FOCUSED CORRECTIVE MEASURES STUDY

VANDEMARK CHEMICAL LOCKPORT, NEW YORK

REPORT

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1.0 INTRODUCTION

Golder Associates Inc. (Golder) under contract to SNPE Inc. (SNPE) and with the direct cooperation of the owner, VanDeMark Chemical Inc. (VDM), has prepared this Focused Corrective Measures Study (CMS) to address the coal tar residuals comprised of semi-volatile organic compounds in soil and bedrock for the creek bank area located to the south of the VanDeMark Lockport, NY facility. The facility is located in the north central sector of the City of Lockport city limits; as shown on Figure 1-1.

The New York State Department of Environmental Conservation (NYSDEC) is currently negotiating a Corrective Measures Order with VDM (as Site owner) and SNPE under the Resource Conservation and Recovery (RCRA) program to refine the criteria and schedule for the selection and implementation of appropriate corrective measures that are discussed in this report.

1.1 Background

In October 2006, sampling of the on-site groundwater monitoring wells installed in the late 1990's as part of a due diligence effort identified the presence of a significant amount of dense non-aqueous phase liquid (DNAPL) in the deeper bedrock monitoring well (MW 2D) located approximately 25 feet north of the top of the creek bank in a paved area just west of the training and men's locker room building.

Based on this finding, further visual investigation of the adjacent slope and Eighteen-Mile Creek bank area south and presumably downgradient of this well was performed. These inspections revealed visible quantities of an accumulated coal-tar like substance seeping out near the base (toe) of the cliff face and present along an approximately 100 feet length of the creek bank shoreline.

Upon this discovery and in consultation with the NYSDEC, two separate remedial efforts were undertaken in 2007 and 2008 (Benchmark, Sept. 12, 2007, Dec. 22, 2008, and May 20, 2009) to mitigate and remove the accumulated tar material that appeared to have flowed out from the toe of the slope and accumulated along the top of bedrock and intermingled within the bank sediments These removal efforts were predicated on the concept that the flow of accumulated tar had essentially ceased based on the highly weathered appearance of the accumulations. Therefore, the remedial efforts were aimed toward expeditious removal of these source materials that were exposed on the creek bank and follow-up visual monitoring of the creek bank after removal to confirm that new seeps were not occurring.

In the summer of 2009 however, a joint inspection conducted by the NYSDEC and VanDeMark Chemical revealed the presence of newly accumulated tar residuals at both the toe of the slope and on top of the clean backfill that was placed along the creek bank area previously remediated. This finding resulted in a request by the NYSDEC to perform a more detailed evaluation of the potential source, nature and extent of the tar residuals along and within the bedrock along the escarpment (creek bank) area. Specifically the NYSDEC requested the preparation of a Work Plan to characterize and better define the impacts in order to develop a more comprehensive remedial approach going forward.

During an October 14, 2009 review meeting with representatives from NYSDEC, SNPE, VanDeMark and Golder, it was agreed that attempting to further delineate the source and extent of the existing DNAPL within the overburden soils and underlying bedrock through a traditional boring investigation program would be unlikely to better characterize the extent of the impacts based on the complexity (i.e. fractured nature) of the underlying rock geology at the VanDeMark Facility and the fact that the release of the tar residuals most likely occurred more than 40 years ago. This type of investigation would also be logistically difficult to implement due to the layout and constrained access within the facility and the hazards of performing these activities in conjunction with the ongoing chemical production activities. The NYSDEC, SNPE and VanDeMark concurred that a more beneficial strategy would consist of a phased assessment of the situation.

As a result, a DNAPL Assessment and Supplemental Work Plan (December 2009) was prepared and proposed a detailed slope overburden mapping and survey to better define the slope and creek bank bedrock/overburden geology across the slope and understanding of the DNAPL transport mechanism (refer to Appendix A for a copy of this Work Plan). However, in April 2010, personnel from VanDeMark Chemical identified previously unknown solidified coal tar seeps along a steeply pitched segment of the creek bank approximately 70 feet long to the east (upstream) of the "lower" creek bank area that was the primary focus of earlier remedial efforts in 2007 and 2008.

Concurrently, new information was obtained from a VanDeMark employee of tar seep observations that had occurred approximately 15 to 20 years ago in a localized paved area northwest of Building B-4 within the VanDeMark Chemical manufacturing facility. In consultation with the NYSDEC, it was agreed that the supplemental investigation activities would be expanded to encompass additional test pits easterly along the toe of the slope and upgradient of the newly observed creek bank coal tar residuals seeps and the performance of a separate soil boring and sampling program within the VanDeMark Chemical facility centered around the area of historical coal tar seeps in the pavement near Building B-4. In both cases the goal of the expanded investigations would be to define the areal and vertical extent of coal tar residuals in both areas. The supplemental investigation results and findings are summarized in Section 3 – Nature and Extent of Contamination.

1.2 General Approach

The December 2009 DNAPL Assessment and Supplemental Work Plan Report and August 2010 Supplemental DNAPL Investigation Summary Report (refer to Appendix B), initially presented a recommendation for the interception and capture of the DNAPL residuals exiting the toe of the slope directly south of monitoring well MW-2D via a linear cut-off trench system. This approach was conceptual and intended for the lower creek bank area only. The NYSDEC requested that design details, including the location and configuration of the proposed trench, be provided as part of a remedial alternatives analysis or focused Corrective Measures Study (CMS). In addition, the NYSDEC has indicated its ultimate remedial goal is the removal of coal tar in the overburden in all areas of the Eighteen

Mile Creek slope and creek bank area and that the remedial approach proposed for the lower creek bank area also be contemplated for the upper access road area.

As noted in the November 2010 Response to Comments letter to the NYSDEC, due to the complexities and impacts that may be incurred in implementing potential remedial strategies, particularly along the upper access road area, it is the intent of SNPE and VanDeMark to describe and analyze selected alternatives that are most appropriate and pragmatic for this unique area (e.g. source removal, collection trenches, grout curtains, etc.) and evaluate them for: technical implementability; short and long term effectiveness; degree of public and environmental protection afforded; community acceptance; cost and other relevant evaluation criteria. Based on the analysis performed, a preferred remedial approach will be recommended for implementation. The selected remedial alternative will encompass all areas of the creek bank (including the previously remediated or lower creek bank area).

The information collected from previous investigations described as part of site assessments and the supplemental DNAPL assessment activities was utilized for conducting the Focused CMS of the affected Eighteen Mile Creek area. In accordance with USEPA RCRA guidance, the objectives of this Creek Bank Focused CMS are:

- Identification and development of a corrective measure alternative or alternatives, including a description of current conditions, establishment of corrective action objectives, evaluation of corrective measure technologies, and identification of the corrective measure alternative or alternatives;
- Evaluation of the corrective measure alternative or alternatives, including consideration of technical, environmental, human health, institutional issues, and cost; and
- Justification and recommendation of the corrective measure or measures, including consideration of technical, human health, and environmental issues.

1.3 Purpose and Organization

This report presents the findings and recommendations of the Focused CMS for the Eighteen Mile Creek slope and creek bank area to the south of the active manufacturing plant and administrative office building. The purpose of this Focused CMS is to:

- Evaluate the data available from recent investigation programs from the standpoint of potential risk to human health and the environment;
- Determine the need to evaluate corrective measures for impacted media based on the potential risk to human health, the environment and the corrective action criteria;
- Develop potential corrective measure alternatives and perform an evaluation of the alternatives to address clean up objectives; and
- Select a preferred corrective measure alternative based on public health, environmental, technical, institutional and cost criteria.

The first four sections of this report are organized to address the site specific issues such as the history and background of the site and the area covered by the Focused CMS, and the potential risk to the environment. These sections provide a discussion of the issues that affect the ultimate development, evaluation and selection of the proposed corrective measures alternative(s), as discussed in Section 5.

2.0 SITE INFORMATION

2.1 General Site Background

The VDM Facility is located within the Erie-Niagara Region in the western section of New York State. The VDM Facility is situated within the borders of the City of Lockport in Niagara County. The regional location of the VDM Facility is shown on Figure 1-1.

A review of historical Sanborn Fire Insurance maps and aerial photos illustrate an area encompassing the present VanDeMark Chemical operations and surrounding parcels north to Mill Street and south to Eighteen Mile Creek. The maps confirm that the Site and adjacent parcels have over a century of nearly uninterrupted industrial use. The following property ownership chronology was obtained from the review:

- From the late 1800's through the 1920s, the Site was occupied by a company alternately known as "United Industrial Fibre Co., United Indurated Fibre Co., and Fibre Corporation". The maps identified these companies as being manufacturers of fibre pipe, pails, drums, etc.
- The 1928 Sanborn Map indicates that the Fibre Corporation appears to be defunct and most buildings are labeled as vacant. Tenants that may be leasing portions of the former Fibre Corp buildings are listed as Norton Laboratories and National Lead Co.
- The 1948 Sanborn map lists the facility as "Niagara Chlorine Products Corporation".
- The 1969 Sanborn Map contains the first reference to the "VanDeMark Chemical Co." and the buildings and labeling of them remains essentially unchanged from the 1948 map.
- Aerial photographs were obtained for the years 1962, 1972, 1985, 1995 and 2006. Based on the known site history, these photos encompass the more recent ownership of the Site by the VanDeMark/VanChem group of companies.

Since the early 1950's, the principal chemical manufacturing operations at the site have primarily consisted of merchant phosgene gas and phosgene derived specialty chemicals. Ancillary activities historically and currently conducted in support of the phosgene and specialty chemicals manufacturing process include the pre-treatment and discharge of industrial wastewaters under a City of Lockport industrial users permit and the storage and off-site disposal of wastes regulated under Resource Conservation and Recovery Act (RCRA).

2.2 Surrounding Land Use

The VanDeMark Facility is located in the City of Lockport. The surrounding area is mixed urban setting consisting of industrial, commercial and some nearby residential areas. The City's total population per the 2010 United States Census Bureau is 22,279 and the population density is 2,612 per square mile, however the portion of the City that the facility is located in is one of the least populated due to geographical features and the vacant or underutilized status of many of the surrounding industrial and commercial properties. The property is zoned I-3 heavy industrial.

2.3 Focused CMS Area

The area addressed by this Focused CMS lies approximately 110 feet south of the southern fence line of the manufacturing facility and encompasses an area varying in width from approximately 20 feet to 50 feet and extending approximately 350 feet from east to west between the creek edge and the toe of the slope The Eighteen Mile Creek valley is steeply sloped and access to the Focused CMS area is restricted. The area is approximately 60 feet below the top of the escarpment where the manufacturing facility is located.

SNPE and VDM are currently negotiating a Corrective Measures Order with the NYSDEC to formally designate and address this area under the RCRA program, as well as the In-Plant coal tar residuals area that will be addressed under an ICM as previously described in Section 1.

2.4 Hydrology and Site Drainage

The Focused CMS area lies directly adjacent to and north of Eighteen Mile Creek and all surface drainage generated from the VDM manufacturing facility and the slope and bank area is generally due south via sheet flow directly into Eighteen Mile Creek which ultimately drains the entire lower escarpment area into Lake Ontario. Eighteen Mile Creek flow volume and level varies widely seasonally due to the discharge of barge canal water upstream during the spring, summer and fall months.

Eighteen Mile Creek is classified by New York State Class D for its entire length within the City of Lockport. Class D fresh surface waters are defined by the NYSDEC as being suitable for fishing. These waters are also suitable for fish, shellfish, and wildlife survival. Under the Class D classification the water quality shall be suitable for primary and secondary contact recreation, though other factors may limit use for these purposes. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery, or stream bed conditions, the waters will not support fish propagation.

2.5 Geology

Bedrock under the site was described in the 1999 Phase I/II report by Dames & Moore (Dames & Moore, 1999) as soft red-brown shale or red to gray sandstone, dipping gently to the south at 30-40 feet per mile (i.e. sub-horizontal). Bedrock descriptions were refined in the 2006 field investigation summary report by Benchmark Environmental Engineering & Science PLLC (Benchmark, Nov 30, 2006), which was associated with the installation of well MW-7D. In this borehole the uppermost bedrock underlying the site was identified as the Grimsby Sandstone, described in MW-7D as a dark red brown to grey, moderately strong, fine-grained, thinly bedded, slightly to moderately weathered intensely fractured sandstone. Also noted were occasional clay-filled horizontal fractures. Other fractures were extremely to vary narrow and partially healed, some iron-stained.

The unit underlying the Grimsby Sandstone is the Power Glen Shale, described in MW-7D as a dark gray with light to medium gray banded, horizontally bedded, very hard, shale. Also noted were clay filled horizontal fractures. These units are both part of the Lower Silurian age Medina Group. Both units are shown in cross sections of the site, shown in Figure 1-4.

The highly fractured nature of the bedrock is well exhibited in the upper portions of an outcrop along W. Jackson Street approximately ¼ mile west of the site (just SE of the Lockport sewer treatment plant), where both the Grimsby/Power Glen formations as well as the underlying Upper Ordovician aged rock are visible. Common fracture patterns in this area would consist of intersecting near-vertical fractures (often forming a characteristic “diamond” shape when viewed from above) and near horizontal fractures typically corresponding with bedding planes. These “diamond” patterns of intersecting near-vertical fractures are easily visible just beyond the south facility gate leading to the closed section of Gooding Street, and are located just to the north of the road where the bedrock surface is exposed.

Topographically, the facility sits on the north side of Eighteen Mile Creek, which flows generally west at this location. The facility itself sits on gently sloping land, with the north side between approx. 5 and 10 feet higher than the south side (based on monitoring well survey data), thus surface water flow is toward the creek. Immediately south of the facility is the steep valley of Eighteen Mile Creek, which has a relief of approx. 50+ feet (based on the USGS 1:24,000 quadrangle map).

2.6 Hydrogeology

Groundwater elevation measurements collected during the 1999 Dames & Moore Phase I/II investigation indicate groundwater flow in the overburden and bedrock is to the southwest towards Eighteen Mile Creek. Bedrock gradients are steep, as groundwater elevations near the north side of the site (e.g. in MW-4D) are approx. 30 feet higher than those near the valley edge (e.g. in MW-3D and MW-2D), from which Golder calculated a gradient of approximately 0.2. Groundwater elevations measured in 2006 (Benchmark, Nov. 30, 2006) appear similar.

3.0 NATURE AND EXTENT OF CONTAMINATION

3.1 Areal Extent and Source Evaluation

The characterization and delineation of the coal tar residuals associated with the ongoing migration of the DNAPL through the bedrock and into the Focused CMS creek bank area adjacent to the toe of the escarpment slope, was performed, following issuance of the 2009 DNAPL Assessment and Supplemental Work Plan, in a stepwise approach by SNPE as follows:

- Conduct slope overburden mapping and survey to better define slope and creek bank bedrock/overburden geology, identify DNAPL transport mechanisms and more accurately locate In-Plant investigation (performed June 2010);
- Perform In-Plant Soil Boring Investigation - Northwest corner of Building B-4 to identify source of historically observed coal tar seeps in asphalt (performed June 2010);
- Overburden/Bedrock Test Pit Investigation - Eighteen Mile Creek bank and toe of slope (performed June 2010);
- Slope test pit and In-Plant investigation locations survey (performed June 2010);
- Summarization of findings and preparation of Proposed Remedial Strategies (August 18, 2010 DNAPL Investigation Summary Report);
- Conduct supplemental In-Plant investigations and refine bedrock stratigraphy (performed October 2010, findings summarized in November 4, 2010 Responses to NYSDE Comments);

A brief summary of each activity/task performed and the findings relative to DNAPL characterization are described below.

Slope Overburden Mapping and Survey

In conjunction with the In-Plant soil boring and the Creek Bank/Slope Test Pit investigations, surveyors from Wendel Duchscherer determined the location and surface elevation of the In-Plant soil borings, the test pits conducted along the Eighteen Mile Creek bank and toe of slope, the edge of Eighteen Mile Creek, and other reference points in the test pit area and service road leading to the test pits. In addition, two north-south traverses of the slope were made.

The In-Plant borehole locations as surveyed are presented on Figure 1-2. Figure 1-3 presents the test pit locations, and well as an elevation contour map of the test pit area, service road, and slope area between the two traverses. The westernmost traverse was performed approximately along the line of Cross Section B-B' (Figure 1-4), which shows the slope in profile and passes very near test pit TP2. An East/West cross section of the test pit area is shown on Figure 1-5, which presents the surface and bedrock elevations (where they could be determined) in an area roughly parallel to Eighteen Mile Creek from the original remedial area in the east to the west past the newly discovered seep. Two north-south traverses of the slope were made.

In-Plant Soil Boring Investigation

On June 22, 2010, a total of fifteen (15) direct push borings were advanced to refusal through the pavement to the northwest of Building B-4. The borings were advanced utilizing direct-push drilling techniques and a 2-inch soil sampling tool (Geoprobe® Macrocore® sampler). Golder also screened the first 9 cores for volatile organic compounds (VOCs) using a photoionization detector (PID) and collected 4 samples from the borings for laboratory analysis.

