SUPPLEMENTAL ENVIRONMENTAL CHARACTERIZATION REPORT

1055 GENESEE STREET SITE BUFFALO, NEW YORK

July 2006

0112-002-100

Prepared for:

Mr. Craig Slater, Esq. Harter, Secrest & Emery, LLP Twelve Fountain Plaza

Buffalo, NY 14202-2228

and

Mr. Michael Yount NOCO Energy Corporation

700 Grand Island Boulevard Tonawanda, New York 14150

SUPPLEMENTAL ENVIRONMENTAL CHARACTERIZATION REPORT

1055 Genesee Street Site

Table of Contents

| 1.0 | INT | INTRODUCTION1 | | | | | | |
|-----|------|---|----|--|--|--|--|--|
| | 1.1 | Background and Site Description | 1 | | | | | |
| | 1.2 | Historical Records Review | 1 | | | | | |
| | | 1.2.1 Site Owner/Operations History | 1 | | | | | |
| | | 1.2.2 City of Buffalo Municipal Records | 1 | | | | | |
| | | 1.2.3 NYSDEC Records | 2 | | | | | |
| | | 1.2.4 Sanborn Maps | 2 | | | | | |
| | | 1.2.5 UST Summary | 3 | | | | | |
| | | 1.2.6 Previous Studies | 3 | | | | | |
| 2.0 | Мет | THODS OF INVESTIGATION | 5 | | | | | |
| | 2.1 | Geophysical Survey | 5 | | | | | |
| | 2.2 | Soil Borings and Soil Sampling | 5 | | | | | |
| | 2.3 | Monitoring Well Installation and Groundwater Sampling | | | | | | |
| | 2.4 | Monitoring Well Survey | | | | | | |
| | 2.5 | Soil and Groundwater Sampling Summary7 | | | | | | |
| 3.0 | INVI | estigation Findings | 8 | | | | | |
| | 3.1 | Geophysical Survey | 8 | | | | | |
| | 3.2 | Qualitative Soil Screening | 8 | | | | | |
| | 3.3 | Soil Analytical Results | 9 | | | | | |
| | 3.4 | Groundwater Analytical Results | 9 | | | | | |
| | 3.4 | Site Hydrogeology | 9 | | | | | |
| 4.0 | CON | ICLUSIONS AND RECOMMENDATIONS 1 | .1 | | | | | |
| 5.0 | LIM | ITATIONS1 | 2 | | | | | |



i

SUPPLEMENTAL ENVIRONMENTAL CHARACTERIZATION REPORT 1055 Genesee Street Site

Table of Contents

LIST OF TABLES

- Table 1Summary of Qualitative Soil Screening
- Table 2Monitoring Well and Groundwater Elevations
- Table 3Summary of Soil Analytical Results
- Table 4Summary of Groundwater Analytical Results

LIST OF FIGURES

- Figure 1 Site Location Map
- Figure 2 Site Plan
- Figure 3 Geophysical Survey Map
- Figure 4 Soil Data Map
- Figure 5 Groundwater Data Map

APPENDICES

- Appendix A Field Borehole Logs
- Appendix B Water Quality Field Collection Logs
- Appendix C Laboratory Analytical Data Summary Package
- Appendix D City of Buffalo Municipal Records
- Appendix E NYSDEC Records
- Appendix F Sanborn Maps
- Appendix G Previous Studies



1.0 INTRODUCTION

1.1 Background and Site Description

Benchmark Environmental Engineering and Science, PLLC, (Benchmark) performed a supplemental site characterization for NOCO Gasoline Station S41, located at 1055 Genesee Street, Buffalo, New York (Site) (See Figure 1). The Site is an approximate 0.75acre parcel located on the southeast corner of Genesee Street and Fillmore Avenue, which is utilized as a retail gasoline station and convenience store. The site is improved with one structure utilized as a convenience store. There are currently three 8,000-gallon gasoline tanks and four product dispensers on-Site (see Figure 2).

This investigation included a historical records review, review of previous technical reports, completion of a geophysical survey and a subsurface soil and groundwater investigation. This investigation was completed to further investigate potential historic sources of environmental impact on-Site, to determine the nature and extent of contamination and to facilitate remedial cost estimates.

