2021 Periodic Review Report

Durez North Tonawanda Interceptor Trench NYSDEC Site No. 932018

Glenn Springs Holdings, Inc.

31 January 2022

The Power of Commitment

Executive summary

Glenn Springs Holdings, Inc. (GSH), an Occidental Chemical Corporation (OCC) affiliate, assumed operation, maintenance, and monitoring (OM&M) responsibilities for the former Durez North Tonawanda Facility Interceptor Trench (IT) (Site) from OCC effective July 1, 1998. Since that time, pursuant to the individual Site documents and subsequent approved modifications, GSH has conducted routine monitoring and maintenance programs at the Site. Since October 1, 2008, the Site's groundwater extraction system has been operated by GHD, formerly Conestoga-Rovers & Associates (CRA), under direct management of GSH.

Approximately 28.0 million gallons of groundwater from the IT were collected, treated, and discharged in 2021. The volume of water treated and discharged was reported in the monthly Discharge Monitoring Reports (DMRs) submitted to the New York State Department of Environmental Conservation (NYSDEC). The 2021 semiannual groundwater contours and measured water levels at the piezometer clusters indicate that an overall inward gradient to the IT is being maintained. Therefore, the purpose and primary objective of the IT are being met.

Groundwater samples are collected annually from the Site for chemical analysis. The analytical results from the April 2021 groundwater monitoring event indicate that no volatile organic compounds (VOCs) or total recoverable phenolics were detected at concentrations above the laboratory method detection limits (MDLs). These results are consistent with Site historical data.

In 2021, GSH monitored non-aqueous phase liquid (NAPL) presence at piezometer T-2A through one annual NAPL thickness measurement and semiannual water level rounds at select wells to demonstrate an inward gradient in the vicinity of T-2A (as indicated by a lower groundwater elevation in T-2A than monitoring wells farther outside of the IT than T-2A). The water level rounds were completed in March and August 2021. The thickness of the NAPL at T-2A observed during the annual NAPL thickness monitoring event in August 2021 was insufficient to warrant pumping at the well. Therefore, no NAPL was removed.

The groundwater monitoring program is conducted to collect the hydraulic and groundwater chemical data necessary to evaluate both the effectiveness of the IT and long-term trends in groundwater chemistry in select monitoring wells. The hydraulic data collected in 2021 indicates that the IT is functioning effectively, and the chemical groundwater data collected demonstrates that the IT continues to prevent off-Site migration of impacted groundwater.

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1. Introduction

Glenn Springs Holdings, Inc. (GSH), an Occidental Chemical Corporation (OCC) affiliate, assumed operation, maintenance, and monitoring (OM&M) responsibilities for the former Durez North Tonawanda Facility Interceptor Trench (IT) (Site) from OCC effective July 1, 1998. Since that time, pursuant to the individual Site documents and subsequent approved modifications, GSH has conducted routine monitoring and maintenance programs at the Site. Since October 1, 2008, the Site's groundwater extraction system has been operated by GHD, formerly Conestoga-Rovers & Associates (CRA), under direct management of GSH.

This report describes the monitoring and maintenance activities conducted and presents the data collected at the Site between January 1, 2021 and December 31, 2021.

2. Durez North Tonawanda Facility/IT Site

Pursuant to Appendix B of the Durez Partial Consent Judgment (PCJ), groundwater monitoring at the former OCC Durez Division North Tonawanda Plant is being conducted as part of the Site-wide groundwater remediation program. This monitoring began on October 2, 1989, prior to the installation of a groundwater remediation system, the principal component of which is a perimeter groundwater IT. This report presents data obtained during the 2021 calendar year.

Site-wide hydraulic monitoring for the period covered by this annual report was conducted in March and August 2021. Groundwater quality monitoring was conducted in April 2021. All work conducted during 2021 was performed in accordance with the protocols and requirements in Appendix B of the PCJ "Monitoring, Operations, and Maintenance Plan" (1989) and subsequent Minor Modification #10, Rev. 2 "Minor Change to Appendix B "Monitoring, Operations, and Maintenance Plan" (September 1999).

This report summarizes the purpose and scope of the current groundwater monitoring program, discusses the hydraulic effectiveness of the IT, and provides a summary of groundwater chemistry monitoring results. The completed New York State Department of Environmental Conservation (NYSDEC) 2021 Institutional and Engineering Controls Certification Form is included in Appendix A.

2.1 Site Monitoring

2.1.1 Purpose

The purpose and primary design objectives of the IT are:

i) To collect and capture groundwater located inside the IT that could otherwise migrate off the Site

ii) To collect and capture groundwater located outside the Site by creating an inward hydraulic gradient toward the IT (lower groundwater elevation in the trench than in the piezometers outside the trench)

The post-IT groundwater monitoring program is conducted to collect the hydraulic and groundwater quality data necessary to evaluate the effectiveness of the IT and the long-term trends in groundwater quality in selected monitoring wells.

2.1.2 Scope

The hydraulic monitoring program currently consists of semiannual measurements of water levels in 48 monitoring wells located on and off the Site and semiannual measurement of water levels in 36 on-Site piezometers located in

12 arrays. The piezometer arrays consist of three wells (A, B, and C): the first well (A) is located on the outside perimeter of IT; the second well (B) is located in the center or in IT backfill; and the third well (C) is located in the Plant side of the IT for a total of 36 piezometers. The piezometer arrays are referred to as the "T-Series" piezometers and have been monitored since their installation in August 1990. The monitoring well and piezometer locations are presented on Figure 1.1.

The groundwater quality monitoring program at the Site consists of annual sampling and chemical analyses of groundwater collected from seven monitoring wells located off and on the Site. The selection and utilization of these wells are consistent with the requirements specified in the PCJ or from approved minor changes to the PCJ. All groundwater samples collected in 2021 were analyzed for the Site-specific list of targeted organic compounds, total recoverable phenolics, and total organic carbon (TOC).

Specific conductance, pH, and temperature were measured in the field during sample collection. The results of the annual monitoring are further discussed in Section 2.3.

2.2 Hydraulic Effectiveness of the IT

Total monthly precipitation in Niagara Falls and Buffalo, New York during 2021 (obtained from the National Oceanic and Atmospheric Administration [NOAA]) is provided in Table 2.1. Monthly precipitation for both areas is provided since the Site is approximately equidistant between both official weather stations.

Groundwater elevation contour maps developed using groundwater elevations measured on March 24 and August 25, 2021 (presented as Figures 2.1 and 2.2, respectively) show the configuration of the water table surface for each measurement event. Due to the steep hydraulic gradient created by the IT (lower groundwater elevation in the trench than in the piezometers outside the trench), not all of the contour lines immediately adjacent to the IT can be shown on the contour maps. Groundwater elevations for 2021 are presented in Table 2.2. Following evaluation of the August semiannual groundwater elevations, water levels were re-measured in select wells and piezometers on September 8, 2021. This additional gaging event is further discussed below. Two additional monitoring wells, NP-19 and NP-27, were hydraulically monitored in addition to the monitoring wells and piezometers in the current hydraulic monitoring program to provide additional hydraulic information in the vicinity of piezometer T-2A. The significance of piezometer T-2A is explained in further detail in Section 2.2.1.

Groundwater elevations for the T-series piezometers are presented on Figures 2.1 and 2.2 to show the magnitude of the hydraulic gradient adjacent to the IT. The water levels in a number of the piezometers (A, B, and C piezometers, respectively) were dry when measured due to the influence of the trench and limited local recharge. Pumping from the IT is maintained such that the water level is below the top of the glaciolacustrine clay unit, which serves as the lower confining unit for the overburden groundwater at the Site. Maintaining this lowered groundwater elevation causes the IT to act as a continuous sump surrounding the Site.

During the March 24, 2021 hydraulic monitoring event (refer to Figure 2.1), an inward gradient was observed at all trench piezometer arrays. At eight of the 12 piezometer arrays (T-2, T-3, T-4, T-5, T-6, T-7, T-11, and T-13), at least one of the A or B piezometers in the array was dry. However, an inward gradient was still observed at each of these locations, as follows:

- When the observed depth of piezometer T-2B (563.86 feet above mean sea level [ft. AMSL]) is compared to the groundwater elevation in piezometer T-2A (570.00 ft. AMSL), which is located directly outside of the IT, it is clear that an inward hydraulic gradient into the trench was present at this array.
- When the groundwater elevation in piezometer T-3B (566.74 ft. AMSL) is compared to the groundwater elevation in monitoring well NP-35 (568.07 ft. AMSL), which is located outside of the IT and in close proximity to array T-3, it is clear that an inward hydraulic gradient into the trench was present at this location.
- When the groundwater elevation in piezometer T-4B (567.01 ft. AMSL) is compared to the groundwater elevation in monitoring well MW-1 (572.13 ft. AMSL), which is located outside of the IT and in close proximity to array T-4, it is clear that an inward hydraulic gradient into the trench was present at this location.

- When the observed depth of piezometer T-5B (564.06 ft. AMSL) is compared to the groundwater elevation in monitoring well NP-22A (571.72 ft. AMSL), which is located outside of the IT and in close proximity to array T-5, it is clear that an inward hydraulic gradient into the trench was present at this location.
- When the groundwater elevation in piezometer T-6B (568.10 ft. AMSL) is compared to the groundwater elevation in monitoring well SP-3 (569.69 ft. AMSL), which is located outside of the IT and in close proximity to array T-6, it is clear that an inward hydraulic gradient into the trench was present at this location.
- When the groundwater elevation in piezometer T-7B (566.61 ft. AMSL) is compared to the groundwater elevations in monitoring wells NP-51 (573.02 ft. AMSL) and NP-42 (570.63 ft. AMSL), which are located outside of the IT and in close proximity to array T-7, it is clear that an inward hydraulic gradient into the trench was present at this location.
- When the observed depth of piezometer T-11B (565.92 ft. AMSL) is compared to the groundwater elevations in monitoring wells NP-23 (569.23 ft. AMSL) and NP-8 (574.04 ft. AMSL), which are located outside of the IT and in close proximity to array T-11, it is clear that an inward hydraulic gradient into the trench was present at this location.
- When the groundwater elevation in piezometer T-13B (562.16 ft. AMSL) is compared to the groundwater elevations in monitoring wells NP-6 (570.75 ft. AMSL) and NP-4 (576.78 ft. AMSL), which are located outside of the IT and in close proximity to array T-13, it is clear that an inward hydraulic gradient into the trench was present at this location.

During the August 25, 2021 hydraulic monitoring event (refer to Figure 2.2), an inward gradient was observed at the locations of all trench piezometer arrays. Water levels were remeasured in the piezometers in the T-8 and T-12 arrays and in nearby wells on September 8, 2021 to confirm inward gradients at these locations, as described below. The groundwater elevations observed in the select wells and piezometers remeasured on September 8 are shown independently on Figure 2.2.

- The groundwater contours developed for the area of the IT proximate to array T-8 using the water levels measured on August 25 indicate that an inward gradient was present from the area of NP-51 (groundwater elevation 572.97 ft. AMSL) to the area of MW-3 (groundwater elevation 569.95 ft. AMSL), beyond which the water table demonstrated a localized high at T-8A (groundwater elevation 571.07 ft. AMSL), just outside of the trench. Although the groundwater elevation in the trench at T-8B (573.17 ft. AMSL) was greater than the groundwater elevation at T-8A during the August monitoring event, the gradient outside of the trench at this location was inward, from NP-51 to T-8A. Furthermore, when the groundwater elevation in piezometer T-8B remeasured on September 8 (572.97 ft. AMSL) is compared to the groundwater elevation remeasured in well NP-51 on September 8 (573.02 ft. AMSL), the overall gradient at this location is inward toward the trench, confirming the August 25 measurements.
- The groundwater contours developed for the area of the IT proximate to array T-12 using the water levels measured on August 25 indicate that an inward gradient was present from the area of NP-8 (groundwater elevation 570.82 ft. AMSL) to T-12A (groundwater elevation 568.49 ft. AMSL). Although the groundwater elevation in the trench at T-12B (569.04 ft. AMSL) was greater than the groundwater elevation at T-12A during the August monitoring event, the gradient outside of the trench at this location was inward, from NP-8 to T-12A. Furthermore, when the groundwater elevation in piezometer T-12B remeasured on September 8 (564.05 ft. AMSL) is compared to the groundwater elevation remeasured in T-12A on September 8 (568.71 ft. AMSL), the overall gradient at this location is inward toward the trench, confirming the August 25 measurements.

At seven of the 12 piezometer arrays (T-2 through T-7 and T-11), at least one of the A or B piezometers in the array was dry at the time of the August monitoring event. However, an inward gradient was still observed at each of these locations, as follows:

- When the observed depth of piezometer T-2B (563.92 ft. AMSL) is compared to the groundwater elevation in piezometer T-2A (568.47 ft. AMSL), which is located directly outside of the IT, it is clear that an inward hydraulic gradient into the trench was present at this array.

- When the groundwater elevation in piezometer T-3B (566.44 ft. AMSL) is compared to the groundwater elevation in monitoring well NP-35 (568.02 ft. AMSL), which is located outside of the IT and in close proximity to array T-3, it is clear that an inward hydraulic gradient into the trench was present at this location.
- When the groundwater elevation in piezometer T-4B (566.44 ft. AMSL) is compared to the groundwater elevation in monitoring well MW-1 (569.34 ft. AMSL), which is located outside of the IT and in close proximity to array T-4, it is clear that an inward hydraulic gradient into the trench was present at this location.
- When the observed depth of piezometer T-5B (564.11 ft. AMSL) is compared to the groundwater elevation in monitoring well NP-22A (569.42 ft. AMSL), which is located outside of the IT and in close proximity to array T-5, it is clear that an inward hydraulic gradient into the trench was present at this location.
- When the groundwater elevation in piezometer T-6B (566.71 ft. AMSL) is compared to the groundwater elevation in monitoring well SP-3 (568.93 ft. AMSL), which is located outside of the IT and in close proximity to array T-6, it is clear that an inward hydraulic gradient into the trench was present at this location.
- When the observed depth of piezometer T-7B (565.81 ft. AMSL) is compared to the groundwater elevations in monitoring wells NP-44 (566.10 ft. AMSL), NP-51 (572.97 ft. AMSL), and NP-42 (570.49 ft. AMSL), which are located outside of the IT and in close proximity to array T-7, it is clear that an inward hydraulic gradient into the trench was present at this location.
- When the observed depth of piezometer T-11B (566.22 ft. AMSL) is compared to the groundwater elevation in piezometer T-11A (569.63 ft. AMSL), which is located directly outside of the IT, it is clear that an inward hydraulic gradient into the trench was present at this array.

2.2.1 Hydraulic Containment at the T-2 Piezometer Cluster

During the October 2008 semiannual hydraulic monitoring event at the Site, non-aqueous phase liquid (NAPL) was observed in the T-2A piezometer.

In December 2008, GSH submitted a letter to the NYSDEC detailing 1) the discovery of NAPL presence in T-2A, and 2) the investigation activities that were conducted to identify the cause of the NAPL presence. GSH and the NYSDEC agreed that GSH would continue to pump the NAPL from the T-2A location and monitor hydraulic conditions weekly at T-2A and surrounding wells to demonstrate a continued inward gradient towards the IT in this area as indicated by a lower groundwater elevation in T-2A than monitoring wells farther outside of the IT than T-2A (P-1-96 and NP-27).

Based on the 2011 results demonstrating consistent hydraulic containment and extended periods without NAPL presence, it was recommended in the 2011 Periodic Review Report (PRR) that biweekly pumping of T-2A and weekly hydraulic monitoring be reduced in frequency to quarterly pumping of T-2A and quarterly hydraulic monitoring of the selected wells. GSH continued to monitor the NAPL presence at piezometer T-2A through biweekly pumping of T-2A and weekly hydraulic monitoring at the select wells shown in Table 2.4, until approval for modification of the program was received on May 11, 2012. Following approval from the NYSDEC, the frequency of monitoring was changed to quarterly. In the 2015 PRR, GSH indicated that NAPL extraction at piezometer T-2A had been impractical and unnecessary for the past 3 years, and, as such, recommended that quarterly NAPL pumping at T-2A and the associated quarterly hydraulic monitoring of the selected wells proximate to T-2A be discontinued. In a letter dated July 12, 2016, the NYSDEC approved reducing the frequency of NAPL pumping at T-2A from quarterly to annually. This change was implemented in 2018. In the 2017 PRR, GSH recommended that the quarterly hydraulic monitoring at piezometer T-2A and nearby wells be reduced from quarterly to semiannually, as consistent hydraulic containment (inward gradient) had been demonstrated in the vicinity of the T-2A piezometer cluster since 2012. In a letter dated June 4, 2018, the NYSDEC approved this recommendation. This change was implemented immediately following receipt of the letter, with the November 2018 hydraulic monitoring event for the select wells around T-2A representing the first semiannual event.

During 2021, no NAPL was removed from the T-2A piezometer (see Table 2.3) as the thickness was insufficient to allow for pumping. Table 2.4 presents the groundwater elevations observed during the semiannual (March and August) hydraulic monitoring at T-2A and surrounding monitoring wells, as well as the groundwater elevations observed on September 8 in the select wells gaged (refer to Section 2.2). Groundwater elevations in these wells and

piezometers from the March 24 and August 25, 2021 monitoring events are shown on Figures 2.3 and 2.4, respectively. The groundwater elevations observed in the select wells and piezometers remeasured on September 8 are shown independently on Figure 2.4. As indicated in Section 2.2, an inward gradient into the trench was present at piezometer array T-2 during both semiannual monitoring events.

2.3 Groundwater Quality Monitoring

Groundwater quality monitoring at the Site consists of seven monitoring wells (NP-22A, NP-23, NP-27, P-32A, NP-35, NP-44, and NP-46) sampled annually. The annual groundwater sampling event was conducted in April 2021. Four of the seven monitoring wells (NP-22A, NP-27, P-32A, and NP-46) produced a sufficient volume of groundwater for sampling during this event. Wells NP-23, NP-35, and NP-44 did not yield sufficient groundwater to either purge prior to sampling or sample after purging and, therefore, were considered "dry". Purge records for this event are presented in Appendix B.

Groundwater samples were submitted to the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory ALS Environmental (ALS) located in Rochester, New York for analysis for the following analytes/parameters:

Targeted Organic Compounds	Reporting Limit (RL) (µg/L)	Method Detection Limit (MDL) (µg/L)
Benzene	1	0.20
Chlorobenzene	1	0.20
Toluene	1	0.20
2-Chlorotoluene	1	0.20
1,2-Dichlorobenzene	1	0.20
1,4-Dichlorobenzene	1	0.20
1,2,3-Trichlorobenzene	1	0.25
1,2,4-Trichlorobenzene	1	0.34
Total Recoverable Phenolics	5	2.9
TOC	1,000	500

Notes: µg/L- micrograms per liter

In addition to the above analytes, measurements of pH, temperature, and specific conductivity were conducted and documented in the field by the sampling team. The quality assurance/quality control (QA/QC) review for the sampling event is presented in Appendix C.

2.3.1 Summary of Groundwater Chemistry Results

A summary of the analytical results for the 2021 groundwater quality monitoring event is presented in Table 2.5. Volatile organic compounds (VOCs) and total recoverable phenolics were not detected above the laboratory RLs in the samples collected from the four wells sampled. As indicated in the QA/QC review in Appendix C, the laboratory reported results down to the laboratory's MDL for each analyte. These MDLs are shown in the table above. With the exception of the MDL for total recoverable phenolics, these MDLs are less than or equal to the New York State (NYS) Class GA Groundwater Standards (Class GA Groundwater Standards) set forth in the Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June 1998). The MDL for total recoverable phenolics increased from 1 µg/L to 2.9 µg/L in 2020 based on a change in laboratory guidance for MDL determination. No analyte detections less than the RL but greater than the MDL were reported. TOC concentrations were detected above the RL, but there is no NYS water quality standard for TOC. Historical groundwater data are presented in Appendix D of this report and demonstrate that the April 2021 sample results are within the historical range for the Site and that the IT continues to prevent off-Site migration of Site groundwater.