Based on an approximation of where historical observations of coal tar residuals seeps had occurred, the first boring (B9-N5) was positioned 5 feet north of the northwest corner of building B-4. Borings were then spread out North and West in 5 feet increments. After consistent findings of a fairly uniform potential coal tar layer was discovered in the first 7 borings, the spacing was increased to ten (10) feet to the North and West. Again, after similar findings, Golder increased the distances to observe where coal tar layer diminished. A thin layer of coal tar was discovered in borings B9-W30-N36 and B9-N36. Borings could not be drilled further North or West of those borings due to a concrete wall and concrete tank pads. Also, underground utility locations and information for that area were unavailable making further exploration unsafe. However, the observed trends indicated that the coal tar layer was diminishing in those directions.

All fifteen (15) borings were advanced until refusal, which was assumed to be at bedrock. The investigation determined that the average depth of the bedrock was approximately 5 feet, but varied between 4.5 to 8 feet below ground surface (bgs). The majority of the overburden was non-native fill materials which included crushed brick, concrete, wood, and foundry-like sands.

After the borings were advanced, the cores were examined by Golder and the NYSDEC and then logged. Samples were collected from 4 borings (B9-W5, B9-N10, B9-W5-N10, and B9-W10-N5). Due to the consistency of the coal tar found in each subsequent boring, Golder and the NYSDEC agreed that it was not necessary to collect any more samples for laboratory analysis. The first 9 borings were screened for VOCs by Golder using a PID. No VOCs were detected by the PID. Olfactory observations were also made for all the borings. All borings exhibited coal tar odor except borings B9-W5, B9-W30-N10, B9-E20-N20, and B9-W24-S10, however, samples B9-W30-N10 and B9-W24-S10 did have a petroleum-like odor.

The laboratory analysis was performed by Test America Inc. in Amherst, New York. The soil sample results detected high concentrations of polyaromatic hydrocarbons (PAHs) which are typically associated with coal tar residuals. For example, the following PAH compounds were consistently detected in each of the four samples at relatively high concentrations: anthracene, benzo(a)anthracene, chrysene, fluoranthene, naphthalene, phenanthrene and pyrene. A summary of the four sample results from the laboratory analysis are presented in Table 1 of the August 18, 2010 Summary Report on these investigation activities (refer to Appendix A).

Creek Bank Overburden/Bedrock Test Pit Investigation

The purpose of the test pit investigation was to further characterize the geologic aspects of the escarpment slope, define the depth of overburden and to survey the bedrock elevation in the areas down the slope and south of the facility towards Eighteen Mile Creek. The information gathered was used to develop a profile of the slope and the underlying bedrock in order to better quantify and assess the coal tar migration patterns and develop the most appropriate means of remediation for the coal tar contamination.

A total of fourteen (14) test pits (TP1 through TP14) were dug along the North side of Eighteen Mile Creek, starting at the west side of the historic seep area and working east towards the seeps discovered in the Spring of 2010. All test pits were dug with a small rubber-tracked excavator to refusal (assumed to be bedrock) except for TP10 and TP13 where bedrock was deeper than 7 feet below grade surface (bgs) – the maximum reach of the excavator used. The depths of bedrock at test pits where bedrock was found ranged from 2.4 to 7 feet bgs.

Golder recorded the nature of the overburden and logged the descriptions for each test pit and also noted where coal tar was found during the excavations. All test pits except for TP2, TP9, and TP14 had evidence of coal tar present. Though no samples or tests were performed on the soils during excavation, based on visual and olfactory evidence, TP7, TP8, TP10 appeared to have the heaviest deposits of coal tar.

The discovery of coal tar residuals in test pits TP10 through TP13 to the east of the previously remediated area is consistent with the understanding of the bedrock geology of the formation. The vertical fracture planes that would act as a conduit for DNAPL/coal tar residuals to be conveyed from the top of bedrock deeper into the formation are expected to be oriented in both a southwest and southeast directions. This would be consistent with the discovery of the two primary deposition areas along the toe of the slope separated by an area that appears to have little or no coal tar residuals (i.e., between TP9 and TP-10).

Supplemental In-Plant Boring Delineation Program and Response to NYSDEC Comments

In September 2010, NYSDEC prepared written comments on the August 18, 2010 "SNPE-VanDeMark Chemical 2010 Supplemental DNAPL Investigation Summary Report" and requested clarification and additional information on both the proposed In-Plant Remediation area and the Creek Bank remediation approach. These comments were addressed in a response to the NYSDEC dated November 4, 2010 (Appendix C). Part of the response included detailed information on supplemental borings conducted in October 2010 to fill data gaps on the delineation of coal tar residuals within the plant to the north and south of the June 2010 investigation limits. In addition, the response addressed the NYSDEC's concerns relative to proposed remedial action along the Creek Bank and proposed the preparation of this report to identify and weigh remedial alternatives using a focused corrective measures study approach.

Subsequent to submittal of the November 4, 2010 letter responses, it was agreed that SNPE andVanDeMark could proceed with source removal of the In-Plant coal tar residuals upon receipt and approval by the NYSDEC of a Work Plan detailing specific procedures to be implemented during the proposed excavation and removal work. The Interim Corrective Measures (ICM) Work Plan was submitted for approval to the NYSDEC on February 15, 2011 and is awaiting final approval from the NYSDEC. Work on the In-Plant coal tar residuals remediation is proposed to be conducted in early summer of 2011 upon NYSDEC approval. It is the consensus of SNPE, VanDeMark and the NYSDEC representatives that removal of this potential DNAPL source material, which is relatively well defined and accessible, would be desirable prior to addressing the lower Creek Band remediation. It is the intent of SNPE and VDM to conduct the ICM ahead of the remedial activities that are ultimately agreed upon and implemented for the Creek Bank area as a result of this report.

4.0 CORRECTIVE ACTION CRITERIA

4.1 Focused CMS Remedial Goals

The DNAPL investigation and characterization activities have identified source coal tar residuals above, within and discharging from the interface between the less competent bedrock formation (Power Glen Shale) and the more competent Whirlpool Sandstone formation, i.e., into the overburden comprising the Eighteen Mile Creek slope and bank area. The chemical characterization of the residuals is consistent with the chemical signature of a weathered coal tar as evidenced by the lack of residual VOCs and the mixture of PAHs present. The residuals are considered source waste material and may potentially adversely impact humans and the environment if allowed to manifest in the environment through current exposure pathways, i.e, erosion, runoff, and uptake into flora and fauna.

In accordance with NYSDEC's remedial program approach (6NYCRR Part 375-1.8(c)), the most preferable of source removal and control measures is the removal and/or treatment of the source material. The next strategies in order of the preferred remedial hierarchy are: containment; elimination of exposure; and treatment of the source at the point of exposure. These criteria, the nature and extent of contamination and the physical site conditions will all be factored into the alternatives analysis presented in Section 5. Based on these considerations, the following remedial goals are proposed for conducting this Focused CMS:

REMEDIAL GOALS:

- Source removal of DNAPL in creek bank and slope overburden where feasible based on access, slope stability, safety and ecological resource damages assessment;
- Containment and control of remaining DNAPL in the creek bank overburden where removal is not feasible to prevent its exposure or further migration;
- Containment and control of remaining DNAPL in the bedrock fractures where removal is not feasible to prevent its exposure or further migration;
- Containment, control and collection of the DNAPL at the bedrock discharge interface through the development of DNAPL interception and extraction systems; and
- Minimization of surficial water impacts, scouring, runoff, erosion, etc. to the remedial systems installed to prevent transfer of coal tar residuals into the surface waters of Eighteen Mile Creek and deposition in downstream riparian soil/sediment areas.

5.0 EVALUATIONS AND SELECTION OF CORRECTIVE MEASURE ALTERNATIVES

5.1 Identification of Corrective Measure Alternatives for Creek Bank Area

Focused corrective measures identified as potential and appropriate remedial alternatives for the nature and extent of SVOCs identified and associated with the DNAPL impacted Creek Bank areas, include the following:

- **Alternative 1 – Source Removal and Comprehensive DNAPL Interception and Collection:** Comprehensive excavation and removal of accumulated DNAPL residuals and impacted overburden material from all upper and lower creek bank and slope areas combined with installation of DNAPL Collection and Recovery System. Design would incorporate a DNAPL cut-off trench collection and recovery system keyed into the more competent Whirlpool Sandstone formation where DNAPL would be collected from a series of recovery sumps and transferred manually to portable containers for off-site treatment/disposal. A grout curtain would be injected into the bedrock below and along the length of the collector trench to minimize bypass and provide additional containment of DNAPL within the bedrock matrix. Permanent slope stabilization and shoring measures are assumed for this alternative along the entire length (north side) of the interceptor trench systems. Groundwater and surface runoff diversion and pumping systems would be incorporated into the design to minimize the amount of water and sediment draining to the trenches and provide for collection and treatment of water that collects in the trench system. This alternative would include long term maintenance and monitoring provisions for removal of DNAPL and monitoring of long term DNAPL flow patterns and collection volumes.
- **Alternative 2 – Overburden & Bedrock Containment Grout Curtain**: Excavation and removal of accumulated shallow DNAPL residuals and impacted overburden material from the creek bank and slope areas combined with installation of a continuous bedrock and overburden grout curtain or cutoff wall. A shallow DNAPL collection trench filled with permeable media (e.g., crushed stone or similar) would be installed parallel to and upgradient of the grout curtain to passively capture and allow for removal of DNAPL discharging from the bedrock formation and trapped north of the cutoff wall.
- **Alternative 3 – DNAPL Cleanup in Shallow Overburden and Maintenance / Monitoring of Creek Bank Area**: Excavation and removal of shallow accumulated DNAPL residuals and impacted overburden material from the creek bank and slope areas combined with frequent visual monitoring and removal of exposed DNAPL breakouts.

5.2 Description of Analysis Criteria

The detailed analysis of the focused corrective measure alternatives is based on six criteria: technical; reduction of toxicity, mobility or volume; environmental; human health; institutional; and cost.

Each criterion is described below:

<u>Technical Analysis</u>

The technical analysis presents a description of each alternative with a description of the technologies necessary to implement the alternative. It consists of an evaluation of each alternatives expected performance, reliability, ease of implementation and potential impacts during implementation. Operation and maintenance requirements and the anticipated life of each alternative are also evaluated.

Reduction of Toxicity, Mobility or Volume

This analysis evaluates the degree to which each of the corrective measure alternatives will permanently and significantly reduce the toxicity, mobility or volume of the contaminants and/ or impacted media. The analysis focuses on the treatment process, amount of materials to be treated, the degree of expected reduction, the degree of treatment irreversibly, and the management of treatment residuals that will remain after treatment.

Environmental

The conditions and pathways of contamination actually addressed by each alternative and evaluation of the short and long term beneficial and adverse effects of the response alternative.

Human Health

The extent to which each alternative mitigates short and long term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure.

Institutional

Assessment of relevant institutional needs for each alternative regarding Federal, State, and local requirements and permitting for the design, operation and timing of each alternative.

Cost Analysis

This criterion identifies cost associated with implementation of each alternative. The purpose of this analysis is to evaluate the corrective measures alternatives in terms of aggregate costs, including capital, operation, and maintenance costs. The cost estimates also include contingencies for potential unexpected or unforeseeable cost increases during implementation of the alternative and provisions for administration and engineering fees. The present worth cost in 2011 dollars is estimated for each alternative.

5.3 Corrective Measures Alternatives

5.3.1 Detailed Analysis

Alternative 1 – Source Removal and Comprehensive DNAPL Interception and Collection:

Technical Analysis

This alternative involves the excavation and removal of accumulated DNAPL residuals and impacted overburden material from all upper and lower creek bank and slope areas combined with installation of DNAPL Collection and Recovery System. Designed features would incorporate a DNAPL cut-off trench collection and recovery system keyed into the more competent Whirlpool Sandstone formation where DNAPL would be collected from a series of sumps and transferred manually to portable containers for off-site treatment/disposal. A grout curtain would be injected into the bedrock below approximately 15 to 20 feet deep and along the entire length of the collector trench to minimize DNAPL bypass and provide additional containment of DNAPL within the bedrock matrix upgradient of the creek. Permanent slope stabilization and shoring measures are assumed for this alternative along the entire length (north side) of the interceptor trench systems. These slope stabilization measures might include anchored sheeting, concrete retaining walls, gabion baskets or equivalent structural systems to prevent slope erosion and deterioration due to the associated excavation and interceptor trench installation at the toe of the slope.

Groundwater and surface runoff diversion and pumping systems would be incorporated into the design to minimize the amount of water collected in the trenches and provide for collection and treatment of any water that collects in the trench system. This alternative would include long term maintenance and monitoring provisions for removal of DNAPL and monitoring of long term DNAPL flow patterns and collection volumes.

This alternative is highly challenging but implementable from a technical standpoint and would employ proven methods for installation of the various remedial technologies, including the installation of the grout curtains, rock trench and slope stabilization features. However, there are several important considerations for implementation of this design including the high degree of uncertainty associated with the slope integrity and stability adjacent to and above the proposed interceptor trench, this is a particular concern to VDM with respect to the integrity and safety of its highly sensitive phosgene manufacturing facilities at the top of the slope. In addition, there are significant accessibility and safety concerns related to mobilizing and operating the specialized heavy equipment that would be required for the installation of the proposed remedial systems.

The interceptor and collection trench systems are anticipated to be reasonably effective in capturing the gravity flow of the DNAPL as it exits the toe of the slope, however its anticipated that exclusion of both groundwater and runoff from the trenches and associated sediment and debris will be extremely difficult to achieve on a consistent basis due the frequency of high flow conditions in the creek and the substantial amount of runoff that would be generated from the slope directly north and above the trench. These conditions will necessitate extensive and comprehensive operating and maintenance provisions, including water pumping and transfer systems.

Reduction of Toxicity, Mobility, Volume

The implementation of this alternative would decrease the overall mobility and volume of the DNAPL remaining in the bedrock through containment/capture and substantially decrease the amount of accumulated DNAPL in the overburden through excavation and disposal. It will further diminish the potential for soluble contaminants in the DNAPL (already minimal as the predominant SVOCs have low solubilities) to be released to the groundwater and migrate beyond the immediate area. Due to the relatively slow transport and dispersion rates associated with the DNAPL, the containment, capture and removal of DNAPL as proposed under this alternative is anticipated to substantially contribute to the reduction in the toxicity, mobility or volume within the impacted areas.

Environmental

Alternative 1 is protective of the environment as the pathway for direct contact and potential metabolic uptake from creek slope and bank overburden soil, sediment and surface water exposure of the DNAPL residuals would be substantially eliminated for both flora and fauna within the creek's affected riparian area. The coal tar residuals are not generally recognized as an inhalation or dermal exposure route for humans based on short term exposures that might be incurred under current conditions. Excavation and disposal will physically remove exposed DNAPL residuals and interception and collection would eliminate future exposure pathways.

Human Health Analysis

Alternative 1 would be protective of human health, particularly from a long term exposure scenario. Based on the location of the DNAPL impacted area and the restricted access maintained by VDM, the frequency of short term human exposure to the DNAPL constituents is currently low. The associated risk to human health based on the mobility and volatility of the DNAPL constituents contributes to this low risk factor. However, long term impacts to human health, primarily due to exposure and potential migration into the waters of Eighteen Mile Creek and ultimately into drinking water supplies would be substantially mitigated by this alternative.

Groundwater use within the impacted area is not a factor as the impacted area falls within the City of Lockport's municipal water service area and impacts to groundwater would be anticipated to be minimal based on the low solubility of the coal tar constituents.

Institutional Analysis

The implementation of the proposed alternative will need to be conducted in accordance with a Corrective Measures Implementation (CMI) Plan or other approved Work Plan that would identify the procedures and methods to be employed to execute the work and conform with state and federal regulations for remedial cleanups. This would include any related permitting required, if needed, by the US Army Corps of Engineers.

Compliance with a Site-specific health and safety plan under 29CFR 1910.120, RCRA and Occupational Health and Safety Act (OSHA) regulations are required during implementation of this alternative.

Cost Analysis

The initial capital cost for this alternative is estimated to be $ 2,430,000 (refer to Table 1). The annual operating and maintenance cost for this alternative is estimated to be $ 49,500 (in 2011 dollars). The estimated cost includes off-site disposal of collected DNAPL which is expected to be a low volume based on the relatively low rate of DNAPL discharge observed from the lower creek bank area in recent years. In addition, costs associated with the additional volume of potentially impacted surface runoff or groundwater that would be collected and treated at the on-site wastewater treatment system were included under this alternative.

