48J	0.58J	2.7		2.8	0.85J			0.55J
Ethylbenzene	5			0.52J	0.43J				0.21J						
Methylene Chloride	5					1.6J								1.8	
Tetrachloroethene	5			0.78J	0.54J		0.42J	0.53J	0.30J			0.29J			
Toluene	5	5.2	3.1	5.4	4.2J		0.48J	0.43J	1.9	1.7	2.6	0.59J			
Trichloroethene	5	15	2.9	16	11	4.5J	2.2	2.7	6.1	5.1	8.4	2.2	0.47J	1.2	1.9
Vinyl Chloride	2	1.3J		0.51J	0.72J				0.42J		0.64J				
Total Xylenes	5			2.1J	1.6J				0.49J		0.86J				
Semi-Volatiles (µg/L)															
1,2-Dichlorobenzene	3*		0.9J												
1,4-Dichlorobenzene	3*	1J	3J	3J	2J	1J			1J						
2,4-Dimethylphenol	50	9J	46	16	8J	3J		0.6J	9J		4J				
2-Methylphenol	NL	6J	6	12	5J	2J			2J		3J				
4-Methylphenol	NL	20	170	35	15J	5J		1J	5J	6J	8J				2J
Naphthalene	10	71	0.2J	130		21		7J	18		25	3J			
Di-n-octyl phthalate	50														
Phenol	1	150	11	290	57	15	1J	8J	4J		19				

Notes:

* Applies to sum of compounds
NL - Not listed
[ ] Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.6

SUMMARY OF DETECTED COMPOUNDS
SITE GROUNDWATER AND RIVER WATER
GRATWICK-RIVERSIDE PARK
NORTH TONAWANDA, NEW YORK

Location		*OGC-1*			
Date		*05/24/07*	*05/29/08*	*05/26/10*	*05/30/12*
Volatiles (µg/L)	*Class GA Level*				
Acetone	50				
Benzene	1				
2-Butanone	50				
Chlorobenzene	5				
trans-1,2-Dichloroethene	5				
Ethylbenzene	5				
Methylene Chloride	5				
Tetrachloroethene	5				
Toluene	5				
Trichloroethene	5	0.53J	4.2		
Vinyl Chloride	2				
Total Xylenes	5				
Semi-Volatiles (µg/L)					
1,2-Dichlorobenzene	3*				
1,4-Dichlorobenzene	3*				
2,4-Dimethylphenol	50				
2-Methylphenol	NL				
4-Methylphenol	NL		0.4J		0.46J
Naphthalene	10		0.5J		
Di-n-octyl phthalate	50				
Phenol	1				
				0.97J	

Notes:

* Applies to sum of compounds
NL - Not listed
☐ Exceeds Class GA Level
NS - Not Sampled
J - Estimated

TABLE 2.7

PH READINGS
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

Monitoring Location	*MH1*	*MH2*	*MH3*	*MW-6*	*OGC-1*	*MH4*	*OGC-5*	*MH5*	*MH6*	*OGC-6*	*MH7*	*MW-7*	*MH8*	*OGC-2*	*MH9*
Date															
01/29/10		9.52	9.33	10.04	9.96		9.53		9.91	10.47		10.64	11.11	10.37	
02/26/10		9.98	9.79	10.03	10.01		9.55		9.84	10.78		10.28	10.87	10.43	
03/30/10		9.48	9.45	9.78	10.06		9.91		9.85	10.68		10.58	10.08	10.76	
04/30/10		9.60	9.53	9.82	10.01		9.65		9.94	11.09		11.00	10.91	10.77	
05/26/10		9.54	9.84	10.63	9.33		9.27		9.84	11.24		10.60	9.37	10.75	
06/28/10		8.46	8.82	9.63	9.51		8.62		9.17	9.86		10.25	9.14	9.44	
07/27/10		8.53	8.82	10.88	10.82		9.42		9.77	11.21		11.73	10.75	10.98	
08/26/10		10.03	10.89	10.73	10.33		8.73		9.81	11.96		10.51	9.77	10.69	
09/28/10		9.94	10.83	10.87	10.38		9.40		10.33	10.61		10.82	10.20	10.97	
10/27/10		9.53	9.75	10.56	10.15		9.63		10.02	10.28		10.47	10.31	10.19	
11/24/10		9.54	9.90	10.70	10.04		9.24		9.54	10.32		10.09	9.65	9.97	
12/28/10		9.48	9.56	10.84	10.37		9.60		10.00	10.42		10.17	9.76	10.33	
01/31/11		11.01	10.24	10.53	10.37		9.20		8.72	10.49		10.37	9.80	10.47	
02/28/11		9.45	9.33	9.87	9.95		9.56		9.59	10.75		10.11	9.76	10.13	
03/30/11		8.72	8.40	10.40	8.65		9.42		8.98	10.56		9.46	9.23	9.51	
04/21/11		8.86	8.80	10.80	9.34		9.17		9.80	11.32		10.13	9.40	9.86	
05/26/11		8.59	8.50	10.49	9.22		8.95		9.49	11.11		9.80	8.84	9.91	
06/22/11		8.91	9.63	10.63	9.07		8.92		9.42	11.21		9.68	9.10	9.00	
07/27/11		8.87	9.56	10.94	10.21		8.85		9.32	10.97		10.22	9.08	9.84	
08/26/11		8.84	9.51	11.16	10.20		8.87		9.45	11.01		10.34	9.21	9.89	
09/27/11		8.61	9.22	10.47	9.74		8.86		9.37	10.60		9.26	9.10	9.51	
10/28/11		9.21	9.65	10.60	10.25		9.33		9.77	10.70		9.71	9.33	9.87	
11/30/11		9.25	9.93	10.00	9.34		8.24		9.82	10.84		10.46	9.26	9.57	
12/29/11		9.24	9.28	10.82	9.80		9.38		9.66	10.91		9.86	9.31	10.02	
01/26/12		9.21	8.93	10.84	9.46		9.13		9.36	10.99		10.02	9.06	10.47	
02/28/12		9.49	9.33	10.69	9.74		9.51		9.60	11.22		10.49	9.10	10.73	
03/29/12		9.75	9.69	10.05	9.97		9.57		9.63	9.93		9.98	9.62	10.13	
04/26/12		10.05	11.29	11.22	9.92		9.58		9.59	11.85		10.05	9.14	10.26	
05/30/12		10.20	11.54	11.54	10.91		6.33		9.84	11.87		10.24	9.49	9.30	

TABLE 2.7

PH READINGS
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

Monitoring Location	*MH10*	*OGC-7*	*MH11*	*MW-8*	*OGC-3*	*MH12*	*MH13*	*OGC-8*	*MH14*	*MW-9*	*OGC-4*	*MH15*	*MH16*	*MH17*
Date														
01/29/10		11.19	11.03	11.58	11.45	10.60		11.62	11.39	10.52	11.29	9.71	9.22	
02/26/10		11.30	10.91	11.59	11.74	10.27		11.64	11.32	11.02	11.30	10.62	8.64	
03/30/10		11.68	11.74	11.51	12.06	10.62		11.78	11.24	11.49	11.76	10.86	9.14	
04/30/10		11.78	11.67	12.11	12.16	10.30		12.15	10.85	11.44	11.92	10.85	9.58	
05/26/10		11.81	10.92	11.85	12.14	10.51		11.88	10.14	11.14	11.60	11.10	9.12	
06/28/10		10.30	9.26	10.70	10.70	9.18		10.42	8.81	9.90	10.24	8.36	7.48	
07/27/10		12.18	10.31	12.76	12.77	10.08		12.31	10.49	11.56	12.03	9.19	8.46	
08/26/10		12.23	11.60	11.62	12.37	10.04		11.56	8.17	11.50	11.38	7.52	8.87	
09/28/10		12.29	11.89	12.39	12.43	10.21		11.68	10.04	11.24	11.45	7.69	8.48	
10/27/10		11.76	11.53	11.81	11.89	9.81		11.65	10.12	11.10	11.39	8.52	9.50	
11/24/10		11.67	11.48	11.85	12.08	9.90		11.42	9.97	10.67	11.64	8.12	8.30	
12/28/10		11.72	11.17	12.03	12.12	10.17		11.57	9.70	10.91	11.73	8.00	7.87	
01/31/11		11.75	11.52	11.27	11.08	9.68		12.36	9.80	11.03	11.53	8.47	10.08	
02/28/11		11.68	10.82	11.88	11.96	10.00		12.23	11.12	11.30	11.51	7.93	8.05	
03/30/11		11.03	10.46	11.21	11.59	9.71		11.13	9.62	11.00	11.50	8.32	8.11	
04/27/11		11.69	9.99	11.78	12.17	9.05		12.09	9.59	11.40	11.78	8.39	8.84	
05/26/11		11.48	10.08	11.58	11.97	9.55		11.25	9.27	11.26	11.32	7.62	8.26	
6/22/2011		11.62	10.75	11.83	12.00	9.55		11.43	9.09	11.12	11.29	7.73	8.27	
7/27/2011		11.58	10.51	11.88	11.92	9.85		11.34	8.91	11.11	11.12	7.71	8.45	
8/26/2011		11.78	10.56	12.16	12.30	9.56		11.59	9.31	11.39	11.05	7.39	8.12	
9/27/2011		11.54	10.07	11.83	11.99	9.51		11.30	8.85	11.06	11.00	7.28	7.66	
10/28/11		11.35	9.57	11.50	11.72	9.82		11.12	9.78	10.91	11.19	8.48	8.52	
11/30/11		11.46	10.49	11.87	12.06	9.60		10.92	9.51	11.20	10.53	7.84	8.19	
12/29/11		11.57	9.74	11.94	11.98	9.99		11.50	9.39	11.00	11.62	8.48	8.92	
01/26/12		11.61	10.44	11.73	12.43	10.21		11.71	9.51	11.19	11.81	7.99	8.45	
02/28/12		11.74	10.55	11.79	12.23	9.90		11.66	9.73	11.44	11.89	8.16	8.94	
03/29/12		11.23	10.41	11.38	11.29	10.09		11.22	9.64	10.51	11.17	8.49	9.13	
04/26/12		12.20	10.52	12.31	12.87	9.51		12.47	9.72	11.74	12.29	8.08	8.95	
05/30/12		12.52	10.88	12.42	12.84	10.17		12.65	10.14	11.95	12.48	8.42	9.68	