1.2 Historical Records Review

The historical records reviewed included New York State Department of Environmental Conservation (NYSDEC) records, City of Buffalo municipal records, historic Sanborn fire insurance maps, and previous reports completed by others.

1.2.1 Site Owner/Operations History

Based on the historic Sanborn maps reviewed, the site has been a gasoline station since at least 1950. According the City of Buffalo permits and NYSDEC reviewed, previous gas station owner/operators on-Site included Gulf Oil Corporation, Northeast Stations, Inc. and Cumberland Farms. NOCO Motor Fuels, Inc. has been site owner since approximately 1993.

1.2.2 City of Buffalo Municipal Records

City of Buffalo municipal records indicated that several generations of USTs have existed on the site since at least 1954. These records showed that the products stored



included gasoline and waste oil. Based on these records, it appears that the site was historically utilized a gas station and automotive service station. Appendix D includes the municipal records reviewed.

1.2.3 NYSDEC Records

NYSDEC petroleum bulk storage (PBS) records indicate that there are three 8,000gallon gasoline USTs located on-Site. The current USTs were installed in 1988. Historic tanks include one 6,000-gallon gasoline UST installed in 1966, one 6,000-gallon gasoline UST installed in 1977, one 10,000-gallon gasoline UST installed in 1977 and one 550-gallon UST installed in 1954 with the product stored listed as "other." The NYSDEC PBS certificate is included in Appendix E.

NYSDEC Spill records obtained on the NYSDEC spill records on-line database indicate that there is one "active" spill on-Site and there have been at least two "closed" spills on- site since 1987. Of note, NYSDEC Spill no. 8710706 involved excavation and on-Site bioremediation of gasoline-impacted soils. These records indicate that bio-treated soils were left on-Site upon completion of the bioremediation program. Appendix E includes the NYSDEC records reviewed.

1.2.4 Sanborn Maps

Historic Sanborn maps for the years 1899, 1926, 1950 and 1986 were reviewed. Appendix F contains copies of the maps reviewed. A summary of Sanborn maps reviewed is as follows:

| Year | Summary |
|------|---|
| 1899 | The site is utilized as commercial storefront and one unidentified building. |
| 1926 | The site is utilized as a residential dwelling and two storefronts. A south adjacent parcel has two gasoline tanks on-site. |
| 1950 | The site is developed as a filling station. UST locations are not shown. |
| 1986 | The site is developed as a filling station similar to the 1950 map. UST locations are not shown. |



1.2.5 UST Summary

There have been numerous USTs installed on-Site from 1950 to 1988. The historic gasoline USTs (since at least 1967) were located in the same general location as the existing tank field. Tank locations prior to 1967 were not identified in the records reviewed. The following table is summary of current and historic USTs that were on-site in a given year based on municipal records as well as NYSDEC petroleum bulk storage (PBS) records.

| Year | Number, size and contents of USTs | Notes |
|-------|--------------------------------------|---|
| 1950s | Unknown | Records reviewed could not confirm tank |
| | | sizes, locations and/or contents prior to |
| | | 1967. However, there was one record of a |
| | | waste oil UST installed in 1954. |
| 1967 | (1) 3,000-gallon steel gasoline UST | (1) 6,000-gallon UST was replaced in 1967, |
| | (1) 4,000-gallon steel gasoline UST | suggesting at least (1) 6,000-gallon UST |
| | (1) 6,000-gallon steel gasoline UST | prior to 1967. |
| 1977 | (1) 10,000-gallon steel gasoline UST | (1) 4,000-gallon gasoline and (1) 3,000- |
| | (2) 6,000-gallon steel gasoline USTs | gallon gasoline USTs were removed in |
| | | 1977 and replaced with the referenced (1) |
| | | 10,000-gallon gasoline UST and (1) 6,000- |
| | | gallon gasoline UST. |
| 1988 | (3) 8,000-gallon FRP gasoline USTs | (1) 10,000-gallon gasoline UST and (2) |
| | | 6,000-gallon gasoline USTs were replaced |
| | | by the referenced (3) 8,000-gallon gasoline |
| | | USTs. Also, one City of Buffalo record |
| | | reviewed indicated that one waste oil UST |
| | | was removed in 1986. |

1.2.6 Previous Studies

A Subsurface Investigation Report was completed by Sentinel Technologies, Inc. (Sentinel) in October 2004 to further investigate groundwater impact previously identified in a tank field observation well. Ten soil borings were completed in the area of the current USTs and pump islands and in an area where impacted soil was biologically treated on-Site. Groundwater samples were collected from three of the soil boring locations via temporary wells. The results of that study indicated that petroleum-related volatile organic compounds (VOCs) were present in on-Site soils and groundwater above NYSDEC recommended soil cleanup objectives and groundwater standards. NYSDEC Spill file #02-75425 is currently listed as "active" for the Site. A copy of the previous report is included in Appendix G.