3. Groundwater Collection System and Panhandle Remediation

This section has been prepared to fulfill the requirements for the Groundwater Collection System and Panhandle Remediation Annual Report as set forth in Appendix B of the PCJ. The Operation and Maintenance (O&M) Manual, dated July 2019, provides procedures and protocols for the instrumentation, operation, maintenance, and inspection of the system.

3.1 Groundwater Collection System

The groundwater collection system consists of an 8,300-foot long groundwater IT, one lateral trench that extends off the former plant property to the south, one lateral trench that extends off to the north of the property, three lift stations, and a main collection pump station (Figure 1.1). The IT creates a closed-loop groundwater sink and flow divide around the Site. Underground piping conveys collected groundwater into two aboveground steel storage tanks from which the water is pumped to an on-Site carbon treatment system. The collected water is treated by the on-Site process. After treatment with granular activated carbon (GAC), the treated water is discharged under the Site's NYSDEC State Pollutant Discharge Elimination System (SPDES) permit (No. NY0001198) to the City of North Tonawanda storm sewer system.

In 2001 and prior years, the Site's groundwater collection system consisted of the IT and a storm water collection sump. Since 2011, all collected groundwater has been recovered through the IT. Approximately 28.0 million gallons of groundwater from the IT were collected, treated, and discharged in 2021 compared to 28.6 million gallons in 2020. The volume of water treated and discharged was reported to the NYSDEC in the monthly NYSDEC SPDES Discharge Monitoring Reports (DMRs). No NAPL was collected in the decanter in 2021.

A lateral drain is present and runs from the bedding of the City of North Tonawanda storm sewer located in Walck Road to trench manhole MH-4+20.2. This lateral is designed to drain the sewer bedding into the IT system to capture any chemistry present in the bedding.

Semiannual inspections of each of the trench manholes and NAPL collectors were performed on May 17 and July 19, 2021. The inspection results are included in Appendix E.

Inspection of the treatment system carbon beds and groundwater collection system is conducted on a monthly basis. The inspections conducted in 2021 show that the treatment system carbon bed and the groundwater collections system are functioning as designed.

3.2 Panhandle Remediation

Prior to 2014, the panhandle monitoring program consisted of a quarterly visual verification of the condition of revegetated areas including evidence of vegetative stress, subsidence, development of drainage features, and ponding. In 2014, the inspections changed from quarterly to semiannual as recommended in the 2013 PRR. This report was approved by NYSDEC in a letter dated September 22, 2014. The inspections were conducted on June 24, 2021 and October 10, 2021. The inspection forms for 2021 are included in Appendix E.

In addition, historical panhandle construction activities completed in accordance with the OM&M Upgrades Site Drainage Improvement Work Plan (CRA, August 2012) have resulted in changes to pitch and drainage in the northeast corner of the Site. In the fall of 2014, additional work activities associated with the OM&M upgrades were completed at the Site, which addressed sedimentation, surface ponding, and erosion at various locations along the periphery of the engineered wetland and eastern drainage ditch. Vegetation is plentiful, native species of wetland/forestland plants are colonizing the area, and there are no obvious symptoms of stress. In addition to the native colonization, native trees and shrubs were planted in the areas surrounding the engineered wetlands and along

the access road on the east side of the panhandle area. The ditch culverts are in good condition, and there is good accessibility to monitoring wells.

4. Site Activities

The activities and repairs performed in 2021 are summarized in the sections below. The activities are grouped into four categories: IT Maintenance, Monitoring Well/Piezometer Maintenance, Process, and Non-Process. Process Activities are activities that influenced the treatment system for the Site; Non-Process Activities are activities performed on Site during the year that had no impact on the treatment system for the Site.

4.1 IT Maintenance

The semiannual inspections of the trench manholes, which were performed on May 17, 2021 and July 19, 2021, verified that no appreciable sediment buildup was occurring within the IT. Inspection forms are included in Appendix E.

4.2 Well Maintenance and Replacement

Well inspections conducted during June and August 2020 indicated that repairs were required at several wells and piezometers at the Site. These repairs were completed on April 6 and 7, 2021 by Earth Dimensions, Inc. (EDI), as summarized below. A photographic log of these repairs is included in Appendix F.

- The cap on well NP-15 has been observed to be close to the J-plug. As a precaution, the top portion of the protective outer casing was removed, including the well cap, to gain access to the riser. Approximately 1.5 inches were cut off of the top of the riser and then the top portion of the protective outer casing was welded back on. The elevations of the top of riser and ground surface were resurveyed on June 22, 2021.
- The top of the riser on piezometer T-11C was observed to be corroded. The inside of the flush-mount road box was cleaned out and then approximately 1.5 inches were cut off of the top of the riser. The top of riser elevation was resurveyed on June 22, 2021.
- The riser on well P-6A was observed to be bent. Soil at the well was excavated to approximately 2 feet below ground surface (ft. bgs) and the well riser was cut off below the bend. A new piece of riser (stick-up) was then compression-coupled to the existing riser and the excavation filled with concrete. The elevations of the new top of riser and ground surface were surveyed on June 22, 2021.
- The riser on well P-13 was observed to be bent. It was discovered that the riser had broken off at approximately 12 to 16 inches bgs. The soil at the well was excavated to beneath the break and a new piece of riser (stick-up) was compression-coupled to the existing riser and the excavation filled with concrete. The elevations of the new top of riser and ground surface were surveyed on June 22, 2021.
- The casing on well P-29 was observed to be bent near the ground surface. Soil at the well was excavated to approximately 2 ft. bgs and the riser was cut below the bend. A new piece of riser (stick-up) was then compression-coupled to the existing riser and the excavation filled with concrete. The elevations of the new top of riser and ground surface were surveyed on June 22, 2021.
- Well P-27 was obstructed at a depth of approximately 4.56 feet below the top of riser. It was discovered that a compression coupling had broken at approximately 18 inches bgs and the well had partially filled with sediment. Soil at the well was excavated to beneath the broken compression coupling and a new compression coupling was installed. The riser (stick-up) was then re-installed and sediment was flushed out of the well. The water and sediment were containerized in a 55-gallon drum for disposal. The excavation was then filled with concrete. The elevations of the top of riser and ground surface were resurveyed on June 22, 2021.

All soil excavated at the wells to facilitate the repairs was staged on-site for off-site disposal. The soil was disposed as nonhazardous at Allied Waste Niagara Falls Landfill in Niagara Falls, New York on July 27, 2021.

Well inspections conducted in July 2021 indicated that additional repairs were required at several wells and piezometers. These repairs were completed on October 6, 2021 by EDI, as summarized below. A photo log of the repairs is included in Appendix F.

- The hasp on well NP-8 was observed to be broken, preventing the well from locking. A new locking 6-inch protective casing was installed on this well.
- A hole was observed in the riser on well P-16 at ground surface. A permanent repair was not able to be completed at the time of the repair mobilization due to flooded conditions at the well. A temporary plug was affixed to the hole. This riser will be repaired in 2022 when conditions allow.
- The top of the riser on piezometer T-11B was observed to be corroded. Approximately 3 inches were cut off the top of the riser. The top of riser on this piezometer will be resurveyed in 2022.

Routine maintenance performed included repairing locks and replacing J-plugs.

4.3 Process Activities

Activities that were performed during 2021 related to the Site's collection and treatment process are listed below:

- Performed preventative maintenance on Site equipment throughout the year
- Replaced the carbon in both sacrificial carbon beds and in two of the three main carbon beds
- Replaced sand filter media
- Tested all heat tracing to ensure operational before winter
- Transported hazardous waste generated at the Site for off-Site for disposal

The tracking of hazardous waste is performed by regulated hazardous waste manifests. A summary of the Site’s annual hazardous waste generation is reported to the NYSDEC in the Annual Hazardous Waste Report. The Annual Hazardous Waste Report summarizes the quantities, transporters, and disposal methods.

A total of 47,989 pounds of hazardous waste was generated from Site activities in 2021. The waste materials were sent off Site for disposal or regeneration, in accordance with applicable laws and regulations, as follows:

- Spent Carbon: A total of 46,935 pounds of spent carbon was shipped to Evoqua Water Technologies LLC (PAD987270725) for regeneration.
- Soil/Debris: A total of 1,054 pounds of soil/debris, consisting of personal protective equipment (PPE), miscellaneous debris, and filters was shipped to Veolia ES Technical Solutions LLC (TXD000838896) for incineration.

4.4 Non-Process Activities

Activities that were performed on Site during the year that were not part of the collection and/or treatment process are as follows:

- Performed Site beautification and maintenance of shrubs and bushes around the Treatment Process Building
- Mowed grassed areas
- Performed annual backflow preventer inspection
- Performed fence maintenance and repairs
- Removed downed tree branches
- Performed maintenance on the heating and cooling system

5. Conclusions

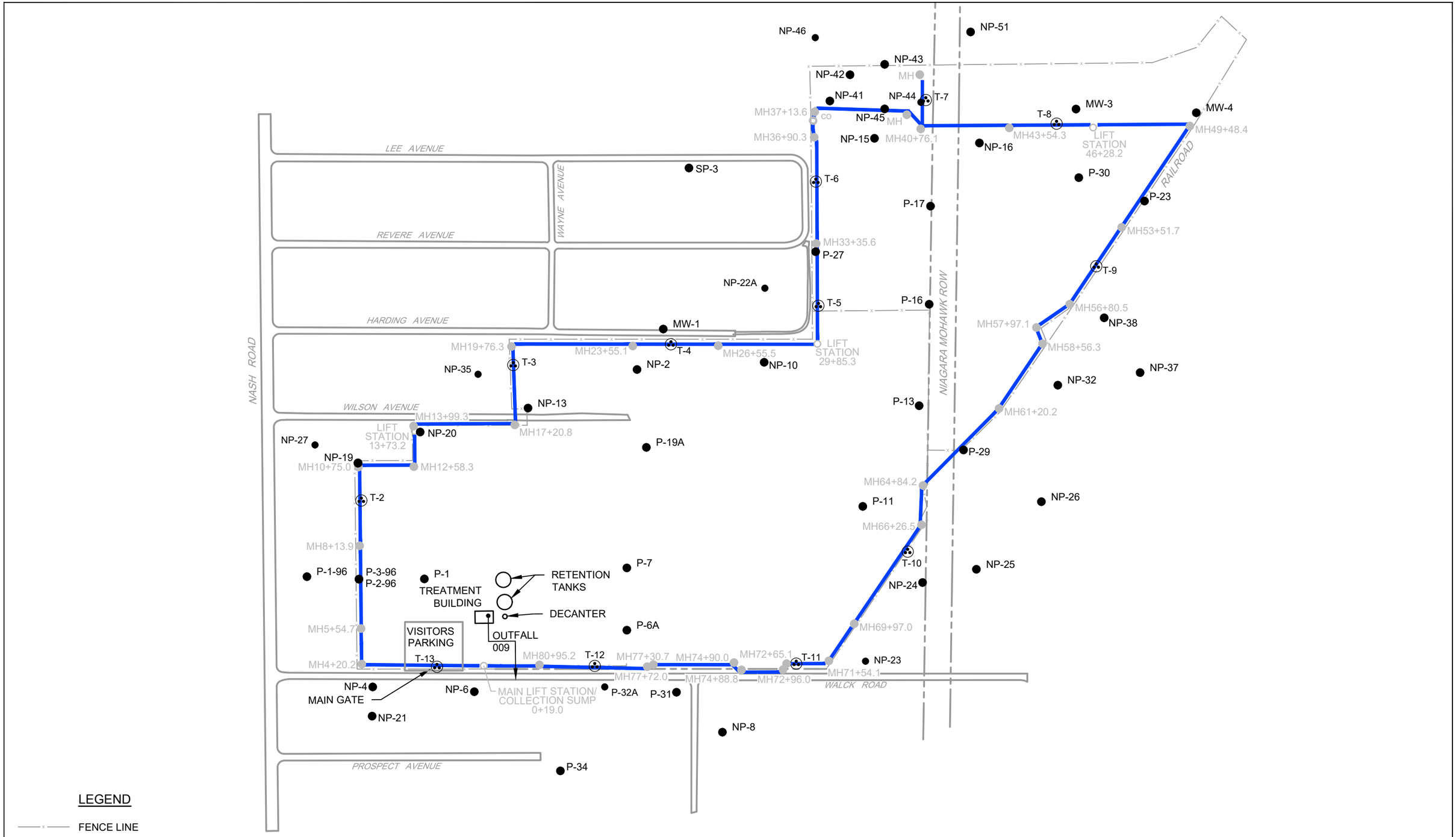
5.1 Summary

The purpose and primary design objective of the IT is to capture and collect groundwater that could otherwise migrate off the Site and to capture and collect groundwater located outside the Site by creating a hydraulic gradient toward the trench. Approximately 28.0 million gallons of groundwater from the IT were collected, treated, and discharged in 2021. The 2021 groundwater contours and measured water levels at the piezometer clusters indicate that an inward gradient to the IT is being maintained. Therefore, the purpose and primary objective of the IT are being met.

The post-IT groundwater monitoring program is conducted to collect the hydraulic and groundwater chemical data necessary to evaluate the effectiveness of the IT and long-term trends in groundwater chemistry in selected monitoring wells. The hydraulic data collected in 2021 indicate that the IT is functioning effectively. The chemical groundwater data collected in 2021 demonstrate that the IT continues to intercept impacted groundwater and prevent it from migrating off the Site.

The analytical results from the 2021 groundwater monitoring event showed no detectable concentrations of VOCs or total recoverable phenolics above the laboratory MDLs. Historical groundwater data demonstrate that the April 2021 sample results are within the historical range for the Site and that the IT continues to prevent off-Site migration of Site groundwater.

In 2021, the NAPL presence at piezometer T-2A was monitored through an annual measurement and semiannual water level rounds at select wells to demonstrate an inward gradient in the vicinity of T-2A (as indicated by a lower groundwater elevation in T-2A than monitoring wells farther outside of the IT than T-2A). The thickness of the NAPL at T-2A in 2021 was insufficient to warrant pumping at the well. Therefore, no NAPL was removed.



LEGEND

- FENCE LINE
- INTERCEPTOR TRENCH
- MONITORING WELL
- TRENCH PIEZOMETER
- MANHOLE

0 150 300 ft

1" = 300 ft

N

GHD

GLENN SPRINGS HOLDINGS, INC.
DUREZ NORTH TONAWANDA SITE
NORTH TONAWANDA, NEW YORK

Project No. **11230176**
Date **January 2022**

SITE PLAN

FIGURE 1.1

Filename: \\ghdnet\ghd\US\Niagara Falls\Projects\S64\11230176\Digital_Design\ACAD\Figures\RPT002\11230176-GHD-0000-RPT-EN-0105_WA-002.DWG
Plot Date: 12 January 2022 8:21 AM

WATER LEVELS AT INTERCEPTOR TRENCH (IT)

MEASURED

TRENCH PIEZOMETER	A	B	C
T-2	570.00	DRY	DRY
T-3	DRY	566.74	569.08
T-4	DRY	567.01	570.13
T-5	DRY	DRY	DRY
T-6	DRY	568.10	572.43
T-7	DRY	566.61	568.02
T-8	571.51	570.86	572.03
T-9	572.75	567.94	574.45
T-10	571.45	567.74	570.19
T-11	DRY	DRY	570.81
T-12	568.32	564.01	570.37
T-13	DRY	562.16	DRY

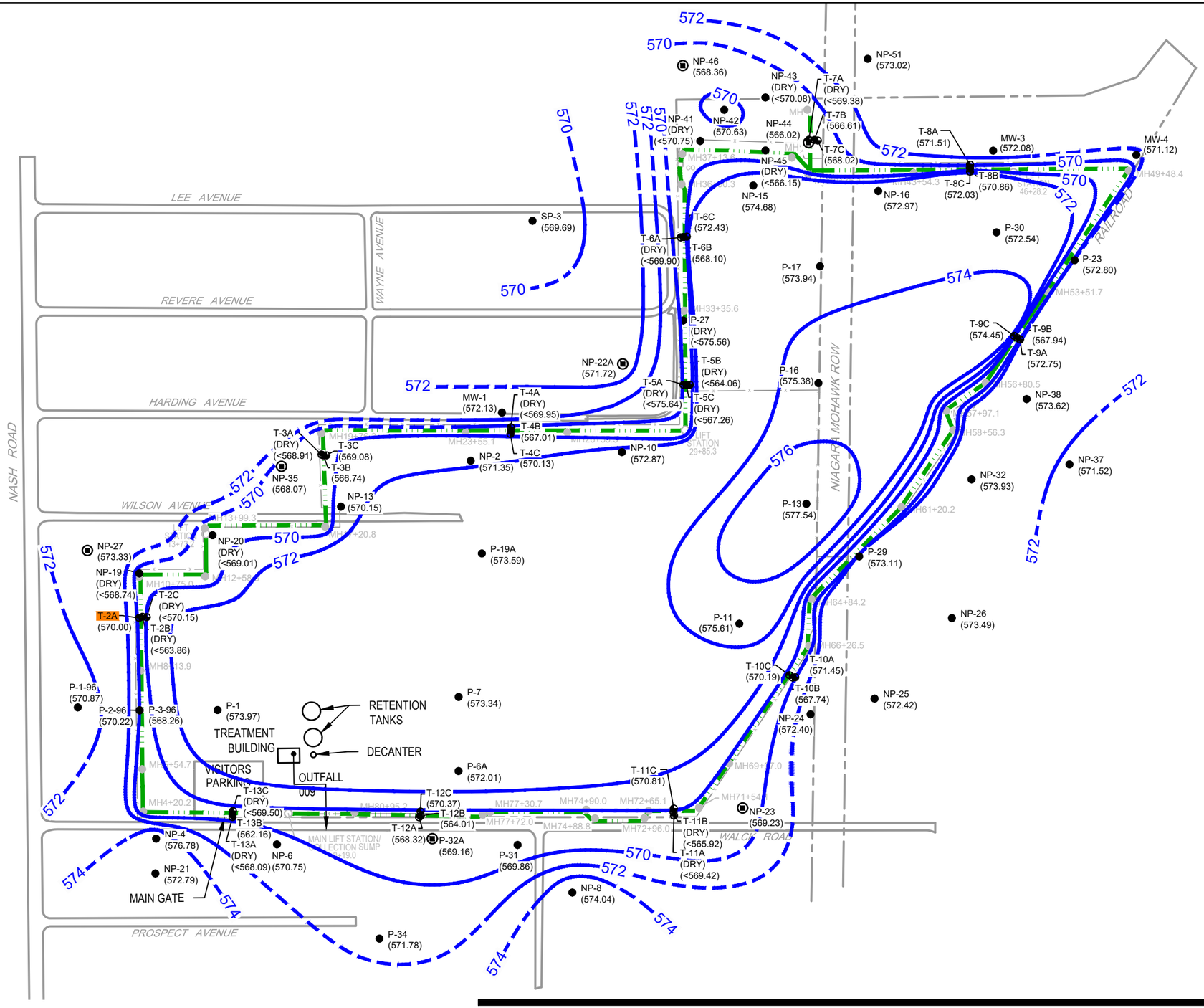
KEY

A OFFSITE SIDE OF IT
B IN IT BACKFILL
C PLANT SIDE OF IT

LEGEND

- INTERCEPTOR TRENCH INWARD GRADIENT (SEE NOTE 1)
- INTERCEPTOR TRENCH OUTWARD GRADIENT (SEE NOTE 2)
- 572 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- MONITORING WELL
- (570.87) GROUNDWATER ELEVATION (ft AMSL)
- (<563.86) DRY DEPTH ELEVATION (ft AMSL)
- PIEZOMETER
- PIEZOMETER T-2A (SEE NOTES)
- MONITORING WELL PART OF GROUNDWATER CHEMISTRY MONITORING PROGRAM
- MANHOLE

NOTES:
1. INWARD GRADIENT INDICATES WATER LEVELS AT TRENCH PIEZOMETER B (IN IT BACKFILL) IS LOWER THAN THE CORRESPONDING TRENCH PIEZOMETER A (OFFSITE SIDE OF IT).
2. OUTWARD GRADIENT INDICATES WATER LEVELS AT TRENCH PIEZOMETER B IS EQUAL TO OR HIGHER THAN THE CORRESPONDING TRENCH PIEZOMETER A.
3. PIEZOMETER T-2A IS MONITORED SEMIANNUALLY FOR NAPL PRESENCE. 16.2 OUNCES OF NAPL HAVE BEEN EXTRACTED SINCE JULY 2010.