TABLE 2.7

PH READINGS
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

Monitoring Location	*City MH1*	*City MH2*	*City MH3*
Date			
01/29/10	8.64	8.94	8.74
02/26/10	10.42	10.15	9.35
03/30./10	10.14	9.11	9.29
04/30/10	11.25	11.09	10.99
05/26/10	9.97	9.26	8.96
06/28/10	8.15	7.86	7.69
07/27/10	9.71	8.92	8.61
08/26/10	10.06	8.96	9.50
09/29/10	10.22	9.54	9.48
10/27/10	11.42	10.80	10.43
11/24/10	10.98	9.03	9.12
12/28/10	9.12	8.27	8.26
01/31/11	11.66	10.34	10.45
02/28/11	9.62	8.82	8.57
03/30/11	10.22	10.05	10.03
04/27/11	10.54	9.86	9.60
05/26/11	10.42	10.01	9.79
6/22/2011	10.90	9.42	9.69
7/27/2011	10.72	10.51	10.13
8/26/2011	10.38	9.81	9.27
09/27/11	10.35	8.48	8.46
10/28/11	10.50	9.52	9.40
11/30/11	10.63	9.69	8.71
12/29/11	10.78	10.27	10.02
01/26/12	10.07	10.02	9.73
02/28/12	11.21	10.15	9.48
03/29/12	10.80	9.90	9.86
04/26/12	11.16	10.52	10.52
05/30/12	11.28	10.85	10.52

TABLE 2.8

EFFLUENT SAMPLING SUMMARY
JUNE 2001 TO FEBRUARY 2007
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

LOCATIONS

effluent monitoring station at Site discharge point

FREQUENCY

monthly (as dictated by the City of North Tonawanda Industrial Wastewater Discharge Permit)

PARAMETERS

Volatiles

Acetone
Benzene
2-Butanone
Chlorobenzene
1,1-Dichloroethane
1,2-Dichloroethane
trans-1,2-Dichloroethene
Ethylbenzene
Methylene Chloride
Styrene
Tetrachloroethene
Toluene
1,1,1-Trichloroethane
Trichloroethene
Vinyl Chloride
Xylenes (Total)

Semi-Volatiles

1,4-Dichlorobenzene
1,2-Dichlorobenzene
2,4-Dimethylphenol
2-Methylphenol
4-Methylphenol
Naphthalene
Di-n-octylphthalate
Phenols (4AAP)

Inorganics

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Copper
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Selenium
Silver
Sodium
Zinc

Wet Chemistry

Alkalinity (Bicarbonate)
Alkalinity (Total)
BOD
Chloride
COD
Cyanide
Hardness
NH3
NO3
Oil and Grease
pH
Phosphorous
Sulfate
Sulfide
TDS
TKN
TOC
TSS

TABLE 2.9

EFFLUENT SAMPLING SUMMARY
SUBSEQUENT TO FEBRUARY 2007
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK

LOCATIONS

effluent monitoring station at Site discharge point

FREQUENCY

Semi-Annual (Spring and Fall as dictated by the City of North Tonawanda Industrial Wastewater Discharge Permit dated January 31, 2007)

PARAMETERS

Volatiles

Acetone
Benzene
2-Butanone
Chlorobenzene
1,1-Dichloroethane
1,2-Dichloroethane
trans-1,2-Dichloroethene
Ethylbenzene
Methylene Chloride
Styrene
Tetrachloroethene
Toluene
1,1,1-Trichloroethane
Trichloroethene
Vinyl Chloride
Xylenes (Total)

Semi-Volatiles

1,4-Dichlorobenzene
1,2-Dichlorobenzene
2,4-Dimethylphenol
2-Methylphenol
4-Methylphenol
Naphthalene
Di-n-octylphthalate
Phenols (4AAP)

Wet Chemistry

Chloride
Cyanide
NH3
NO3
Phosphorous
Sulfate
Sulfide

TABLE 2.10

ANALYTICAL RESULTS SUMMARY
SITE EFFLUENT
GRATWICK-RIVERSIDE PARK SITE

Sample ID:							
Sample Date:		*09/13/10*	*03/07/11*	*09/15/11*	*03/08/12*	*Surface Water Standard*	(1)
Parameter	*Unit*						
Volatiles							
1,1,1-Trichloroethane	µg/L	5.0U	5.0U	5.0U	5.0U	5	
1,1-Dichloroethane	µg/L	5.0U	5.0U	5.0U	5.0U	5	
1,2-Dichloroethane	µg/L	5.0U	5.0U	5.0U	5.0U	0.6	
2-Butanone	µg/L	25U	25U	25U	25U	50	
Acetone	µg/L	25U	25U	25U	25U	50	
Benzene	µg/L	5.0U	5.0U	5.0U	5.0U	1	
Chlorobenzene	µg/L	5.0U	5.0U	5.0U	5.0U	5	
Ethylbenzene	µg/L	5.0U	5.0U	5.0U	5.0U	5	
Methylene chloride	µg/L	5.0U	5.0U	5.0U	5.0U	5	
Styrene	µg/L	5.0U	5.0U	5.0U	5.0U	5	
Tetrachloroethene	µg/L	5.0U	5.0U	5.0U	5.0U	0.7	(2)
Toluene	µg/L	7.5	12	11	15	5	
trans-1,2-Dichloroethene	µg/L	5.0U	5.0U	5.0U	5.0U	5	
Trichloroethene	µg/L	15	30	20	43	5	
Vinyl chloride	µg/L	5.0U	5.0U	5.0U	5.0U	0.3	(2)
Xylene (total)	µg/L	10U	10U	10U	17	5	
Semi-Volatiles							
1,2-Dichlorobenzene	µg/L	0.68U	0.15U	0.15U	0.84	3	
1,4-Dichlorobenzene	µg/L	0.42U	0.090U	1.7	3.6	3	
2,4-Dimethylphenol	µg/L	3.5	0.13U	2.5	7.4	50	(2)
2-Methylphenol	µg/L	1.0U	0.22U	0.22U	0.91	NL	
4-Methylphenol	µg/L	5.0U	0.62U	0.62U	3.1	NL	
Di-n-octyl phthalate	µg/L	21	4.6U	4.6U	4.6U	50	(2)
Naphthalene	µg/L	0.38U	0.080U	0.080U	0.57	10	
Phenol	µg/L	0.57U	0.12U	0.12U	0.12U	1	

TABLE 2.10

ANALYTICAL RESULTS SUMMARY
SITE EFFLUENT
GRATWICK-RIVERSIDE PARK SITE

Sample ID:							
Sample Date:		*09/13/10*	*03/07/11*	*09/15/11*	*03/08/12*	*Surface Water Standard*	
Parameter	*Unit*						(1)
Metals							
Aluminum	mg/L	0.20U	0.45	0.20U	0.20U	NL	
Antimony	mg/L	0.20U	0.020U	0.020U	0.020U	0.003	
Arsenic	mg/L	0.010U	0.010U	0.010U	0.010U	0.050	
Barium	mg/L	0.069	0.086	0.063	0.083	1.0	
Beryllium	mg/L	0.0020U	0.0020U	0.0020U	0.0020U	0.003	(2)
Cadmium	mg/L	0.0010U	0.0010U	0.0010U	0.0010U	0.005	
Chromium	mg/L	0.0040U	0.0040U	0.0040U	0.0040U	0.050	
Copper	mg/L	0.027	0.023	0.010U	0.010U	0.023	(3)
Iron	mg/L	0.050U	0.39	0.050U	0.050U	0.30	
Lead	mg/L	0.0050U	0.0050U	0.0050U	0.0050U	0.012	
Magnesium	mg/L	1.43	3.5	1.6	2.2	35	
Manganese	mg/L	0.030U	0.012	0.030U	0.0030U	0.30	
Mercury	mg/L	0.00020U	0.00020U	0.00020U	0.00020U	0.0000026	(4)
Nickel	mg/L	0.010U	0.010U	0.010U	0.010U	0.10	
Selenium	mg/L	0.015U	0.015U	0.015U	0.015U	0.0046	(4)
Silver	mg/L	0.0030U	0.0030U	0.0030U	0.0030U	0.050	
Sodium	mg/L	253	372	267	380	NL	
Zinc	mg/L	0.010U	0.010	0.010U	0.010U	2.0	(2)