Characterization of one groundwater sample from the Phase II study referenced above was sent to Worldwide Geosciences, Inc. Laboratory (Worldwide), for purposes of analyzing and dating the product that was apparently released on-Site. The results of Worldwide's analysis indicated that the product in the groundwater sample analyzed was a residual fraction of a highly weathered gasoline produced no later than 1985 (i.e., prior to NOCO's ownership). A copy of the Worldwide report is included in Appendix G.



2.0 METHODS OF INVESTIGATION

2.1 Geophysical Survey

A geophysical survey was completed by Geomatrix Consultants, Inc. (Geomatrix) to assess whether buried metal objects, such as legacy USTs, are located on-site. The sites were surveyed using a Geonics EM-61 unit equipped with a high sensitivity, high-resolution electromagnetic metal detector that can detect both ferrous and non-ferrous metallic objects to an approximate depth of 10 feet. The results of the survey are presented in a colorcontoured figure showing metallic anomalies. The results of the geophysical survey are discussed in section 3.1 and shown in Figure 3.

2.2 Soil Borings and Soil Sampling

Boreholes SB1 through SB13 were completed on June 28, 2006, in accessible locations of the subject property. (See Figure 2.) Soil samples were collected with a truck-mounted percussion and hydraulically driven drive system equipped with an approximate 1.5-inch diameter, approximate 48 inch long macro-core sampler. Soil samples were generally collected within each borehole continuously from the ground surface to approximately 8 to 12 feet below the ground surface (fbgs). Any downhole equipment was decontaminated with an Alconox and water wash and tap water rinse between boreholes. The cutting shoes were decontaminated in a similar manner between the collection of each sample.

The physical characteristics of all soil samples were classified using the Unified Soil Classification System (USCS) (Visual-Manual Method). Upon collection, the liner containing the sample was opened slightly at several locations and total volatile organic compound (VOC) concentrations in air within the sample were recorded using a photoionization detector (PID) calibrated in accordance with manufacturer's specifications. (The PID is designed to detect VOCs, such as those associated with petroleum.) The results of this screening are included in Table 1. Based on the field observations and/or PID measurements, soils were selected for analysis.

The soil samples were then submitted, under standard chain-of-custody, to a National Environmental Laboratory Accreditation Counsel (NELAC) approved laboratory, for analysis in accordance with United States Environmental Protection Agency (USEPA) SW-



846 Methods 8260 for NYSDEC STARS List volatile organic compounds (VOCs). Select samples were analyzed for ethylene dibromide (EDB), ethylene dichloride (EDC), tetraethyl lead, as well as a petroleum fingerprint analysis.

2.3 Monitoring Well Installation and Groundwater Sampling

Following borehole advancement described above, three new temporary monitoring wells were installed at the site (see Figure 2). Well construction diagrams are provided in Appendix A. The wells were constructed via installation of a temporary one-inch diameter Schedule 40 PVC well in each borehole. The temporary wells were allowed to stabilize a minimum of one hour prior to groundwater sample collection. Groundwater grab samples were collected from each temporary well, as well as three tank field observation wells, utilizing dedicated 0.5" polyethylene bailers. Field measurements of pH, temperature, specific conductance, and turbidity were determined following collection of the analytical samples. Field measured parameters were recorded on Water Quality Field Collection Logs presented in Appendix B. All temporary wells were manually decommissioned (pulled) following reference elevation determinations. The resulting open annulus was backfilled with site soils and/or bentonite and supplemented at the surface with asphalt patch or soil to match the existing grade and to close the open hole.