Alternative 2 – Overburden and Bedrock Containment Grout Curtain:

Technical Analysis

This alternative involves the design and installation of a continuous grout curtain injected into the creek bank overburden soils and into the underlying bedrock in an east-west orientation south of the toe of the slope and extending a total length of approximately 300 feet. The specific grout injection technique (e.g., soil mixing, direct pressure injection, etc.) and formulation would be optimized based on pre-construction field testing. The grout curtain is proposed as a proven containment approach for both overburden and bedrock applications that will significantly reduce or completely eliminate the requirements for large equipment access/operation, eliminate deep excavations into the overburden and bedrock and potential destabilization of the slope. It would be combined with the installation of an upgradient shallow parallel trench located just north of the cutoff curtain and filled with crushed stone or gravel media that would act as a collection sink for DNAPL residuals discharging from the slope and trapped behind the grout curtain. As observed in the lower creek bank area, the density of DNAPL is lower than the overburden soils and over time the DNAPL rises to the surface. This characteristic will allow the more permeable shallow trench media to act as a preferential pathway for DNAPL accumulation directly upgradient of the curtain. The trench design will allow surficial runoff to flow naturally, eliminating the need for dedicated water management and allow for readily accessible removal and replacement of the DNAPL impacted media on a frequency determined by accumulation rates. The top of the collection trench would be covered with a layer of geotextile to reduce sediment intrusion into the gravel media from slope and creek runoff and minimize direct exposure of DNAPL residuals to the environment between cleanout events.

As part of this alternative, shallow (two feet bgs or less) excavation of exposed DANPL residuals across the entire creek bank and slope impacted area would be performed prior to grout curtain installation to remove and dispose of previously accumulated residuals at or near the surface. Figure 5-1 illustrates the proposed plan location and conceptual details for this alternative.

This alternative would be readily implementable and technically feasible and variations of this technology have been employed on numerous hazardous waste site containment applications. The alternative would establish a definitive physical barrier for the purposes of migration control of DNAPL exiting the bedrock formation and migrating towards Eighteen Mile Creek. It also provides a simplified and readily implementable means of collecting and removing source material that may continue to exit the bedrock and accumulate behind the barrier. The design and DNAPL collection approach is inherently simpler and will minimize long term operation and maintenance for this alternative.

Reduction of Toxicity, Mobility, Volume

The implementation of this alternative would decrease the overall mobility and volume of the DNAPL remaining in the bedrock through containment, capture and decrease the amount of accumulated DNAPL in the upper overburden through excavation and disposal. It will further diminish the potential for soluble contaminants in the DNAPL (already minimal as the predominant SVOCs have low solubilities in water) to be released to the groundwater and migrate beyond the immediate area. Due to the relatively slow transport and dispersion rates associated with the DNAPL, the containment, capture and removal of DNAPL as proposed under this alternative is anticipated to substantially contribute to the reduction in the toxicity, mobility or volume within the impacted areas.

Environmental

Alternative 2 is protective of the environment as the exposure pathway for direct contact with and potential metabolic uptake from creek slope and bank overburden soil, sediment and surface water exposure of the DNAPL residuals would be substantially eliminated for both flora and fauna within the creek's affected riparian area. The coal tar residuals are not generally recognized as an inhalation or dermal exposure route for humans based on short term exposures that might be incurred under current conditions. Excavation and disposal will physically remove shallow and exposed DNAPL residuals and interception and routine removal of accumulated DNAPL would substantially reduce future exposure opportunities.

Human Health Analysis

Alternative 2 would be protective of human health, particularly from a long term exposure scenario. Based on the location of the DNAPL impacted area and the restricted access maintained by VDM, the frequency of short term human exposure to the DNAPL constituents is currently low. The associated risk to human health based on the mobility and volatility of the DNAPL constituents contributes to this low risk factor. However, long term impacts to human health, primarily due to exposure and potential migration into the waters of Eighteen Mile Creek and ultimately into drinking water supplies would be substantially mitigated by this alternative.

Groundwater use within the impacted area is not a factor as the impacted area falls within the City of Lockport's municipal water service area and impacts to groundwater would be anticipated to be minimal based on the low solubility of the coal tar constituents.

Institutional Analysis

The implementation of the proposed alternative will need to be conducted in accordance with a Corrective Measures Implementation (CMI) Plan or other approved Work Plan that would identify the procedures and methods to be employed to execute the work and conform to state and federal regulations for remedial cleanups. This would include any related permitting required, if needed, by the US Army Corps of Engineers.

Compliance with a Site-specific health and safety plan under 29CFR 1910.120, RCRA and Occupational Health and Safety Act (OSHA) regulations are required during implementation of this alternative.

Cost Analysis

The initial capital cost for this alternative is estimated to be \$ 1,742,000 (refer to Table 2). The annual operating and maintenance cost for this alternative is estimated to be \$ 14,100 (in 2011 dollars). The estimated cost includes off-site disposal of collected DNAPL and trench media on an annual basis assuming a relatively low rate of DNAPL discharge as recently observed from the lower creek bank area.

Alternative 3 - DNAPL Cleanup in Shallow Overburden and Maintenance / Monitoring of Creek Bank Area:

Technical Analysis

Under this alternative, shallow (two feet bgs or less) excavation and removal of accumulated, exposed DANPL residuals across the entire creek bank and slope impacted area would be performed. Soil backfill would be imported to restore excavated areas and native vegetation would be planted.

This alternative is proposed to minimize the disturbance of creek bank overburden and the adjacent slope and utilize the protective soil cover that currently exists for the buried DNAPL within the creek bank overburden. It also takes into account the low mobility of DNAPL discharge and the relatively low rate of degradation of the DNAPL constituents into the environment. This approach is proposed as an alternative to the removal of substantial portion of the creek bank riparian system along the 300 feet length of the impacted area.

This alternative would place a heavy emphasis on long term, frequent visual inspection, monitoring and maintenance provisions to remove and dispose of exposed DNAPL breakouts.

Reduction of Toxicity, Mobility, Volume

The implementation of this alternative would provide a minimal decrease the overall toxicity and volume of the DNAPL currently present in the creek bank soils as it would not address DNAPL residuals located at depth on the top of the bedrock. It will reduce the potential for soluble contaminants in the DNAPL (already minimal as the predominant SVOCs have low solubilities) to be released to the runoff and migrate beyond the immediate area through this pathway, however shallow groundwater may still be impacted.

Although this alternative is premised on leaving the coal tar deposits identified in the overburden in the upper creek bank area, the average depth and resulting substantial existing soil cover provides for an inherent reduction in the mobility and exposure potential of these deposits.

Environmental

Alternative 3 is partially protective of the environment as the pathway for direct contact and associated metabolic uptake from shallow and exposed DNAPL in creek slope and bank overburden soil, sediment and surface water exposure of the DNAPL residuals would be substantially eliminated for both flora and fauna within the creek's affected riparian area. The coal tar residuals are not generally recognized as an inhalation or dermal exposure route for humans based on short term exposures that might be incurred under current conditions. Excavation and disposal will physically remove shallow and exposed DNAPL residuals that would be more readily degraded than deeper deposits.

Human Health Analysis

Alternative 1 would be protective of human health from a short-term exposure scenario. Based on the removal of exposed or shallow DNAPL accumulations in the impacted area and the restricted access maintained by VDM, the frequency of short term human exposure to the DNAPL constituents would be very low. The associated risk to human health based on the mobility and volatility of the DNAPL constituents contributes to this low risk factor. However, potential long term impacts to human health, primarily due to transport and potential migration into the waters of Eighteen Mile Creek and ultimately into drinking water supplies and fish would not be substantially mitigated by this alternative. Those impacts although anticipated to be minimal cannot be quantified in this analysis.

Groundwater use within the impacted area is not a factor as the impacted area falls within the City of Lockport's municipal water service area and impacts to groundwater would be anticipated to be minimal based on the low solubility of the coal tar constituents.

Institutional Analysis

The implementation of the proposed alternative will need to be conducted in accordance with a Corrective Measures Implementation (CMI) Plan or other approved Work Plan that would identify the procedures and methods to be employed to execute the work and conform with state and federal regulations for remedial cleanups. This would include any related permitting required, if needed, by the US Army Corps of Engineers.

Compliance with a Site-specific health and safety plan under 29CFR 1910.120, RCRA and Occupational Health and Safety Act (OSHA) regulations are required during implementation of this alternative.

Cost Analysis

The initial capital cost for this alternative is estimated to be $ 151,000 (refer to Table 3). The annual operating and maintenance cost for this alternative is estimated to be $ 30,500 (in 2011 dollars). The estimated cost includes an annual maintenance program for removal of DNAPL accumulations and off-site disposal of collected DNAPL and impacted soils.

5.3.2 Conclusions and Recommendations

An assessment of the evaluation criteria for the three alternatives identified for the Focused CMS evaluation is summarized in Table 3. Alternative 1 was not selected due to the installation complexity, potential for significant adverse impacts to the adjacent slope stability and the operational considerations with respect to managing water and sediment collection within the DNAPL collection trenches. The additional DNAPL capture and removal capability that might be achieved by the system was not significant enough to overcome the numerous installation and operational issues associated with this alternative.

Alternative 3 was not selected as the preferred alternative as this approach would not be effective in containing, capturing and ultimately removing the majority of the ongoing DNAPL discharge that continues to flow from the fractured bedrock formation. Therefore, this alternative would not provide an appreciable reduction in the mobility, toxicity or volume of contaminants.

Based on the detailed evaluation, Alternative 2 is recommended for implementation. Alternative 2, Overburden and Bedrock Grout Curtain Containment, would meet the corrective action objectives of DNAPL capture/containment and provide a more passive and reliable method for collection and removal of DNAPL. This alternative would provide a comparable level of containment, capture and removal that would be expected from Alternative 1, while significantly reducing the concerns noted above relative to the construction and operation in this challenging location.

TABLES

TABLE 1
Focused CMS for Creek Bank Area
SNPE - VanDeMark Chemical Inc.
Lockport, New York

CAPITAL AND OPERATIONS & MAINTENANCE COST ESTIMATE
ATERNATIVE NO. 1: Source Removal & Comprehensive DNAPL Interception & Collection

Direct Capital Cost ($)					
Item	Unit Cost	Unit	Quantity	Total Cost	
Lower Creek Bank Area					
Mobilization/Demobilization and Contractor O.H.	$50,000	LS	1	$50,000	
Permanent Slope Stabilization/Shoring (150 ft x 20 ft high)	$75	SF	3000	$225,000	
Bank Overburden Excavation, Staging and Hauling	$25	CY	250	$6,250	
Coal Tar Impacted Soil/Fill Excavation, Staging & Hauling	$25	CY	400	$10,000	
Coal Tar Imapcted Non-Hazardous Soil/Fill Disposal	$120	TON	600	$72,000	
Bedrock Grout Curtain Installation	$150	SF	3000	$450,000	
Rock Keyway Trench Excavation (150' x 1.5' x 2'D)	$100	CY	20	$2,000	
Overburden Barrier Wall (South Side) (150' x 8' x 1.5')	$150	CY	65	$9,750	
Product/DNAPL Collection Sumps (3' dia x 5' deep)	$25,000	EA	3	$75,000	
Groundwater Dewatering Pumps and Controls	$12,500	EA	3	$37,500	
Upgradient Trench Drainage Diversion Wall (150' x 1' x 1')	$150	CY	10	$1,500	
Grading and Backfill	$25	CY	350	$8,750	
Site Restoration	$20,000	LS	1	$20,000	
Upgradient Bank Rip-Rap	$25	LF	150	$3,750	
	Subtotal, Direct Capital Costs			$971,500	
Item	Unit Cost	Unit	Quantity	Total Cost	
Upper Creek Bank Area					
Mobilization/Demobilization and Contractor O.H.	$50,000	LS	1	$50,000	
Permanent Slope Stabilization/Shoring (125 ft x 20 ft high)	$75	SF	2500	$187,500	
Overburden Soil Excavation, Staging and Hauling	$25	CY	350	$8,750	
Rock Structure Removal and Hauling	$50	CY	250	$12,500	
Coal Tar Impacted Soil/Fill Excavation, Staging & Hauling	$25	CY	150	$3,750	
Coal Tar Impacted Non-Hazardous Soil/Fill Disposal	$120	TON	225	$27,000	
Bedrock Grout Curtain Installation	$150	SF	2500	$375,000	
Rock Keyway Trench Excavation (125' x 1.5' x 2'D)	$100	CY	15	$1,500	
Overburden Barrier Wall (South Side) (125' x 10' x 1.5')	$150	CY	70	$10,500	
Product/DNAPL Collection Sumps (3' dia x 5' deep)	$15,000	EA	3	$45,000	
Groundwater Dewatering Pumps and Controls	$25,000	EA	3	$75,000	
Upgradient Trench Drainage Diversion Wall (100' x 1' x 1')	$150	CY	3	$450	
Grading and Backfill	$25	CY	350	$8,750	
Site Restoration	$20,000	LS	1	$20,000	
Upgradient Bank Rip-Rap (100'x 5'W)	$25	LF	125	$3,125	
	Subtotal, Direct Capital Costs			$828,825	
Indirect Capital Costs ($)					
				Total Cost	
Engineering and Contingency (10% + 25%)	35% of Capital Costs			$630,114	
	Subtotal, Indirect Capital Costs			$630,114	
	Subtotal, Direct Capital Costs			$1,800,325	
	Total Capital Cost			**$2,430,439**	

Annual Operations Maintenance & Monitoring (OM & M), Direct					
Item	Unit Cost	Unit	Quantity	Annual Cost	Present Value Cost @ 5%
Quarterly DNAPL Sump Cleanout & Monitoring	$8,000	EA	4	$32,000	$484,870
DNAPL Disposal (T and D)	$300	DRUM	10	$3,000	$45,457
Annual Reporting	$4,000	YEAR	1	$4,000	$60,609
Total Annual Cost				$39,000	
Subtotal, Direct O&M Costs (30 Years)				**$1,170,000**	**$590,936**

Annual Operation Maintenance & Monitoring (OM & M), Indirect		Annual Cost	Present Value Cost @ 5%
Engineering/Administration	12% of O&M Costs	$4,680	$70,912
Contingencies	15% of O&M Costs	$5,850	$88,640
	Subtotal, Indirect O&M Costs	$10,530	$159,553
	Total Annual O&M Cost (Direct and Indirect)	$49,530	
	Total O&M Costs (Direct and Indirect)	**$1,485,900**	**$750,488**

Total Present Worth (PW): Capital Costs + OM & M PW	Total 30 Year Cost	Present Value Cost @ 5%
Total Estimated Cost of Alternative	**$3,916,339**	**$3,180,927**

Notes/Assumptions:

A 5% rate of return was used for calculating present value costs.

TABLE 2
Focused CMS for Creek Bank Area
SNPE -VanDeMark Chemical Inc.
Lockport, New York

CAPITAL AND OPERATIONS & MAINTENANCE COST ESTIMATE

ATERNATIVE NO. 2: Overbuden & Bedrock Containment Grout Curtain

Direct Capital Cost ($)					
Item Description	Unit Cost	Unit	Quantity	Total Cost	
Mobilization/Demobilization and Contractor O.H.	$50,000	LS	1	$50,000	
Coal Tar Impacted Overburden Exc., Staging & Hauling	$25	CY	350	$8,750	
Coal Tar Imapcted Non-Hazardous Soil/Fill Disposal	$120	TON	525	$63,000	
Bank Grading and Prep for Grouting	$10	CY	150	$1,500	
Grout Curtain Installation (300' x 25' D)	$150	SF	7500	$1,125,000	
DNAPL Collection Trench Excavation (300' x 2' x 2.5'D)	$5	CY	60	$300	
DNAPL Collection Trench Stone Backfill	$35	TON	110	$3,850	
Grading and Backfill	$25	CY	400	$10,000	
Site Restoration	$20,000	LS	1	$20,000	
Upgradient Bank Rip-Rap	$25	LF	325	$8,125	
	Subtotal, Direct Capital Costs			$1,290,525	
Indirect Capital Costs ($)					
				Total Cost	
Engineering and Contingency (10% + 25%)	35% of Capital Costs			$451,684	
	Subtotal, Indirect Capital Costs			$451,684	
	Subtotal, Direct Capital Costs			$1,290,525	
	Total Capital Cost			**$1,742,209**	
Annual Operations Maintenance & Monitoring (OM & M), Direct					
Item	Unit Cost	Unit	Quantity	Annual Cost	Present Value Cost @ 5%
Annual DNAPL Collection Trench Cleanout	$25	CY	40	$1,000	$15,152
DNAPL & Media Disposal (T and D)	$120	TON	55	$6,600	$100,005
Annual Reporting	$3,500	YEAR	1	$3,500	$53,033
			Total Annual Cost	$11,100	
			Subtotal, Direct O&M Costs (30 Years)	**$333,000**	**$168,189**
Annual Operation Maintenance & Monitoring (OM & M), Indirect				Annual Cost	Present Value Cost @ 5%
Engineering/Administration	12% of O&M Costs			$1,332	$20,183
Contingencies	15% of O&M Costs			$1,665	$25,228
			Subtotal, Indirect O&M Costs	$2,997	$45,411
			Total Annual O&M Cost (Direct and Indirect)	$14,097	
			Total O&M Costs (Direct and Indirect)[30 Years]	**$422,910**	**$213,601**
Total Present Worth (PW): Capital Costs + OM & M PW					
				Total 30 Year Cost	Present Value Cost @ 5%
	Total Cost of Alternative			**$2,165,119**	**$1,955,809**

Notes/Assumptions:

A 5% rate of return was used for calculating present value costs.