TABLE 2.10

ANALYTICAL RESULTS SUMMARY
SITE EFFLUENT
GRATWICK-RIVERSIDE PARK SITE

Sample ID:							
Sample Date:		*09/13/10*	*03/07/11*	*09/15/11*	*03/08/12*	*Surface Water Standard*	(1)
Parameter	*Unit*						
General Chemistry							
pH	S.U.	9.39	9.95	9.75	10.51	NL	
Hardness	mg/L	213	235	244	268	NL	
Total Dissolved Solids (TDS)	mg/L	1040	1450	1030	1280	NL	
Total Suspended Solids (TSS)	mg/L	7	6	3	4	NL	
Chloride	mg/L	423	655	425	551	250	
BOD	mg/L	24	16	22	21	NL	
COD	mg/L	33	37	28	33	NL	
Oil and Grease	mg/L	0.10U	0.10U	0.10U	0.20	NL	
Organic Carbon	mg/L	7.1	8.1	7.2	6.9	NL	
Alkalinity, Total (As CaCO3)	mg/L	53.9	57	30.5	32.0	NL	
Bicarbonate (as CaCO3)	mg/L	53.9	11.1	5.0	8.0	NL	
Ammonia	mg/L	1.96	1.12	1.12	1.68	2.0	
Nitrate (as N)	mg/L	0.050U	0.050U	0.050U	0.050U	10	
TKN	mg/L	2.24	2.24	1.68	2.24	NL	
Sulfate	mg/L	184	135	150	191	250	
Sulfide	mg/L	2.0	2.0	4.8	4.0	0.002	
Phenol	mg/L	0.008U	0.008U	0.009U	0.009	0.001	
Phosphorous	mg/L	0.12	0.13	0.17	0.09	0.020	(2)
Cyanide	mg/L	0.005U	0.005	0.005U	0.005	0.0052	

Notes:

U - Non-detect at associated value
- - Not Analyzed
J - Estimated
NL - Not Listed
SL - Sample Lost
(1) - Lowest Standard/Guidance Value shown
(2) - Guidance Value
(3) - Calculated using a hardness of 300 ppm
(4) - Applies to dissolved form
(5) - TOC analyzer malfunction prevented analysis of this compound.

TABLE 2.11

**GROUNDWATER VOLUMES DISCHARGED
TO NORTH TONAWANDA POTW
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK**

	Volumes (gallons)	
Month	***Monthly***	***Total***
May 2001	2,900,000	2,900,000
June 2001	2,353,800	5,253,800
July 2001	1,488,500	6,742,300
August 2001	712,800	7,455,100
September 2001	473,100	7,928,200
October 2001	1,213,100	9,141,300
November 2001	1,281,100	10,422,400
December 2001	231,700 (1)	10,654,100
January 2002	1,383,200 (2)	12,037,300
February 2002	1,186,000	13,223,300
March 2002	233,600	13,456,900
April 2002	736,000	14,192,900
May 2002	348,200	14,541,100
June 2002	1,137,200	15,678,300
July 2002	869,300	16,547,600
August 2002	1,060,800	17,608,400
September 2002	707,000	18,315,400
October 2002	679,800	18,995,100
November 2002	489,500	19,484,700
December 2002	743,500	20,228,200
January 2003	1,150,700	21,378,900
February 2003	483,300	21,862,200
March 2003	402,300	22,264,500
April 2003	531,900	22,796,400
May 2003	655,600	23,452,000
June 2003	682,100	24,134,000
July 2003	942,000	25,076,100
August 2003	627,500	25,703,600
September 2003	349,600	26,053,200
October 2003	966,500	27,019,700
November 2003	442,200	27,461,900
December 2003	463,900	27,925,800
January 2004	443,900	28,369,700
February 2004	253,700	28,623,400
March 2004	403,700	29,027,100
April 2004	433,600	29,460,700
May 2004	377,400	29,838,100
June 2004	395,000	30,233,100
July 2004	384,300	30,617,400
August 2004	479,700	31,097,100
September 2004	413,900	31,511,000
October 2004	319,400	31,902,400
November 2004	249,200	32,151,600
December 2004	209,900	32,361,500

TABLE 2.11

**GROUNDWATER VOLUMES DISCHARGED
TO NORTH TONAWANDA POTW
GRATWICK-RIVERSIDE PARK SITE
NORTH TONAWANDA, NEW YORK**

	Volumes (gallons)	
Month	***Monthly***	***Total***
January 2005	310,100	32,671,600
February 2005	301,100	32,972,700
March 2005	250,200	33,222,900
April 2005	378,400	33,601,300
May 2005	458,800	34,060,100
June 2005	455,900	34,516,000
July 2005	270,200	34,786,200
August 2005	285,100	35,071,300
September 2005	395,600	35,466,900
October 2005	333,200	35,800,100
November 2005	360,200	36,160,300
December 2005	395,300	36,555,600
January 2006	297,500	36,853,100
February 2006	508,300	37,361,400
March 2006	244,700	37,606,100
April 2006	224,400	37,830,500
May 2006	153,300	37,983,800
June 2006	262,300	38,246,100
July 2006	212,900	38,459,000
August 2006	357,500	38,816,500
September 2006	777,000	39,593,500
October 2006	254,700	39,848,200
November 2006	778,700	40,626,900
December 2006	496,600	41,123,500
January 2007	410,500	41,534,000
February 2007	494,600	42,028,600
March, April & May 2007	1,489,200[3]	43,517,800
June 2007	334,300	43,852,100
July 2007	258,600	44,110,700
August 2007	239,000	44,349,700
September 2007	59,500[4]	44,409,200
October 2007 through January 2008	50,600[4]	44,459,800
February 2008	23,800[4]	44,483,600
March 2008	1,238,300	45,721,900
April 2008	2,126,700	47,848,600
May 2008	1,771,100	49,619,700
June 2008	618,000	50,237,700
July 2008	1,559,200	51,796,900
August 2008	1,365,900	53,162,800
September 2008	1,998,000	55,160,800
October 2008	2,511,100	57,671,900
November 2008	1,151,600	58,823,500
December 2008	572,700	59,396,200

TABLE 2.11

GROUNDWATER VOLUMES DISCHARGED TO NORTH TONAWANDA POTW GRATWICK-RIVERSIDE PARK SITE NORTH TONAWANDA, NEW YORK

	Volumes (gallons)	
Month	***Monthly***	***Total***
January 2009	1,021,700	60,417,900
February 2009	2,661,400	63,079,300
March 2009	4,239,300	67,318,600
April 2009	1,189,900	68,508,500
May 2009	1,362,500	69,871,000
June 2009	1,035,200	70,906,200
July 2009	1,010,100	71,916,300
August 2009	1,058,000	72,974,400
September 2009	947,000	73,921,400
October 2009	690,800	74,612,200
November 2009	697,500	75,309,700
December 2009	1,100,900	76,410,600
January 2010	767,100	77,177,700
February 2010	398,600	77,576,300
March 2010	1,094,500	78,670,800
April 2010	761,000	79,431,800
May 2010	354,700	79,786,500
June 2010	170,300	79,956,800
July 2010	323,600	80,280,400
August 2010	1,292,400	81,572,800
September 2010	672,800	82,245,600
October 2010	972,800	83,218,400
November 2010	433,500	83,651,900
December 2010	483,900	84,135,800
January 2011	420,300	84,556,100
February 2011	257,000	84,813,100
March 2011	1,136,700	85,949,800
April 2011	875,300	86,825,100
May 2011	727,500	87,552,600
June 2011	489,500	88,042,100
July 2011	459,300	88,501,400
August 2011	296,900	88,798,300
September 2011	390,300	89,188,600
October 2011	414,800	89,603,400
November 2011	393,100	89,996,500
December 2011	583,300	90,579,800
January 2012	651,800	91,231,600
February 2012	276,900	91,508,500
March 2012	586,600	92,095,100
April 2012	400,600	92,495,700
May 2012	458,800	92,954,500

Notes:

(1) To December 7, 2001.
(2) From December 8, 2001.
(3) Plotted as 496,400 gallons on Figure 2.18 for each of March, April, and May 2007.
(4) Meter malfunctioned due to tar-like material buildup inside meter. Meter was cleaned on March 14, 2008. Volumes not plotted on Figure 2.18 as volumes are not representative of actual volume removed.