Groundwater samples were placed in pre-cleaned laboratory provided sample bottles, cooled to 4 °C in the field, and transported under chain-of-custody to STL for analysis of NYSDEC STARS List VOCs (EPA Method 8260B). Select samples were analyzed for EDB, EDC, tetraethyl lead, as well as a petroleum fingerprint analysis. In addition, one groundwater sample from within the impacted area was analyzed for dissolved oxygen (DO), total and dissolved iron and manganese, biological oxygen demand (BOD), chemical oxygen demand (COD), nitrate and sulfate. These inorganic and water quality parameters were used for evaluation of enhanced in-situ biodegradation as a potential remedial alternative.

2.4 Monitoring Well Survey

Following temporary monitoring well installation, Benchmark personnel surveyed each temporary well using an arbitrary reference elevation of 500.00 feet above mean sea level (fmsl) to estimate groundwater flow direction. The reference top of riser elevations, as



well as groundwater elevations, obtained from the three on-site temporary monitoring wells during the investigation is summarized in Table 2.

2.5 Soil and Groundwater Sampling Summary

Based on sample location, field observations and PID measurements, soil and groundwater samples were selected for analysis (see below).

| Sample Location | Rationale | Testing Parameters | | | |
|-----------------------------|-------------------------------|------------------------------|--|--|--|
| Soil | | | | | |
| SB 1 (4.6 ft bas) | Current/Historic UST's | VOCs, EDB, EDC, Lead, | | | |
| 3D-1 (4-0 It. bgs) | | Petroleum Fingerprint | | | |
| SB-3 (2-4 ft. bgs) | Contamination Delineation | VOCs, EDB, EDC | | | |
| SB-7 (4-6 ft. bgs) | Current/Historic Pump Islands | VOCs, EDB, EDC | | | |
| Groundwater | | <u>.</u> | | | |
| T'PMW/1 | Current/Historic UST's | VOCs EDB EDC | | | |
| | | V0003, LDD, LDC | | | |
| TPMW2 | Contamination Delineation | VOCs, EDB, EDC | | | |
| | | VOCs, EDB, EDC, Lead, | | | |
| TPMW3 | Current/Historic Pump Islands | Petroleum Fingerprint, Water | | | |
| | | Quality Parameters | | | |
| OW-1 | Current/Historic USTs | VOCs, EDB, EDC | | | |
| OW-2 | Current/Historic USTs | VOCs, EDB, EDC | | | |
| OW-3 | Current/Historic USTs | VOCs, EDB, EDC | | | |



3.0 INVESTIGATION FINDINGS

A geophysical survey was completed on June 21, 2006. The results of that survey are discussed in section 3.1 below and shown on Figure 3. Thirteen test borings (SB1-SB13) and three temporary monitoring wells (TPMW1-TPMW3) were completed in accessible areas of the subject property on June 28, 2006 (see Figure 2). Site investigation soil and groundwater sample results are presented in Tables 3 and 4, respectively. Each compound that was analyzed and detected above the laboratory reporting limit is listed on the table with its associated result to provide a complete data summary. For comparison purposes, Table 3 presents recommended soil cleanup objectives (RSCOs) for each of the detected parameters as published in NYSDEC TAGM HWR-94-4046. Similarly, Table 4 presents NYSDEC Class "GA" Groundwater Quality Standards (GWQS) for each of the detected parameters as published in NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June 1998). A copy of the laboratory analytical data package is included in Appendix C. Analytical results for collected soil and groundwater samples are discussed below.

3.1 Geophysical Survey

The geophysical survey identified metallic anomalies north of the current USTs and south of the building (see Figure 3). The strength of the anomalies suggests that they could represent buried metallic objects. The northern anomaly was located in the area of a historic UST adjacent to the existing USTs. The southern anomaly was located approximately 110 feet south of the building. Based on the historic records reviewed, the southern anomaly was not located in a known area of historic USTs.

Soil borings were advanced in the area of each of the anomalies. There were no metallic objects encountered in those borings. However, soil boring SB-2 in the area of the northern anomaly (i.e., historic UST area) encountered petroleum odors from zero to eight fbgs.

3.2 Qualitative Soil Screening

Soil samples were screened for VOCs using a Photovac 2020 PID. PID measurements ranged from 0.0 ppm (several locations) to 734 ppm (BH2, 4-6 fbgs) (see Table 1). In Benchmark's experience, some of the PID measurements and field



observations are indicative of petroleum-VOC impact. Refer to the attached subsurface logs for soil classification for each sample interval, field observations, and PID measurements.