0 150 300 ft
1" = 300 ft

N

GHD

GLENN SPRINGS HOLDINGS, INC.
DUREZ NORTH TONAWANDA SITE
NORTH TONAWANDA, NEW YORK

GROUNDWATER CONTOUR MAP - MARCH 24, 2021

Project No. **11230176**
Date **January 2022**

FIGURE 2.1

Filename: \\ghdnet\ghd\US\Niagara Falls\Projects\564\11230176\Digital_Design\ACAD\Figures\RPT002\11230176-GHD-0000-RPT-EN-0101_WA-002.DWG
Plot Date: 14 January 2022 9:18 AM

WATER LEVELS AT INTERCEPTOR TRENCH (IT)

MEASURED

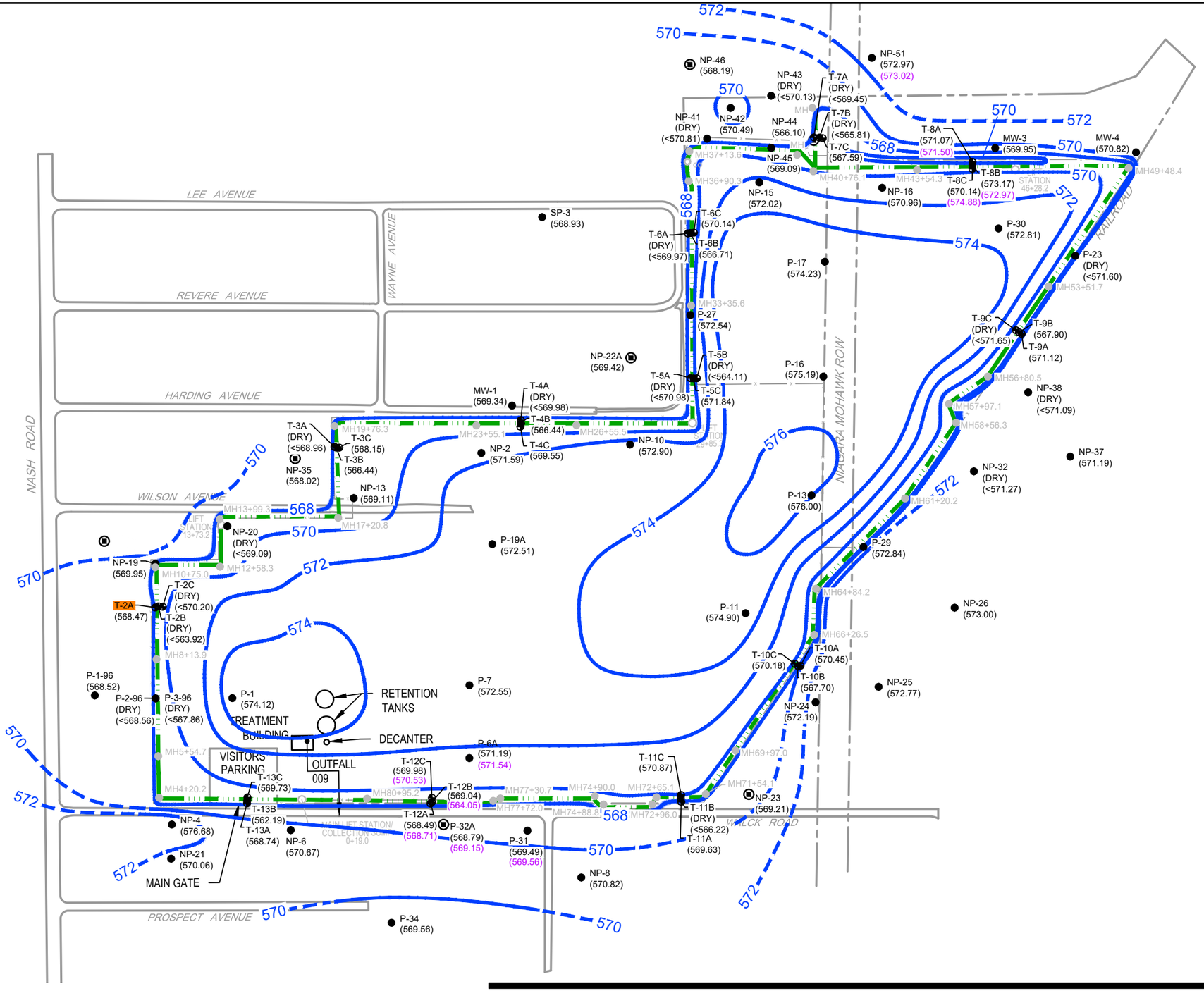
TRENCH PIEZOMETER	A	B	C
T-2	568.47	DRY	DRY
T-3	DRY	566.44	568.15
T-4	DRY	566.44	569.55
T-5	DRY	DRY	571.84
T-6	DRY	566.71	570.14
T-7	DRY	DRY	567.59
T-8	571.07	573.17	570.14
T-9	571.12	567.90	DRY
T-10	570.45	567.70	570.18
T-11	569.63	DRY	570.87
T-12	568.49	569.04	569.98
T-13	568.74	562.19	569.73

KEY

A OFFSITE SIDE OF IT
B IN IT BACKFILL
C PLANT SIDE OF IT

LEGEND

- INTERCEPTOR TRENCH INWARD GRADIENT (SEE NOTE 1)
- INTERCEPTOR TRENCH OUTWARD GRADIENT (SEE NOTE 2)
- 572 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- MONITORING WELL
- (569.34) GROUNDWATER ELEVATION (ft AMSL)
- (<569.09) DRY DEPTH ELEVATION (ft AMSL)
- (568.71) GROUNDWATER ELEVATION (ft AMSL) MEASURED ON SEPTEMBER 8, 2021
- PIEZOMETER
- PIEZOMETER T-2A (SEE NOTES)
- MONITORING WELL PART OF GROUNDWATER CHEMISTRY MONITORING PROGRAM
- MANHOLE



NOTES:

1. INWARD GRADIENT INDICATES WATER LEVELS AT TRENCH PIEZOMETER B (IN IT BACKFILL) IS LOWER THAN THE CORRESPONDING TRENCH PIEZOMETER A (OFFSITE SIDE OF IT).
2. OUTWARD GRADIENT INDICATES WATER LEVELS AT TRENCH PIEZOMETER B IS EQUAL TO OR HIGHER THAN THE CORRESPONDING TRENCH PIEZOMETER A.
3. PIEZOMETER T-2A IS MONITORED SEMIANNUALLY FOR NAPL PRESENCE. 16.2 OUNCES OF NAPL HAVE BEEN EXTRACTED SINCE JULY 2010.

GHD

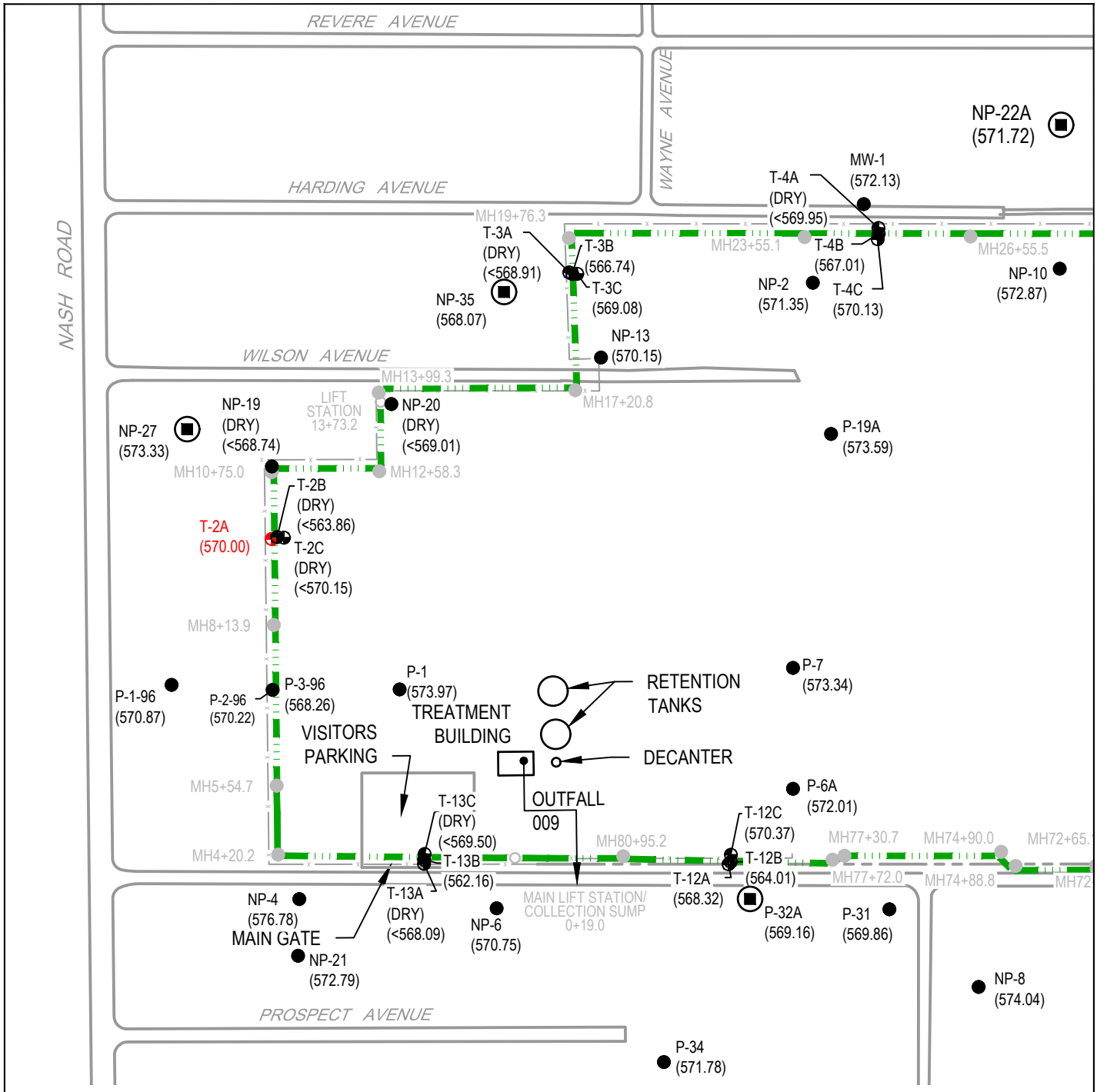
GLENN SPRINGS HOLDINGS, INC.
DUREZ NORTH TONAWANDA SITE
NORTH TONAWANDA, NEW YORK

GROUNDWATER CONTOUR MAP - AUGUST 25, 2021

Project No. **11230176**
Date **January 2022**

FIGURE 2.2

Filename: N:\US\Niagara Falls\Projects\564\11230176\Digital_Design\ACAD\Figures\RPT002\11230176-GHD-0000-RPT-EN-0102_WA-002.DWG
Plot Date: 17 January 2022 2:01 PM



LEGEND

- INTERCEPTOR TRENCH INWARD GRADIENT (SEE NOTE 1)
- MONITORING WELL USED IN SEMIANNUAL HYDRAULIC MONITORING OF T-2A
- MONITORING WELL PART OF GROUNDWATER CHEMISTRY MONITORING PROGRAM
- (572.79) GROUNDWATER ELEVATION (ft AMSL)
- (<568.09) DRY DEPTH ELEVATION (ft AMSL)
- PIEZOMETER T-2A WHERE NAPL IS PRESENT
- MANHOLE
- PIEZOMETER

NOTE:
1. WATER LEVELS AT TRENCH PIEZOMETERS B (IN IT BACKFILL) ARE LOWER THAN THE CORRESPONDING TRENCH PIEZOMETER A (OFFSITE SIDE OF IT). INDICATING AN INWARD GRADIENT.

0 125 250 ft
1" = 250 ft

N

GHD

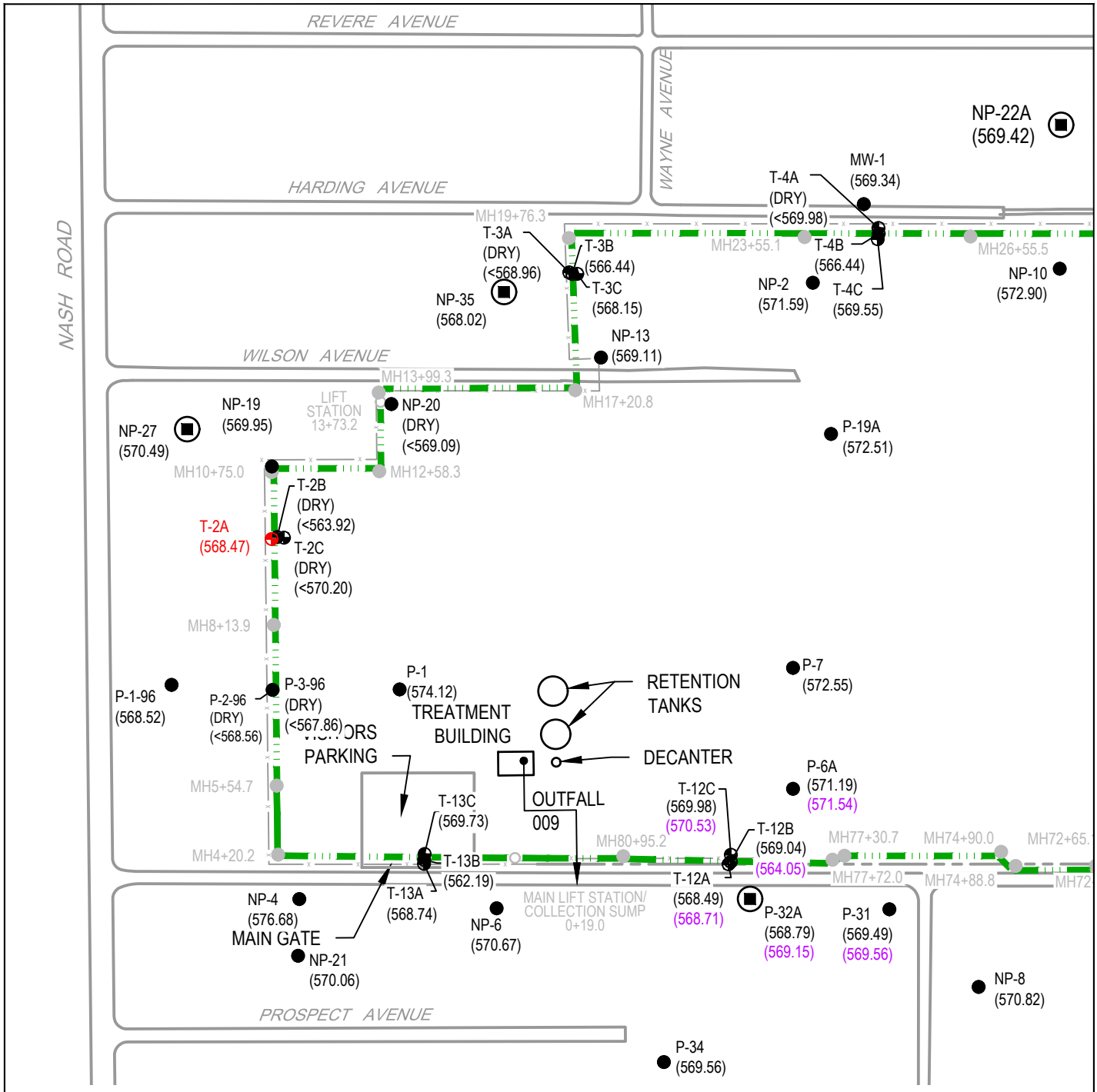
GLENN SPRINGS HOLDINGS, INC.
DUREZ NORTH TONAWANDA SITE
NORTH TONAWANDA, NEW YORK

GROUNDWATER ELEVATIONS NEAR T-2A - MARCH 24, 2021

Project No. **11230176**
Date **January 2022**

FIGURE 2.3

Filename: \\ghdnet\ghd\US\Niagara Falls\Projects\564\11230176\Digital_Design\ACAD\Figures\RPT002\11230176-GHD-0000-RPT-EN-0103_WA-002.DWG
Plot Date: 05 January 2022 2:20 PM



LEGEND

- INTERCEPTOR TRENCH INWARD GRADIENT (SEE NOTE 1)
- MONITORING WELL USED IN SEMIANNUAL HYDRAULIC MONITORING OF T-2A
- MONITORING WELL PART OF GROUNDWATER CHEMISTRY MONITORING PROGRAM
- (570.06) GROUNDWATER ELEVATION (ft AMSL)
- (<568.56) DRY DEPTH ELEVATION (ft AMSL)
- (568.71) GROUNDWATER ELEVATION (ft AMSL) MEASURED ON SEPTEMBER 8, 2021
- PIEZOMETER T-2A WHERE NAPL IS PRESENT
- MANHOLE
- PIEZOMETER

NOTE:
1. WATER LEVELS AT TRENCH PIEZOMETERS B (IN IT BACKFILL) ARE LOWER THAN THE CORRESPONDING TRENCH PIEZOMETER A (OFFSITE SIDE OF IT). INDICATING AN INWARD GRADIENT.