APPENDIX A

MONTHLY INSPECTION LOGS (JUNE 2011 TO MAY 2012)

2011/2012 Maintenance Record for Gratwick Riverside Park

Date	Description	#1pump Hrs.	#2 Pump Hrs.	#3Pump Hrs.
7/1/2011		14771	15655	18312
8/1/2011		15027	15946	19040
9/1/2011		15239	16191	19785
10/3/2011		15439	16415	20552
11/1/2011		15653	16676	21248
12/1/2011		15830	16892	21967
1/3/2012		16075	17239	22759
1/25/2012	#1pump tripped c leared and reset	16233	17465	23288
2/1/2012		16295	17557	23457
2/10/2012	#2 tripped,pulled/acid bath,OK	16395	17711	23744
3/1/2012		16513	17891	24151
4/2/2012		16715	18206	24919
5/1/2012		16857	18426	25615
5/27/2012	#3Tripped,OOS,Replacement ordered	17064	18706	26220
6/1/2012		17064	18757	OOS
6/25/2012		17199	18975	OOS

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 06/22/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

Item	Inspect For	Action Required	Comments
1. **Perimeter Collection System/Off-Site Forcemain**			
Manholes	- cover on securely	NONE	
	- condition of cover		
	- condition of inside of manhole		
	- flow conditions		
Wet Wells	- cover on securely		
	- condition of cover		
	- condition of inside of wet well		
2. **Landfill Cap**			
Vegetated Soil Cover	- erosion		
	- bare areas		
	- washouts	* SEE PREVIOUS MONTH	
	- leachate seeps		
	- length of vegetation		
	- dead/dying vegetation		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 06/22/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

Item	Inspect For	Action Required	Comments
2. Landfill Cap (continued)			
Access Roads	- bare areas, dead/dying veg.	NONE	
	- erosion		
	- potholes or puddles		
	- obstruction		
3. Wetlands (Area "F")	- dead/dying vegetation		
	- change in water budget		
	- general condition of wetlands		
4. Other Site Systems			
Perimeter Fence	- integrity of fence	NA	
	- integrity of gates		
	- integrity of locks		
	- placement and condition of signs		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 10/6/22/11/ (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

Item	Inspect For	Action Required	Comments
4.	**Other Site Systems (continued)**		
Drainage Ditches/ Swale Outlets	- sediment build-up		
	- erosion		
	- condition of erosion protection	* SEE PREVIOUS MONTH	
	- flow obstructions		
	- dead/dying vegetation		
	- cable concrete/gabion mats and riprap		
Culverts	- sediment build-up	NONE	
	- erosion		
	- condition of erosion protection		
	- flow obstructions		
Gas Vents	- intact / damage	NA	
Wells	- locks secure	NONE	

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 07/27/11 (MM DD YY)

INSPECTOR(S): D TYRAN, D OSCAR

Item	Inspect For	Action Required	Comments
1. Perimeter Collection System/Off-Site Forcemain			
Manholes	- cover on securely	NONE	
	- condition of cover		
	- condition of inside of manhole		
	- flow conditions		
Wet Wells	- cover on securely		
	- condition of cover		
	- condition of inside of wet well		
2. Landfill Cap			
Vegetated Soil Cover	- erosion		
	- bare areas		
	- washouts	* SEE MAY 2011 SAME	
	- leachate seeps		
	- length of vegetation		
	- dead/dying vegetation		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 07/27/11 (MM DD YY)

INSPECTOR(S): D TYRAN, D OSCAR

Item	Inspect For	Action Required	Comments
2. Landfill Cap (continued)			
Access Roads	- bare areas, dead/dying veg.	NONE	
	- erosion		
	- potholes or puddles		
	- obstruction		
3. Wetlands (Area "F")	- dead/dying vegetation		
	- change in water budget		
	- general condition of wetlands		
4. Other Site Systems			
Perimeter Fence	- integrity of fence	NA	
	- integrity of gates		
	- integrity of locks		
	- placement and condition of signs		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 07/27/11 (MM DD YY)

INSPECTOR(S): D TYRAN, D OSCAR

Item	Inspect For	Action Required	Comments
4. Other Site Systems (continued)			
Drainage Ditches/ Swale Outlets	- sediment build-up		
	- erosion		
	- condition of erosion protection	* SEE MAY 2011	
	- flow obstructions		
	- dead/dying vegetation		
	- cable concrete/gabion mats and riprap		
Culverts	- sediment build-up	NONE	
	- erosion	↓	
	- condition of erosion protection	↓	
	- flow obstructions	↓	
Gas Vents	- intact / damage	NA	
Wells	- locks secure	NONE	

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 08/20/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	*Inspect For*	*Action Required*	*Comments*
1.	**Perimeter Collection System/Off-Site Forcemain**			
☒	Manholes	- cover on securely	NONE	
		- condition of cover		
		- condition of inside of manhole		
		- flow conditions		
☒	Wet Wells	- cover on securely		
		- condition of cover		
		- condition of inside of wet well		
2.	**Landfill Cap**			
☒	Vegetated Soil Cover	- erosion		
		- bare areas		
		- washouts	* SEE MAY'S INSPECTION LOG	- SAME
		- leachate seeps		
		- length of vegetation		
		- dead/dying vegetation		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 08/26/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
2.	**Landfill Cap (continued)**			
X	Access Roads	- bare areas, dead/dying veg.	NONE	
X		- erosion		
X		- potholes or puddles		
X		- obstruction		
3.	**Wetlands (Area "F")**			
X		- dead/dying vegetation		
X		- change in water budget		
X		- general condition of wetlands		
4.	**Other Site Systems**			
	Perimeter Fence	- integrity of fence	NA	
		- integrity of gates		
		- integrity of locks		
		- placement and condition of signs		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 08/26/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
4.	Other Site Systems (continued)			
☒	Drainage Ditches/ Swale Outlets	- sediment build-up	* SEE MAY'S INSPECTION	LOG - SAME
		- erosion		
		- condition of erosion protection		
		- flow obstructions		
		- dead/dying vegetation		
		- cable concrete/gabion mats and riprap		
☒	Culverts	- sediment build-up		
		- erosion		
		- condition of erosion protection		
		- flow obstructions		
☐	Gas Vents	- intact / damage	NA	
☒	Wells	- locks secure	NONE	

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 09/27/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

Item	Inspect For	Action Required	Comments
1. **Perimeter Collection System/Off-Site Forcemain**			
Manholes	- cover on securely	NONE	
	- condition of cover		
	- condition of inside of manhole		
	- flow conditions		
Wet Wells	- cover on securely		
	- condition of cover		
	- condition of inside of wet well		
2. **Landfill Cap**			
Vegetated Soil Cover	- erosion	STILL SEVERAL LARGE HOLES ABOUT 20' SOUTH OF OBC-7 AT TOP OF EMBANKMENT, LARGEST HOLES BETWEEN 4' TO 6' ACROSS AND 8" DEEP, EXPOSING THE WIRE MESH	
	- bare areas		
	- washouts		
	- leachate seeps		
	- length of vegetation	LOTS OF SMALL HOLES IN THE EMBANKMENT EAST AND WEST OF RIVER MIDDLE EXPOSING THE WIRE MESH	
	- dead/dying vegetation		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 0 9 2 7 1 1 (MM DD YY)

INSPECTOR(S): D TYRAN, S BARONER

Item	Inspect For	Action Required	Comments
2. Landfill Cap (continued)			
Access Roads	- bare areas, dead/dying veg.	NONE	
	- erosion		
	- potholes or puddles		
	- obstruction		
3. Wetlands (Area "F")	- dead/dying vegetation	SHORELINE EROSION FROM RIVER NORTH PIPE TO THE NEW FISHING PIER AND SOUTH FROM RIVER NORTH OUTFALL ' APPROX 100'	
	- change in water budget		
	- general condition of wetlands		
4. Other Site Systems			
Perimeter Fence	- integrity of fence	NA	
	- integrity of gates		
	- integrity of locks		
	- placement and condition of signs		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 09/27/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

Item	Inspect For	Action Required	Comments
4. Other Site Systems (continued)		NONE	
Drainage Ditches/ Swale Outlets	- sediment build-up		
	- erosion		
	- condition of erosion protection		
	- flow obstructions		
	- dead/dying vegetation		
	- cable concrete/gabion mats and riprap		
Culverts	- sediment build-up		
	- erosion		
	- condition of erosion protection		
	- flow obstructions		
Gas Vents	- intact / damage		
Wells	- locks secure		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 10/28/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
1.	**Perimeter Collection System/Off-Site Forcemain**			
☒	Manholes	- cover on securely	NONE	
		- condition of cover		
		- condition of inside of manhole		
		- flow conditions		
☐	Wet Wells	- cover on securely		
		- condition of cover		
		- condition of inside of wet well		
2.	**Landfill Cap**			
☒	Vegetated Soil Cover	- erosion	SEVERAL LARGE HOLES ABOUT 20' SOUTH OF OGC-7 AT TOP OF EMBANKMENT LARGE HOLES BETWEEN 4' TO 6' ACROSS AND 8" DEEP EXPOSING WIRE MESH	
		- bare areas		
		- washouts		
		- leachate seeps		
		- length of vegetation	LOTS OF SMALL HOLES IN THE EMBANKMENT EAST AND WEST OF RIVER MIDDLE EXPOSING WIRE MESH	
		- dead/dying vegetation		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 10/28/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