3.3 Soil Analytical Results

Soil samples from soil borings SB-1 (4-6 fbs), SB-3 (2-4 fbgs) and SB-7 (4-6 fbgs) detected NYSDEC STARS List VOCs above applicable NYSDEC RSCOs. Soil sample SB-7 indicated the greatest impact of the soil samples submitted with three analytes above their respective RSCOs (total xylenes- 29,000 ug/kg; 1,2,4-trimethylbenzene- 31,000 ug/kg; 1,3,5-trimethylbenzene- 9,300 ug/kg; and, total VOCs- 80,760 ug/kg). Soil sample SB-1 indicated that only one analyte (benzene- 74 ug/kg) was detected above its applicable RSCO. Soil sample SB-3 indicated that only two analytes (benzene-150 ug/kg and total xylenes- 2,400 ug/kg) were detected above their respective RSCOs.

Analytical results for the soil samples are presented in Table 3. Figure 4 shows the soil impacted areas of the site based on analytical results and qualitative field screening. The laboratory analytical report is included in Appendix C.

3.4 Groundwater Analytical Results

Groundwater samples TPMW1, TPMW2, TPMW-3, OW-1, OW-2 and OW-3 detected NYSDEC STARS List VOCs above applicable GWQS. Groundwater contaminant concentrations were highest from TPMW-3 and OW-3 (32,030 ug/L total VOCs and 99,990 ug/L total VOCs, respectively). Tetraethyl lead was also detected at a concentration of 1,500 ug/L from TPMW-3.

Analytical results for the groundwater samples are presented in Table 4. Figure 5 shows the groundwater impacted area of the site. The laboratory analytical report is included in Appendix C.

3.4 Site Hydrogeology

The geology at the site is generally described as fill materials overlying dense brown clay. The fill materials consist of silt, sand and gravel with varying amounts of brick fragments at depths ranging from 1.5 to 8 fbgs. Native materials consists of dense clay with varying amounts of sand and gravel to depths up to 12 fbgs.



Groundwater elevations at monitoring wells TPMW-1 through TPMW-3 ranged from 494.59 at TPMW-2 to 497.45 at TPMW-1 (relative to a common site datum of 500.00). Based on the groundwater gauging, groundwater appears to generally flow in northwestern direction.

10



4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on a review of historical documents, review of previous studies, a geophysical survey and a soil and groundwater investigation at the Site, Benchmark offers the following conclusions and recommendations:

- The site has been a gasoline station since at least 1950. Past site use likely included automotive repair based on evidence of a historic waste oil UST on site.
- USTs and pump islands on-site have historically been located in the same general area as the current USTs and pump islands.
- A previous subsurface investigation identified soil and groundwater impact in the area of the current/historic UST and pump islands. One groundwater sample submitted for forensic analysis at that time indicated that some of the groundwater contamination was the result of gasoline spill from a gasoline product produced no later than 1985.
- A geophysical survey identified two anomalies on-Site (see Figure 3). There was no evidence of buried metallic objects or subsurface impact in the area of the southern anomaly. Soil boring SB-2 in the area of the northern anomaly (i.e., historic UST area) encountered petroleum odors from zero to eight fbgs. Tank records indicate that an UST was removed from this area in approximately 1988.
- During this investigation, additional soil and groundwater impact was identified on-Site (see Figures 4 and 5). Soil and/or groundwater impact appears to extend to the northern, eastern and western property boundaries in the area of the current/historic USTs and pump islands. The greatest soil impact was identified at sample location SB-7 (4-6 fbgs), south of the current/historic pump islands. The greatest groundwater impact was identified in TPMW-3 (installed at soil boring SB-7) in the area of the current/historic USTs. The groundwater sample from TPMW-3 also contained tetraethyl lead, indicating a historic spill of leaded gasoline.

Benchmark has prepared a conceptual remedial approach and associated remedial cost estimates to address the soil and groundwater impact identified on-Site. Such will be provided under separate cover for your review. Upon review, a corrective action plan (CAP) can be submitted to the NYSDEC for review and approval.