TABLE 3
Focused CMS for Creek Bank Area
SNPE -VanDeMark Chemical Inc.
Lockport, New York

CAPITAL AND OPERATIONS & MAINTENANCE COST ESTIMATE
ATERNATIVE NO. 3: DNAPL Cleanup in Shallow Overburden and Maintenance / Monitoring of Creek Bank Area

Direct Capital Cost ($)					
Item Description	Unit Cost	Unit	Quantity	Total Cost	
Mobilization/Demobilization and Contractor O.H.	$15,000	LS	1	$15,000	
Coal Tar Impacted Overburden Exc., Staging & Hauling	$25	CY	350	$8,750	
Coal Tar Imapcted Non-Hazardous Soil/Fill Disposal	$120	TON	525	$63,000	
Grading and Backfill	$25	CY	400	$10,000	
Site Restoration	$15,000	LS	1	$15,000	
	Subtotal, Direct Capital Costs			$111,750	
Indirect Capital Costs ($)					
				Total Cost	
Engineering and Contingency (10% + 25%)	35% of Capital Costs			$39,113	
	Subtotal, Indirect Capital Costs			$39,113	
	Subtotal, Direct Capital Costs			$111,750	
	Total Capital Cost			**$150,863**	
Annual Operations Maintenance & Monitoring (OM & M), Direct					
Item	Unit Cost	Unit	Quantity	Annual Cost	Present Value Cost @ 5%
Annual DNAPL & Impacted Overburden Removal	$25	CY	100	$2,500	$37,881
Coal Tar Imapcted Non-Hazardous Soil/Fill Disposal	$120	TON	150	$18,000	$272,740
Annual Reporting	$3,500	YEAR	1	$3,500	$53,033
	Total Annual Cost			$24,000	
	Subtotal, Direct O&M Costs (30 Years)			**$720,000**	**$363,653**
Annual Operation Maintenance & Monitoring (OM & M), Indirect				Annual Cost	Present Value Cost @ 5%
Engineering/Administration	12% of O&M Costs			$2,880	$43,638
Contingencies	15% of O&M Costs			$3,600	$54,548
	Subtotal, Indirect O&M Costs			$6,480	$98,186
	Total Annual O&M Cost (Direct and Indirect)			$30,480	
	Total O&M Costs (Direct and Indirect)[30 Years]			**$914,400**	**$461,839**
Total Present Worth (PW): Capital Costs + OM & M PW					
				Total 30 Year Cost	Present Value Cost @ 5%
	Total Cost of Alternative			**$1,065,263**	**$612,702**

Notes/Assumptions:

A 5% rate of return was used for calculating present value costs.

TABLE 4
SUMMARY OF DETAILED ANALYSIS FOR CREEK BANK ALTERNATIVES
FOCUSED CMS FOR SNPE – VANDEMARK FACILITY

Evaluation Criteria	Focused Corrective Measures Alternatives		
	Alternative 1 **Source Removal and Comprehensive DNAPL Interception and Collection**	Alternative 2 **Overburden & Bedrock Containment Grout Curtain**	Alternative 3 **DNAPL Cleanup in Shallow Overburden and Maintenance / Monitoring of Creek Bank Area**
Technical Analysis	Technically Feasible, Implementable. However significant concerns with construction and associated slope stability. Further concerns with respect to reliability due to operational intensity.	Technically Feasible, Implementable and Reliable.	Technically Feasible, and Implementable. Limited effectiveness relative to source control and removal.
Reduction in Toxicity, Mobility & Volume	Reduction of toxicity, mobility and volume from overburden and bedrock sources through removal and treatment of contaminants.	Reduction of toxicity, mobility and volume from overburden and bedrock sources through removal and treatment of contaminants.	Reduction in toxicity and volume through shallow removals, however no reduction in mobility.
Environmental Analysis	Provides high degree of environmental protection and reduction in potential environmental exposures.	Provides high degree of environmental protection and reduction in potential environmental exposures. Passive collection trench may result in short term pathway for direct contact of DNAPL with flora and fauna	Provides a limited degree of environmental protection through reduction in exposed DNAPL to surface water degradation. DNAPL pathway to creek through overburden may be substantially unchanged.
Human Health Analysis	Provides short and long term reduction in potential human exposures through comprehensive contaminant control, capture and removal.	Provides short and long term reduction in potential human exposures through comprehensive contaminant control, capture and removal.	Provides short term reduction in potential exposures to direct exposures, however long term control of DNAPL pathway to surface waters is marginal.
Institutional Analysis	Needs to comply with final Corrective Measures Order and/or Work Plan for approved remedy.	Needs to comply with final Corrective Measures Order and/or Work Plan for approved remedy.	Needs to comply with final Corrective Measures Order and/or Work Plan for approved remedy.
Total Cost	Capital: $2,352,000 Annual O & M: $39,400	Capital: $1,702,000 Annual O & M: $14,100	Capital: $151,000 Annual O & M: $30,500

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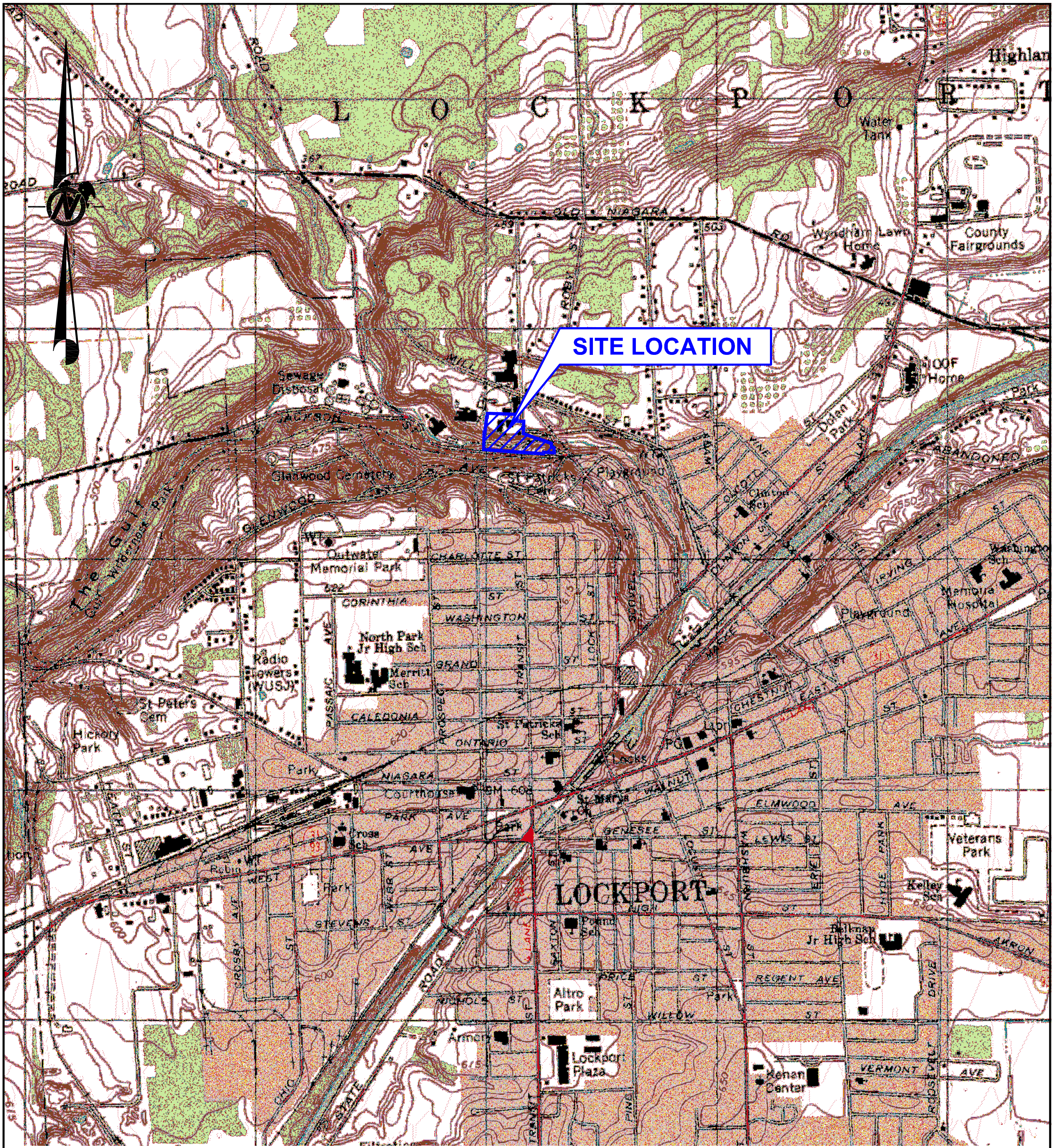
FIGURES

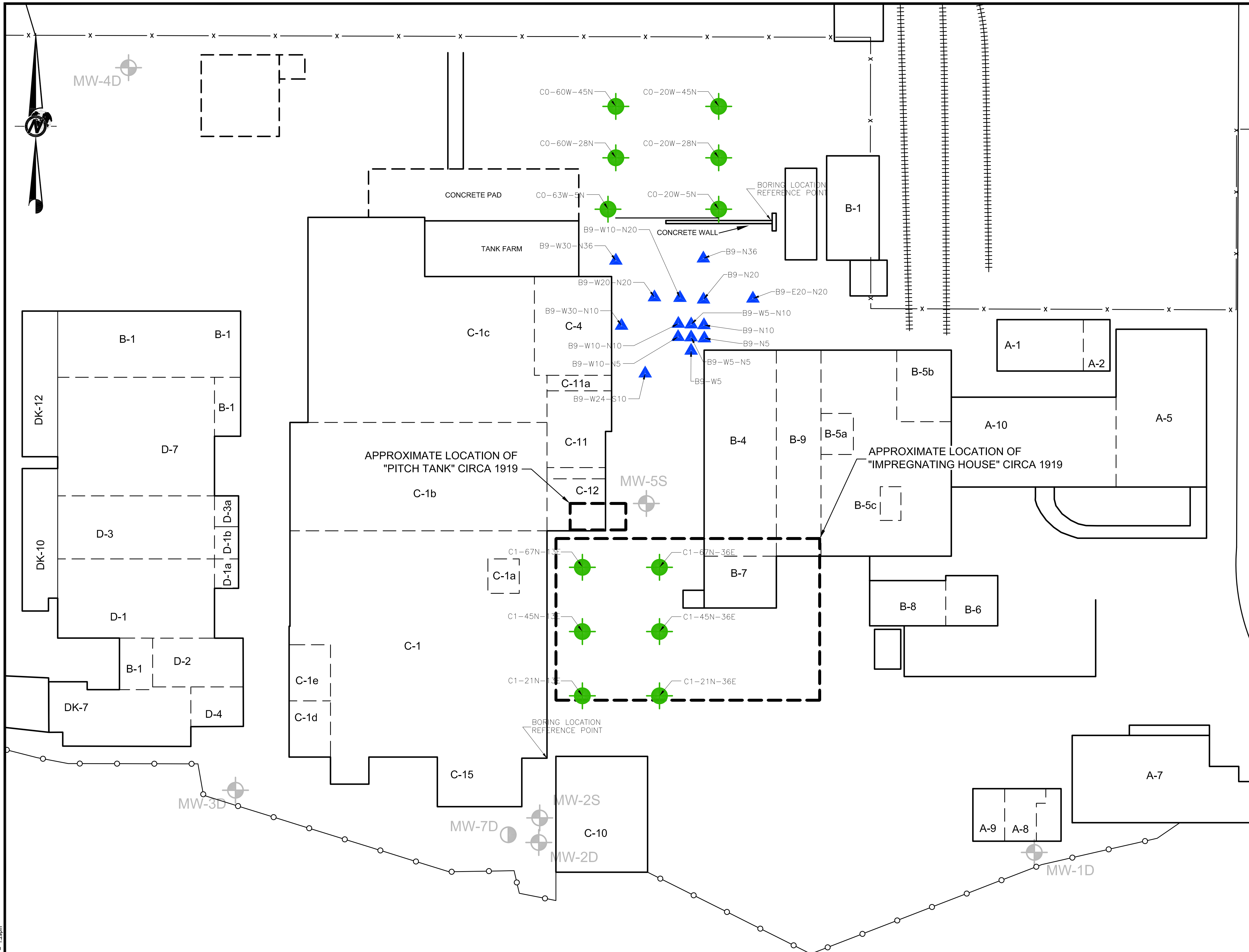


REFERENCES

1.) BASE MAP TAKEN FROM U.S.G.S. 7.5 MINUTE QUADRANGLE OF LOCKPORT, NEW YORK DATED 1980.

2000 0 2000
SCALE FEET

NJ Authorization #24GA28029100 Golder Associates Buffalo, New York	SCALE AS SHOWN	TITLE	
	DATE 02/04/11	**SITE LOCATION MAP**	
	DESIGN AML		
	CADD GLS		
FILE No. 09389168A011	CHECK		
PROJECT No. 093-89168 REV. 0	REVIEW	SNPE - VANDEMARK CHEMICAL	FIGURE 1-1



LEGEND

- FENCE
- RAILROAD
- 1999 INVESTIGATION MONITORING WELL
- 2006 BEDROCK MONITORING WELL
- JUNE 2010 BOREHOLES
- SUPPLEMENTAL BOREHOLE LOCATIONS

REFERENCE

1.) TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

2.) TEST PITS SHOWN ON THIS PLAN WHERE TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

3.) MAP DIGITIZED FROM HARD COPY OF FIGURE 1 ENTITLED "SITE PLAN," PREPARED BY BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.

40 0 40

SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
SNPE - VANDEMARK
FOCUSED CORRECTIVE MEASURES STUDY
LOCKPORT, NEW YORK

TITLE
COAL TAR DELINEATION OVERBURDEN/BEDROCK BOREHOLE LOCATION MAP

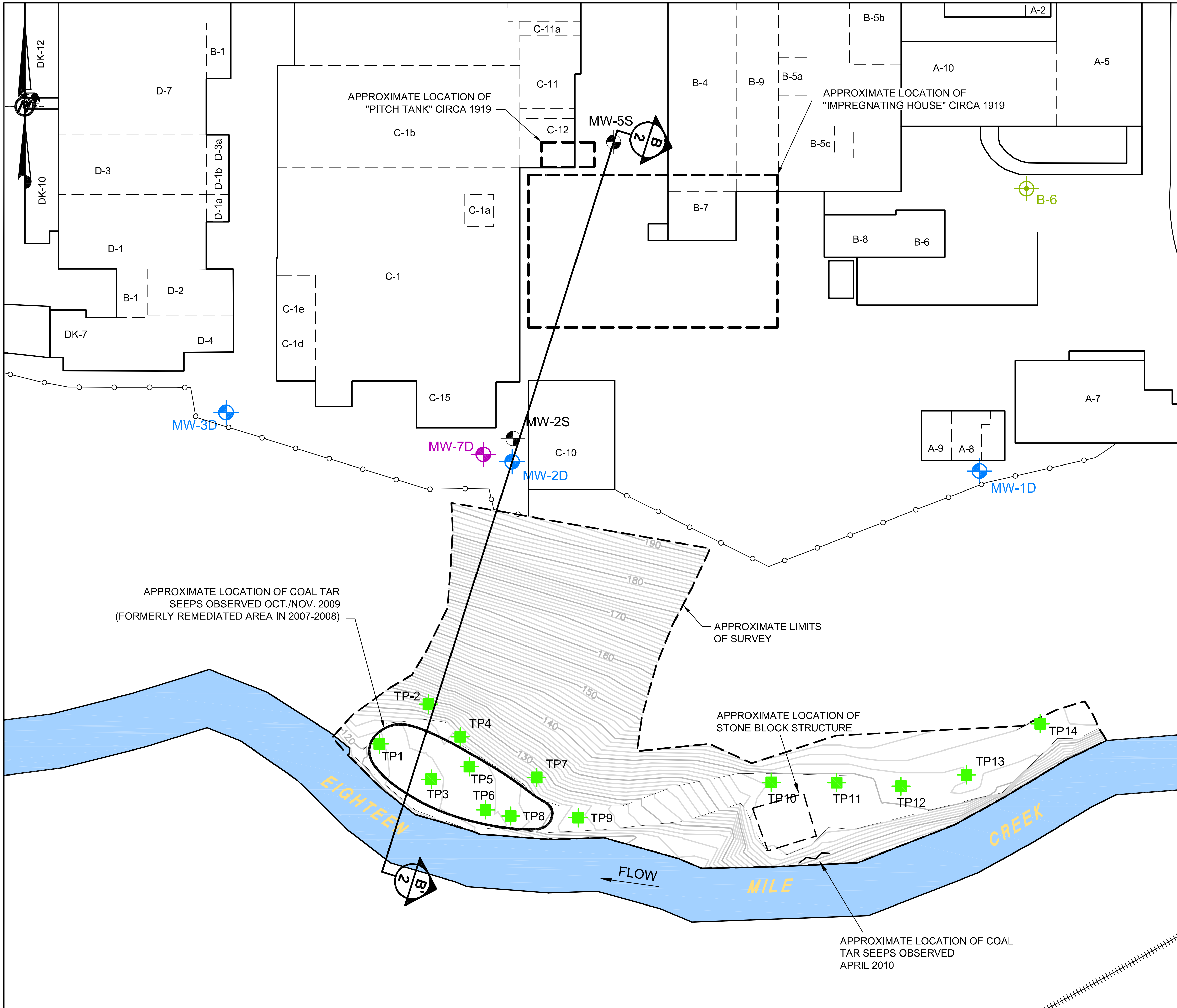
NJ Authorization #24GA28029100

Golder Associates
Mt. Laurel, New Jersey

PROJECT No.	093-89168	FILE No.	09389168A016
DESIGN	DCW 09/09/10	SCALE AS SHOWN	REV. 0
CADD	AML 04/12/11		
CHECK			
REVIEW			

FIGURE 1-2

Drawing file: 09389168A016.dwg Apr. 26, 2011 - 1:29pm



LEGEND

- FENCE
- RAILROAD
- 1999 INVESTIGATION BORING
- 1999 INVESTIGATION OVERBURDEN MONITORING WELL
- 1999 INVESTIGATION BEDROCK MONITORING WELL
- 2006 BEDROCK MONITORING WELL
- TEST PIT LOCATIONS
- EIGHTEEN–MILE CREEK

REFERENCE

1.) TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM SURVEY FILE xve–vandemark base.dwg, DATED 06–21–2010.