Item	Inspect For	Action Required	Comments
2. Landfill Cap (continued)			
☒ Access Roads	- bare areas, dead/dying veg.	NONE	
	- erosion		
	- potholes or puddles		
	- obstruction		
3. Wetlands (Area "F")	- dead/dying vegetation	NONE	
	- change in water budget		
	- general condition of wetlands		
4. Other Site Systems			
☐ Perimeter Fence	- integrity of fence	NA	
	- integrity of gates		
	- integrity of locks		
	- placement and condition of signs		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 10/28/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
4.	**Other Site Systems (continued)**			
☐	Drainage Ditches/ Swale Outlets	- sediment build-up		
		- erosion		
		- condition of erosion protection		
		- flow obstructions	RIVER NORTH BLOCKED BY HUGE DEAD TREES, NEED LARGE MACHINARY TO HAVE THEM REMOVED	
		- dead/dying vegetation		
		- cable concrete/gabion mats and riprap		
☒	Culverts	- sediment build-up	NONE	
		- erosion		
		- condition of erosion protection		
		- flow obstructions		
☐	Gas Vents	- intact / damage		
☒	Wells	- locks secure		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 1 1 3 0 1 1 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
1.	**Perimeter Collection System/Off-Site Forcemain**			
X	Manholes	- cover on securely	NONE	
X		- condition of cover		
X		- condition of inside of manhole		
X		- flow conditions		
X	Wet Wells	- cover on securely		
X		- condition of cover		
X		- condition of inside of wet well		
2.	**Landfill Cap**			
X	Vegetated Soil Cover	- erosion		
X		- bare areas	SAME AS LAST MONTH	
X		- washouts		
X		- leachate seeps		
X		- length of vegetation		
X		- dead/dying vegetation		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 11/30/10 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
2.	**Landfill Cap (continued)**			
[X]	Access Roads	- bare areas, dead/dying veg.	NONE	
		- erosion		
		- potholes or puddles		
		- obstruction		
3.	**Wetlands (Area "F")**	- dead/dying vegetation		
[X]		- change in water budget		
		- general condition of wetlands		
4.	**Other Site Systems**			
[ ]	Perimeter Fence	- integrity of fence	NA	
		- integrity of gates		
		- integrity of locks		
		- placement and condition of signs		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 11/30/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
4.	**Other Site Systems (continued)**			
X	Drainage Ditches/ Swale Outlets	- sediment build-up		
X		- erosion		
X		- condition of erosion protection	RIVER NORTH STILL BLOCKED BY A HUGE DEAD TREE	
X		- flow obstructions	NEED A LARGE PIECE OF MACHINERY TO REMOVE	
X		- dead/dying vegetation		
X		- cable concrete/ gabion mats and riprap		
X	Culverts	- sediment build-up	NONE	
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions		
	Gas Vents	- intact / damage		
X	Wells	- locks secure		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 1 2 2 9 1 1 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
1.	**Perimeter Collection System/Off-Site Forcemain**			
X	Manholes	- cover on securely	NONE	
X		- condition of cover		
X		- condition of inside of manhole		
X		- flow conditions		
X	Wet Wells	- cover on securely		
X		- condition of cover		
X		- condition of inside of wet well		
2.	**Landfill Cap**			
X	Vegetated Soil Cover	- erosion		
X		- bare areas	SAME AS OCTOBER & NOVEMBER	
X		- washouts		
X		- leachate seeps		
X		- length of vegetation		
X		- dead/dying vegetation	DORMANT	

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 12/29/11 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
2.	**Landfill Cap (continued)**			
X	Access Roads	- bare areas, dead/dying veg.	DORMANT	
X		- erosion	NONE	
X		- potholes or puddles	↓	
X		- obstruction		
3.	**Wetlands (Area "F")**	- dead/dying vegetation	DORMANT	
X		- change in water budget	NONE	
X		- general condition of wetlands	↓	
4.	**Other Site Systems**			
	Perimeter Fence	- integrity of fence	NA	
		- integrity of gates	↓	
		- integrity of locks		
		- placement and condition of signs		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 12/29/11 (MM DD YY)

INSPECTOR(S): D TYRAN S GARDNER

	Item	Inspect For	Action Required	Comments
	4. Other Site Systems (continued)			
X	Drainage Ditches/ Swale Outlets	- sediment build-up		
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions	RIVER NORTH BLOCKED BY A HUGE DEAD TREE	
X		- dead/dying vegetation		
X		- cable concrete/gabion mats and riprap		
X	Culverts	- sediment build-up	NONE	
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions		
	Gas Vents	- intact / damage		
X	Wells	- locks secure	NONE	

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 01/26/12 (MM DD YY)

INSPECTOR(S): D. Tyran S. Gardner

	Item	Inspect For	Action Required	Comments
1.	**Perimeter Collection System/Off-Site Forcemain**			
X	Manholes	- cover on securely	None	
X		- condition of cover		
X		- condition of inside of manhole		
X		- flow conditions		
X	Wet Wells	- cover on securely	MH-15 was within 0.02'	
X		- condition of cover	Of the high water elevation	
X		- condition of inside of wet well		
2.	**Landfill Cap**			
X	Vegetated Soil Cover	- erosion	Holes North of OGC-7 exposing wire mesh	
X		- bare areas	Holes East of River Middle exposing wire mesh	
X		- washouts		
X		- leachate seeps		
X		- length of vegetation		
X		- dead/dying vegetation	Dormant for Winter	

FORM 17

CRA 7987 (24)

David J Tyran

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 01/26/12 (MM DD YY)

INSPECTOR(S): D. Tyrer / S. Gardner

	Item	Inspect For	Action Required	Comments
2.	**Landfill Cap (continued)**			
X	Access Roads	- bare areas, dead/dying veg.	None	
X		- erosion		
X		- potholes or puddles		
X		- obstruction		
3.	**Wetlands (Area "F")**	- dead/dying vegetation	None	
		- change in water budget		
		- general condition of wetlands		
4.	**Other Site Systems**			
	Perimeter Fence	- integrity of fence	NA	
		- integrity of gates		
		- integrity of locks		
		- placement and condition of signs		

FORM 17

David J Tyrer

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: | | | | | | (MM DD YY)

INSPECTOR(S): _____

	Item	Inspect For	Action Required	Comments
4.	**Other Site Systems (continued)**			
X	Drainage Ditches/ Swale Outlets	- sediment build-up	None	
X		- erosion	↓	
X		- condition of erosion protection		
X		- flow obstructions		
X		- dead/dying vegetation		
X		- cable concrete/gabion mats and riprap		
X	Culverts	- sediment build-up		
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions	Several large trees piled in front of River North	
X	Gas Vents	- intact / damage	None	
X	Wells	- locks secure	↓	

FORM 17

CRA 7987 (24)

David J Tyson

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 02/28/12 (MM DD YY)

INSPECTOR(S): S GARDNER, D OSCAR

	Item	*Inspect For*	*Action Required*	*Comments*
1.	**Perimeter Collection System/Off-Site Forcemain**			
X	Manholes	- cover on securely	NONE	
X		- condition of cover		
X		- condition of inside of manhole		
X		- flow conditions		
X	Wet Wells	- cover on securely	NONE	
X		- condition of cover		
X		- condition of inside of wet well		
2.	**Landfill Cap**			
X	Vegetated Soil Cover	- erosion	LARGE & SMALL HOLES NORTH AND EAST OF OGC-7	
X		- bare areas	EXPOSING WIRE MESH	
X		- washouts		
X		- leachate seeps		
X		- length of vegetation		
X		- dead/dying vegetation	DORMANT	

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 02/28/12 (MM DD YY)

INSPECTOR(S): S GARDNER, D OSCAR

	Item	Inspect For	Action Required	Comments
2.	**Landfill Cap (continued)**			
X	Access Roads	- bare areas, dead/dying veg.	NONE	
X		- erosion		
X		- potholes or puddles		
X		- obstruction		
3.	**Wetlands (Area "F")**	- dead/dying vegetation		
X		- change in water budget		
X		- general condition of wetlands		
4.	**Other Site Systems**			
	Perimeter Fence	- integrity of fence	NA	
		- integrity of gates		
		- integrity of locks		
		- placement and condition of signs		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 0 2 / 2 8 / 1 2 (MM DD YY)

INSPECTOR(S): S GARDNER, D OSCAR

	Item	Inspect For	Action Required	Comments
	4. Other Site Systems (continued)			
X	Drainage Ditches/ Swale Outlets	- sediment build-up	NONE	
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions		
X		- dead/dying vegetation		
X		- cable concrete/gabion mats and riprap		
X	Culverts	- sediment build-up		
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions	LARGE TREES PILED IN FRONT OF RIVER NORTH PIPE	
	Gas Vents	- intact / damage	NONE	
X	Wells	- locks secure		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 03/29/12 (MM DD YY)

INSPECTOR(S): D TYRAN, L PABST

	Item	Inspect For	Action Required	Comments
1.	**Perimeter Collection System/Off-Site Forcemain**			
☒	Manholes	- cover on securely	NONE	
		- condition of cover		
		- condition of inside of manhole		
		- flow conditions		
☒	Wet Wells	- cover on securely		
		- condition of cover		
		- condition of inside of wet well		
2.	**Landfill Cap**			
☒	Vegetated Soil Cover	- erosion	LARGE AND SMALL HOLES NORTH AND EAST OF OGC-7	
		- bare areas	EXPOSING WIRE MESH	
		- washouts		
		- leachate seeps		
		- length of vegetation		
		- dead/dying vegetation		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 03/29/12 (MM DD YY)