5.0 LIMITATIONS

This report has been prepared for the exclusive use of NOCO Energy Corporation and Harter, Secrest & Emery, LLP. The contents of this report are limited to information available at the time of the site investigation activities and to data referenced herein, and assume all referenced historic information sources to be true and accurate. The findings herein may be relied upon only at the discretion of NOCO Energy Corporation. Use of or reliance upon this report or its findings by any other person or entity is prohibited without written permission of Benchmark Environmental Engineering & Science, PLLC.









PID SUMMARY

1055 Genesee Street Site Buffalo, New York

| BORING | | BORING LOCATION & PID FIELD SCAN READINGS (ppm) | | | | | | | | | | | |
|-----------------|---------|---|---------|---------|---------|---------|---------|--------|--------|---------|---------|---------|---------|
| INTERVAL (fbgs) | SB - 1 | SB - 2 | SB - 3 | SB - 4 | SB - 5 | SB - 6 | SB - 7 | SB - 8 | SB - 9 | SB - 10 | SB - 11 | SB - 12 | SB - 13 |
| 0.0 - 2.0 | 0.0 | 127.0 | 5.0 | 72.1 | 0.0 | 0.7 | 7.9 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2.0 - 4.0 | 0.0 | 91.2 | 6.0 | 27.0 | 0.0 | 0.3 | 0.7 | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4.0 - 6.0 | 38.0 | 734.0 | 1.3 | 0.0 | 0.0 | 0.6 | 78.2 | 0.0 | 148.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6.0 - 8.0 | 164.0 | 60.7 | 1.9 | 0.0 | 0.0 | 0.3 | 22.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8.0 - 10.0 | 0.0 | 8.9 | 1.6 | 0.0 | 0.0 | 0.2 | 91.3 | | | | | | |
| 10.0 - 12.0 | 0.0 | | | 0.0 | | | 65.3 | | | | | | |
| Boring Terminus | 12 fbgs | 10 fbgs | 10 fbgs | 12 fbgs | 10 fbgs | 10 fbgs | 12 fbgs | 8 fbgs | 8 fbgs | 8 fbgs | 8 fbgs | 8 fbgs | 8 fbgs |

Notes

1. fbgs= feet below ground surface



GROUNDWATER ELEVATIONS SUMMARY

1055 Genesee Street Site Buffalo, New York

| Monitoring Well Designation | Top of Casing Elevation | Top of Riser Elevation (Reference Point) | Depth to Water (fbTOR) | Groundwater Elevation (fmsl) | |
|--------------------------------|----------------------------|--|---------------------------|------------------------------------|--|
| TPMW - 1 | grade | 501.41 | 3.96 | 497.45 | |
| TPMW - 2 | grade | 500.7 | 6.11 | 494.59 | |
| TPMW - 3 | grade | 501.14 | 4.51 | 496.63 | |

Note:

1. Top of riser elevation based upon an assumed datum of 500.00 fmsl.

2. Water levels measured and recorded on June 28, 2006

3. fbTOR = feet below Top of Riser

4. fmsl = feet above mean sea level.



SUMMARY OF SOIL ANALYTICAL RESULTS

| | Boring Locat | Regulatory | | |
|---------------------------------|-------------------|-------------------|-------------------|-------------------|
| Parameter | SB-1 (4.0-6.0) | SB-3 (2.0-4.0) | SB-7 (4.0-6.0) | Guidance Limit |
| NYSDEC STARS List Volatile Orga | anic Compound | ls (VOCs) -ug/kg | 1 | |
| Benzene | 74 | 150 | ND | 60 |
| Ethylbenzene | 51 | 330 | 3,400 | 5,500 |
| Toluene | 110 | 710 | ND | 1,500 |
| Total Xylenes | 200 2,400 29,000 | | 1,200 | |
| Isopropylbenzene | ND | 75 | 1,500 | 2,300 |
| n-Propylbenzene | ND | 87 | 3,100 | 3,700 |
| p-Cymene | ND | ND | 260 | 5,000 |
| 1,2,4-Trimethylbenzene | 78 | 440 | 31,000 | 13,000 |
| 1,3,5-Trimethylbenzene | 31 | 260 | 9,300 | 3,300 |
| n-Butylbenzene | ND | ND | 1,900 | 12,000 |
| sec-Butylbenzene | ND | ND | 1,300 | 11,000 |
| tert-Butylbenzene | ND | ND | ND | 10,000 |
| Methyl-Tert-Butyl-Ether (MTBE) | ND | 75 | ND | 120 |
| Total VOCs | 544 | 4,527 | 80,760 | 10,000 |