2.) TEST PITS SHOWN ON THIS PLAN WHERE TAKEN FROM SURVEY FILE xve–vandemark base.dwg, DATED 06–21–2010.

3.) MAP DIGITIZED FROM HARD COPY OF FIGURE 1 ENTITLED "SITE PLAN," PREPARED BY BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.

40 0 40

SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SNPE - VANDEMARK
FOCUSED CORRECTION MEASURES STUDY
LOCKPORT, NEW YORK

TITLE

COAL TAR DELINEATION OVERBURDEN/BEDROCK TEST PIT LOCATION MAP

NJ Authorization #24GA28029100

Golder Associates
Mt. Laurel, New Jersey

PROJECT No.	093–89168		FILE No.	09389168A013
DESIGN	DCW	07/16/10	SCALE AS SHOWN	REV. 0
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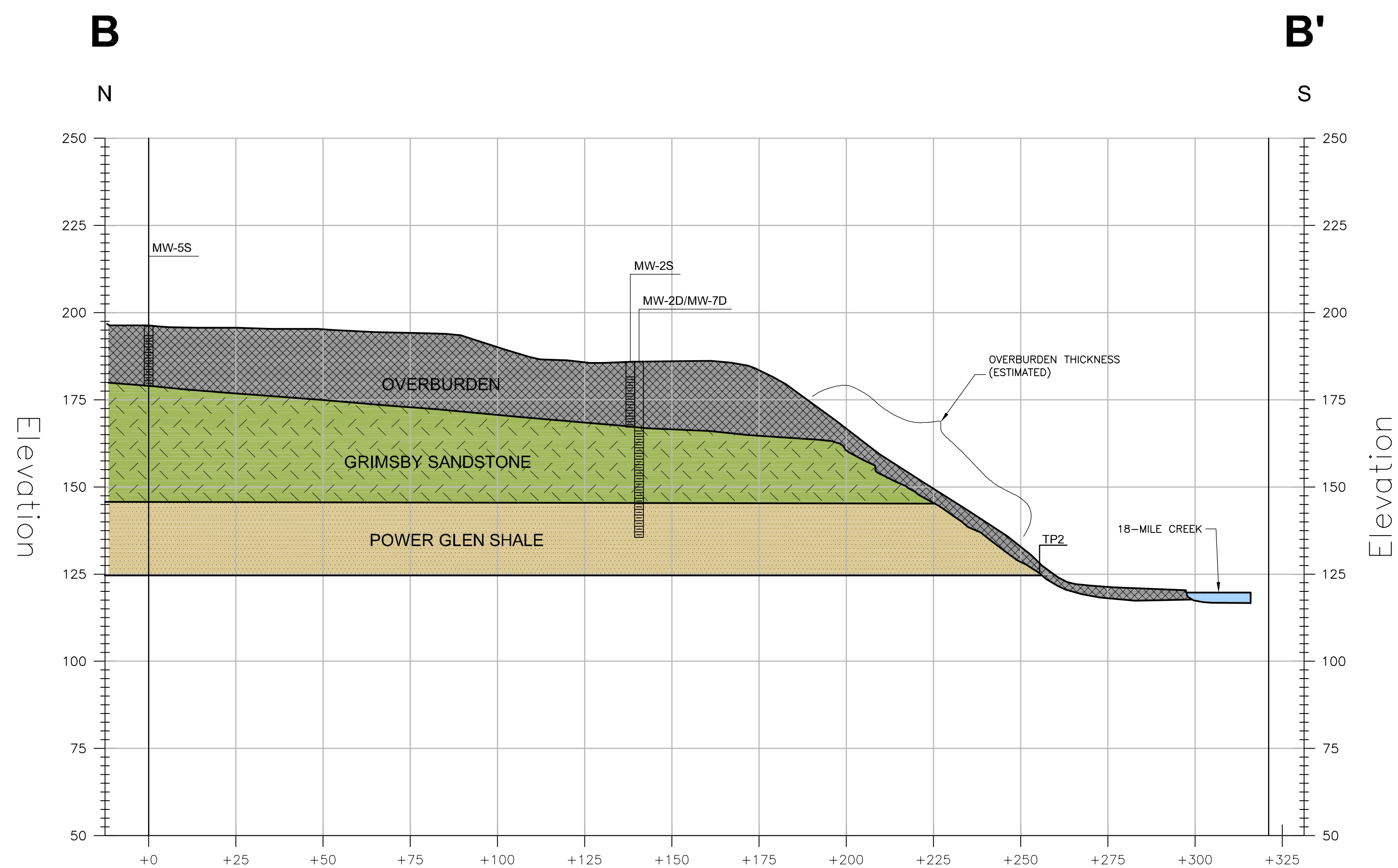
CHECK				
REVIEW				



LEGEND

- OVERBURDEN
- GRIMSBY SANDSTONE
- POWER GLEN SHALE
- WATER ELEVATION IN WELL

REFERENCES

1.) URS CORP. FIGURE 3 – PHASE I/II ENVIRONMENTAL AUDIT – VANDE/MARIL, INC. A VANCHEM, INC. SEPTEMBER 17, 1999.

2.) BENCHMARK BES, PLLC – SUMMARY OF SUPPLEMENTAL FIELD INVESTIGATION AND SAMPLING ACTIVITIES, ISOCHEM INC., NOVEMBER 30, 2006.

3.) U.S.G.S. LOCKPORT QUADRANGLE (FOR ELEVATION OF EIGHTEEN-MILE CREEK)

25 0 25 50
HORIZONTAL SCALE FEET

25 0 25 50
VERTICAL SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SNPE - VANDEMARK
FOCUSED CORRECTIVE MEASURES STUDY
LOCKPORT, NEW YORK

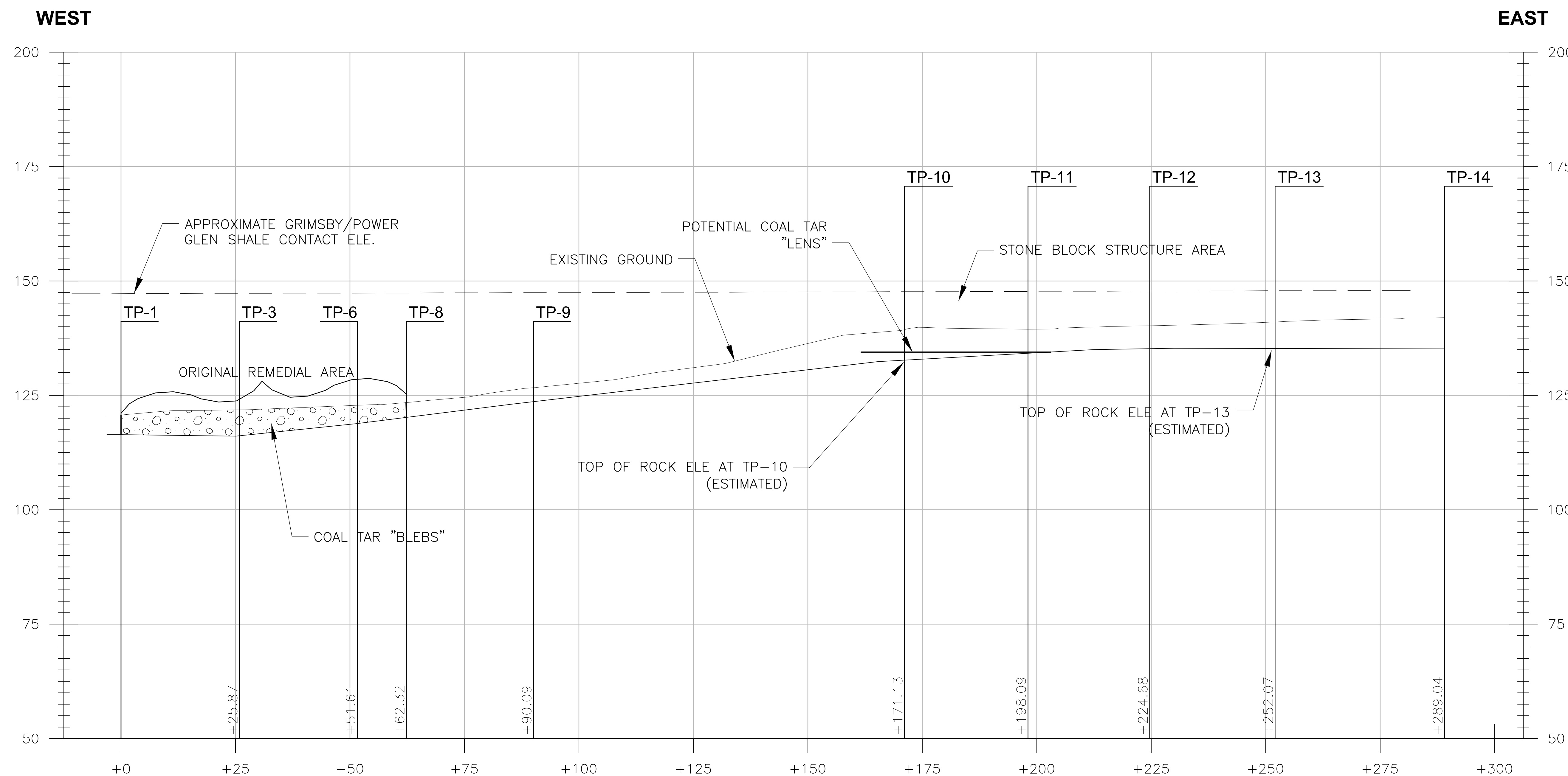
TITLE

CROSS SECTION B-B'

Golder Associates
Mt. Laurel, New Jersey
NJ Authorization #24GA28029100

PROJECT No.		093-89168	FILE No.	09389168A014
DESIGN	DCW	08/09/10	SCALE AS SHOWN	REV. 0
CADD	AML	04/12/11		
CHECK				
REVIEW				

FIGURE 1-4



25 0 25
HORIZONTAL SCALE FEET

25 0 25
VERTICAL SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

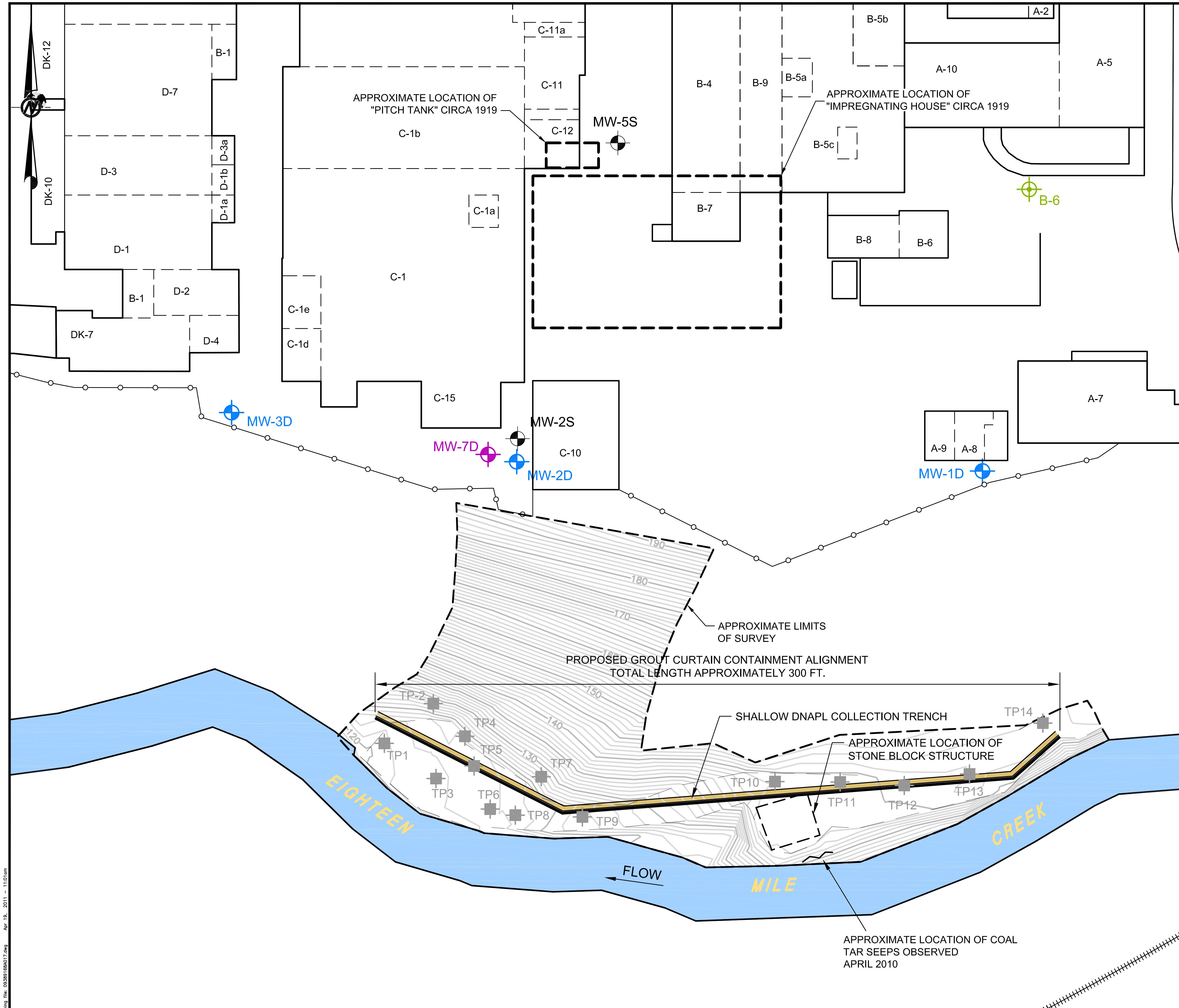
PROJECT
SNPE - VANDEMARK
FOCUSED CORRECTIVE MEASURES STUDY
LOCKPORT, NEW YORK

TITLE
TEST PIT CROSS SECTION

Golder Associates
Mt. Laurel, New Jersey

PROJECT No.	093-89168	FILE No.	09389168A015
DESIGN	AL 07/29/10	SCALE AS SHOWN	REV. 0
CADD	AML 04/12/11		
CHECK			
REVIEW			

FIGURE 1-5



LEGEND

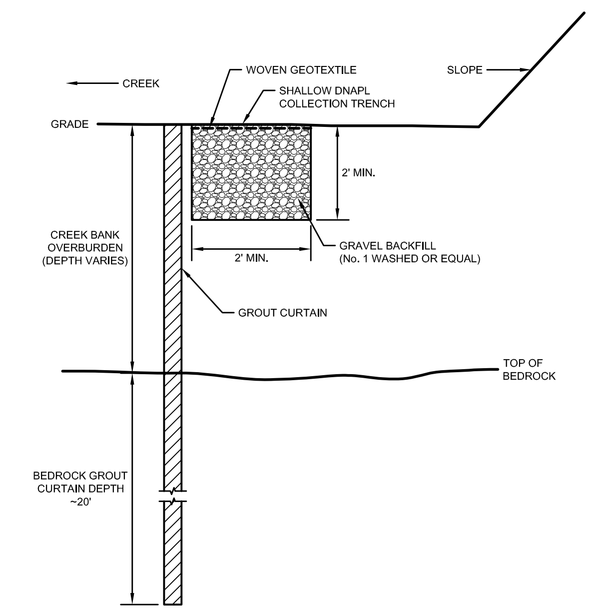
- FENCE
- RAILROAD
- 1999 INVESTIGATION BORING
- 1999 INVESTIGATION OVERBURDEN MONITORING WELL
- 1999 INVESTIGATION BEDROCK MONITORING WELL
- 2006 BEDROCK MONITORING WELL
- TEST PIT LOCATIONS
- EIGHTEEN-MILE CREEK

REFERENCE

1.) TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

2.) TEST PITS SHOWN ON THIS PLAN WHERE TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

3.) MAP DIGITIZED FROM HARD COPY OF FIGURE 1 ENTITLED "SITE PLAN," PREPARED BY BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.