INSPECTOR(S): D TYRAN, L PABST

Item	Inspect For	Action Required	Comments
2. Landfill Cap (continued)			
[X] Access Roads	- bare areas, dead/dying veg.	NONE	
	- erosion		
	- potholes or puddles		
	- obstruction		
3. Wetlands (Area "F")	- dead/dying vegetation		
[X]	- change in water budget		
[X]	- general condition of wetlands		
4. Other Site Systems			
[ ] Perimeter Fence	- integrity of fence	NA	
[ ]	- integrity of gates		
[ ]	- integrity of locks		
[ ]	- placement and condition of signs		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 03/29/12 (MM DD YY)

INSPECTOR(S): D TYRAN, L. PABST

	Item	Inspect For	Action Required	Comments
4.	Other Site Systems (continued)			
X	Drainage Ditches/ Swale Outlets	- sediment build-up	NONE	
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions		
X		- dead/dying vegetation		
X		- cable concrete/gabion mats and riprap		
X	Culverts	- sediment build-up	RIVER MIDDLE - MODERATE SHEEN ON WATER COMING FROM PIPE	
X		- erosion		
X		- condition of erosion protection	LARGE TREES PILED IN FRONT OF RIVER NORTH PIPE	
X		- flow obstructions		
	Gas Vents	- intact / damage	NONE	
X	Wells	- locks secure		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 04/26/12 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
1.	**Perimeter Collection System/Off-Site Forcemain**			
☒	Manholes	- cover on securely	NONE	
		- condition of cover		
		- condition of inside of manhole		
		- flow conditions		
☒	Wet Wells	- cover on securely		
		- condition of cover		
		- condition of inside of wet well		
2.	**Landfill Cap**			
☒	Vegetated Soil Cover	- erosion	VERY LARGE HOLES SOUTH OF OGC-7, HOLES ALL AROUND THE WELL ALL EXPOSING WIRE MESH	
		- bare areas		
		- washouts		
		- leachate seeps	SMALL HOLES NORTH OF OGC-5 EXPOSING WIRE MESH	
		- length of vegetation		
		- dead/dying vegetation		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 04/26/12 (MM DD YY)

INSPECTOR(S): D. TYRAN, S GARDNER

Item	*Inspect For*	*Action Required*	*Comments*
2. **Landfill Cap (continued)**			
☒ Access Roads	- bare areas, dead/dying veg.	NONE	
	- erosion		
	- potholes or puddles		
	- obstruction		
3. **Wetlands (Area "F")**	- dead/dying vegetation		
☒	- change in water budget		
	- general condition of wetlands		
4. **Other Site Systems**			
☐ Perimeter Fence	- integrity of fence	NA	
	- integrity of gates		
	- integrity of locks		
	- placement and condition of signs		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 04/26/12 (MM DD YY)

INSPECTOR(S): D TYRAN, S GARDNER

	Item	Inspect For	Action Required	Comments
X	4. Other Site Systems (continued)			
X	Drainage Ditches/ Swale Outlets	- sediment build-up	NONE	
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions		
X		- dead/dying vegetation		
X		- cable concrete/gabion mats and riprap		
X	Culverts	- sediment build-up	LARGE TREES PILED IN FRONT OF RIVER NORTH PIPE	
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions		
	Gas Vents	- intact / damage		
X	Wells	- locks secure		

FORM 17

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 05/30/12 (MM DD YY)

INSPECTOR(S): D. Tyran S. Gardner

	Item	Inspect For	Action Required	Comments
1.	**Perimeter Collection System/Off-Site Forcemain**			
X	Manholes	- cover on securely	None	
X		- condition of cover		
X		- condition of inside of manhole		
X		- flow conditions		MH 15 w/L was above High water elev but pump was running when chamber door was opened
X	Wet Wells	- cover on securely		
X		- condition of cover		
X		- condition of inside of wet well		
2.	**Landfill Cap**			
X	Vegetated Soil Cover	- erosion		Same as previous months
X		- bare areas		
X		- washouts		
X		- leachate seeps		
X		- length of vegetation		
X		- dead/dying vegetation		

FORM 17

CRA 7967 (24)

Dave Tyran

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 05/30/12 (MM DD YY)

INSPECTOR(S): D. Tyron S. Gardner

	Item	Inspect For	Action Required	Comments
2.	**Landfill Cap (continued)**			
X	Access Roads	- bare areas, dead/dying veg.	None	
X		- erosion		
X		- potholes or puddles		
X		- obstruction		
3.	**Wetlands (Area "F")**			
X		- dead/dying vegetation		
X		- change in water budget		
X		- general condition of wetlands		
4.	**Other Site Systems**			
	Perimeter Fence	- integrity of fence	NA	
		- integrity of gates		
		- integrity of locks		
		- placement and condition of signs		

FORM 17

CRA 7987 (24)

David J Tyron

GRATWICK-RIVERSIDE PARK SITE
MONTHLY INSPECTION LOG

PROJECT NAME: Gratwick-Riverside Park Site

LOCATION: Wheatfield, New York

DATE: 05/30/12 (MM DD YY)

INSPECTOR(S): D. Tyran S. Gardner

	Item	Inspect For	Action Required	Comments
4.	**Other Site Systems (continued)**			
X	Drainage Ditches/ Swale Outlets	- sediment build-up	None	
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions		
X		- dead/dying vegetation		
X		- cable concrete/gabion mats and riprap		
X	Culverts	- sediment build-up		
X		- erosion		
X		- condition of erosion protection		
X		- flow obstructions	Large tree in front of River North	
X	Gas Vents	- intact / damage	None	
X	Wells	- locks secure		

FORM 17

CRA 7987 (24)

Dave Tyran

APPENDIX B

QA/QC REVIEWS

- GROUNDWATER EFFLUENT, SEPTEMBER 2011
- GROUNDWATER EFFLUENT, MARCH 2012
- ANNUAL GROUNDWATER, MAY 2012

GROUNDWATER EFFLUENT, SEPTEMBER 2011

CONESTOGA-ROVERS & ASSOCIATES

2055 Niagara Falls Blvd., Suite #3
Niagara Falls, New York 14304
Telephone: (716) 297-6150 Fax: (716) 297-2265
www.CRAworld.com

MEMORANDUM

TO: Klaus Schmidtke

FROM: Susan Scrocchi/bjw/9 SCS

REF. NO.: 7987DM-95

DATE: November 17, 2011

E-Mail and Hard Copy if Requested

RE: **Analytical Results and QA/QC Review**
Wastewater Treatment Plant Sampling
September 2011

INTRODUCTION

One effluent sample was collected in support of the Wastewater Treatment Plant Sampling at the Gratwick-Riverside Park Site (Site) during September 2011. The sample was submitted to Test America Laboratories (TA) in Amherst, New York, and analyzed for the following:

Parameter	*Methodology*[1]
Site-Specific Volatile Organic Compounds (VOCs)	USEPA 624
Site-Specific Semi-Volatile Organic Compounds (SVOCs)	USEPA 625
Target Compound List (TCL) Metals	USEPA 200.7
Mercury	USEPA 245.1
Sulfate	USEPA 300.0
Chloride	USEPA 300.0
Alkalinity	SM 2320B
Nitrate	USEPA 353.2
Sulfide	SM 4500-S F
Total Dissolved Solids (TDS)	SM 2540C
Total Hardness	SM 2340C

The analytical results are summarized in Table 1. The quality assurance/quality control (QA/QC) criteria by which these data have been assessed are outlined in the analytical methods and the following documents:

i) "USEPA Contract Laboratory National Functional Guidelines for Organic Data Review" (October 1999)

ii) "National Functional Guidelines for Inorganic Data Review" (February 1994)

1 "Methods for Chemical Analysis of Water and Wastes", United States Environmental Protection Agency (USEPA) 600/4-79-220, March 1983 and "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992.

Data assessment was based on information obtained from final data sheets, blank data, duplicate results, surrogate recoveries, and spike recoveries.

QA/QC REVIEW

All samples were prepared and/or analyzed within the method specified holding times.

Surrogates were added to all samples, blanks, and QC samples prior to extraction and/or analysis for VOCs and SVOCs. All VOC and SVOC surrogate recoveries met the method criteria indicating acceptable analytical efficiency.

Method blanks were extracted and/or analyzed for all parameters and all results were non-detect for the compounds of interest indicating that no compounds were introduced to the samples during preparation and/or analysis.

Blank spikes (BS) were prepared and analyzed for all parameters. All recoveries were acceptable indicating good analytical accuracy and precision.

A matrix spike (MS) using this investigative sample was not requested.

CONCLUSION

Based on the preceding assessment, the data were acceptable for use without qualification.