1055 Genesee Street Site Buffalo, New York

Notes:

2. Only those compounds detected above the laboratory reporting limit are presented in this table.

3. Shaded yellow or orange values indicate an exceedance of the regulatory limit.

4. ND= not detected above laboratory detection limits.

^{1.} The regulatory limits are taken from NYSDEC TAGM #4046



SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

1055 Genesee Street Site Buffalo, New York

| Parameter | Monitoring Location | | | | | | | | | |
|--|---------------------|--------|--------|-------|-------|--------|-------|--|--|--|
| Farameter | TPMW-1 | TPMW-2 | TPMW-3 | OW-1 | OW-2 | OW-3 | Limit | | | |
| NYSDEC STARS List Volatile Organic Compounds (VOCs) - ug/L | | | | | | | | | | |
| Benzene | 3.3 | 6.7 | 1,500 | 140 | 160 | 7,700 | 0.7 | | | |
| Ethylbenzene | 8.6 | 18 | 2,400 | 140 | 140 | 7,000 | 5.0 | | | |
| Toluene | 2.5 | 0.84 | 210 | 41 | 67 | 1,100 | 5.0 | | | |
| Total Xylenes | 54 | 130 | 19,000 | 430 | 430 | 30,000 | 5.0 | | | |
| Isopropylbenzene | 7.1 | 2.8 | 170 | 40 | 27 | 1,000 | 5.0 | | | |
| n-Propylbenzene | 19 | 8.6 | 480 | 76 | 51 | 1,700 | 5.0 | | | |
| p-Cymene | 1.3 | 0.59 | ND | 10 | 10 | 200 | 5.0 | | | |
| 1,2,4-Trimethylbenzene | 44 | 81 | 5,500 | 220 | 230 | 14,000 | 5.0 | | | |
| 1,3,5-Trimethylbenzene | 14 | 25 | 1,500 | 120 | 140 | 8,400 | 5.0 | | | |
| n-Butylbenzene | 4.7 | 1.6 | 860 | ND | ND | ND | 5.0 | | | |
| sec-Butylbenzene | 9.1 | 2.2 | 100 | 30 | 35 | 890 | 5.0 | | | |
| Methyl-Tert-Butyl-Ether (MTBE) | 59 | 240 | 310 | 390 | 440 | 28,000 | 10.0 | | | |
| Total VOCs | 227 | 517 | 32,030 | 1,637 | 1,730 | 99,990 | | | | |
| Other Parameters- ug/L | | | • | | | | | | | |
| Tetraethyl - Lead | | | 1500 | | | | 25 | | | |
| Water Quality Parameters mg/L | | | | | | | | | | |
| Iron - Soluble | | | 22 | | | | NA | | | |
| Manganese - Soluble | | | 6 | | | | NA | | | |
| Iron - Total | | | 306 | | | | NA | | | |
| Manganese - Total | | | 10.5 | | | | NA | | | |
| Biochemical Oxygen Demand | | | 1,110 | | | | NA | | | |
| Chemical Oxygen Demand | | | 270 | | | | NA | | | |
| Nitrate | | | ND | | | | NA | | | |
| Sultate | | | 84.9 | | | | NA | | | |

Notes:

1. Regulatory limits are NYSDEC Class "GA" Groundwater Quality Standards (GWQS) as published in NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June 1998).

2. Only those compounds detected above the laboratory reporting limit are presented in this table.

3. Shaded yellow values indicate an exceedance of the regulatory limit.

4. J = indicates an estimated value.

5. ND= not detected above laboratory detection limits.

6. NA= not applicable.

FIGURES



FIGURE 1





FIGURE 3







APPENDIX A

FIELD BOREHOLE LOGS



APPENDIX B

WATER QUALITY FIELD COLLECTION LOGS



APPENDIX C

LABORATORY ANALYTICAL DATA SUMMARY PACKAGE



APPENDIX D

CITY OF BUFFALO MUNICIPAL RECORDS



APPENDIX E

NYSDEC RECORDS



APPENDIX F

SANBORN MAPS





Copyright 1988 The Sanborn Library, LLC TM Year The Sentern Library, LLC TM Year LDF Research Associate









APPENDIX G

PREVIOUS STUDIES