1 / 5-1 TYPICAL GROUT CURTAIN AND DNAPL COLLECTION TRENCH DETAIL

NOT TO SCALE

SCALE 40 0 40 FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SNPE - VANDEMARK
FOCUSED CORRECTION MEASURES STUDY
LOCKPORT, NEW YORK

TITLE

ALTERNATIVE NO. 2 OVERBURDEN & BEDROCK CONTAINMENT CURTAIN LAYOUT

NJ Authorization #24GA28029100

Golder Associates
Mt. Laurel, New Jersey

PROJECT No.	093-89168	FILE No.	09389168A017
DESIGN	DCW 07/16/10	SCALE AS SHOWN	REV. 0
CADD			
CHECK		FIGURE 5-1	
REVIEW			

Drawing file: 09389168A017.dwg Apr. 19, 2011 – 11:01am

APPENDIX A

DNAPL ASSESSMENT AND SUPPLEMENTAL WORK PLAN (DECEMBER 2009)

December 21, 2009 093-89168

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials, Region 9
270 Michigan Ave.
Buffalo, New York 14203

Attention: Mr. Stanley Radon, Sr. Engineering Geologist

RE: SNPE - VANDEMARK CHEMICAL DNAPL ASSESSMENT & SUPPLEMENTAL WORK PLAN VANDEMARK CHEMICAL FACILITY, LOCKPORT, NY

Dear Mr. Radon:

On behalf of SNPE Inc. (SNPE), Golder Associates Inc. (Golder) has prepared this report to address the issues and concerns raised by the New York State Department of Environmental Conservation concerning further characterization and development of a supplemental Work Plan pertaining to investigation activities of tar impacts along the Eighteen Mile Creek bank and slope adjacent to the VanDeMark Chemical facility in Lockport, New York. SNPE, Inc. as former site owner is taking the lead in conducting the additional evaluation described herein and conducting any recommended supplemental characterization activities with support from the current site owner, VanDeMark Chemical, Inc.

1.0 BACKGROUND

In October 2006, SNPE, as site Owner at that time, conducted sampling of the on-site groundwater monitoring wells network as part of due diligence efforts associated with the pending sale of the facility. The sampling effort identified the presence of a significant amount of dense non-aqueous phase liquid (DNAPL) in the deeper bedrock monitoring well (MW 2D) located approximately 25 feet north of the top of the creek bank in a paved area just west of the training and men's locker room building (Figure 1).

Based on this finding, further visual investigation of the adjacent slope and Eighteen-Mile Creek bank area south and presumably downgradient of this well was performed by SNPE's consultant. These inspections revealed visible quantities of an accumulated coal-tar like substance seeping out near the base (toe) of the cliff face and present along an approximately 100 feet length of the creek bank shoreline itself.

Upon this discovery and in consultation with the New York State Department of Environmental Conservation (NYSDEC), two separate remedial efforts were undertaken through SNPE in 2007 and 2008 (Benchmark, Sept. 12, 2007, Dec. 22, 2008, and May 20, 2009) to mitigate and remove the accumulated tar material that appeared to have flowed out from the toe of the slope and accumulated along the top of bedrock and intermingled within the bank sediments and into the creek itself. These removal efforts were predicated on the concept that the flow of accumulated tar had run its course based on the highly weathered appearance of the accumulations. Therefore, the remedial efforts were aimed toward expeditious removal of these source materials that were exposed on the creek bank and within the creek and follow-up monitoring the creek bank after removal to confirm that new seeps were not occurring.

In the summer of 2009 however, a joint inspection conducted by the NYSDEC and Pam Cook from VanDeMark Chemical revealed the presence of newly accumulated tar residuals at both the toe of the slope and on top of the clean backfill that was placed along the creek bank area previously remediated. This finding has led to a request by the NYSDEC to perform a more detailed evaluation of the potential

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source, nature and extent of the tar residuals along and within the bedrock along the escarpment (creek bank) area. Specifically the NYSDEC has requested the preparation of a Work Plan to characterize and better define the impacts in order to craft a more comprehensive remedial approach going forward.

During an October 14, 2009 review meeting with representatives from NYSDEC, SNPE, VanDeMark and Golder, the complexity (i.e. fractured nature) of the underlying rock geology at the VanDeMark Facility and the assumption that the release of the tar residuals most likely occurred more than 40 years ago was reiterated. Therefore, it was agreed that attempting to further delineate the source and extent of the existing DNAPL within the overburden soils and underlying bedrock through a traditional boring investigation program would be costly and unlikely to better characterize the location of extent of the impacts. This type of investigation would also be logistically difficult to implement due to the layout and constrained access within the facility and the hazards of performing these activities in conjunction with the ongoing chemical production activities. The NYSDEC, SNPE and VanDeMark concurred that a more beneficial strategy would consist of a phased assessment of the problem.

Following this strategy, Golder conducted the following tasks:

- A historical record review;
- Bedrock and DNAPL analysis and conceptual model formulation; and
- Summarization of findings and preparation of Workplan

2.0 HISTORICAL SITE REVIEW

A review of historical records was conducted from the sources discussed below:

2.1 Sanborn Map Review

A review of the available historical Sanborn fire insurance maps of the site and surrounding parcels for evidence of past manufacturing or related commercial activities that may have resulted in the generation and disposal of tar residuals was conducted by Golder.

Sanborn maps were obtained through Environmental Data Resources (EDR) using the current Site's One North Transit Road address. Maps were available from the years 1898, 1903, 1909, 1914, 1919, 1928, 1948 and 1969. In general the maps illustrate an area encompassing the present VanDeMark Chemical operations and surrounding parcels north to Mill Street and south to Eighteen Mile Creek. The maps confirm that the Site and adjacent parcels have a long history of nearly uninterrupted industrial use. The following detailed observations and inferences were made:

- From the late 1800's through the 1920s, the Site was occupied by a company alternately known as "United Industrial Fibre Co., United Indurated Fibre Co., and Fibre Corporation". The maps identified these companies as being manufacturers of fibre pipe, pails, drums, etc. The most notable features on the map that were associated with all these operations were a "Bake Oven Building", a combined "Resin Storage and Boiling House" building and in the 1914 and 1919 maps a new building located in the southeast portion of the Site. A portion of this building is labeled "Impregnating Room". On the 1919 map, three tanks (presumably outdoors) are evident on the north side of what's now called the "Impregnating House". One of the tanks is labeled as a "Pitch Tank & Heater". These operations and nomenclature would be consistent with the practice of treating/impregnating the fiber-based pipes, containers, etc. with a bituminous mastic or pitch material to waterproof or render them suitable for storing or conveying other liquids.
- The 1928 Sanborn Map indicates that the Fibre Corporation appears to be defunct and most buildings are labeled as vacant. Tenants that may be leasing portions of the former Fibre Corp buildings are listed as Norton Laboratories and National Lead Co. There are no further descriptions of their activities or the nature of their operations.

- The 1948 Sanborn map reveals a significantly diminished set of physical buildings and structures on the Site and it is listed as “Niagara Chlorine Products Corporation”. Buildings are labeled as “Factory Building”, Aluminum Chloride”, “Empty Drum Storage” and “Weld Shop”. There are no indications of processes or structures that might be associated with the generation of tar related substances.
- The 1969 Sanborn Map contains the first reference to the “VanDeMark Chemical Co.” on the Site and the buildings and labeling of them remains essentially unchanged from the 1948 map. The Milward Alloys buildings appear on this map in the northeast corner of the Site and are labeled generically as “Factory Buildings”.

A copy of the Sanborn Maps reviewed and described above are included in Attachment A.

2.2 Aerial Photographs Review

A review of the available historical aerial photographs of the site and surrounding parcels for evidence of past manufacturing or related commercial activities that may have resulted in the generation and disposal of tar residuals was also performed by Golder.

Aerial photographs were obtained through EDR using the current Site’s One North Transit Road address. The aerial photos available for review were from the years 1962, 1972, 1985, 1995 and 2006. Based on the known site history, these photos encompass the more recent ownership of the Site by either the VanDeMark/VanChem group of companies (in the 1960s, 1970s, 1980s and majority of the 1990s) or the subsequent ownership of the Site by SNPE NA (SNPE) from the late 1990s through 2006. In general, the photos obtained were taken at an elevation and resulting scale that does not allow for detailed evaluation of specific structures or features and in many cases the photo resolution/quality is relatively poor which further limits the usefulness of the photos.

The photos scale and resolution only allow for confirmation of the presence of the chemical manufacturing plant on the Site during the time frame encompassed by the photos. No other observations or conclusion could be drawn from the photos.

A copy of the aerial photos reviewed and described above are included in Attachment B.

2.3 Facility Records Review

A review of VanDeMark Chemical facility records/files was conducted with the assistance of VandeMark personnel to determine if documentation exists pertaining to the production of CO or any other related process activities (e.g., coal combustion related operations) that may have been associated with the source of the tar residuals observed in the bedrock well and migrating from the toe of the slope.

The records review performed by Golder revealed that oldest available known files are dated to the early 1960s. Specifically, engineering design and documentation information pertaining to the installation of the carbon monoxide (CO) storage tank installation were found and dated circa 1962. This confirmed the assumed time frame for the implementation of CO purchase off-site that was initiated when the on-site generation of CO for use as a raw material in the manufacture of phosgene was discontinued.

Production records related to pre-1962 processes were unavailable and according to current VanDeMark employees there is no record that these records exist.

2.4 Employee Interviews

VanDeMark Chemical provided names of four former employees (all retired) that worked at the facility and were employed in the 1950s and 1960s and may have had direct or anecdotal knowledge of the processes employed by VanDeMark and VanChem (a system company to VanDeMark co-located at the Site) related to the potential use or generation of coal-tar based substances or residuals.

Golder attempted to conduct telephone interviews with all of the former employees and was successful in contacting two of the four contacts provided. Mr. Gerald Schultz indicated that he did not begin working at the VanDeMark facility until the late 1960s and had no knowledge of any processes employed during his tenure that used or resulted in the generation of coal tar or related substances. He also added that he recalled no discussions with longer tenured employees at that time who indicated that any generation or disposal of coal tar related residuals occurred at the facility.

Mr. Robert Dunn, a former long time production worker and supervisor for the VanDeMark Chemical Company was also interviewed. He was employed at the facility during the majority of the 1950s. He had direct knowledge of the on-site CO manufacturing process and was definitive that CO was generated using coke (not coal) as the primary carbon raw material source. To his knowledge, coal was not purchased for use at the facility for any purpose. Mr. Dunn described the residuals from the CO "producers" as a dry ash–like material. He was unaware of any coal-tar based substances either being used as a raw material in any of the production process or generated as a by-product or waste. He described the routine disposal over the south slope of silicon carbide solid waste that was generated from the silicon tetra- carbide process. This fill material was observed in quantity at or near the surface during recent inspections of the creek bank and adjacent slope area.

2.5 Previous Report Review

A review of the results of the Phase II Investigation report performed at the facility in 1998/1999 at the request of SNPE prior to transfer of ownership to SNPE was performed by Golder. As part of this Phase II investigation, seven soil borings were advanced and sampled and six ground water monitoring wells were installed, developed and sampled. The results of these investigation activities were utilized extensively in support of the "DNAPL Transport Analysis" presented in Section 3 of this report.

2.6 Historical Record Review Summary

The results of the historical records review and interviews described above were intended to determine if a more definitive connection may be made as to the type, location, time frame, quantity and disposal practices associated with coal tar residuals from the historical manufacturing activities at the facility. This approach was followed to address the NYSDEC's specific concerns related to conducting a more thorough assessment of the Dense Non Aqueous Phase Liquid (DNAPL) source (potential coal tar) and to better define the extent of the impacts within the complex bedrock geology of the site.

In general, the results of the records review and interviews conducted, while not definitive, found that the Site currently occupied by the VanDeMark Chemical Company and adjacent properties have a long and diverse history of heavy industrialized usage dating back to the late 1800s. A review of the processes and operations conducted at the site over the past 65 to 70 years, i.e., since the Site was under control of the VanDeMark Chemical Company and it successors, did not find evidence that the chemical processes employed resulted in the generation or disposal of coal-tar related residuals during this time period. Prior to conducting the employee interviews there was some anecdotal reports by current VanDeMark employees that coal may have been used/combusted to generate CO prior to the discontinuation of on-site CO generation on the early 1960s. As noted in the interview summary, this does not appear to be consistent with the actual process employed and the use of coke was a standard method of CO generation that would have been typical for a phosgene production facility during the early to mid 1900s.

The most relevant information obtained from the records review pertains to evidence from the Sanborn maps of the use of "pitch" and the identification of a pitch storage tank adjacent to an "Impregnating House" on the 1919 map. The approximate location of these structures was scaled based on the location of North Transit Road and railroad spurs and when overlaid on the current site map is consistent with the area of the Site to the north - northeast of MW-2D that may potentially be the source of the DNAPL as discussed in more fully in Section 3.

3.0 DNAPL TRANSPORT ANALYSIS

To characterize the geologic aspects of the overall tar impacts at the site associated with the ongoing migration of the DNAPL through the bedrock and into the creek bank area adjacent to the toe of the escarpment slope, Golder reviewed existing geologic, hydrogeologic, and groundwater/DNAPL chemistry information and summarized it to create a conceptual site model of DNAPL transport at the facility. These reviews and a summary are presented in the sections following.

3.1 Site Geology Review

Geologic information was primarily derived from the 1999 Phase I/II report by Dames & Moore (Dames & Moore, 1999) and the 2006 field investigation summary report by Benchmark Environmental Engineering & Science PLLC (Benchmark, Nov 30, 2006). In general, the site is underlain by 10-14 feet of brown to black silty sand and gravel fill, subsequently underlain by a silt and clay till (with some coarse sand and medium gravel). Total overburden thickness ranges from approximately 10-20 feet.

Bedrock under the site was described in the Dames & Moore report referenced above as soft red-brown shale or red to gray sandstone, dipping gently to the south at 30-40 feet per mile (i.e. sub-horizontal). Bedrock descriptions were refined in the Benchmark report referenced above, which was associated with the installation of well MW-7D. In this borehole the uppermost bedrock underlying the site was identified as the Grimsby Sandstone, described in MW-7D as a dark red brown to grey, moderately strong, fine-grained, thinly bedded, slightly to moderately weathered intensely fractured sandstone. Also noted were occasional clay-filled horizontal fractures. Other factures were extremely to vary narrow and partially healed, some iron-stained.

The unit underlying the Grimsby Sandstone is the Power Glen Shale, described in MW-7D as a dark gray with light to medium gray banded, horizontally bedded, very hard, shale. Also noted were clay filled horizontal fractures. These units are both part of the Lower Silurian age Medina Group. Both units are shown in cross sections of the site, shown in Figure 2.

The highly fractured nature of the bedrock is well exhibited in the upper portions of an outcrop along W. Jackson Street approximately ¼ mile west of the site (just SE of the Lockport sewer treatment plant), where both the Grimsby/Power Glen formations as well as the underlying Upper Ordovician aged rock are visible. Common fracture patterns in this area would consist of intersecting near-vertical fractures (often forming a characteristic “diamond” shape when viewed from above) and near horizontal fractures typically corresponding with bedding planes. These “diamond” patterns of intersecting near-vertical fractures are easily visible just beyond the south facility gate leading to the closed section of Gooding Street, and are located just to the north of the road where the bedrock surface is exposed.

Topographically, the facility sits on the north side of Eighteen Mile Creek, which flows generally west at this location. The facility itself sits on gently sloping land, with the north side between approx. 5 and 10 feet higher than the south side (based on monitoring well survey data), thus surface water flow is toward the creek. Immediately south of the facility is the steep valley of Eighteen Mile Creek, which has a relief of approx. 50+ feet (based on the USGS 1:24,000 quadrangle map).