TABLE 1

ANALYTICAL RESULTS SUMMARY
WASTEWATER TREATMENT PLANT SAMPLING
GRATWICK-RIVERSIDE PARK SITE
SEPTEMBER 2011

	Sample Location:	*Effluent*
	Sample ID:	*GRP*
	Sample Date:	*9/15/2011*
Parameters	*Units*	
Volatile Organic Compounds		
1,1,1-Trichloroethane	µg/L	5.0 U
1,1-Dichloroethane	µg/L	5.0 U
1,2-Dichloroethane	µg/L	5.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	25 U
Acetone	µg/L	25 U
Benzene	µg/L	5.0 U
Chlorobenzene	µg/L	5.0 U
Ethylbenzene	µg/L	5.0 U
Methylene chloride	µg/L	5.0 U
Styrene	µg/L	5.0 U
Tetrachloroethene	µg/L	5.0 U
Toluene	µg/L	11
trans-1,2-Dichloroethene	µg/L	5.0 U
Trichloroethene	µg/L	20
Vinyl chloride	µg/L	5.0 U
Xylenes (total)	µg/L	10 U
Semi-volatile Organic Compounds		
1,2-Dichlorobenzene	µg/L	0.15 U
1,4-Dichlorobenzene	µg/L	1.7
2,4-Dimethylphenol	µg/L	2.5
2-Methylphenol	µg/L	0.22 U
4-Methylphenol	µg/L	0.62 U
Di-n-octyl phthalate (DnOP)	µg/L	4.6 U
Naphthalene	µg/L	0.080 U
Phenol	µg/L	0.12 U
Metals		
Aluminum	mg/L	0.20 U
Antimony	mg/L	0.020 U
Arsenic	mg/L	0.010 U
Barium	mg/L	0.063
Beryllium	mg/L	0.0020 U
Cadmium	mg/L	0.0010 U
Chromium	mg/L	0.0040 U

TABLE 1

ANALYTICAL RESULTS SUMMARY
WASTEWATER TREATMENT PLANT SAMPLING
GRATWICK-RIVERSIDE PARK SITE
SEPTEMBER 2011

	Sample Location:	*Effluent*
	Sample ID:	*GRP*
	Sample Date:	*9/15/2011*
Parameters	*Units*	
Metals (Cont'd.)		
Copper	mg/L	0.010 U
Iron	mg/L	0.050 U
Lead	mg/L	0.0050 U
Magnesium	mg/L	1.6
Manganese	mg/L	0.0030 U
Mercury	mg/L	0.00020 U
Nickel	mg/L	0.010 U
Selenium	mg/L	0.015 U
Silver	mg/L	0.0030 U
Sodium	mg/L	267
Zinc	mg/L	0.010 U
General Chemistry		
Alkalinity, bicarbonate	mg/L	5.0
Alkalinity, total (as CaCO3)	mg/L	30.5
Ammonia	mg/L	1.12
Biochemical oxygen demand (BOD)	mg/L	22
Chemical oxygen demand (COD)	mg/L	28
Chloride	mg/L	425
Cyanide (total)	mg/L	0.005 U
Hardness, carbonate	mg/L	244
Nitrate (as N)	mg/L	0.050 U
Oil and grease	mg/L	0.10 U
pH (water)	s.u.	9.75
Phenolics (total)	mg/L	0.009 U
Phosphorus	mg/L	0.17
Sulfate	mg/L	150
Sulfide	mg/L	4.8
Total dissolved solids (TDS)	mg/L	1030
Total kjeldahl nitrogen (TKN)	mg/L	1.68
Total organic carbon (TOC)	mg/L	7.2
Total suspended solids (TSS)	mg/L	3

Notes:

U - Not present at or above the associated value.

GROUNDWATER EFFLUENT, MARCH 2012

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2055 Niagara Falls Blvd., Suite #3
Niagara Falls, New York 14304
Telephone: (716) 297-6150 Fax: (716) 297-2265
www.CRAworld.com

MEMORANDUM

TO: Klaus Schmidtke

REF. NO.: 7987DM-95

FROM: Susan Scrocchi/bjw/10

DATE: June 22, 2012

E-Mail and Hard Copy if Requested

RE: **Analytical Results and QA/QC Review**
Wastewater Treatment Plant Sampling
March 2012

INTRODUCTION

One effluent sample was collected in support of the Wastewater Treatment Plant Sampling at the Gratwick-Riverside Park Site (Site) during March 2012. The sample was submitted to Test America Laboratories (TA) in Amherst, New York, and analyzed for the following:

Parameter	*Methodology*[1]
Site-Specific Volatile Organic Compounds (VOCs)	USEPA 624
Site-Specific Semi-Volatile Organic Compounds (SVOCs)	USEPA 625
Target Compound List (TCL) Metals	USEPA 200.7
Mercury	USEPA 245.1
Sulfate	USEPA 300.0
Chloride	USEPA 300.0
Alkalinity	SM 2320B
Nitrate	USEPA 353.2
Sulfide	SM 4500-S F
Total Dissolved Solids (TDS)	SM 2540C
Total Hardness	SM 2340C

The analytical results are summarized in Table 1. The quality assurance/quality control (QA/QC) criteria by which these data have been assessed are outlined in the analytical methods and the following documents:

i) "USEPA Contract Laboratory National Functional Guidelines for Organic Data Review" (October 1999)

ii) "National Functional Guidelines for Inorganic Data Review" (February 1994)

1 "Methods for Chemical Analysis of Water and Wastes", United States Environmental Protection Agency (USEPA) 600/4-79-220, March 1983 and "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992.

Data assessment was based on information obtained from final data sheets, blank data, duplicate results, surrogate recoveries, and spike recoveries.

QA/QC REVIEW

All samples were prepared and/or analyzed within the method specified holding times.

Surrogates were added to all samples, blanks, and QC samples prior to extraction and/or analysis for VOCs and SVOCs. All VOC and SVOC surrogate recoveries met the method criteria indicating acceptable analytical efficiency.

Method blanks were extracted and/or analyzed for all parameters and all results were non-detect for the compounds of interest indicating that no compounds were introduced to the samples during preparation and/or analysis.

Blank spikes (BS) were prepared and analyzed for all parameters. All recoveries were acceptable indicating good analytical accuracy and precision.

A matrix spike (MS) using this investigative sample was not requested.

CONCLUSION

Based on the preceding assessment, the data were acceptable for use without qualification.

TABLE 1

ANALYTICAL RESULTS SUMMARY
WASTEWATER TREATMENT PLANT SAMPLING
MARCH 2012

	Sample Location:	*Effluent*
	Sample ID:	*GRATWICK RIVERSIDE*
	Sample Date:	*3/8/2012*
Parameters	*Units*	
Volatile Organic Compounds		
1,1,1-Trichloroethane	µg/L	5.0 U
1,1-Dichloroethane	µg/L	5.0 U
1,2-Dichloroethane	µg/L	5.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	25 U
Acetone	µg/L	25 U
Benzene	µg/L	5.0 U
Chlorobenzene	µg/L	5.0 U
Ethylbenzene	µg/L	5.0 U
Methylene chloride	µg/L	5.0 U
Styrene	µg/L	5.0 U
Tetrachloroethene	µg/L	5.0 U
Toluene	µg/L	15
trans-1,2-Dichloroethene	µg/L	5.0 U
Trichloroethene	µg/L	43
Vinyl chloride	µg/L	5.0 U
Xylenes (total)	µg/L	17
Semi-volatile Organic Compounds		
1,2-Dichlorobenzene	µg/L	0.84
1,4-Dichlorobenzene	µg/L	3.6
2,4-Dimethylphenol	µg/L	7.4
2-Methylphenol	µg/L	0.91
4-Methylphenol	µg/L	3.1
Di-n-octyl phthalate (DnOP)	µg/L	4.6 U
Naphthalene	µg/L	0.57
Phenol	µg/L	0.12 U
Metals		
Aluminum	mg/L	0.20 U
Antimony	mg/L	0.020 U
Arsenic	mg/L	0.010 U
Barium	mg/L	0.083
Beryllium	mg/L	0.0020 U
Cadmium	mg/L	0.0010 U
Chromium	mg/L	0.0040 U
Copper	mg/L	0.010 U
Iron	mg/L	0.050 U

TABLE 1

ANALYTICAL RESULTS SUMMARY
WASTEWATER TREATMENT PLANT SAMPLING
MARCH 2012

	Sample Location:	*Effluent*
	Sample ID:	*GRATWICK RIVERSIDE*
	Sample Date:	*3/8/2012*
Parameters	*Units*	
Lead	mg/L	0.0050 U
Magnesium	mg/L	2.2
Manganese	mg/L	0.0030 U
Mercury	mg/L	0.00020 U
Nickel	mg/L	0.010 U
Selenium	mg/L	0.015 U
Silver	mg/L	0.0030 U
Sodium	mg/L	380
Zinc	mg/L	0.010 U
General Chemistry		
Alkalinity, bicarbonate	mg/L	8.0
Alkalinity, total (as CaCO3)	mg/L	32.0
Ammonia	mg/L	1.68
Biochemical oxygen demand (BOD)	mg/L	21
Chemical oxygen demand (COD)	mg/L	33
Chloride	mg/L	551
Cyanide (total)	mg/L	0.005
Hardness, carbonate	mg/L	268
Nitrate (as N)	mg/L	0.050 U
Oil and grease	mg/L	0.20
pH (water)	s.u.	10.51
Phenolics (total)	mg/L	0.009
Phosphorus	mg/L	0.09
Sulfate	mg/L	191
Sulfide	mg/L	4.0
Total dissolved solids (TDS)	mg/L	1280
Total kjeldahl nitrogen (TKN)	mg/L	2.24
Total organic carbon (TOC)	mg/L	6.9
Total suspended solids (TSS)	mg/L	4
Volatile suspended solids	mg/L	2

Notes:

J - Estimated concentration.