0 125 250 ft
1" = 250 ft

N

GHD

GLENN SPRINGS HOLDINGS, INC.
DUREZ NORTH TONAWANDA SITE
NORTH TONAWANDA, NEW YORK

GROUNDWATER ELEVATIONS NEAR T-2A - AUGUST 25, 2021

Project No. **11230176**
Date **January 2022**

FIGURE 2.4

Filename: N:\US\Niagara Falls\Projects\564\11230176\Digital_Design\ACAD\Figures\RPT002\11230176-GHD-0000-RPT-EN-0104_WA-002.DWG
Plot Date: 17 January 2022 10:21 AM

Table 2.1

2021 Precipitation Data
Durez North Tonawanda
Glenn Springs Holdings, Inc.
North Tonawanda, New York

Month	Niagara Falls (Inches of Water)	Buffalo (Inches of Water)
January	0.95	1.85
February	0.67	2.06
March	0.67	1.92
April	0.79	2.77
May	0.40	1.63
June	1.62	1.77
July	7.55	7.49
August	2.15	3.68
September	2.23	5.28
October	2.16	6.14
November	0.95	3.27
December	1.12	2.46
Total	**21.26**	**40.32**

Notes:

Data shown are for Niagara Falls and Buffalo, New York, obtained from the National Oceanic & Atmospheric Administration

Table 2.2

2021 Groundwater Elevations
Durez North Tonawanda
Glenn Springs Holdings, Inc.
North Tonawanda, New York

Well ID	Reference Elevation (ft. AMSL)	Bottom of Well Elevation (ft. AMSL)	March 24, 2021	August 25, 2021	September 8, 2021
MW-1	574.52	565.29	572.13	569.34	NM
MW-3	577.01	564.77	572.08	569.95	571.74
MW-4	576.40	564.18	571.12	570.82	NM
NP-10	579.79	567.99	572.87	572.90	NM
NP-13	576.69	567.72	570.15	569.11	NM
NP-15	579.01	568.28	574.68	572.02	NM
NP-16	578.35	570.91	572.97	570.96	Dry, <570.82
NP-19	576.66	568.86	Dry, <568.74	569.95	NM
NP-2	577.37	567.64	571.35	571.59	NM
NP-20	577.62	569.09	Dry, <569.01	Dry, <569.09	NM
NP-21	576.90	568.62	572.79	570.06	NM
NP-22A	577.63	565.69	571.72	569.42	NM
NP-23	577.92	569.03	569.23	569.21	NM
NP-24	578.97	569.14	572.40	572.19	NM
NP-25	578.33	568.35	572.42	572.77	NM
NP-26	577.71	571.13	573.49	573.00	NM
NP-27	577.22	567.37	573.33	570.49	NM
NP-32	577.25	571.45	573.93	Dry, <571.27	NM
NP-35	577.42	567.50	568.07	568.02	NM
NP-37	577.45	571.10	571.52	571.19	NM
NP-38	578.09	571.21	573.62	Dry, <571.09	NM
NP-4	577.16	567.81	576.78	576.68	NM
NP-41	577.65	570.97	Dry, <570.75	Dry, <570.81	NM
NP-42	576.58	570.15	570.63	570.49	NM
NP-43	577.08	571.12	Dry, <570.08	Dry, <570.13	NM
NP-44	576.63	570.31	566.02	566.10	NM
NP-45	576.33	572.66	Dry, <566.15	569.09	NM
NP-46	576.87	567.71	568.36	568.19	NM
NP-51	577.36	568.38	573.02	572.97	573.02
NP-6	575.21	568.87	570.75	570.67	NM
NP-8	577.20	568.37	574.04	570.82	NM
P-1	578.88	571.27	573.97	574.12	NM
P-11	580.14	569.95	575.61	574.90	NM
P-13	581.23	568.54	577.54	576.00	NM
P-16	577.11	570.99	575.38	575.19	NM
P-17	577.46	572.00	573.94	574.23	NM
P-1-96	574.93	567.85	570.87	568.52	NM
P-19A	580.01	567.83	573.59	572.51	NM
P-23	578.83	571.70	572.80	Dry, <571.60	NM
P-27	580.14	569.50	Dry, <575.56	572.54	NM
P-29	579.13	570.98	573.11	572.84	NM
P-2-96	574.57	568.49	570.22	Dry, <568.56	NM
P-30	579.28	571.28	572.54	572.81	NM
P-31	578.15	569.10	569.86	569.49	569.56
P-32A	577.67	565.70	569.16	568.79	569.15
P-34	576.12	566.39	571.78	569.56	NM
P-3-96	574.42	567.76	568.26	Dry, <567.86	NM
P-6A	577.43	566.13	572.01	571.19	571.54
P-7	577.46	567.91	573.34	572.55	NM
SP-3	575.30	565.77	569.69	568.93	NM

Table 2.2

2021 Groundwater Elevations
Durez North Tonawanda
Glenn Springs Holdings, Inc.
North Tonawanda, New York

Well ID	Reference Elevation (ft. AMSL)	Bottom of Well Elevation (ft. AMSL)	March 24, 2021	August 25, 2021	September 8, 2021
T-10A	576.64	569.73	571.45	570.45	NM
T-10B	577.29	567.69	567.74	567.70	NM
T-10C	577.00	569.71	570.19	570.18	NM
T-11A	577.10	569.56	Dry, <569.42	569.63	NM
T-11B	577.52	565.89	Dry, <565.92	Dry, <566.22	NM
T-11C	577.79	570.54	570.81	570.87	NM
T-12A	574.64	567.41	568.32	568.49	568.71
T-12B	574.92	563.81	564.01	569.04	564.05
T-12C	575.45	568.43	570.37	569.98	570.53
T-13A	575.09	568.18	Dry, <568.09	568.74	NM
T-13B	575.07	561.78	562.16	562.19	NM
T-13C	574.98	569.39	Dry, <569.50	569.73	NM
T-2A	577.86	565.94	570.00	568.47	NM
T-2B	578.73	563.90	Dry, <563.86	Dry, <563.92	NM
T-2C	578.81	570.28	Dry, <570.15	Dry, <570.20	NM
T-3A	577.71	569.02	Dry, <568.91	Dry, <568.96	NM
T-3B	577.92	564.26	566.74	566.44	NM
T-3C	578.00	565.83	569.08	568.15	NM
T-4A	579.68	569.95	Dry, <569.95	Dry, <569.98	NM
T-4B	579.72	565.62	567.01	566.44	NM
T-4C	580.17	568.21	570.13	569.55	NM
T-5A	579.40	570.75	Dry, <575.64	Dry, <570.98	NM
T-5B	578.63	564.14	Dry, <564.06	Dry, <564.11	NM
T-5C	575.74	572.41	Dry, <567.26	571.84	NM
T-6A	578.98	569.94	Dry, <569.90	Dry, <569.97	NM
T-6B	579.22	565.18	568.10	566.71	NM
T-6C	580.41	568.62	572.43	570.14	NM
T-7A	578.77	571.52	Dry, <569.38	Dry, <569.45	NM
T-7B	576.07	570.13	566.61	Dry, <565.81	NM
T-7C	576.72	571.33	568.02	567.59	NM
T-8A	575.87	571.11	571.51	571.07	571.58
T-8B	575.97	565.99	570.86	573.17	572.97
T-8C	578.82	572.78	572.03	570.14	574.88
T-9A	579.12	571.04	572.75	571.12	NM
T-9B	575.91	568.43	567.94	567.90	NM
T-9C	578.24	571.79	574.45	Dry, <571.65	NM

Notes:

ft. AMSL - Feet above mean sea level
Dry - No water found in well at time of measurement
NM - Not measured

Table 2.3

T-2A NAPL Pumping - 2008-2021
Durez North Tonawanda
Glenn Springs Holdings, Inc.
North Tonawanda, New York

Date	NAPL Extracted (ounces)	NAPL Thickness (inches)
10/29/2008	32	NM
10/30/2008	8	NM
10/31/2008	8	NM
11/3/2008	8	NM
11/11/2008	8	NM
11/18/2008	6	3
12/3/2008	6	3
12/30/2008	6	3
03/31/2009	6	3
4/14/2009	6	3
04/28/2009	6	3
05/14/2009	5	3
05/28/2009	3	2
06/10/2009	3	2
06/16/2009	3	2
06/24/2009	3	3
07/07/2009	3	3
07/15/2009	3	3
07/31/2009	1	1
08/14/2009	1	1
08/31/2009	1	1
09/08/2009	1	1
09/24/2009	1	1
10/8/2009	1	1
10/22/2009	1	1
11/5/2009	1	1
11/18/2009	1	1
11/25/2009	1	1
12/9/2009	1	1
12/23/2009	1	1
04/06/2010	1	1
04/19/2010	1	1
05/03/2010	1	1
05/19/2010	1	1
06/02/2010	1	1
06/16/2010	1	1
06/30/2010	1	1
07/13/2010	1	1
03/28/2011	1	1
10/4/2011	0.2	0.2
03/23/2012	2	0.04
06/11/2012	2	0.02
08/14/2012	2	0.02
11/06/2012	8	0.08
02/06/2013	0	1.2
05/03/2013	0	0.2
08/01/2013	0	0.3
11/06/2013	0	Trace

Table 2.3

T-2A NAPL Pumping - 2008-2021
Durez North Tonawanda
Glenn Springs Holdings, Inc.
North Tonawanda, New York

Date	NAPL Extracted (ounces)	NAPL Thickness (inches)
02/24/2014	0	0.8
05/23/2014	0	0.8
08/08/2014	0	27.0*
11/19/2014	0	0.5
02/19/2015	0	0.1
04/08/2015	0	0.17
09/02/2015	0	0.17
11/19/2015	0	0.36
02/04/2016	0	0.15
05/04/2016	0	0.11
08/12/2016	0	0.11
11/30/2016	0	Trace
02/10/2017	0	0.03
05/26/2017	0	0.09
08/02/2017	0	Trace
12/07/2017	0	Trace
11/21/2018	0	Trace
11/12/2019	0	0.24
08/05/2020	0	0.48
08/25/2021	0	Trace
Total NAPL Removed:	**158.2 ounces**	

Notes:

NAPL	- Non-Aqueous Phase Liquid
*	-NAPL thickness represents an outlier reading with possible measurement error
NM	-Not measured

Table 2.4

2021 T-2A NAPL Presence - Hydraulic Monitoring
Durez North Tonawanda
Glenn Springs Holdings, Inc.
North Tonawanda, New York

	Groundwater Elevations		
Well ID	**March 24, 2021**	**August 25, 2021**	**September 8, 2021**
NP-13	570.15	569.11	NM
NP-19	Dry, <568.74	569.95	NM
NP-20	Dry, <569.01	Dry, <569.09	NM
NP-27	573.33	570.49	NM
NP-35	568.07	568.02	NM
NP-4	576.78	576.68	NM
P-1	573.97	574.12	NM
P-1-96	570.87	568.52	NM
P-2-96	570.22	Dry, <568.56	NM
P-3-96	568.26	Dry, <567.86	NM
T-12A	568.32	568.49	568.71
T-12B	564.01	569.04	564.05
T-12C	570.37	569.98	570.53
T-13A	Dry, <568.09	568.74	NM
T-13B	562.16	562.19	NM
T-13C	Dry, <569.50	569.73	NM
T-2A	570.00	568.47	NM
T-2B	Dry, <563.86	Dry, <563.92	NM
T-2C	Dry, <570.15	Dry, <570.20	NM
T-3A	Dry, <568.91	Dry, <568.96	NM
T-3B	566.74	566.44	NM
T-3C	569.08	568.15	NM

Notes:

- Elevations shown are in feet above mean sea level
- Dry - No water found in well at time of measurement
- NAPL - Non-Aqueous Phase Liquid
- NM - Not measured

Table 2.5

2021 Groundwater Chemistry Monitoring Analytical Results
Durez North Tonawanda
Glenn Springs Holdings, Inc.
North Tonawanda, New York

Parameter [1]	Groundwater Standard [2]	Units	Reporting Limit	Sample Location: NP-22A [3] Sample ID: NP-22A-0421 Sample Date: 4/14/2021	NP-22A [3] NP-70-0421 4/14/2021 (Duplicate)	NP-27 NP-27-0421 4/14/2021	NP-46 NP-46-0421 4/14/2021	P-32A P-32A-0421 4/14/2021
Volatile Organic Compounds								
1,2,3-Trichlorobenzene	5	µg/L	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5	µg/L	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	3	µg/L	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	3	µg/L	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chlorotoluene	5	µg/L	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	1	µg/L	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	5	µg/L	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
General Chemistry								
Phenolics (total)	0.001	mg/L	0.0050	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Total organic carbon (TOC)	-	mg/L	1.0	2.0	2.3	2.0	2.5	2.2
Field Parameters								
Temperature, field	-	Deg C	-	8.1	8.1	7.6	9.7	9.9
pH, field	6.5-8.5	s.u.	-	7.18	7.18	7.69	8.69	7.40
Conductivity, field	-	mS/cm	-	5.05	5.05	0.85	1.06	4.85

Notes:

(1) - Monitoring wells and compounds are in accordance with Appendix B, Durez Partial Consent Judgement; except analyses for Total Recoverable Phenolics were reported as Phenols in February 1984
(2) - Groundwater standards are NYS Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998
(3) - NP-22A was installed in November 1993, approximately 10 feet from the former location of NP-22
µg/L - Micrograms per liter
mg/L - Milligrams per liter
s.u. - Standard Unit
mS/cm - Millisiemens per centimeter
U - Not detected at associated value
- - Not applicable

Appendices

Appendix A

2021 Institutional and Engineering Controls Certification Form

NEW YORK ST ATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Remediation
625 Broadway, 11th Floor, Albany, NY 12233-7020
P: (518)402-9543 | F: (518)402-9547
www.dec.ny.gov

11/16/2021

Joseph Branch
Project Manager
OCC/Glenn Springs Holdings, Inc.
7601 Old Channel Trail
Montague, MI 49437
Joseph_Branch@oxy.com

Re: Reminder Notice: Site Management Periodic Review Report and IC/EC Certification Submittal
Site Name: Durez Div. - Occidental Chemical Corp.
Site No.: 932018
Site Address: Walck Road/River Road
North Tonawanda, NY 14120

Dear Joseph Branch:

This letter serves as a reminder that sites in active Site Management (SM) require the submittal of a periodic progress report. This report, referred to as the Periodic Review Report (PRR), must document the implementation of, and compliance with, site-specific SM requirements. Section 6.3(b) of DER-10 *Technical Guidance for Site Investigation and Remediation* (available online at http://www.dec.ny.gov/regulations/67386.html) provides guidance regarding the information that must be included in the PRR. Further, if the site is comprised of multiple parcels, then you as the Certifying Party must arrange to submit one PRR for all parcels that comprise the site. The PRR must be received by the Department no later than **January 30, 2022**. Guidance on the content of a PRR is enclosed.

Site Management is defined in regulation (6 NYCRR 375-1.2(at)) and in Chapter 6 of DER-10. Depending on when the remedial program for your site was completed, SM may be governed by multiple documents (e.g., Operation, Maintenance, and Monitoring Plan; Soil Management Plan) or one comprehensive Site Management Plan.

A Site Management Plan (SMP) may contain one or all of the following elements, as applicable to the site: a plan to maintain institutional controls and/or engineering controls ("IC/EC Plan"); a plan for monitoring the performance and effectiveness of the selected remedy ("Monitoring Plan"); and/or a plan for the operation and maintenance of the selected remedy ("O&M Plan"). Additionally, the technical requirements for SM are stated in the decision document (e.g., Record of Decision) and, in some cases, the legal agreement directing the remediation of the site (e.g., order on consent, voluntary agreement, etc.).

When you submit the PRR (by the due date above), include the enclosed forms documenting that all SM requirements are being met. The Institutional Controls (ICs) portion of the form (Box 6) must be signed by you or your designated representative. The Engineering Controls (ECs) portion of the form (Box 7) must be signed by a Professional Engineer (PE). If you cannot certify that all SM requirements are being met, you must submit a Corrective Measures Work Plan that identifies the actions to be taken to restore compliance. The work plan must include a schedule to be approved by the Department. The Periodic Review process will not be considered complete until all necessary corrective measures are completed and all required controls are certified. Instructions for completing the certifications are enclosed.

All site-related documents and data, including the PRR, must be submitted in electronic format to the Department of Environmental Conservation. The required format for documents is an Adobe PDF file with optical character recognition and no password protection. Data must be submitted as an electronic data deliverable (EDD) according to the instructions on the following webpage:

https://www.dec.ny.gov/chemical/62440.html

Documents may be submitted to the project manager either through electronic mail or by using the Department's file transfer service at the following webpage:

https://fts.dec.state.ny.us/fts/

The Department will not approve the PRR unless all documents and data generated in support of the PRR have been submitted using the required formats and protocols.

You may contact Benjamin Mcpherson, the Project Manager, at 716-851-7220 or benjamin.mcpherson@dec.ny.gov with any questions or concerns about the site. Please notify the project manager before conducting inspections or field work. You may also write to the project manager at the following address:

New York State Department of Environmental Conservation
270 Michigan Ave

Buffalo, NY 14203-2915

Enclosures

PRR General Guidance
Certification Form Instructions
Certification Forms

ec: w/ enclosures
Benjamin Mcpherson, Project Manager
Andrea Caprio, Hazardous Waste Remediation Supervisor, Region 9

GHD - Margaret Popek - margaret.popek@ghd.com
GHD - John Pentilchuk - jpentilchuk@ghd.com
ghd - dennis hoyt - dennis.hoyt@ghd.com

The following parcel owner did not receive an ec:
Oar Marina, Llc - Parcel Owner
Occidental Chemical Corporation - Parcel Owner
National Grid - Parcel Owner

Enclosure 1

Certification Instructions

I. Verification of Site Details (Box 1 and Box 2):

Answer the three questions in the Verification of Site Details Section. The Owner and/or Qualified Environmental Professional (QEP) may include handwritten changes and/or other supporting documentation, as necessary.

II. Certification of Institutional Controls/ Engineering Controls (IC/ECs)(Boxes 3, 4, and 5)

1.1.1. Review the listed IC/ECs, confirming that all existing controls are listed, and that all existing controls are still applicable. If there is a control that is no longer applicable the Owner / Remedial Party should petition the Department separately to request approval to remove the control.

2. In Box 5, complete certifications for all Plan components, as applicable, by checking the corresponding checkbox.

3. If you cannot certify "YES" for each Control listed in Box 3 & Box 4, sign and date the form in Box 5. Attach supporting documentation that explains why the **Certification** cannot be rendered, as well as a plan of proposed corrective measures, and an associated schedule for completing the corrective measures. Note that this **Certification** form must be submitted even if an IC or EC cannot be certified; however, the certification process will not be considered complete until corrective action is completed.

If the Department concurs with the explanation, the proposed corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Department's Project Manager. Once the corrective measures are complete, a new Periodic Review Report (with IC/EC Certification) must be submitted within 45 days to the Department. If the Department has any questions or concerns regarding the PRR and/or completion of the IC/EC Certification, the Project Manager will contact you.

III. IC/EC Certification by Signature (Box 6 and Box 7**):**

If you certified "YES" for each Control, please complete and sign the IC/EC Certifications page as follows:

- For the Institutional Controls on the use of the property, the certification statement in Box 6 shall be completed and may be made by the property owner or designated representative.

- For the Engineering Controls, the certification statement in Box 7 must be completed by a Professional Engineer or Qualified Environmental Professional, as noted on the form.

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. 932018

Site Name Durez Div. - Occidental Chemical Corp.

Site Address: Walck Road/River Road Zip Code: 14120
City/Town: North Tonawanda
County: Niagara
Site Acreage: ~~73.300~~ 72.23

Walck Road = 67.45 acres
River Road = 4.78 acres

Reporting Period: December 31, 2020 to December 31, 2021

	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? Industrial	☒	☐
7. Are all ICs 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.

Signature of Owner, Remedial Party or Designated Representative Date

SITE NO. 932018 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
181.20-2-9	Oar Marina, LLC	
		Monitoring Plan O&M Plan

Site Operation, Maintenance and Monitoring (OMM) is conducted by the RP in accordance with the February 1989 Record of Decision and approved work plans. At the Inlet Site, site management includes groundwater quality monitoring, NAPL removal from extraction wells during the off-boating season and maintenance of the cover system.

Groundwater Quality Monitoring; Durez Third Stipulation and PCJ and associated minor changes to the PCJ (currently minor change number 10, Rev.2, September 1999).

DNAPL Removal; Inlet Monitoring Plan~~, Rust 1995.~~ GHD, 2019

182.06-3-19	Occidental Chemical Corporation	
		Monitoring Plan O&M Plan

Site Operation, Maintenance and Monitoring (OMM) is conducted by the RP in accordance with the February 1989 Record of Decision and approved work plans.

182.06-3-20	Occidental Chemical Corporation	
		Monitoring Plan O&M Plan

Site Operation, Maintenance and Monitoring (OMM) is conducted by the RP in accordance with the February 1989 Record of Decision and approved work plans.

182.06-3-21	Occidental Chemical Corporation	
		Monitoring Plan O&M Plan

Site Operation, Maintenance and Monitoring (OMM) is conducted by the RP in accordance with the February 1989 Record of Decision and approved work plans.

182.07-1-14	Occidental Chemical Corporation	
		Monitoring Plan O&M Plan

Record of Decision (ROD); February 25, 1989.

Appendix B, Durez Partial Consent Judgement (PCJ) "Monitoring, Operations,and Maintenance Plan" (1989) Subsequent Minor Modification #10, Rev. 2 "Minor Change to Appendix B" Monitoring, Operations, and Maintenace Plan"(September 1999) (Minor Change No. 10) groundwater monitoring.

PCJ 1992; amended by Minor Change No. 5 to allow for semi-annual reporting to the NYSDEC on quarterly hydraulic groundwater data.

Plant Site: OMM includes operation, maintenance and monitoring of the cover system, groundwater collection system, groundwater conveyance system, groundwater treatment system, groundwater monitoring wells, fencing/access points and the panhandle area.