3.2 Hydrogeology Review

Groundwater elevation measurements collected during the 1999 Dames & Moore Phase I/II investigation indicate groundwater flow in the overburden and bedrock is to the southwest towards Eighteen Mile Creek. Bedrock gradients are steep, as groundwater elevations near the north side of the site (e.g. in MW-4D) are approx. 30 feet higher than those near the valley edge (e.g. in MW-3D and MW-2D), from which Golder calculated a gradient of approx. 0.2. Groundwater elevations measured in 2006 (Benchmark, Nov. 30, 2006) appear similar.

Note there were some irregularities in Table 2 of the 1999 Dames & Moore Phase I/II report (the values for “Depth to Groundwater From TOC” for wells MW-2S and MW-2D appear to have been inadvertently switched), however the calculated groundwater elevations appear to be correct. As no tests to calculate bedrock hydraulic conductivity are known to have been performed, no estimate of groundwater flow rate has been made.

3.3 Chemistry Review

3.3.1 Previous Sample Results

Soil and groundwater were sampled at the facility in 1999 (Dames & Moore, 1999), and groundwater, surface water, and NAPL were sampled in 2006 and 2007 (Benchmark; Nov. 30, 2006; Dec. 22, 2006; and Feb 26, 2007). As summarized in the Dames & Moore report, exceedances of state standards in soils were noted for Volatile Organic Compounds (VOCs), Base/Neutral/Acid (BNAs – aka Semi-Volatile Organic Compounds [SVOCs]), and metals. Metal exceedances were rather evenly distributed across the site, with VOC exceedances limited to the MW-6 and MW-3 locations, and BNA exceedances found in the MW-5 and MW-6 boreholes. Some metal exceedances (e.g. arsenic, iron, manganese, magnesium) are expected in areas with glacially derived soils such as found at the site, and may not necessarily be related to site activities.

For groundwater samples collected in 1999, all wells indicated exceedances of VOCs except for MW-2S, and all wells had metal exceedances similar to those in the soil samples. BNA exceedances, likely associated with tar DNAPL and present at much higher concentrations (up to 110,000 ppb for naphthalene) than any of the other compounds were limited to MW-2D, with minimal impact elsewhere. A strong moth ball-like odor, and NAPL were observed in MW-2D during sampling.

One suite of chlorinated compounds was limited to the western portion of the site in wells MW-3D and MW-4D, suggesting a possible upgradient off-site source for these compounds. A second suite of chlorinated compounds, with none of the same compounds as the first, was found only in well MW-1D, suggesting a different source. Compounds typically associated with gasoline impacted groundwater (e.g. toluene, ethylbenzene, and xylene) were limited to samples collected from MW-5S and MW-2D in the south/central part of the site.

In 2006, a second round of well sampling was performed (Benchmark, Nov. 30, 2006) including NAPL sampling in MW-2D, two surface water samples collected in Eighteen Mile Creek, and a new well MW-7D installed just west of MW-2D. Monitoring well results were similar to the first round of sampling in that the most significant impacts were present in MW-2D (up to 230,000 ppb for naphthalene), and appear to be related to coal-tar like DNAPL impact (based on the DNAPL analysis). Note wells MW-2S and MW-4D could not be located and were thus not re-sampled, the gasoline-like compounds flagged as exceedances MW-5S in the first round were not detected in the second, and that none of the wells were analyzed for metals in round two.

No VOCs or BNAs were detected in either the upstream or downstream samples collected from Eighteen Mile Creek, suggesting no dissolved-phase measurable impact to the Creek that can be attributed to site activities.

Sample results from MW-7D (Benchmark, Dec. 22, 2006), installed approximately 7 feet west of MW-2D, indicated that groundwater in MW-7D is actually more similar to that collected in cross-gradient wells MW-1D, and MW-3D and only similar to that of MW-2D with regards to VOCs (suggesting a common upgradient VOC source[s]). SVOC (i.e. coal-tar-related) concentrations in MW-7D groundwater were *not* similar to those in MW-2D, and instead were much lower or absent, like those in MW-2D and MW-3D, suggesting that the DNAPL impact area is very localized around MW-2D. No DNAPL was noted in MW-7D.

3.3.2 November 2009 DNAPL Sample Results

A sample of recently exposed (i.e. post-remedial effort) DNAPL was collected from several deposits on November 19, 2009 along the area of the creek bank previously remediated and adjacent toe of the cliff face for chemical property analysis to characterize the DNAPL. The results of the analysis are presented in Attachment C.

The detected constituents, primarily semi-volatile organic compounds (SVOCs) and to a much lesser extent volatile organic compounds (VOCs) are nearly identical to the compounds detected in the DNAPL sample collected from MW-2D in November 2006 and reported in Table 3 of the "Summary of Supplemental Field Investigation and Sampling Activities" dated November 30, 2006 (Benchmark Environmental Engineering). In general, the concentrations reported were an order of magnitude lower than the 2006 DNAPL sample which would be consistent with the weathering and environmental exposure/degradation that would be expected for DNAPL that has slowly migrated through the bedrock fractures and onto the creek bank. The close correlation of the compounds detected within the DNAPL found in the bedrock monitoring well MW2D and the recent sample found along the creek bank confirms that it is highly probable that they emanated from the same source.

3.4 DNAPL Transport and General Site Conceptual Model

The above information was compiled and used to construct a conceptual model of the site's DNAPL transport from the likely original source area location to the toe of the cliff. Based on the Sanborn map notation of "pitch" and the identification of a pitch storage tank adjacent to an "Impregnating House" on the 1919 map (located just south of existing well MW-5S), and the reported use of coke (and not coal) for CO production, Golder has concluded that the most likely origin for the current DNAPL is the pitch impregnation process dating from the late 1910s.

Though the exact mechanism for how the DNAPL was transported from the pitch impregnation process line to the upper bedrock is unknown, the approximate location of the pitch impregnation structures (Figure 1) directly north (upgradient) from MW-2D (the only location where DNAPL is currently present in a well) suggests the tar either leaked directly from the process equipment into the site soils, or it was possibly disposed of in an unlined pit very near the process buildings (a common practice of that era).

Once in the site soils, the tar would move downward through the soil pores under the influence of gravity (it being denser than water) until reaching the upper bedrock, where it would continue its downward migration through the vertical rock fractures known to be present at the site. With the dip of the rock being gently towards the creek (i.e. south), and with groundwater flow also generally towards the south, the downward-migrating DNAPL would also tend to have a southerly component as well (along the bedding planes), until eventually the tar would either exit the rock on north face of the slope of Eighteen Mile Creek (to then flow under the overburden cover of the slope), or it would move downward through the rock until it reaches the (probable) less permeable rock layer currently trapping the tar near the toe of the slope, and *then* move south. At that point it would collect at the toe of the slope as it is currently seen to be doing. The reappearance of the tar subsequent to remedial efforts support the model that tar is continuing to move through the rock (with the rock voids acting as a reservoir) and exiting at the toe of the slope, and was not a one-time "pulse" of DNAPL.

The observation that the DNAPL is currently present in a very limited area at the toe of the slope supports the earlier findings that the original source area was also very localized. The groundwater chemistry findings that show the dissolved phase impact from the DNAPL is similarly localized around well MW-2D also support the above limited-extent source area scenario, and suggests DNAPL was not widely dispersed across the site.

4.0 PROPOSED WORK PLAN / SCHEDULE

In view of the above findings and conceptual model, it would be impractical or impossible remove the source of the DNAPL, which is likely now the rock fractures, or to intercept the DNAPL while it is still moving through the rock fractures without significantly interrupting site operations. There are also considerable technical/cost challenges to removing very viscous liquids from small pore spaces/fractures, with a certain percentage of tar material likely to remain in place no matter what the extraction technique attempted. Consequently, the most practical strategy to prevent the migration of DNAPL into Eighteen Mile Creek may be to design and construct a DNAPL capture structure at the toe of the slope to intercept the DNAPL before it reaches the creek floodplain (where it is currently noted collecting), but after it exits the rock. This would likely be a linear structure parallel to the creek, substantial enough to withstand occasional creek flooding, with a mechanism for periodic tar removal.

In order to design any such capture structure, the bedrock/overburden interface in the floodplain, at the toe of the slope, and part way up the slope face must be well defined over entire reach of creek where DNAPL is currently collecting.

As a next step in the remedial process, Golder proposes the preparation of a detailed elevation and location survey of the overburden and underlying bedrock surfaces in this area. Based on the previous remedial activities performed in the creek bank floodplain area, the bedrock surface may potentially be reached using hand punchbars, small portable engine-powered augers, or by a small excavator. Once a three-dimensional map has been constructed of the overburden and bedrock surface, the suitability of various designs for the interception and collection of the DNAPL can be assessed.

Due to weather and safety concerns (i.e., difficult access, steep slopes, and proximity to swift-flowing water) associated with implementing the proposed work, Golder recommends scheduling the survey in late spring 2010.

Subsequent to collection and mapping of this data, development of detailed remedial design alternatives based on the DNAPL intercepting structure(s) concept presented above is proposed for Department review within 8 to 10 weeks of survey completion. Assessment of the suitability and effectiveness of each design alternative is anticipated to be a component of the design alternatives submittal with final remedy selection to be determined in conjunction with the NYSDEC.

If you have any questions concerning the findings and recommendations presented in this assessment report or the proposed supplemental Work Plan activities, please contact us at 716-215-0650.

Sincerely,

GOLDER ASSOCIATES INC.

Patrick T. Martin, P.E., BCEE
Senior Consultant

David C. Wehn, CPG
Associate

C: D. Slick, SNPE, Inc.
P. Cook, VanDeMark Chemical

Attachments:
Figures 1 and 2
Attachment A: Sanborn Fire Insurance Maps
Attachment B: Aerial Photographs
Attachment C: DNAPL Analysis Report (TestAmerica, December 2009)

PTM/DCW:dml

5.0 REFERENCES

Benchmark Environmental Engineering & Science, PLLC, November 30, 2006, *ISOCHEM Inc. – Lockport Facility Summary of Supplemental Field Investigation & Sampling Activities*

Benchmark Environmental Engineering & Science, PLLC, December 22, 2006, *ISOCHEM Inc. – Lockport Facility Supplemental Field Investigation & Sampling Report No. 2*

Benchmark Environmental Engineering & Science, PLLC, February 26, 2007, *ISOCHEM Inc. – Lockport Facility Summary of Site Reconnaissance Activities*

Benchmark Environmental Engineering & Science, PLLC, March 23, 2007, *ISOCHEM Inc. – Lockport Facility DNAPL Assessment Report*

Benchmark Environmental Engineering & Science, PLLC, June 4, 2007, *ISOCHEM Inc. – Lockport Facility Proposed Site Monitoring Program and Creek Bank Clean-up Approach*

Benchmark Environmental Engineering & Science, PLLC, July 18, 2007, *ISOCHEM Inc. – Lockport Facility REVISED Site Monitoring Program and Creek Bank Clean-up Approach*

Benchmark Environmental Engineering & Science, PLLC, September 12, 2007, *VanDeMark (ISOCHEM) Inc. – Lockport Facility Creek Bank Clean-up Closeout Report*

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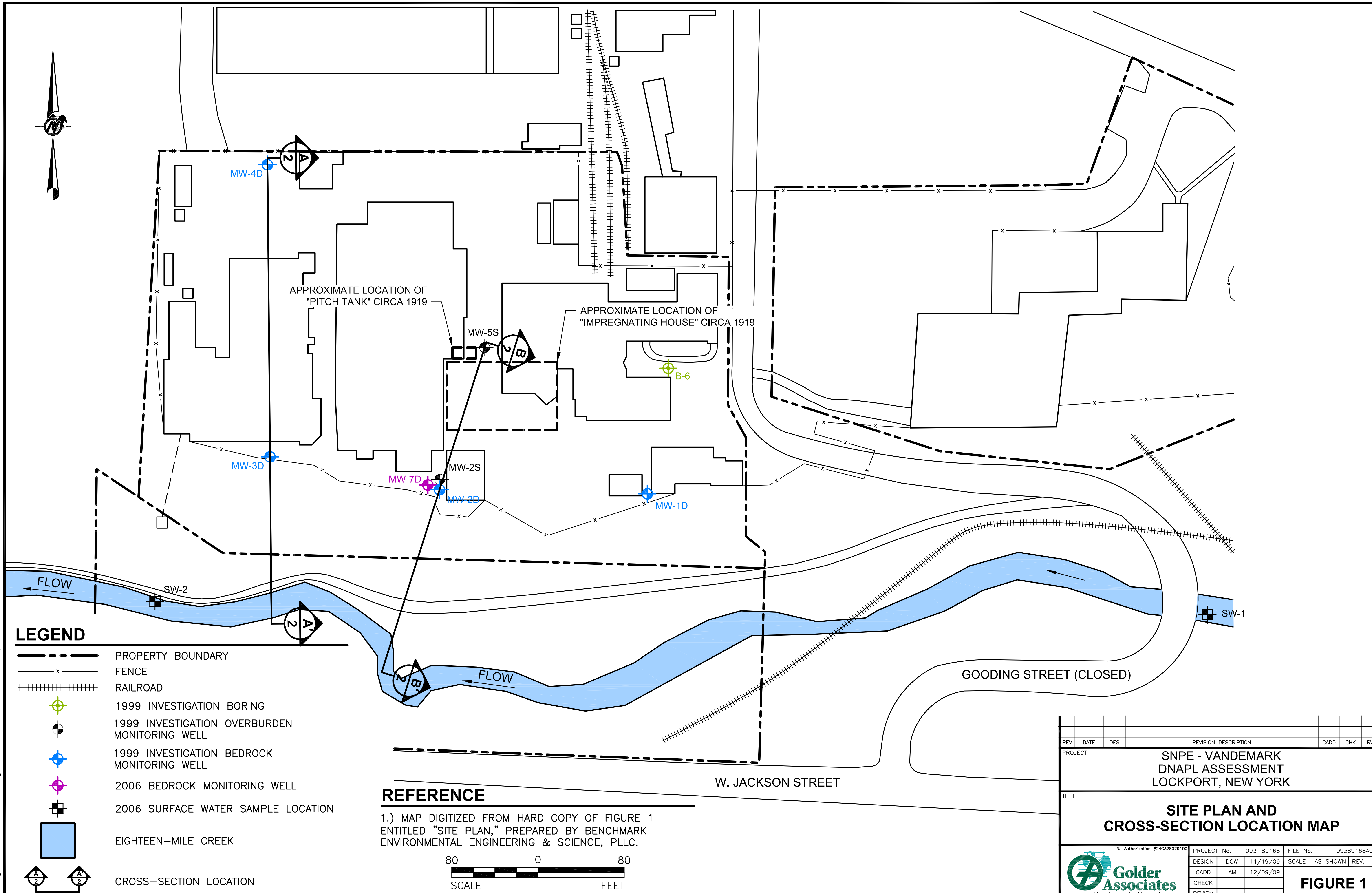
Benchmark Environmental Engineering & Science, PLLC, May 20, 2009, *VanDeMark (ISOCHEM) Inc. – Lockport Facility Supplement to December 2008 Creek Bank Clean-up Report – Summary of Work Performed*

Dames & Moore, September 17, 1999, *PHASE I/II ENVIRONMENTAL AUDIT, VanDeMark, Inc. & Vanchem, Inc., 1 North Transit Road, Lockport, New York*