U - Not present at or above the associated value.

- - Not analyzed.

ANNUAL GROUNDWATER, MAY 2012

CONESTOGA-ROVERS & ASSOCIATES

2055 Niagara Falls Blvd., Suite #3
Niagara Falls, New York 14304
Telephone: (716) 297-6150 Fax: (716) 297-2265
www.CRAworld.com

MEMORANDUM

TO: Klaus Schmidtke

REF. NO.: 007987

FROM: Susan Scrocchi/bjw/11 SCS

DATE: June 22, 2012

E-Mail and Hard Copy if Requested

RE: **Analytical Results and QA/QC Review**
Annual Groundwater Sampling
Gratwick-Riverside Park Site
May 2012

INTRODUCTION

Fourteen (14) samples, including one field duplicate and one trip blank, were collected in support of the Annual Groundwater Sampling at the Gratwick-Riverside Park Site (Site) during May 2012. Samples were submitted to Test America Laboratories (TA) in Amherst, New York, and analyzed for the following:

Parameter	*Methodology*
Site-Specific Volatile Organic Compounds (VOCs)	SW-846 8260[1]
Site-Specific Semi-Volatile Organic Compounds (SVOCs)	SW-846 8270[1]

The sample collection and analysis summary is presented in Table 1. The analytical results are summarized in Table 2. The quality assurance/quality control (QA/QC) criteria by which these data have been assessed are outlined in the analytical methods and the "National Functional Guidelines for Organic Data Review" (October 1999).

Data assessment was based on information obtained from final data sheets, blank data, duplicate results, surrogate recoveries, and spike recoveries.

QA/QC REVIEW

All samples were prepared and/or analyzed within the method specified holding times. All samples were received in good condition and properly preserved.

1 "Test Methods for Solid Waste Physical/Chemical Methods", SW-846, 3rd Edition, September 1986 (with all subsequent revisions).

Surrogates were added to all samples, blanks, and QC samples prior to extraction and/or analysis for VOCs and SVOCs. All VOC and SVOC surrogate recoveries met the method criteria indicating acceptable analytical efficiency.

Method blanks were extracted and/or analyzed for all parameters. All method blank results were non-detect for the compounds of interest indicating acceptable analytical procedures.

A trip blank was submitted with the samples for VOC analysis. All VOC results were non-detect for the compounds of interest indicating contamination was not a problem during transport and analysis.

Blank spikes (BS) were prepared and analyzed for all parameters. All recoveries showed acceptable analytical accuracy.

A matrix spike/matrix spike duplicate (MS/MSD) was prepared and analyzed for VOCs and SVOCs. All recoveries were acceptable indicating adequate analytical accuracy and precision.

A field duplicate was submitted "blind" to the laboratory for analysis as specified in Table 1. All the results showed good precision outside of the estimated regions of detection, indicating acceptable analytical and sampling precision.

CONCLUSION

Based on the preceding assessment, the data were acceptable without qualification.

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
ANNUAL GROUNDWATER SAMPLING
GRATWICK-RIVERSIDE PARK SITE
MAY 2012

				Analysis/Parameters		
Sample I.D.	*Location I.D.*	*Collection Date (mm/dd/yy)*	*Collection Time (hr:min)*	*Selected VOCs*	*Selected SVOCs*	*Comments*
WG-7987-053012-001	OGC4	05/30/12	10:35	X	X	
WG-7987-053012-002	MW9	05/30/12	11:25	X	X	
WG-7987-053012-003	OGC8	05/30/12	12:15	X	X	
WG-7987-053012-004	MW8	05/30/12	13:40	X	X	
WG-7987-053012-005	OGC3	05/30/12	14:20	X	X	
WG-7987-053012-006	OGC1	05/30/12	11:20	X	X	
WG-7987-053012-007	MW6	05/30/12	11:50	X	X	
WG-7987-053012-008	OGC5	05/30/12	12:15	X	X	
WG-7987-053012-009	OGC6	05/30/12	12:50	X	X	
WG-7987-053012-010	MW7	05/30/12	13:15	X	X	
WG-7987-053012-011	OGC2	05/30/12	13:30	X	X	
WG-7987-053012-012	OGC7	05/30/12	14:05	X	X	
WG-7987-053012-013	OGC7	05/30/12	14:30	X	X	Field duplicate of WG-7987-053012-012
TB-7987-053012	Trip Blank	05/30/12	-	X		Trip Blank

Notes:

VOCs - Volatile Organic Compounds.
SVOCs - Semi-Volatile Organic Compounds.

TABLE 2

ANALYTICAL RESULTS SUMMARY
ANNUAL GROUNDWATER SAMPLING
GRATWICK-RIVERSIDE PARK SITE
MAY 2012

	Sample Location:	*MW6*	*MW7*	*MW8*	*MW9*	*OGC1*	*OGC2*	*OGC3*
	Sample ID:	*WG-7987-053012-007*	*WG-7987-053012-010*	*WG-7987-053012-004*	*WG-7987-053012-002*	*WG-7987-053012-006*	*WG-7987-053012-011*	*WG-7987-053012-005*
	Sample Date:	*5/30/2012*	*5/30/2012*	*5/30/2012*	*5/30/2012*	*5/30/2012*	*5/30/2012*	*5/30/2012*
Parameters	*Units*							
Volatile Organic Compounds								
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	µg/L	0.70 U	0.70 U	2.1	0.44 J	0.70 U	0.70 U	0.45 J
Chlorobenzene	µg/L	1.0 U	1.0 U	3.4	2.3	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	4.4	0.74 J	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	7.7	0.54 J	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	6.5	3.5	1.0 U	1.0 U	0.88 J
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	3.3	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	0.66 J	1.0 U	22	2.3	1.0 U	1.0 U	1.8
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	16	1.5 J	2.0 U	2.0 U	0.71 J
Semi-volatile Organic Compounds								
1,2-Dichlorobenzene	µg/L	9.4 U	9.4 U	1.3 J	1.1 J	9.4 U	9.4 U	0.61 J
1,4-Dichlorobenzene	µg/L	2.9 J	9.4 U	6.9 J	1.8 J	9.4 U	9.4 U	9.5 U
2,4-Dimethylphenol	µg/L	1.4 J	9.4 U	16	47	9.4 U	9.4 U	5.8 J
2-Methylphenol	µg/L	0.71 J	9.4 U	20	11	9.4 U	9.4 U	35
4-Methylphenol	µg/L	1.3 J	9.4 U	30	230	0.46 J	9.4 U	11
Di-n-octyl phthalate (DnOP)	µg/L	9.4 U	9.4 U	9.5 U	9.6 U	9.4 U	9.4 U	9.5 U
Naphthalene	µg/L	3.9 J	9.4 U	9.5 U	9.6 U	9.4 U	9.4 U	9.5 U
Phenol	µg/L	9.4 U	9.4 U	4.0 J	9.3 J	9.4 U	9.4 U	53

TABLE 2

ANALYTICAL RESULTS SUMMARY
ANNUAL GROUNDWATER SAMPLING
GRATWICK-RIVERSIDE PARK SITE
MAY 2012

	Sample Location:	*OGC4*	*OGC5*	*OGC6*	*OGC7*	*OGC7*	*OGC8*
	Sample ID:	*WG-7987-053012-001*	*WG-7987-053012-008*	*WG-7987-053012-009*	*WG-7987-053012-012*	*WG-7987-053012-013*	*WG-7987-053012-003*
	Sample Date:	*5/30/2012*	*5/30/2012*	*5/30/2012*	*5/30/2012*	*5/30/2012 (Duplicate)*	*5/30/2012*
Parameters	*Units*						
Volatile Organic Compounds							
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	µg/L	0.70 U	0.58 J	1.9	0.70 U	0.70 U	0.70 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	2.0	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	100	0.64 J	0.69 J	1.3
Toluene	µg/L	1.0 U	1.0 U	16	2.3	2.4	2.6
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	4.8	1.8	2.0	1.0 U
Trichloroethene	µg/L	1.0 U	1.0 U	92	7.4	7.7	2.7
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.6	1.6	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	8.9	2.6	2.8	0.86 J
Semi-volatile Organic Compounds							
1,2-Dichlorobenzene	µg/L	9.6 U	9.6 U	9.4 U	9.5 U	9.4 U	9.5 U
1,4-Dichlorobenzene	µg/L	9.6 U	9.6 U	9.4 U	9.5 U	9.4 U	9.5 U
2,4-Dimethylphenol	µg/L	9.6 U	9.6 U	9.4 U	9.5 U	9.4 U	0.52 J
2-Methylphenol	µg/L	9.6 U	9.6 U	16	9.5 U	9.4 U	2.0 J
4-Methylphenol	µg/L	2.8 J	9.6 U	1.1 J	9.5 U	9.4 U	6.2 J
Di-n-octyl phthalate (DnOP)	µg/L	9.6 U	9.6 U	9.4 U	9.5 U	9.4 U	9.5 U
Naphthalene	µg/L	9.6 U	0.85 J	1.1 J	9.5 U	9.4 U	9.5 U
Phenol	µg/L	0.97 J	9.6 U	1.5 J	9.5 U	9.4 U	9.5 U

Notes:

J - Estimated concentration.

U - Not present at or above the associated value.