182.32.-1-47 Occidental Chemical Corporation

Monitoring Plan
O&M Plan

Site Operation, Maintenance and Monitoring (OMM) is conducted by the RP in accordance with the February 1989 Record of Decision and approved work plans.

p/o 182.07-1-17 National Grid

Monitoring Plan
O&M Plan

Site Operation, Maintenance and Monitoring (OMM) is conducted by the RP in accordance with the February 1989 Record of Decision and approved work plans.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
181.20-2-9	Cover System Groundwater Containment Monitoring Wells Subsurface Barriers

Sheet pile wall, NAPL extraction wells and cover system.

182.06-3-19	Groundwater Treatment System Cover System Groundwater Containment Leachate Collection Fencing/Access Control

At the Plant Site, OMM includes operation, maintenance and monitoring of the cover system, groundwater collection system, groundwater conveyance system, groundwater treatment system, goundwater monitoring wells, fencing/access points and the panhandle area.

182.06-3-20	Groundwater Treatment System Cover System Groundwater Containment Leachate Collection Fencing/Access Control

At the Plant Site, OMM includes operation, maintenance and monitoring of the cover system, groundwater collection system, groundwater conveyance system, groundwater treatment system, groundwater monitoring wells,fencing/access points and the panhandle area.

182.06-3-21

Parcel	Engineering Control
	Groundwater Treatment System Cover System Groundwater Containment Leachate Collection Fencing/Access Control

At the Plant Site, OMM includes operation, maintenance and monitoring of the cover system, groundwater collection system, groundwater conveyance system, groundwater treatment system, goundwater monitoring wells, fencing/access points and the panhandle area.

182.07-1-14

Point-of-Entry Water Treatment
Monitoring Wells
Groundwater Treatment System
Cover System
Groundwater Containment
Leachate Collection
Fencing/Access Control

Soil cover system with encompassing groundwater interceptor trench and conveyance to an onsite treatment plant.

182.32.-1-47

Groundwater Treatment System
Cover System
Groundwater Containment
Leachate Collection
Fencing/Access Control

At the Plant Site, OMM includes operation, maintenance and monitoring of the cover system, groundwater collection system, groundwater conveyance system, groundwater treatment system, groundwater monitoring wells, fencing/access points and the panhandle area.

p/o 182.07-1-17

Monitoring Wells
Groundwater Treatment System
Cover System
Groundwater Containment
Leachate Collection
Fencing/Access Control

At the Plant Site, OMM includes operation, maintenance and monitoring of the cover system, groundwater collection system, groundwater conveyance system, groundwater treatment system, groundwater monitoring wells and fencing/access points. The Right Of Way (ROW) for National Grid is on site. Reporting is done by the RP; OCC/Glenn Springs Holdings, Inc.

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 Engineering Control 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
X	☐

2. For each Engineering control listed in Box 4, I certify by checking "YES" below that all of the following statements are true:

   (a) The 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
X	☐

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.

_____ _____

Signature of Owner, Remedial Party or Designated Representative Date

NT

IC CERTIFICATIONS
SITE NO. 932018

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 Joseph A. Branch (print name) at 7601 Old Channel Trail, Montague, MI 49437 (print business address),

am certifying as Remedial Party (Owner or Remedial Party)

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

Signature of Owner, Remedial Party, or Designated Representative Rendering Certification

1/28/2022
Date

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 Richard J. Snyder (print name) at 2055 Niagara Falls Boulevard, Niagara Falls, NY 14304 (print business address),

am certifying as a Professional Engineer for the Remedial Party (Owner or Remedial Party)

Signature of Professional Engineer, for the Owner or Remedial Party, Rendering Certification

Stamp (Required for PE) — No. 66242

Jan 28, 2022
Date

Enclosure 3
Periodic Review Report (PRR) General Guidance

I. Executive Summary: (1/2-page or less)
   A. Provide a brief summary of site, nature and extent of contamination, and remedial history.
   B. Effectiveness of the Remedial Program - Provide overall conclusions regarding;
      1. progress made during the reporting period toward meeting the remedial objectives for the site
      2. the ultimate ability of the remedial program to achieve the remedial objectives for the site.
   C. Compliance
      1. Identify any areas of non-compliance regarding the major elements of the Site Management Plan (SMP, i.e., the Institutional/Engineering Control (IC/EC) Plan, the Monitoring Plan, and the Operation & Maintenance (O&M) Plan).
      2. Propose steps to be taken and a schedule to correct any areas of non-compliance.
   D. Recommendations
      1. recommend whether any changes to the SMP are needed
      2. recommend any changes to the frequency for submittal of PRRs (increase, decrease)
      3. recommend whether the requirements for discontinuing site management have been met.

II. Site Overview (one page or less)
   A. Describe the site location, boundaries (figure), significant features, surrounding area, and the nature and extent of contamination prior to site remediation.
   B. Describe the chronology of the main features of the remedial program for the site, the components of the selected remedy, cleanup goals, site closure criteria, and any significant changes to the selected remedy that have been made since remedy selection.

III. Evaluate Remedy Performance, Effectiveness, and Protectiveness
   Using tables, graphs, charts and bulleted text to the extent practicable, describe the effectiveness of the remedy in achieving the remedial goals for the site. Base findings, recommendations, and conclusions on objective data. Evaluations and should be presented simply and concisely.

IV. IC/EC Plan Compliance Report (if applicable)
   A. IC/EC Requirements and Compliance
      1. Describe each control, its objective, and how performance of the control is evaluated.
      2. Summarize the status of each goal (whether it is fully in place and its effectiveness).
      3. Corrective Measures: describe steps proposed to address any deficiencies in ICECs.
      4. Conclusions and recommendations for changes.
   B. IC/EC Certification
      1. The certification must be complete (even if there are IC/EC deficiencies), and certified by the appropriate party as set forth in a Department-approved certification form(s).

V. Monitoring Plan Compliance Report (if applicable)
   A. Components of the Monitoring Plan (tabular presentations preferred) - Describe the requirements of the monitoring plan by media (i.e., soil, groundwater, sediment, etc.) and by any remedial technologies being used at the site.
   B. Summary of Monitoring Completed During Reporting Period - Describe the monitoring tasks actually completed during this PRR reporting period. Tables and/or figures should be used to show all data.
   C. Comparisons with Remedial Objectives - Compare the results of all monitoring with the remedial objectives for the site. Include trend analyses where possible.
   D. Monitoring Deficiencies - Describe any ways in which monitoring did not fully comply with the monitoring plan.
   E. Conclusions and Recommendations for Changes - Provide overall conclusions regarding the monitoring completed and the resulting evaluations regarding remedial effectiveness.

VI. Operation & Maintenance (O&M) Plan Compliance Report (if applicable)
   A. Components of O&M Plan - Describe the requirements of the O&M plan including required activities, frequencies, recordkeeping, etc.
   B. Summary of O&M Completed During Reporting Period - Describe the O&M tasks actually completed during this PRR reporting period.

C. Evaluation of Remedial Systems - Based upon the results of the O&M activities completed, evaluated the ability of each component of the remedy subject to O&M requirements to perform as designed/expected.
D. O&M Deficiencies - Identify any deficiencies in complying with the O&M plan during this PRR reporting period.
E. Conclusions and Recommendations for Improvements - Provide an overall conclusion regarding O&M for the site and identify any suggested improvements requiring changes in the O&M Plan.

VII. Overall PRR Conclusions and Recommendations
A. Compliance with SMP - For each component of the SMP (i.e., IC/EC, monitoring, O&M), summarize;
1. whether all requirements of each plan were met during the reporting period
2. any requirements not met
3. proposed plans and a schedule for coming into full compliance.
B. Performance and Effectiveness of the Remedy - Based upon your evaluation of the components of the SMP, form conclusions about the performance of each component and the ability of the remedy to achieve the remedial objectives for the site.
C. Future PRR Submittals
1. Recommend, with supporting justification, whether the frequency of the submittal of PRRs should be changed (either increased or decreased).
2. If the requirements for site closure have been achieved, contact the Departments Project Manager for the site to determine what, if any, additional documentation is needed to support a decision to discontinue site management.

VIII. Additional Guidance

Additional guidance regarding the preparation and submittal of an acceptable PRR can be obtained from the Departments Project Manager for the site.

Appendix B

Monitoring Well Purge Records

Appendix B

North Tonawanda Plant Monitoring Key 2021

Well #	Station #	Blind	MS/MSD	DEC Split	Date
NP-22A	NP-22A	X			04/14/2021
NP-23	NP-23				Dry
NP-27	NP-27				04/14/2021
NP-35	NP-35				Dry
NP-44	NP-44				Dry
NP-46	NP-46				04/14/2021
P-32A	P-32A		X		04/14/2021

Notes:

DEC - New York State Department of Environmental Conservation
MS/MSD - Matrix Spike/Matrix Spike Duplicate Sample
Blind - Field duplicate (blind) sample
Dry - Insufficient volume of water in well for sample collection

Well No.: NP-22A **Sampling Event:** 202104-WG-A **SSOW Code:** 281-402-D02 **Monitoring Well Record for Low-Flow Purging**

Project Name: **Ref. No.:** **Personnel:** David Tyran GHD **Date:** 4/14/2021 11:07:35

Monitoring Well Data

Well Diameter:	2.0	in	Constructed Well Depth:	12.5	ft	Measured Well Depth:		ft
Screen Material:	Unknown		Screen Volume:	2.0401		Water Column Length:	User Entry	ft
Screen Start Depth:	.00000	ft	Ref Point Elev:	577.63	ft			
Screen End Depth:	12.50000	ft	Static Water Depth:	5.02	ft	Measurement Type:	Screen	
Screen Length:	12.5	ft	Static Water Elev:	572.61	ft	Sampling Method:	Low flow	

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
			Precision Required								
4/14 11:13	98	5.32	0.30	8.1	5.69	3.76	1.39	7.05	-8.5	0	
4/14 11:18	84	5.36	0.34	8.0	5.70	3.58	1.39	7.19	-11.2	Error	
4/14 11:23	84	5.33	0.31	8.1	5.67	9.27	1.26	7.17	-27.8	Error	
4/14 11:28	88	5.33	0.31	8.1	5.57	4.24	1.18	7.19	-48.4	Error	
4/14 11:33	88	5.33	0.31	8.1	5.25	4.13	1.28	7.17	-45.5	Error	
4/14 11:38	88	5.33	0.31	8.2	4.98	6.02	1.75	7.30	-36.7	Error	
4/14 11:43	88	5.34	0.32	8.1	4.93	2.84	1.91	7.28	-32.2	Error	
4/14 11:48	88	5.34	0.32	8.1	5.05	3.95	1.91	7.18	-30.5	Error	

Field Parameters:									Total Volume Purged (gal):
Primary:	.32	.82	1.27	40.98	2.87	.07	-7.95		
Iron:		And	Or	Or					# of Screen Volumes:
Sulfide:	Secondary:	NA	NA	NA	3.95	NA	NA	NA	

Sample ID	Type	Matrix	Comp/Grab	DateTime	Filtered	Analysis	Container #
NP-22A-0421	N	WG	G	4/14 11:55		VOCs Phenols, TOC	4
NP-70-0421	FD	WG	G	4/14 11:55		VOCs, TOC Phenols	4

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
4/14 11:13	98	5.32	0.30	8.1	5.69	3.76	1.39	7.05	-8.5	0	

Well No.: NP-46 **Sampling Event:** 202104-WG-A **SSOW Code:** 281-402-D02 **Monitoring Well Record for Low-Flow Purging**

Project Name: **Ref. No.:** **Personnel:** David Tyran GHD **Date:** 4/14/2021 12:29:40

Monitoring Well Data

Well Diameter:	1.25	in	Constructed Well Depth:	9.0100002	ft	Measured Well Depth:		ft
Screen Material:	Unknown		Screen Volume:			Water Column Length:	User Entry	ft
Screen Start Depth:	.00000	ft	Ref Point Elev:	576.87	ft			
Screen End Depth:	9.01000	ft	Static Water Depth:	7.35	ft	Measurement Type:	Screen	
Screen Length:	9.01	ft	Static Water Elev:	569.52	ft	Sampling Method:	Low flow	

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
			Precision Required								
4/14 12:36	100	7.38	0.03	9.2	1.14	12.5	8.78	7.91	38.8	0	
4/14 12:41	100	7.38	0.03	9.3	1.12	4.26	8.33	8.6	40.8	.14	
4/14 12:46	100	7.39	0.04	9.4	1.11	1.90	8.20	8.43	41.3	.27	
4/14 12:51	100	7.39	0.04	9.4	1.09	1.30	8.21	8.77	39.8	.41	
4/14 12:56	92	7.39	0.04	9.7	1.07	0.71	8.24	8.73	40.0	Error	
4/14 13:01	100	7.39	0.04	9.7	1.06	1.21	8.08	8.69	40.6	.12	
Field Parameters:		Primary:	.04	2.08	1.55	33.85	.77	.04	1.16	Total Volume Purged (gal):	.12
Iron:				And	Or	Or					
Sulfide:		Secondary:	NA	NA	NA	1.21	NA	NA	NA	# of Screen Volumes:	

Sample ID	Type	Matrix	Comp/Grab	DateTime	Filtered	Analysis	Container #
NP-46-0421	N	WG	G	4/14 13:10		VOCs, TOC Phenols	4

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
4/14 12:36	100	7.38	0.03	9.2	1.14	12.5	8.78	7.91	38.8	0	

Well No.: P-32A **Sampling Event:** 202104-WG-A **SSOW Code:** 281-402-D02 **Monitoring Well Record for Low-Flow Purging**

Project Name: **Ref. No.:** **Personnel:** David Tyran GHD **Date:** 4/14/2021 10:03:29

Monitoring Well Data

Well Diameter:	2.0	in	Constructed Well Depth:	10.0	ft	Measured Well Depth:		ft
Screen Material:	Unknown		Screen Volume:	1.6321		Water Column Length:	User Entry	ft
Screen Start Depth:	.00000	ft	Ref Point Elev:	577.67	ft			
Screen End Depth:	10.00000	ft	Static Water Depth:	8.37	ft	Measurement Type:	Screen	
Screen Length:	10	ft	Static Water Elev:	569.3	ft	Sampling Method:	Low flow	

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
			Precision Required								
4/14 10:09	136	8.49	0.12	9.9	4.85	32.8	7.33	7.40	36.7	0	
4/14 10:14	136	8.50	0.13	9.9	4.68	12.1	5.71	7.40	34.3	Error	
4/14 10:19	128	8.50	0.13	9.8	4.62	5.89	5.04	7.33	34.1	Error	
4/14 10:24	128	8.51	0.14	9.8	4.59	2.15	4.14	7.26	32.8	Error	
4/14 10:29	128	8.50	0.13	9.8	4.59	1.07	3.45	7.17	32.3	Error	
4/14 10:34	128	8.50	0.13	9.9	4.61	0.85	3.54	7.25	31.7	Error	
4/14 10:39	128	8.50	0.13	9.9	4.64	1.42	3.43	7.34	31.8	Error	

Field Parameters:									Total Volume Purged (gal):
Primary:	.13	.68	.58	27.54	1.92	.09	1.15		
Iron:		And	Or	Or					# of Screen Volumes:
Sulfide:	Secondary:	NA	NA	NA	1.42	NA	NA	NA	

Sample ID	Type	Matrix	Comp/Grab	DateTime	Filtered	Analysis	Container #
P-32A-0421	MS/MSD	WG	G	4/14 10:45		VOCs, TOC Phenols	12

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
4/14 10:09	136	8.49	0.12	9.9	4.85	32.8	7.33	7.40	36.7	0	

Well No.: TRIPBLANK **Sampling Event:** 202104-WG-A **SSOW Code:** 281-402-D02 **Monitoring Well Record for Low-Flow Purging**

Project Name: **Ref. No.:** **Personnel:** David Tyran GHD **Date:** 4/14/2021 10:15:54

Monitoring Well Data

Well Diameter:	Constructed Well Depth:	Measured Well Depth:
Screen Material:		Water Column Length:
Screen Start Depth:	Ref Point Elev:	
Screen End Depth:	Static Water Depth:	Measurement Type:
Screen Length:	Static Water Elev:	Sampling Method:

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
			Precision Required								

Field Parameters:

Iron:	Primary:							
Sulfide:			And	Or	Or			
	Secondary:							

Total Volume Purged (gal):

Sample ID	Type	Matrix	Comp/Grab	DateTime	Filtered	Analysis	Container #
NTTRIP-041421	TB	WQ	G	4/14 10:10		VOCs	3

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged

Well No.: NP-27 **Sampling Event:** 202104-WG-A **SSOW Code:** 281-402-D02 **Monitoring Well Record for Low-Flow Purging**

Project Name: **Ref. No.:** 11225877-60-410 **Personnel:** **Date:** 4/14/2021 8:58:03 AM

Monitoring Well Data

Well Diameter:	1.25	in	Constructed Well Depth:	9.8000002	ft	Measured Well Depth:		ft
Screen Material:	Unknown		Screen Volume:			Water Column Length:	User Entry	ft
Screen Start Depth:	.00000	ft	Ref Point Elev:	577.22	ft			
Screen End Depth:	9.80000	ft	Static Water Depth:	3.95	ft	Measurement Type:	Screen	
Screen Length:	9.8	ft	Static Water Elev:	573.27	ft	Sampling Method:	Low flow	

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
			Precision Required	±% 3	±% 3	±% 10 Or ≤ 10	±% 10	± 0.1	±% 10		
4/14 9:05	76	5.78	1.83	7.8	0.89	19.9	2.60	7.37	-49.2	0	
4/14 9:10	80	6.71	2.76	7.5	0.86	3.26	0.95	7.56	-58.2	Error	
4/14 9:15	80	8.06	4.11	7.5	0.82	1.51	0.83	7.74	-57.3	Error	
4/14 9:20	80	9.00	5.05	7.6	0.85	2.22	1.41	7.69	-46.1	Error	

Field Parameters:									Total Volume Purged (gal):	.11
Iron:			And	Or	Or				# of Screen Volumes:	
Sulfide:	Secondary:	NA	NA	NA	2.22	NA	NA	NA		

Sample ID	Type	Matrix	Comp/Grab	DateTime	Filtered	Analysis	Container #
NP-27-0421	N	WG	G	4/15 8:30		VOCs, TOC Phenols	4

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
4/14 9:05	76	5.78	1.83	7.8	0.89	19.9	2.60	7.37	-49.2	0	

Well No.: NP-35 **Sampling Event:** 202104-WG-A **SSOW Code:** 281-402-D02 **Monitoring Well Record for Low-Flow Purging**

Project Name: **Ref. No.:** 11225877-60-410 **Personnel:** **Date:** 4/14/2021 9:36:24 AM

Monitoring Well Data

Well Diameter:	1.25	in	Constructed Well Depth:	7.5	ft	Measured Well Depth:	10.06	ft
Screen Material:	Unknown					Water Column Length:	.8	ft
Screen Start Depth:	.00000	ft	Ref Point Elev:	577.42	ft			
Screen End Depth:	7.50000	ft	Static Water Depth:	9.26	ft	Measurement Type:		
Screen Length:	7.5	ft	Static Water Elev:	568.16	ft	Sampling Method:		

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
			Precision Required	±% 3	±% 3	±% 10 Or ≤ 10	±% 10	± 0.1	±% 10		
4/14 9:39			-9.26	9.0	0.265	190	3.29	9.57	3.4		

Field Parameters: Primary: And Or Or

Iron:

Sulfide: Secondary:

Total Volume Purged (gal):

Sample ID	Type	Matrix	Comp/Grab	DateTime	Filtered	Analysis	Container #
NO SAMPLE	N			4/15 8:41			

Time	Pumping Rate (ml/min)	Depth to Water (ft BREF)	Drawdown from Initial Water Level (ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (gal)	No. of Well Screen Volumes Purged
4/14 9:39			-9.26	9.0	0.265	190	3.29	9.57	3.4		

Appendix C

Quality Assurance/Quality Control Report

Memorandum

May 11, 2021

To:	Joseph Branch	Ref. No.:	11223794
From:	Linda Waters	Tel:	716-297-6150
cc:	Dennis Hoyt, Darrell Crockett, Paul Fowler, Maggie Popek, Justin Adams, Paul McMahon		

Subject: **Analytical Results and Reduced Validation**
Annual Groundwater Monitoring Program
Former North Tonawanda Plant Site
North Tonawanda, New York
April 2021

1. Introduction

The following document details a reduced validation of analytical results for groundwater samples collected in support of the Annual Groundwater Monitoring Program at the former North Tonawanda, New York Plant Site in April 2021. ALS Environmental in Rochester, New York (ALS) analyzed the samples for the following:

Parameter	Methodology
Volatile Organic Compounds (VOCs)	USEPA 624.1[1]
Total Recoverable Phenolics	USEPA 420.4[2]
Total Organic Carbon (TOC)	Standard Method 5310C

A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A copy of the chain of custody form is attached.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody form, finished report forms, method blank data, recovery data from surrogate spikes, laboratory control samples (LCS), and matrix spikes, and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods and the documents entitled:

1 40 CFR Part 136 "Guidelines Establishing Test Procedures for the Analysis of Pollutants", United States Environmental Protection Agency (USEPA).

2 "Methods for Chemical Analysis of Water and Wastes", USEPA-600/4-79-220, March 1983 (with all subsequent revisions).

i) "United States Environmental Protection Agency (USEPA) National Functional Guidelines for Inorganic Superfund Data Review", USEPA 540-R-2016-001, September 2016

ii) "USEPA National Functional Guidelines for Superfund Organic Methods Data Review", USEPA 540-R-2016-002, September 2016

Items i) and ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in the analytical methods. The sample chain of custody document and analytical report were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per analytical batch. All method blank results were non-detect, demonstrating laboratory contamination was not a factor for this investigation.

4. Surrogate Spike Recoveries - Organic Analyses

In accordance with the method employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for VOC analyses were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against the laboratory control limits. All surrogate recoveries were within the laboratory acceptance criteria.

5. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per analytical batch.

5.1 Organic Analyses

The LCS contained the compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

5.2 Inorganic Analyses

The LCS contained all analytes of interest. LCS recoveries were assessed per the "Guidelines". All LCS recoveries were within the control limits, demonstrating acceptable analytical accuracy.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1.

6.1 Organic Analyses

The MS/MSD sample was spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

6.2 Inorganic Analyses

The MS/MSD sample was spiked with the analytes of interest, and the results were evaluated using the "Guidelines". All percent recoveries and RPD values were within the control limits, demonstrating acceptable analytical accuracy.

7. Field QA/QC Samples

The field QA/QC consisted of one trip blank sample and one field duplicate sample set.

7.1 Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank was submitted to the laboratory for VOC analysis. All results were non-detect for the compounds of interest.

7.2 Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample set was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent.

All field duplicate results were within acceptable agreement, demonstrating good sampling and analytical precision.

8. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. No positive analyte detections less than the reporting limit (RL) but greater than the MDL were reported. Non-detect results were presented as non-detect at the RL in Table 2.

9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.

Table 1

Sample Collection and Analysis Summary
Annual Groundwater Monitoring Program
Former North Tonawanda Plant Site
North Tonawanda, New York
April 2021

				Analysis/Parameters			
Sample ID	**Location ID**	**Collection Date**	**Collection Time**	**VOCs**	**Phenols**	**TOC**	***Comments***
NP-22A-0421	NP-22A	04/14/2021	11:55	X	X	X	
NP-70-0421	NP-22A	04/14/2021	11:55	X	X	X	Duplicate of NP-22A-0421
NP-27-0421	NP-27	04/14/2021	08:30	X	X	X	
NP-46-0421	NP-46	04/14/2021	13:10	X	X	X	
P-32A-0421	P-32A	04/14/2021	10:45	X	X	X	MS/MSD
NTTRIP-041421	-	04/14/2021	-	X			Trip Blank

Notes:

TOC - Total Organic Compounds
VOCs - Volatile Organic Compounds
MS - Matrix Spike
MSD - Matrix Spike Duplicate

Table 2

Analytical Results Summary
Annual Groundwater Monitoring Program
Former North Tonawanda Plant Site
North Tonawanda, New York
April 2021

Location ID:		NP-22A	NP-22A	NP-27	NP-46	P-32A
Sample Name:		NP-22A-0421	NP-70-0421	NP-27-0421	NP-46-0421	P-32A-0421
Sample Date:		04/14/2021	04/14/2021 Duplicate	04/14/2021	04/14/2021	04/14/2021
Parameters	**Unit**					
Volatile Organic Compounds						
1,2,3-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chlorotoluene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
General Chemistry						
Phenolics (total)	mg/L	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Total organic carbon (TOC)	mg/L	2.0	2.3	2.0	2.5	2.2

Notes:

U - Not detected at the associated reporting limit

Appendix D

Historical Groundwater Chemistry Monitoring Analytical Results

Appendix D
Table D.1

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-22/NP-22A

Parameter [1]	Groundwater Standard [2]	Units	Feb-84	Jun-93	Oct-93	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Mar-96	Jun-96
Benzene	1	µg/L	U	Dry	Dry	1 U	5 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	1 U/1 U
Toluene	5	µg/L	U	Dry	Dry	1 U	5 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	1 U/1 U
Monochlorobenzene	5	µg/L	U	Dry	Dry	1 U	5 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	1 U/1 U
2-Chlorotoluene	5	µg/L	U	Dry	Dry	1 U	5 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	1 U/1 U
1,4-Dichlorobenzene	3	µg/L	U	Dry	Dry	1 U	5 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	1 U/1 U
1,2-Dichlorobenzene	3	µg/L	U	Dry	Dry	1 U	5 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	1 U/1 U
1,2,4-Trichlorobenzene	5	µg/L	U	Dry	Dry	1 U	5 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	1 U/1 U
1,2,3-Trichlorobenzene	5	µg/L	U	Dry	Dry	1 U	5 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	1 U/1 U
Total Targeted Organics	NA	µg/L	0	Dry	Dry	0	0	0	0/0	0/0	0/0	0/0
Total Recoverable Phenolics	1	µg/L	1	Dry	Dry	15	13	9	5 U/5 U	5 U/5 U	5 U/5 U	5 U/5 U
TOC	NA	mg/L	4	Dry	Dry	7.4	3.5	4.6 U	6.0/4.6	3.6/3.6	2.7/3.0	2.2/2.0
pH	6.5 - 8.5	S.U.	6.6	Dry	Dry	7.5	6.92	6.63	7.55	7.75	6.69	7.88
Conductivity	NA	mS/cm	1,500	Dry	Dry	758	682	804	944	536	906	568
Temperature	NA	Celsius	3	Dry	Dry	6.4	5.6	20.6	16.2	5.0	4.4	16.1

			Sep-96	Dec-96	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98	Jun-98	Sep-98	Dec-98
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry	1 U	Dry
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry	1 U	Dry
Monochlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry	1 U	Dry
2-Chlorotoluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry	1 U	Dry
1,4-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry	1 U	Dry
1,2-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry	1 U	Dry
1,2,4-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry	1 U	Dry
1,2,3-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry	1 U	Dry
Total Targeted Organics	NA	µg/L	0	0	0	0	0	0	0	Dry	0	Dry
Total Recoverable Phenolics	1	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	Dry	5 U	Dry
TOC	NA	mg/L	14	3.7 J	5.3	1.4	3.2	2.7	1.6	Dry	74.8	Dry
pH	6.5 - 8.5	S.U.	6.61	7.48	7.33	7.46	7.32	7.8	7.1	Dry	7.32	Dry
Conductivity	NA	mS/cm	680	890	900	860	1100	950	790	Dry	850	Dry
Temperature	NA	Celsius	15.5	7.9	5.1	14.4	13.8	7.2	5.0	Dry	16.2	Dry

Appendix D
Table D.1

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-22/NP-22A

Parameter [1]	Groundwater Standard [2]	Units	Mar-99	Jun-99	Sep-99	Dec-99	Apr-00	May-01	Apr-02	May-03	May-04	Jul-05
Benzene	1	µg/L	1 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1.00 U	1.0 U
Toluene	5	µg/L	1 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1.00 U	1.0 U
Monochlorobenzene	5	µg/L	1 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1.00 U	1.0 U
2-Chlorotoluene	5	µg/L	1 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1.00 U	1.0 U
1,4-Dichlorobenzene	3	µg/L	1 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1.00 U	1.0 U
1,2-Dichlorobenzene	3	µg/L	1 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1.00 U	1.0 U
1,2,4-Trichlorobenzene	5	µg/L	1 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1.00 U	1.0 U
1,2,3-Trichlorobenzene	5	µg/L	1 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1.00 U	1.0 U
Total Targeted Organics	-	µg/L	0	0	Dry	0	0	0	0	0	0	0
Total Recoverable Phenolics	1	µg/L	**6 J**	**13**	Dry	**9**	5 U	5 U	**239**	**7.66**	5 U	**29**
TOC	-	mg/L	2.6 U	2.78	Dry	2.28	2.9	5.1	4.6	3.8	4.9	3.7
pH	6.5 - 8.5	S.U.	**4.68**	**6.24**	Dry	**6.4**	**5.82**	**6.31**	7.46	6.58	6.99	7.08
Conductivity	-	mS/cm	600	800	Dry	8090	765	820	937	561	920	72.5
Temperature	-	Celsius	6.2	11.2	Dry	10	5.5	10.4	8	6.8	10.3	11

			Aug-06	Jun-07	Aug-08	Apr-09	May-10	May-11	Apr-12	Apr-13	Apr-14	Apr-15
Benzene	1	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Monochlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chlorotoluene	5	µg/L	1.0 U	0.32 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	3	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	3	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Targeted Organics	NA	µg/L	0	0.32	0	0	0	0	0	0	0	0
Total Recoverable Phenolics	1	µg/L	10 U	10 U	10 U	10U	**34**	**12**	10 U	0.01	**14**	10 U
TOC	NA	mg/L	2.9	3.4	2.8	2.02	3.5	2.7	2.8	2.4	2.4	1.6
pH	6.5 - 8.5	S.U.	6.96	6.82	6.78	7.89	8.14	6.95	5.73	7.28	7.28	7.05
Conductivity	NA	mS/cm	712	960	1041	10180	1030	902	944	1.242	1.242	0.78
Temperature	NA	Celsius	15.4	10.3	16.1	9.33	9.98	9.51	9.87	7.84	7.84	9.8

Appendix D
Table D.1

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-22/NP-22A

Parameter [1]	Groundwater Standard [2]	Units	Apr-16	Apr-17	Apr-18	Apr-19	May-20	Apr-21
Benzene	1	µg/L	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U
Toluene	5	µg/L	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U
Monochlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U
2-Chlorotoluene	5	µg/L	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U
1,4-Dichlorobenzene	3	µg/L	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U
1,2-Dichlorobenzene	3	µg/L	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U
1,2,4-Trichlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U
1,2,3-Trichlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U
Total Targeted Organics	NA	µg/L	0	0	0/0	0/0	0/0	0/0
Total Recoverable Phenolics	1	µg/L	5.0 U	5.0 U	5.0 U/5.0 U	5.0 U/5.0 U	5.0 U/5.0 U	5.0 U/5.0 U
TOC	NA	mg/L	10.5	3.3	2.7/2.6	3.0/3.0	3.5/3.9	2.0/2.3
pH	6.5 - 8.5	S.U.	6.98	6.28	6.27	6.85	8.31	7.18
Conductivity	NA	mS/cm	0.94	0.97	1.19	1.05	1.71	5.05
Temperature	NA	Celsius	6.3	7.6	3.9	9.5	12.9	8.1

Notes:

(1) - Monitoring wells and compounds are in accordance with Appendix B, Durez Partial Consent Judgment; except analyses for Total Recoverable Phenolics were reported in Phenols in February 1984

(2) - Groundwater standards are New York State Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998

- Interceptor Trench operation began in October 1990; first full month of operation was November 1990; represented by dashed vertical line above

- NP-22A was installed in November 1993, approximately 10 feet from the former location of NP-22

Dry - Dry well or insufficient sample for analyses

J - Estimated at associated value

NA - Not analyzed or not available

S.U. - Standard Unit

TOC - Total Organic Carbon

U - Not detected at associated value

µg/L - Micrograms per liter

mS/cm - Microsiemens per centimeter

- Concentration exceeds New York State water quality standards

Appendix D
Table D.2

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-23 (Near Conrail Tracks)

Parameter [1]	Groundwater Standard [2]	Units	Sum-83	Jan-89	Dec-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95
Benzene	1	µg/L	9	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	Dry
Toluene	5	µg/L	U	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	Dry
Monochlorobenzene	5	µg/L	U	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	Dry
2-Chlorotoluene	5	µg/L	2	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	Dry
1,4-Dichlorobenzene	3	µg/L	U	4	1 U	1 U	1 U	1 U	1 U	5 U	1 U	Dry
1,2-Dichlorobenzene	3	µg/L	U	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	Dry
1,2,4-Trichlorobenzene	5	µg/L	3	1	1 U	1 U	1 U	1 U	1 U	5 U	1 U	Dry
1,2,3-Trichlorobenzene	5	µg/L	U	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	Dry
Total Targeted Organics	-	µg/L	14	5	0	0	0	0	0	0	0	Dry
Total Recoverable Phenolics	1	µg/L	I	NA	5 U	5 U	27	10	2	5 U	5 U	Dry
TOC	-	mg/L	I	NA	3	6.7	3.8	8.5	4.5	2.8	I	Dry
pH	6.5 - 8.5	S.U.	7	6.5	8.25	7.68	7.7	7.45	7.75	7	6.71	Dry
Conductivity	-	mS/cm	610	3100	486	1440	740	870	851	356	430	Dry
Temperature	-	Celsius	20	5.7	7.5	8.8	19.3	12.1	7.8	6	21.3	Dry

			Dec-95	Mar-96	Jun-96	Sep-96	Dec-96	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Monochlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorotoluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Targeted Organics	-	µg/L	0	0	0	0	0	0	0	0	0	0
Total Recoverable Phenolics	1	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TOC	-	mg/L	5.2	2.3	2.1	4.6	3.8 J	41	1.1	8.8	3.9	2.0
pH	6.5 - 8.5	S.U.	7.56	6.53	7.57	6.53	7.17	7.82	7.47	7.53	7.11	7.30
Conductivity	-	mS/cm	480	770	388	480	896	425	400	820	600	1055
Temperature	-	Celsius	5.4	3.9	16.7	16.4	7.9	5.0	15.1	16.2	8.8	6.8

Appendix D
Table D.2

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-23 (Near Conrail Tracks)

Parameter [1]	Groundwater Standard [2]	Units	Jun-98	Sep-98	Dec-98	Mar-99	Jun-99	Sep-99	Dec-99	Apr-00	May-01	Apr-02
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TOC	-	mg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Conductivity	NA	mS/cm	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

			May-03	May-04	Jul-05	Aug-06	Jun-07	Aug-08	Apr-09	May-10	May-11	Apr-12
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry	Dry	Dry	Dry
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry	Dry	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry	Dry	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry	Dry	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry	Dry	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry	Dry	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry	Dry	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry	Dry	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	0	Dry	Dry	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	10 U	Dry	Dry	Dry	Dry
TOC	NA	mg/L	Dry	Dry	Dry	Dry	Dry	18.6	Dry	Dry	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	7.74	Dry	Dry	Dry	Dry
Conductivity	NA	mS/cm	Dry	Dry	Dry	Dry	Dry	443	Dry	Dry	Dry	Dry
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	20.8	Dry	Dry	Dry	Dry

Appendix D
Table D.2

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-23 (Near Conrail Tracks)

Parameter [1]	Groundwater Standard [2]	Units	Apr-13	Apr-14	Apr-15	Apr-16	Apr-17	Apr-18	Apr-19	May-20	Apr-21
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TOC	NA	mg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Conductivity	NA	mS/cm	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Notes:

(1) - Monitoring wells and compounds are in accordance with Appendix B, Durez Partial Consent Judgment; except analyses for Total Recoverable Phenolics were reported as Phenols in February 1984

(2) - Groundwater standards are New York State Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998

- Interceptor Trench operation began in October 1990; first full month of operation was November 1990

Dry - Dry well or insufficient sample for analyses

J - Estimated at associated value

I - Data unavailable

NA - Not analyzed or not available

S.U. - Standard Unit

TOC - Total Organic Carbon

U - Not detected at associated value

µg/L - Micrograms per liter

mS/cm - Microsiemens per centimeter

[ ] - Concentration exceeds New York State water quality standards

Appendix D
Table D.3

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-27 (Wilson and Nash)

Parameter [1]	Groundwater Standard [2]	Units	Sum-83	Dec-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95
Benzene	1	µg/L	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry	1 U
Toluene	5	µg/L	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry	1 U
Monochlorobenzene	5	µg/L	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry	1 U
2-Chlorotoluene	5	µg/L	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry	1 U
1,4-Dichlorobenzene	3	µg/L	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry	1 U
1,2-Dichlorobenzene	3	µg/L	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry	1 U
1,2,4-Trichlorobenzene	5	µg/L	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry	1 U
1,2,3-Trichlorobenzene	5	µg/L	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry	1 U
Total Targeted Organics	NA	µg/L	0	0	0	0	Dry	0	0	0	Dry	0
Total Recoverable Phenolics	1	µg/L	14 U	3	5 U	5	Dry	6	5 U	5 U	Dry	5 U
TOC	NA	mg/L	4	2.4	11	2.9	Dry	5	1.6	2.6	Dry	3.4
pH	6.5 - 8.5	S.U.	6.8	7.58	7.48	6.96	Dry	7.43	7.46	6.41	Dry	7.52
Conductivity	NA	mS/cm	1,570	805	1890	840	Dry	716	546	631	Dry	555
Temperature	NA	Celsius	15	7.4	8.6	17.5	Dry	7.6	5.7	20.2	Dry	4.1

Parameter [1]	Groundwater Standard [2]	Units	Mar-96	Jun-96	Sep-96	Dec-96	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98	Jun-98
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry
Monochlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry
2-Chlorotoluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry
1,4-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry
1,2-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry
1,2,4-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry
1,2,3-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	Dry
Total Targeted Organics	NA	µg/L	0	0	0	0	0	0	0	0	0	Dry
Total Recoverable Phenolics	1	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	Dry
TOC	NA	mg/L	1.2	1.1	2.9	4.2 J	3.7	1 U	2.4	3.0	1.3	Dry
pH	6.5 - 8.5	S.U.	6.85	7.37	6.94	7.34	7.42	8.01	7.27	7.13	7.28	Dry
Conductivity	NA	mS/cm	780	600	630	990	920	910	1000	850	820	Dry
Temperature	NA	Celsius	3.9	16.9	17.8	8.7	4.5	16.1	15.4	6.2	5.9	Dry

Appendix D
Table D.3

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-27 (Wilson and Nash)

Parameter [1]	Groundwater Standard [2]	Units	Sep-98	Dec-98	Mar-99	Jun-99	Sep-99	Dec-99	Apr-00	May-01	Apr-02	May-03
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TOC	NA	mg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Conductivity	NA	mS/cm	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

			May-04	Jul-05	Aug-06	Jun-07	Aug-08	Apr-09	May-10	May-11	Apr-12	Apr-13
Benzene	1	µg/L	Dry	Dry	Dry	Dry	1.0 U	Dry	1.0 U	Dry	1.0 U	1.0 U
Toluene	5	µg/L	Dry	Dry	Dry	Dry	1.0 U	Dry	1.0 U	Dry	1.0 U	1.0 U
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	1.0 U	Dry	1.0 U	Dry	1.0 U	1.0 U
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	6.0 U	Dry	1.0 U	Dry	1.0 U	1.0 U
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	1.0 U	Dry	1.0 U	Dry	1.0 U	1.0 U
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	1.0 U	Dry	1.0 U	Dry	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	1.0 U	Dry	1.0 U	Dry	1.1	1.0 U
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	1.0 U	Dry	1.0 U	Dry	1.0 U	1.0 U
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	0	Dry	0	Dry	1.1	0
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	12 U	Dry	25U	Dry	10 U	0.01
TOC	NA	mg/L	Dry	Dry	Dry	Dry	19.9	Dry	1.5	Dry	1.9	9.4
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	6.74	Dry	NA	Dry	7.05	7.85
Conductivity	NA	mS/cm	Dry	Dry	Dry	Dry	930	Dry	NA	Dry	504	0.627
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	19.2	Dry	NA	Dry	11.52	6.9

Appendix D
Table D.3

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-27 (Wilson and Nash)

Parameter [1]	Groundwater Standard [2]	Units	Apr-14	Apr-15	Apr-16	Apr-17	Apr-18	Apr-19	May-20	Apr-21
Benzene	1	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Dry	1.0 U
Toluene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Dry	1.0 U
Monochlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Dry	1.0 U
2-Chlorotoluene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Dry	1.0 U
1,4-Dichlorobenzene	3	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Dry	1.0 U
1,2-Dichlorobenzene	3	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Dry	1.0 U
1,2,4-Trichlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Dry	1.0 U
1,2,3-Trichlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	Dry	1.0 U
Total Targeted Organics	NA	µg/L	0	0	0	0	0	0	Dry	0
Total Recoverable Phenolics	1	µg/L	**3.1 J**	10 U	5.0 U	5.0 U	5.0 U	5.0 U	Dry	5.0 U
TOC	NA	mg/L	1.6	1.0	11.3	2.4	2.5	1.6	Dry	2.0
pH	6.5 - 8.5	S.U.	7.85	7.74	7.62	6.62	7.93	6.84	Dry	7.69
Conductivity	NA	mS/cm	0.627	0.647	0.556	0.69	0.487	0.581	Dry	0.85
Temperature	NA	Celsius	6.9	6.9	5.9	6.8	5.3	7.3	Dry	7.6

Notes:

(1) - Monitoring wells and compounds are in accordance with Appendix B, Durez Partial Consent Judgment; except analyses for Total Recoverable Phenolics were reported as Phenols in February 1984

(2) - Groundwater standards are New York State Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998

- Interceptor Trench operation began in October 1990; first full month of operation was November 1990

Dry - Dry well or insufficient sample for analyses

J - Estimated at associated value

NA - Not analyzed or not available

S.U. - Standard Unit

TOC - Total Organic Carbon

U - Not detected at associated value

µg/L - Micrograms per liter

mS/cm - Microsiemens per centimeter

- Concentration exceeds New York State water quality standards

Appendix D
Table D.4

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
P-32/P-32A (Walck Road)

Parameter [1]	Groundwater Standard [2]	Units	Sum-83	Jan-89	Jun-93	Oct-93	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95
Benzene	1	µg/L	7	1	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Toluene	5	µg/L	U	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Monochlorobenzene	5	µg/L	310	25	5	**10**	1 U	1 U	1 U	5 U	1 U	1 U
2-Chlorotoluene	5	µg/L	2	U	2	1 U	1 U	1 U	1 U	5 U	1 U	1 U
1,4-Dichlorobenzene	3	µg/L	120	7	3	**12**	1 U	1 U	1 U	5 U	1 U	3 U
1,2-Dichlorobenzene	3	µg/L	82	10	3	3	1 U	1 U	1 U	5 U	1 U	1 U
1,2,4-Trichlorobenzene	5	µg/L	U	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
1,2,3-Trichlorobenzene	5	µg/L	U	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Total Targeted Organics	NA	µg/L	521	43	13	25	0	0	0	0	0	0
Total Recoverable Phenolics	1	µg/L	14 U	30	1	1	**5**	**19**	**16**	5 U	5 U	5 U
TOC	NA	mg/L	4	28	1	1	3.8	11	9.3	3.4	4.7	3.4
pH	6.5 - 8.5	S.U.	7.1	6.2	1	1	7.04	7.1	7.48	6.82	6.2	7.29
Conductivity	NA	mS/cm	1,940	100000	1	1	8120	759	6150	3830	951	12740
Temperature	NA	Celsius	20	12	1	1	20.2	6.3	10.3	8.2	18.6	20.2

Parameter	Groundwater Standard	Units	Dec-95	Mar-96	Jun-96	Sep-96	Dec-96	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Monochlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorotoluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Targeted Organics	NA	µg/L	0	0	0	0	0	0	0	0	0	0
Total Recoverable Phenolics	1	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TOC	NA	mg/L	3.4	5.4	3.4	5.7	5.2	6.2	1.9	2.5	3.9	2.3
pH	6.5 - 8.5	S.U.	7.43	6.54	7.38	6.72	6.84	7.11	7.27	7.04	6.79	7.30
Conductivity	NA	mS/cm	5,310	4910	2460	2810	8120	3000	6200	4700	6200	5200
Temperature	NA	Celsius	6.9	4.4	16.1	16.9	11.3	6.2	15.1	17.7	10.9	7.2

Appendix D
Table D.4

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
P-32/P-32A (Walck Road)

Parameter [1]	Groundwater Standard [2]	Units	Jun-98	Sep-98	Dec-98	Mar-99	Jun-99	Sep-99	Dec-99	Apr-00	May-01	Apr-02
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Monochlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorotoluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Targeted Organics	NA	µg/L	0	0	0	0	0	0	0	0	0	0
Total Recoverable Phenolics	1	µg/L	5 U	5 U	5 U	5 U	**28**	**5**	**10**	5 U	5 U	**185**
TOC	NA	mg/L	3.7	76.8	4	3.0 U	3.23	1 U.0	4.39	3	4.2	2.7
pH	6.5 - 8.5	S.U.	7.34	7.18	6.9	**6.12**	6.8	-	6.86	6.78	6.97	7.65
Conductivity	NA	mS/cm	4,000	4300	4000	3000	3500	3670	3570	3700	2520	3270
Temperature	NA	Celsius	16.7	17.1	14.1	5.5	16.9	20	12.8	6.5	13.5	9.3

Parameter	Groundwater Standard	Units	May-03	May-04	Jul-05	Aug-06	Jun-07	Aug-08	Apr-09	May-10	May-11	Apr-12
Benzene	1	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U/1.0 U
Toluene	5	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U/1.0 U
Monochlorobenzene	5	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U/1.0 U
2-Chlorotoluene	5	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	0.33 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U/1.0 U
1,4-Dichlorobenzene	3	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	0.36 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U/1.0 U
1,2-Dichlorobenzene	3	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	0.23 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U/1.0 U
1,2,4-Trichlorobenzene	5	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U/1.0 U
1,2,3-Trichlorobenzene	5	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U/1.0 U
Total Targeted Organics	NA	µg/L	0	0	0	0	0.92	0	0	0	0	0/0
Total Recoverable Phenolics	1	µg/L	5 U	5 U	10 U	10 U	10 U	10 U	10 U	26 U	**79**	10 U/10 U
TOC	NA	mg/L	3.6	4.3	3.3	2.2	3.9	3.1	2.31	2.5	2	2.0/1.9
pH	6.5 - 8.5	S.U.	7.35	7.17	7.28	7.42	6.87	6.82	8.12	NA	7.23	6.96
Conductivity	NA	mS/cm	3570	4290	3110	2270	3960	4180	3210	NA	5440	3790
Temperature	NA	Celsius	8.3	12	17.1	21.5	13.1	19.2	11.16	NA	10.44	11.58

Appendix D
Table D.4

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
P-32/P-32A (Walck Road)

Parameter [1]	Groundwater Standard [2]	Units	Apr-13	Apr-14	Apr-15	Apr-16	Apr-17	Apr-18	Apr-19	May-20	Apr-21
Benzene	1	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Monochlorobenzene	5	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chlorotoluene	5	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	3	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	3	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	5	µg/L	1.00 U	1.00 U	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Targeted Organics	NA	µg/L	0	0	0	0	0/0	0	0	0	0
Total Recoverable Phenolics	1	µg/L	0.01	**4.1 J**	10 U	**3.5 J**	5 U/5 U	5.0 U	5.0 U	5.0 U	5.0 U
TOC	NA	mg/L	2.3	2.4	1.6	9.4	2.6/2.6	2.6	2.2	2.3	2.2
pH	6.5 - 8.5	S.U.	7.42	7.28	7.41	7.05	6.76	5.57	6.06	8.61	7.40
Conductivity	NA	mS/cm	3	1	2.9	3.18	3.12	4.88	4.32	4.14	4.85
Temperature	NA	Celsius	9.27	7.84	10.2	7.9	8.3	6.5	10.4	16.0	9.9

Notes:

(1) - Monitoring wells and compounds are in accordance with Appendix B, Durez Partial Consent Judgment; except analyses for Total Recoverable Phenolics were reported as Phenols in February 1984

(2) - Groundwater standards are New York State Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998

- Interceptor Trench operation began in October 1990; first full month of operation was November 1990

Dry - Dry well or insufficient sample for analyses

J - Estimated at associated value

NA - Not analyzed or not available

S.U. - Standard Unit

TOC - Total Organic Carbon

U - Not detected at associated value

µg/L - Micrograms per liter

mS/cm - Microsiemens per centimeter

- Concentration exceeds New York State water quality standards

Appendix D
Table D.5

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-35 (Harding and Wilson)

Parameter [1]	Groundwater Standard [2]	Units	Sum-83	Dec-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95
Benzene	1	µg/L	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Toluene	5	µg/L	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Monochlorobenzene	5	µg/L	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
2-Chlorotoluene	5	µg/L	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	µg/L	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	µg/L	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	µg/L	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5	µg/L	U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Total Targeted Organics	NA	µg/L	0	0	0	0	0	0	0	0	0	0
Total Recoverable Phenolics	1	µg/L	14 U	**11**	5 U	**80**	**14**	**12**	**10**	5 U	5 U	5 U
TOC	NA	mg/L	4	4	11	5.5	7	10	4.4	11	10.6	8.6
pH	6.5 - 8.5	S.U.	6.9	7.27	8.2	7.08	**6.45**	7.34	7.02	6.94	7.46	7.42
Conductivity	NA	umhos/cm	930	876	1590	920	740	825	499	694	905	696
Temperature	NA	Celsius	21	8	8.1	17.9	20	6.1	5.9	18.3	21.05	4.9

Parameter [1]	Groundwater Standard [2]	Units	Mar-96	Jun-96	Sep-96	Dec-96	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98	Jun-84
Benzene	1	µg/L	1 U	1 U	1 U/1 U	1 U	1 U	1 U	1 U/1 U	1 U	1 U/1 U	Dry
Toluene	5	µg/L	1 U	1 U	1.9/1.6 J	1 U	1 U	1 U	1 U/1 U	1 U	1 U/1 U	Dry
Monochlorobenzene	5	µg/L	1 U	1 U	1 U/1 U	1 U	1 U	1 U	1 U/1 U	1 U	1 U/1 U	Dry
2-Chlorotoluene	5	µg/L	1 U	1 U	1 U/1 U	1 U	1 U	1 U	1 U/1 U	1 U	1 U/1 U	Dry
1,4-Dichlorobenzene	3	µg/L	1 U	1 U	1 U/1 U	1 U	1 U	1 U	1 U/1 U	1 U	1 U/1 U	Dry
1,2-Dichlorobenzene	3	µg/L	1 U	1 U	1 U/1 U	1 U	1 U	1 U	1 U/1 U	1 U	1 U/1 U	Dry
1,2,4-Trichlorobenzene	5	µg/L	1 U	1 U	1 U/1 U	1 U	1 U	1 U	1 U/1 U	1 U	1 U/1 U	Dry
1,2,3-Trichlorobenzene	5	µg/L	1 U	1 U	1 U/1 U	1 U	1 U	1 U	1 U/1 U	1 U	1 U/1 U	Dry
Total Targeted Organics	NA	µg/L	0	0	1.9/1.6 J	0	0	0	0/0	0	0/0	Dry
Total Recoverable Phenolics	1	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U/5 U	5 U	5 U/5 U	Dry
TOC	NA	mg/L	2.8	2.4	4.4	4.2 J	6.2	1.6/1.7	4.0/4.2	4.2	2.5/2.4	Dry
pH	6.5 - 8.5	S.U.	6.77	7.86	6.93	7.71	7.47	7.92	7.22	**8.66**	7.20	Dry
Conductivity	NA	umhos/cm	790	596	680	1000	1000	900	1100	1000	890	Dry
Temperature	NA	Celsius	3.9	20.5	17.3	7.9	4.7	18.0	16.8	5.3	5.9	Dry

Appendix D
Table D.5

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-35 (Harding and Wilson)

Parameter [1]	Groundwater Standard [2]	Units	Sep-98	Dec-98	Mar-99	Jun-99	Sep-99	Dec-99	Apr-00	May-01	Apr-02	May-03
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	1 U	1 U	Dry	Dry	Dry
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	1.5	1 U	Dry	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	1 U	1 U	Dry	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	1 U	1 U	Dry	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	1 U	1 U	Dry	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	1 U	1 U	Dry	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	1 U	1 U	Dry	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	1 U	1 U	Dry	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	1.5	0	Dry	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	**69**	5 U	Dry	Dry	Dry
TOC	NA	mg/L	Dry	Dry	Dry	Dry	Dry	3.52	3.1	Dry	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	6.68	6.3	Dry	Dry	Dry
Conductivity	NA	umhos/cm	Dry	Dry	Dry	Dry	Dry	6863	564	Dry	Dry	Dry
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	9.8	6.7	Dry	Dry	Dry

			May-04	Jul-05	Aug-06	Jun-07	Aug-08	Apr-09	May-10	May-11	Apr-12	Apr-13
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TOC	NA	mg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Conductivity	NA	umhos/cm	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Appendix D
Table D.5

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-35 (Harding and Wilson)

Parameter [1]	Groundwater Standard [2]	Units	Apr-14	Apr-15	Apr-16	Apr-17	Apr-18	Apr-19	May-20	Apr-21
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TOC	NA	mg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Conductivity	NA	umhos/cm	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Notes:

(1) - Monitoring wells and compounds are in accordance with Appendix B, Durez Partial Consent Judgment; except analyses for Total Recoverable Phenolics were reported as Phenols in February 1984

(2) - Groundwater standards are New York State Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998

- Interceptor Trench operation began in October 1990; first full month of operation was November 1990

Dry - Dry well or insufficient sample for analyses

J - Estimated at associated value

NA - Not analyzed or not available

S.U. - Standard Unit

TOC - Total Organic Carbon

U - Not detected at associated value

µg/L - Micrograms per liter

mS/cm - Microsiemens per centimeter

- Concentration exceeds New York State water quality standards

Appendix D
Table D.6

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-44 (Near Northeast Lateral of Interceptor Trench)

Parameter [1]	Groundwater Standard [2]	Units	May-85	Dec-85	Dec-88	Jun-93	Oct-93	Dec-93	Mar-94	Jun-94	Sep-94	Dec-94
Benzene	1	µg/L	700	70	920	1 U	Dry	Dry	Dry	1 U	Dry	1 U
Toluene	5	µg/L	13	2	6	1 U	Dry	Dry	Dry	1 U	Dry	1 U
Monochlorobenzene	5	µg/L	9500	2500	14000	1 U	Dry	Dry	Dry	1 U	Dry	1 U
2-Chlorotoluene	5	µg/L	U	1	3	1 U	Dry	Dry	Dry	1 U	Dry	1 U
1,4-Dichlorobenzene	3	µg/L	2700	2900	2900	1 U	Dry	Dry	Dry	1 U	Dry	1 U
1,2-Dichlorobenzene	3	µg/L	700	990	1100	1 U	Dry	Dry	Dry	1 U	Dry	1 U
1,2,4-Trichlorobenzene	5	µg/L	31	48	39	1 U	Dry	Dry	Dry	1 U	Dry	1 U
1,2,3-Trichlorobenzene	5	µg/L	15	14	2	1 U	Dry	Dry	Dry	1 U	Dry	1 U
Total Targeted Organics	NA	µg/L	13659	6525	18970	0	Dry	Dry	Dry	0	Dry	0
Total Recoverable Phenolics	1	µg/L	1750	4650	600	NA	Dry	Dry	Dry	24	Dry	5
TOC	NA	mg/L	131	33	19	9.4	Dry	Dry	Dry	8.8	Dry	12
pH	6.5 - 8.5	S.U.	7.7	6.8	6.9	7.01	Dry	Dry	Dry	1	Dry	7.15
Conductivity	NA	umhos/cm	140	1430	NA	885	Dry	Dry	Dry	1	Dry	1234
Temperature	NA	Celsius	19	10	NA	15	Dry	Dry	Dry	1	Dry	6.5

Parameter [1]	Groundwater Standard [2]	Units	Mar-95	Jun-95	Sep-95	Dec-95	Mar-96	Jun-96	Sep-96	Dec-96	Mar-97	Jun-97
Benzene	1	µg/L	5 U	1 U	Dry	1 U	1 U	0.22 J	1 U	1 U	1 U	1 U
Toluene	5	µg/L	5 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Monochlorobenzene	5	µg/L	5 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1 U	1.9
2-Chlorotoluene	5	µg/L	5 U	1 U	Dry	1 U	1 U	1.4	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	µg/L	5 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	µg/L	5 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	µg/L	5 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5	µg/L	5 U	1 U	Dry	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Targeted Organics	NA	µg/L	0	0	Dry	0	0	1.6 J	0	0	0	0
Total Recoverable Phenolics	1	µg/L	**17**	**11**	Dry	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TOC	NA	mg/L	5.8	7.1	Dry	9.1	2.4	2.2	6.2	3.2	6.1	1.3
pH	6.5 - 8.5	S.U.	**6.06**	**6.3**	Dry	7.56	7.14	8.01	6.63	7.38	7.12	7.73
Conductivity	NA	umhos/cm	1234	868	Dry	1080	965	832	1020	1200	1000	980
Temperature	NA	Celsius	6.5	20.2	Dry	4.3	3.3	20	16.2	7.2	3.5	19.0

Appendix D
Table D.6

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-44 (Near Northeast Lateral of Interceptor Trench)

Parameter [1]	Groundwater Standard [2]	Units	Sep-97	Dec-97	Mar-98	Jun-98	Sep-98	Dec-98	Mar-99	Jun-99	Sep-99	Dec-99
Benzene	1	µg/L	Dry	1 U/1 U	1 U	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Toluene	5	µg/L	Dry	1 U/1 U	1 U	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	1 U/1 U	1 U	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	1 U/1 U	1 U	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	1 U/1 U	1 U	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	1 U/1 U	1 U	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	1 U/1 U	1 U	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	1 U/1 U	1 U	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	0/0	0	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	5 U/5 U	5 U	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TOC	NA	mg/L	Dry	3.4/3.6	1.8	Dry	Dry	Dry	Dry	Dry	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	7.18	7.10	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Conductivity	NA	umhos/cm	Dry	1000	1000	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Temperature	NA	Celsius	Dry	7.0	3.5	Dry	Dry	Dry	Dry	Dry	Dry	Dry

			Apr-00	May-01	Apr-02	May-03	May-04	Jul-05	Aug-06	Jun-07	Aug-08	Apr-09
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	0.26 J	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	0.26 J	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	0.14 J	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	0.66	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	NA	Dry
TOC	NA	mg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	NA	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	6.52	Dry
Conductivity	NA	umhos/cm	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	443	Dry
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	23.1	Dry

Appendix D
Table D.6

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-44 (Near Northeast Lateral of Interceptor Trench)

Parameter [1]	Groundwater Standard [2]	Units	May-10	May-11	Apr-12	Apr-13	Apr-14	Apr-15	Apr-16	Apr-17	Apr-18	Apr-19
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
TOC	NA	mg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Conductivity	NA	umhos/cm	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Parameter [1]	Groundwater Standard [2]	Units	May-20	Apr-21
Benzene	1	µg/L	Dry	Dry
Toluene	5	µg/L	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry
TOC	NA	mg/L	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry
Conductivity	NA	umhos/cm	Dry	Dry
Temperature	NA	Celsius	Dry	Dry

Notes:

(1) - Monitoring wells and compounds are in accordance with Appendix B, Durez Partial Consent Judgment; except analyses for Total Recoverable Phenolics were reported as Phenols in February 1984
(2) - Groundwater standards are New York State Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998
- Interceptor Trench operation began in October 1990; first full month of operation was November 1990
Dry - Dry well or insufficient sample for analyses
J - Estimated at associated value
NA - Not analyzed or not available
S.U. - Standard Unit
TOC - Total Organic Carbon
U - Not detected at associated value
µg/L - Micrograms per liter
mS/cm - Microsiemens per centimeter
- Concentration exceeds New York State water quality standards

Appendix D
Table D.7

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-46 (Northeast of Panhandle)

Parameter [1]	Groundwater Standard [2]	Units	Dec-85	Jan-89	Dec-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95
Benzene	1	µg/L	U	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry
Toluene	5	µg/L	10 U	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry
Monochlorobenzene	5	µg/L	U	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry
2-Chlorotoluene	5	µg/L	U	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry
1,4-Dichlorobenzene	3	µg/L	U	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry
1,2-Dichlorobenzene	3	µg/L	U	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry
1,2,4-Trichlorobenzene	5	µg/L	U	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry
1,2,3-Trichlorobenzene	5	µg/L	U	U	1 U	1 U	1 U	Dry	1 U	5 U	1 U	Dry
Total Targeted Organics	NA	µg/L	0	0	0	0	0	Dry	0	0	0	Dry
Total Recoverable Phenolics	1	µg/L	500 U	NA	**6**	5 U	**5**	Dry	**5**	5 U	5 U	Dry
TOC	NA	mg/L	10 U	NA	2.1	7.8	3.1	Dry	11	3.6	3.1	Dry
pH	6.5 - 8.5	S.U.	6	6.8	7.18	7.32	7.27	Dry	7.13	7	6.58	Dry
Conductivity	NA	mS/cm	1,045	11000	912	2030	990	Dry	927	650	810	Dry
Temperature	NA	Celsius	14	NA	8.3	8.1	17.4	Dry	6.9	5	16.9	Dry

Parameter	Groundwater Standard	Units	Dec-95	Mar-96	Jun-96	Sep-96	Dec-96	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	Dry	1 U	1 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	Dry	1 U	1 U
Monochlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	Dry	1 U	1 U
2-Chlorotoluene	5	µg/L	1 U	1 U	1 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	Dry	1 U	1 U
1,4-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	Dry	1 U	1 U
1,2-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	Dry	1 U	1 U
1,2,4-Trichlorobenzene	5	µg/L	1 U	1.3	1 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	Dry	1 U	1 U
1,2,3-Trichlorobenzene	5	µg/L	1 U	1.2	1 U	1 U	1 U/1 U	1 U/1 U	1 U/1 U	Dry	1 U	1 U
Total Targeted Organics	NA	µg/L	0	2.5	0	0	0/0	0/0	0/0	Dry	0	0
Total Recoverable Phenolics	1	µg/L	5 U	5 U	5 U	5 U	5 U/5 U	5 U/5 U	5 U/5 U	Dry	5 U	5 U
TOC	NA	mg/L	3.4	1.4	1.7	2.8	3.2 J/3.7 J	5.8 J/3.6 J	1 U	Dry	2.3	1.2
pH	6.5 - 8.5	S.U.	7.71	6.95	7.52	**6.28**	7.09	7.06	7.00	Dry	7.2	6.85
Conductivity	NA	mS/cm	724	870	786	830	1100	1000	1000	Dry	1000	990
Temperature	NA	Celsius	5.3	3.9	18.9	14.9	7.2	3.7	12.5	Dry	6.3	4.5

Appendix D
Table D.7

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-46 (Northeast of Panhandle)

Parameter [1]	Groundwater Standard [2]	Units	Jun-98	Sep-98	Dec-98	Mar-99	Jun-99	Sep-99	Dec-99	Apr-00	May-01	Apr-02
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1 U	Dry	Dry
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1 U	Dry	Dry
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1	Dry	Dry
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1 U	Dry	Dry
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1 U	Dry	Dry
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1 U	Dry	Dry
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1 U	Dry	Dry
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1 U	Dry	Dry
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	1	Dry	Dry
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	5 U	Dry	Dry
TOC	NA	mg/L	Dry	Dry	Dry	Dry	Dry	Dry	Dry	5.8	Dry	Dry
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	Dry	Dry	**5.52**	Dry	Dry
Conductivity	NA	mS/cm	Dry	Dry	Dry	Dry	Dry	Dry	Dry	806	Dry	Dry
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	Dry	Dry	5.8	Dry	Dry

			May-03	May-04	Jul-05	Aug-06	Jun-07	Aug-08	Apr-09	May-10	May-11	Apr-12
Benzene	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U
Toluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U
Monochlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U
2-Chlorotoluene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U
1,4-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U
1,2-Dichlorobenzene	3	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U
1,2,4-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U
1,2,3-Trichlorobenzene	5	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	1.0 U	1.0 U	1.0 U/1.0 U	1.0 U
Total Targeted Organics	NA	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	0	0	0/0	0
Total Recoverable Phenolics	1	µg/L	Dry	Dry	Dry	Dry	Dry	Dry	10 U	26 U	**9.4 J/14**	10 U
TOC	NA	mg/L	Dry	Dry	Dry	Dry	Dry	Dry	1.67	1.6	1.9/1.8	2.1
pH	6.5 - 8.5	S.U.	Dry	Dry	Dry	Dry	Dry	Dry	7.73	**8.73**	6.83	6.69
Conductivity	NA	mS/cm	Dry	Dry	Dry	Dry	Dry	Dry	1013	1045	931	960
Temperature	NA	Celsius	Dry	Dry	Dry	Dry	Dry	Dry	11.8	11.49	8.72	10.43

Appendix D
Table D.7

Groundwater Chemistry Monitoring Analytical Results
Durez Interceptor Trench
North Tonawanda, New York
NP-46 (Northeast of Panhandle)

Parameter [1]	Groundwater Standard [2]	Units	Apr-13	Apr-14	Apr-15	Apr-16	Apr-17	Apr-18	Apr-19	May-20	Apr-21
Benzene	1	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Monochlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chlorotoluene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	3	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	3	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Targeted Organics	NA	µg/L	0	0	0	0	0	0	0	0	0
Total Recoverable Phenolics	1	µg/L	0.01	**4.4 J**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
TOC	NA	mg/L	2.1	3.2	10.4	10.4	2.3	3.2	3.3	3.1	2.5
pH	6.5 - 8.5	S.U.	7.24	7.24	6.75	6.75	6.18	7.02	5.99	7.78	8.69
Conductivity	NA	mS/cm	0.888	0.888	0.87	0.87	0.85	1.00	0.96	1.00	1.06
Temperature	NA	Celsius	9.1	9.1	6.9	6.9	7.8	5.1	7.7	14.7	9.7

Notes:

(1) - Monitoring wells and compounds are in accordance with Appendix B, Durez Partial Consent Judgment; except analyses for Total Recoverable Phenolics were reported as Phenols in February 1984

(2) - Groundwater standards are New York State Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998

- Interceptor Trench operation began in October 1990; first full month of operation was November 1990

Dry - Dry well or insufficient sample for analyses

J - Estimated at associated value

NA - Not analyzed or not available

S.U. - Standard Unit

TOC - Total Organic Carbon

U - Not detected at associated value

µg/L - Micrograms per liter

mS/cm - Microsiemens per centimeter

- Concentration exceeds New York State water quality standards

Appendix E

Landfill Cap, Site Cover, and Fence Inspection and IT System Manhole and NAPL Collection Well Inspection Forms

Glenn Springs Holdings, Inc.
A subsidiary of Occidental Petroleum

Durez North Tonawanda Semiannual IT System Inspections

Date: 5/17/2021 Checked By: D. Crockett

	Manhole					NAPL Well		
Station Number	Condition	Visible Chemistry	Sediment	Water Depth	Flow Speed	NAPL	Amount Removed	Date Removed
Main Lift Station	Good	None	None	2.8'	Slow	None	None	
MH-4+20	Good	None	None	2.3"	Slow	None	None	
MH-5+54	Good	None	None	2.3"	Slow	None	None	
MH-8+13	Good	None	None	2.1"	Slow	None	None	
MH-10+75	Good	None	None	2.2"	Slow	None	None	
MH-12+58	Good	None	None	2.3"	Slow	None	None	
Lift Station #1	Good	None	None	3.2'	Slow	None	None	
MH-13+99	Good	None	None	3"	Slow	None	None	
MH-17+20	Good	None	None	3"	Slow	None	None	
MH-19+78	Good	None	None	3"	Slow	None	None	
MH-23+55	Good	None	None	3"	Slow	None	None	
MH-26_55	Good	None	None	3	Slow	None	None	
Lift Station #2	Good	None	None	2.8'	Slow	None	None	
MH-33+35	Good	None	None	3"	Slow	None	None	
MH-37+13	Good	None	None	3"	None	None	None	
MH-40+70	Good	None	None	2.5"	Slow	None	None	
MH-43+54	Good	None	Yes	2.5"	Slow	None	None	
Lift Station #3	Good	None	None	3.0'	Slow	None	None	
MH-49+48	Good	None	None	3"	Slow	None	None	
MH-53+51	Good	None	None	3"	Slow	None	None	
MH-56+60	Good	None	None	2"	Slow	None	None	
MH-57+97	Good	None	None	1"	Slow	None	None	
MH-58+56	Good	None	None	2"	Slow	None	None	
MH-61+20	Good	None	None	2"	Slow	None	None	
MH-64+84	Good	None	None	2"	Slow	None	None	
MH-66+28	Good	None	None	2"	Slow	None	None	
MH-69+97	Good	None	None	2"	Slow	None	None	
MH-71+54	Good	None	None	2"	None	None	None	
MH-72+65	Good	None	None	2"	None	None	None	
MH-72+96	Good	None	None	2"	Slow	None	None	
MH-74+68	Good	None	None	2"	Slow	None	None	
MH-74+90	Good	None	None	3"	Slow	None	None	
MH-77+39	Good	None	None	2"	Slow	None	None	
MH-77+72	Good	None	None	2"	Slow	None	None	
MH-80+95	Good	None	None	1"	Slow	None	None	

Glenn Springs Holdings, Inc.
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Durez North Tonawanda Semiannual IT System Inspections

Date: 7/19/2021 Checked By: D. Crockett

	Manhole					NAPL Well		
Station Number	Condition	Visible Chemistry	Sediment	Water Depth	Flow Speed	NAPL	Amount Removed	Date Removed
Main Lift Station	Good	None	None	3.0'	Slow	None	None	
MH-4+20	Good	None	None	2.5"	Slow	None	None	
MH-5+54	Good	None	None	2.5"	Slow	None	None	
MH-8+13	Good	None	None	2"	Slow	None	None	
MH-10+75	Good	None	None	2.5"	Slow	None	None	
MH-12+58	Good	None	None	2.5"	Slow	None	None	
Lift Station #1	Good	None	None	2.9'	Slow	None	None	
MH-13+99	Good	None	None	2.0"	Slow	None	None	
MH-17+20	Good	None	None	2.5"	Slow	None	None	
MH-19+78	Good	None	None	2.5"	Slow	None	None	
MH-23+55	Good	None	None	3"	Slow	None	None	
MH-26_55	Good	None	None	3"	Slow	None	None	
Lift Station #2	Good	None	None	3.4'	Slow	None	None	
MH-33+35	Good	None	None	3"	Slow	None	None	
MH-37+13	Good	None	None	3"	None	None	None	
MH-40+70	Good	None	None	3"	Slow	None	None	
MH-43+54	Good	None	Yes	3"	Slow	None	None	
Lift Station #3	Good	None	None	2.8'	Slow	None	None	
MH-49+48	Good	None	None	3"	Slow	None	None	
MH-53+51	Good	None	None	3"	Slow	None	None	
MH-56+60	Good	None	None	3"	Slow	None	None	
MH-57+97	Good	None	None	2"	Slow	None	None	
MH-58+56	Good	None	None	2"	Slow	None	None	
MH-61+20	Good	None	None	2"	Slow	None	None	
MH-64+84	Good	None	None	2"	Slow	None	None	
MH-66+28	Good	None	None	1"	Slow	None	None	
MH-69+97	Good	None	None	1"	Slow	None	None	
MH-71+54	Good	None	None	1"	None	None	None	
MH-72+65	Good	None	None	1"	None	None	None	
MH-72+96	Good	None	None	1"	Slow	None	None	
MH-74+68	Good	None	None	2"	Slow	None	None	
MH-74+90	Good	None	None	3"	Slow	None	None	
MH-77+39	Good	None	None	2"	Slow	None	None	
MH-77+72	Good	None	None	2"	Slow	None	None	
MH-80+95	Good	None	None	1"	Slow	None	None	

Glenn Springs Holdings, Inc.

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SEMIANNUAL LANDFILL CAP, SITE COVER, AND FENCE INSPECTION

Site: NT Durez Plant

Date: 6/24/2021 **Weather:** 75oF

Inspector: Darrell Crockett

Inspection Item	Applicable to Site	Inspect For	
1. Landfill Cap	N	- signs of erosion (cap, ditches, swales)	Y / N
		- exposure of the HDPE Liner	Y / N
		- areas of insufficient grass coverage	Y / N
		- signs of dead/dying grass	Y / N
		- presence of washouts	Y / N
		- settlement causing ponding of water	Y / N
		- signs of slope instability	Y / N
		- signs of burrowing by animals	Y / N
		- presence of rooting trees (cap, ditches, swales)	Y / N
		- signs of poor drainage in ditches/swales	Y / N
2. Site Cover (Asphalt, Grass, Vegetation)	Y	- signs of erosion (cover, ditches, swales)	N
		- areas of insufficient asphalt, grass, vegetation coverage	N
		- signs of dead/dying grass/vegetation	N
		- presence of washouts	N
		- settlement causing ponding of water	N
		- signs of slope instability	N
		- signs of burrowing by animals	N
		- presence of rooting trees (cover, ditches, swales)	N
		- signs of poor drainage in ditches/swales	N
3. Perimeter Fence	Y	- breaches in fence	N
		- gates secure	Y
		- locks in place	Y
		- missing or illegible signage	N

Comments/Remarks **(Note: If repair/maintenance is recommended, describe its location/extent below)**

Glenn Springs Holdings, Inc.

A subsidiary of Occidental Petroleum

SEMIANNUAL LANDFILL CAP, SITE COVER, AND FENCE INSPECTION

Site: NT Durez Plant

Date: 10/10/2021 **Weather:** 76oF

Inspector: Darrell Crockett

Inspection Item	Applicable to Site	Inspect For	
1. Landfill Cap	N	- signs of erosion (cap, ditches, swales)	Y / N
		- exposure of the HDPE Liner	Y / N
		- areas of insufficient grass coverage	Y / N
		- signs of dead/dying grass	Y / N
		- presence of washouts	Y / N
		- settlement causing ponding of water	Y / N
		- signs of slope instability	Y / N
		- signs of burrowing by animals	Y / N
		- presence of rooting trees (cap, ditches, swales)	Y / N
		- signs of poor drainage in ditches/swales	Y / N
2. Site Cover (Asphalt, Grass, Vegetation)	Y	- signs of erosion (cover, ditches, swales)	N
		- areas of insufficient asphalt, grass, vegetation coverage	N
		- signs of dead/dying grass/vegetation	N
		- presence of washouts	N
		- settlement causing ponding of water	N
		- signs of slope instability	N
		- signs of burrowing by animals	N
		- presence of rooting trees (cover, ditches, swales)	N
		- signs of poor drainage in ditches/swales	N
3. Perimeter Fence	N	- breaches in fence	N
		- gates secure	Y
		- locks in place	Y
		- missing or illegible signage	N

Comments/Remarks **(Note: If repair/maintenance is recommended, describe its location/extent below)**

Appendix F

Well Repairs Photographic Log

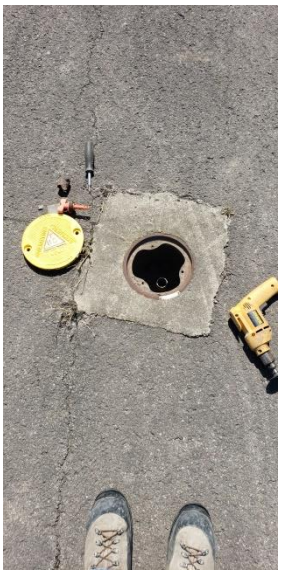
DUREZ
North Tonawanda Site
Well Repairs on April 6th & 7th, 2021
Earth Dimensions INC. Job # 17I06bl

P-6A

- Well pipe was bent: excavated soil to approximately 2 feet below ground surface and cut off well riser below bend. Then repaired with a new 4' piece of 1 ¼"black iron pipe and a metal 1 ¼"compression coupling. Placed a 6" dia. Sono-tube from 2' -1' below ground surface and then a 12" dia. Sono-tube on top of the 6" Sono-tube from 1' to ground surface and filled them with concrete, then re-installed the locking cap to complete well repair.


T-11c

- Well pipe was corroded: cleaned out inside of flush mount road box, then removed J-plug and cut off approximately 1 ½" off top of the well riser (1 ¼" black iron pipe). Re-installed J-plug and road box cover to complete well repair.




DUREZ
North Tonawanda Site
Well Repairs on April 6th & 7th, 2021
Earth Dimensions INC. Job # 17I06bl

P-13

- Well pipe was broken: at approximately 12”-16” below ground surface the 1 ½” black iron pipe well riser was broken off. Soil was excavated out down to an existing concrete pad within asphalt, well pipe was cut off flush and a 3 ½’ piece of new 1 ½” black iron pipe was installed using a 1 ½” metal compression coupling. A new 2” to 1 ½” reducing coupling and a new 2” flip top locking cap were installed. Then a 12” dia. Sono-tube 1’ deep filled with concrete to complete well repair.



NP-15

- Well pipe to close to top of protective casing unable to place cap on well: had to cut outer 3 ½” protective casing, then cut off approximately 1 ½” off top of the 1 ¼” black iron pipe well riser. Then re-installed the 3 ½” outer protective casing via welding to complete well repair.

DUREZ
North Tonawanda Site
Well Repairs on April 6th & 7th, 2021
Earth Dimensions INC. Job # 17I06bl

P-27

- Well pipe was broken: at approximately 18" below ground surface a old 1 ¼" plastic compression coupling was broken and the well partially filled with sediment. Removed concrete pad and excavated soil to approximately 18" below ground surface and removed broken plastic compression coupling and replaced it with a new 1 ¼" metal compression coupling. Then installed ½" tremi pipe and flushed sediment out of well to original installed depth using clean potable water, well was flushed until water was clear (free of sediment) all water was contained in a 55 gallon drum for disposal at on-site treatment facility. A 12" dia. Sono-tube was then installed 18" deep and filled with concrete to complete well repair.




P-29

- Well pipe was bent: excavated soil to approximately 2 feet below ground surface and cut off well riser below bend. Then repaired with a new 4' piece of 1 ¼"black iron pipe and a metal 1 ¼"compression coupling. Placed a 6" dia. Sono-tube from 2' -1' below ground surface and then a 12" dia. Sono-tube on top of the 6" Sono-tube from 1' to ground surface and filled them with concrete and re-installed the locking cap to complete well repair.




Photo 1 View of NP-8 observed on July 7, 2021 with broken hasp.

Photo 2 View of NP-8 with new locking 6-inch protective casing and concrete pad installed on October 6, 2021.

Photo 3 View of P-16 with hole in riser observed on July 1, 2021.

Photo 4 View of P-16 with temporary repair observed on October 6, 2021. A permanent repair was not able to be completed due to the saturated conditions at the well.

Photo 5 View of T-11B following removal of the top ~3 inches of corroded riser on October 6, 2021.

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