FIGURES



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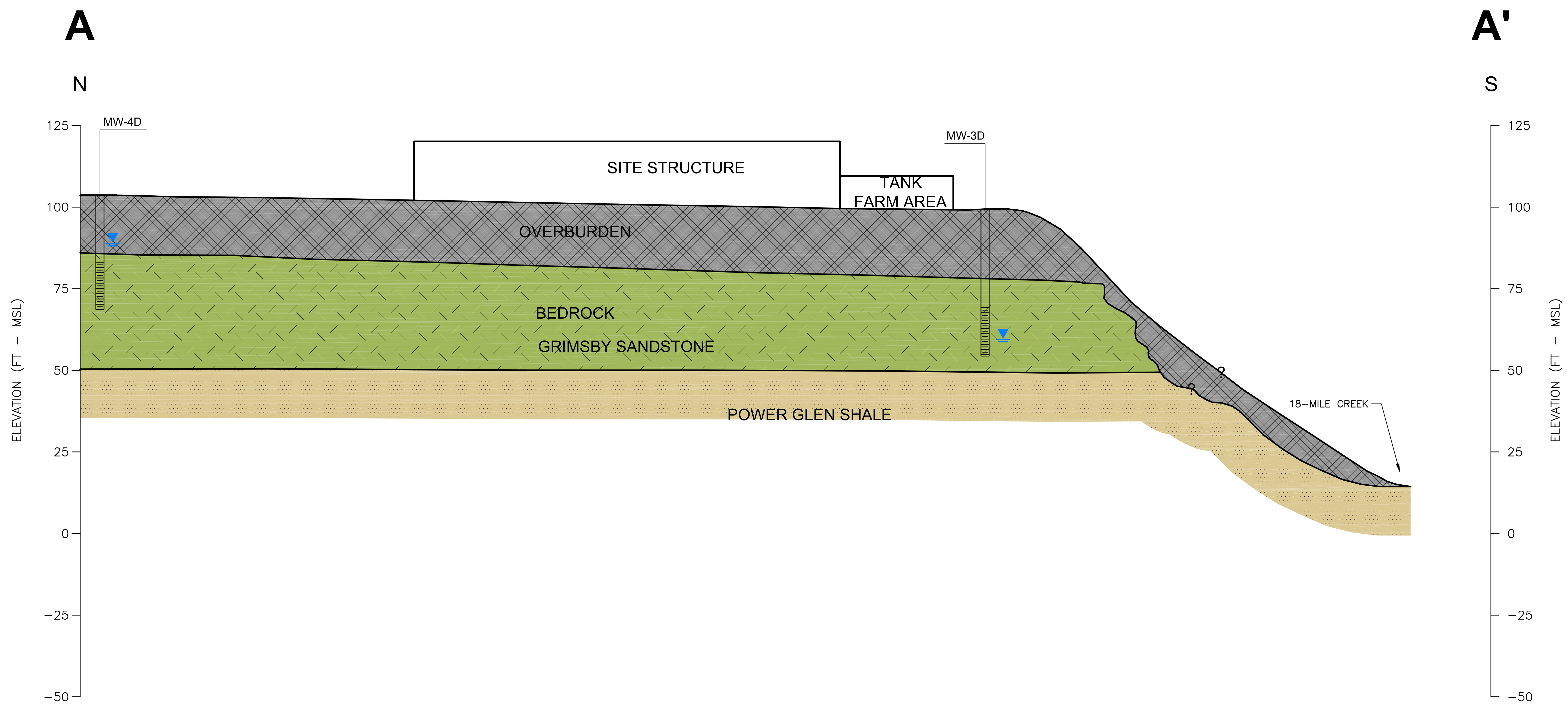
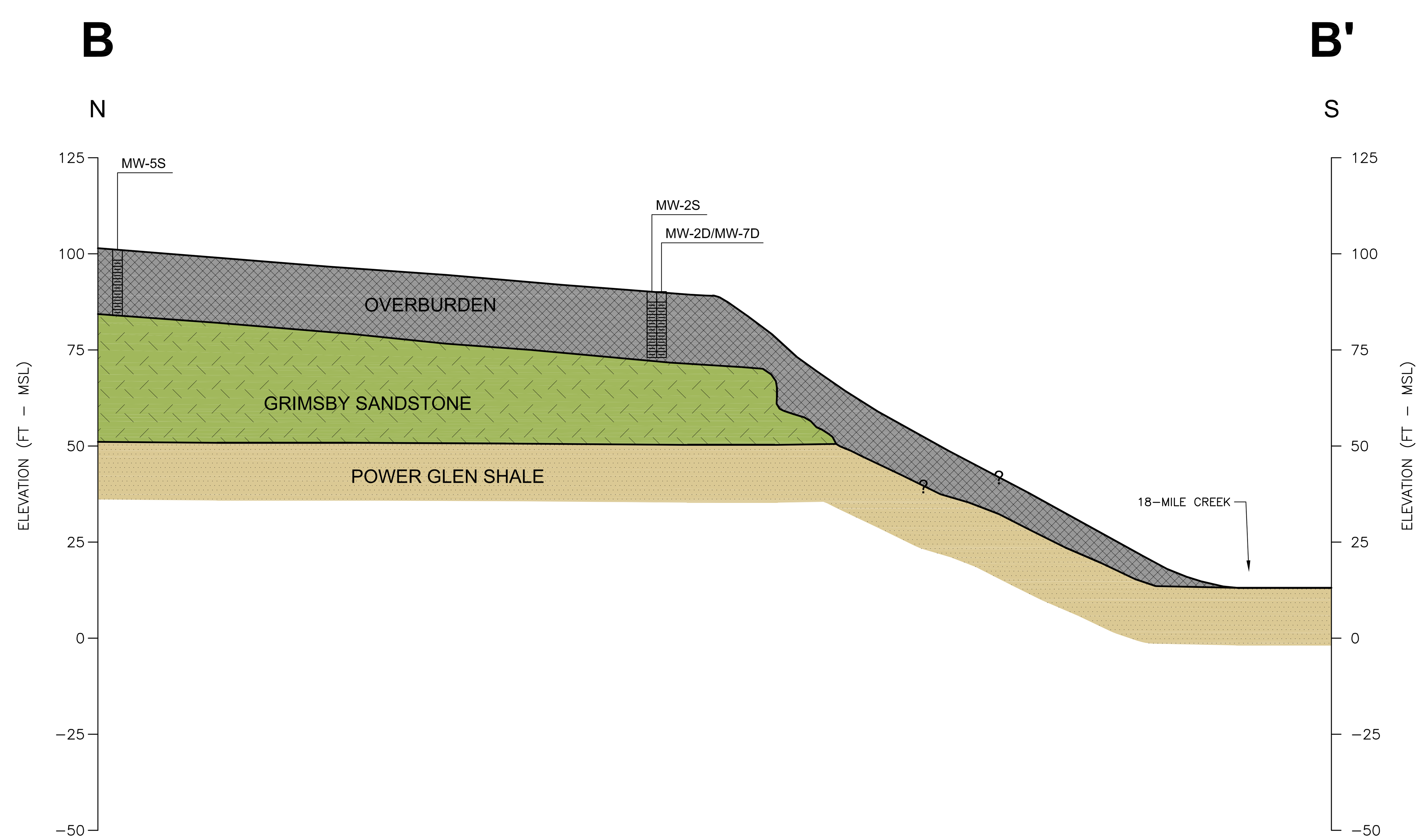




LEGEND

- OVERBURDEN
- BEDROCK GRIMSBY SANDSTONE
- POWER GLEN SHALE

REFERENCES

1.) URS CORP. FIGURE 3 – PHASE I/II ENVIRONMENTAL AUDIT – VANDE/MARIL, INC. A VANCHEM, INC. SEPTEMBER 17, 1999.

2.) BENCHMARK BES, PLLC – SUMMARY OF SUPPLEMENTAL FIELD INVESTIGATION AND SAMPLING ACTIVITIES, ISOCHEM INC., NOVEMBER 30, 2006.

3.) U.S.G.S. LOCKPORT QUADRANGLE (FOR ELEVATION OF EIGHTEEN-MILE CREEK)

25 0 25 50
HORIZONTAL SCALE FEET

25 0 25 50
VERTICAL SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SNPE - VANDEMARK
DNAPL ASSESSMENT
LOCKPORT, NEW YORK

TITLE

CROSS SECTIONS A-A' AND B-B'

NJ Authorization #24GA28029100

Golder Associates
Mt. Laurel, New Jersey

PROJECT No.	093-89168		FILE No.	09389168A002
DESIGN	DCW	11/19/09	SCALE AS SHOWN	REV. 0
CADD	AM	12/09/09	FIGURE 2	
CHECK				
REVIEW				

Drawing File: 09389168A002.dwg   Dec 15, 2009 – 3:47pm

ATTACHMENT A

SANBORN FIRE INSURANCE MAPS

One North Transit Road

One North Transit Road

Lockport, NY 14094

Inquiry Number: 2633108.3

November 06, 2009

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/06/09

Site Name:	Client Name:
One North Transit Road	Golder Associates, Inc.
One North Transit Road	2221 Niagara Falls Blvd. Ste 9
Lockport, NY 14094	Niagara Falls, NY 14304
EDR Inquiry # 2633108.3	Contact: Aaron Lange

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Golder Associates, Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: One North Transit Road
Address: One North Transit Road
City, State, Zip: Lockport, NY 14094
Cross Street:
P.O. # NA
Project: NA
Certification # 3D28-45F9-A4D1

Sanborn® Library search results
Certification # 3D28-45F9-A4D1

Maps Provided:

1969	1903
1948	1898
1928	
1919	
1914	
1909	

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

Limited Permission To Make Copies

Golder Associates, Inc. (the client) is permitted to make up to THREE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

Certified Sanborn® Map Report Enhancements for 2009

The accompanying Certified Sanborn Map Report reflects a number of enhancements that make it easier for you to review these historical maps. EDR has digitally joined together the more than one million fire insurance maps from the Sanborn Library collection so that your target property is centered, making it easier for you to review adjoining properties. Here is a list of the new features:

· Your target property is centered on each map. You can quickly locate your target property and view adjoining properties. Plus, adjoining properties are included more often, reducing your need to refer to additional maps.

· All maps are now displayed at a uniform scale. This makes it easier for you to view changes to the property over time.

· We've increased coverage by adding thousands of new maps from 40 cities for years 1994-2007.

· A new Map Key and Sheet Thumbnails let you reference sheet numbers, year and volume of original Sanborn Map panels used for this report.

For more information about the new enhancements to the Certified Sanborn Map Report, contact your EDR representative at 800-352-0050.

Sanborn Sheet Thumbnails

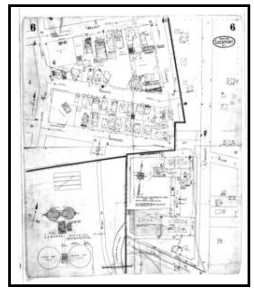
This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.

1969 Source Sheets

Volume 1, Sheet 24

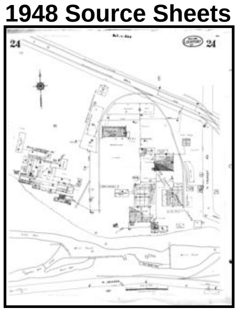
Volume 1, Sheet 25

Volume 1, Sheet 32

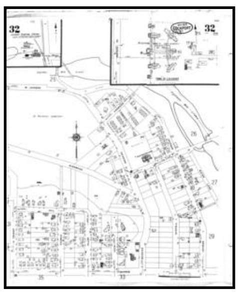


Volume 1, Sheet 6

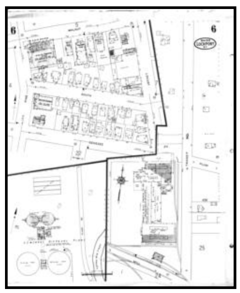
1948 Source Sheets



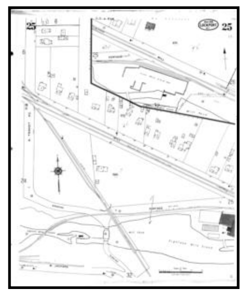
Volume 1, Sheet 24



Volume 1, Sheet 32

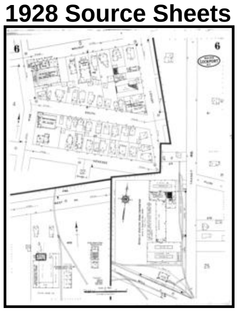


Volume 1, Sheet 6



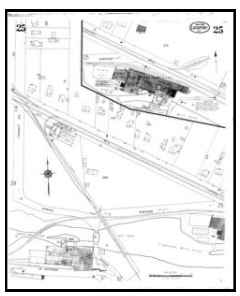
Volume 1, Sheet 25

1928 Source Sheets

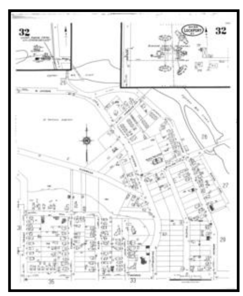


Volume 1, Sheet 6

Volume 1, Sheet 24



Volume 1, Sheet 25



Volume 1, Sheet 32

1919 Source Sheets

Volume 1, Sheet 25

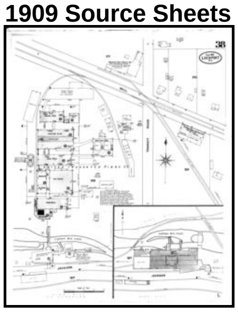
Volume 1, Sheet 26

Volume 1, Sheet 36

1914 Source Sheets

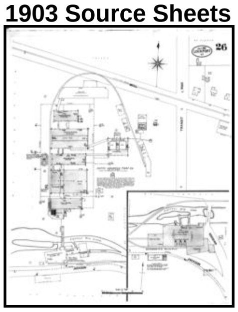
Volume 1, Sheet 38

1909 Source Sheets



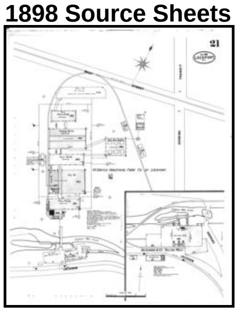
Volume 1, Sheet 38

1903 Source Sheets



Volume 1, Sheet 26

1898 Source Sheets



Volume 1, Sheet 21

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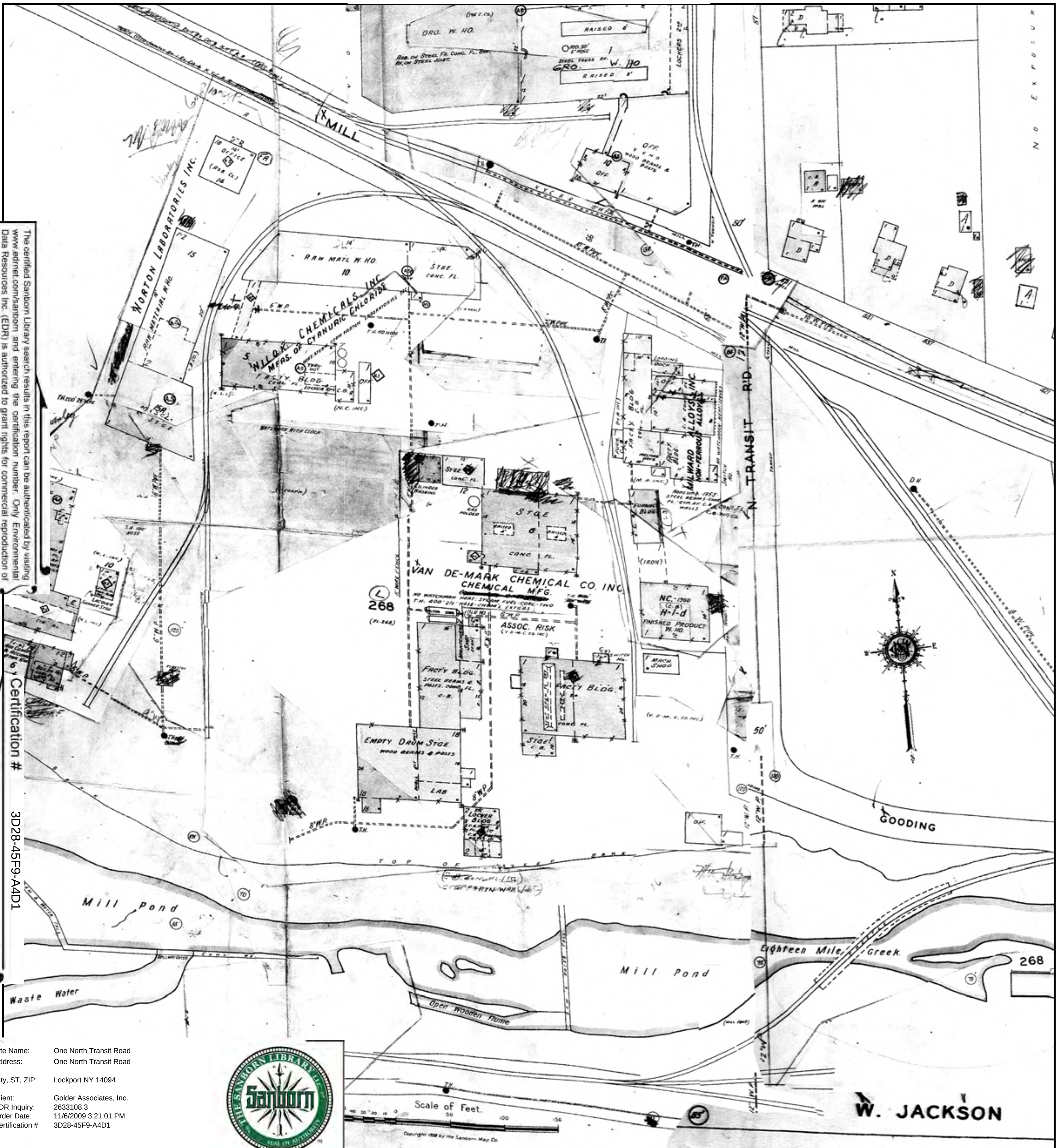

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Address: One North Transit Road
City, ST, ZIP: Lockport NY 14094
Client: Golder Associates, Inc.
EDR Inquiry: 2633108.3
Order Date: 11/6/2009 3:21:01 PM
Certification # 3D28-45F9-A4D1

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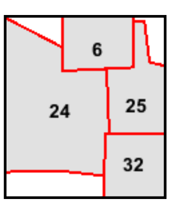
This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



Volume 1, Sheet 24
Volume 1, Sheet 25
Volume 1, Sheet 32
Volume 1, Sheet 6

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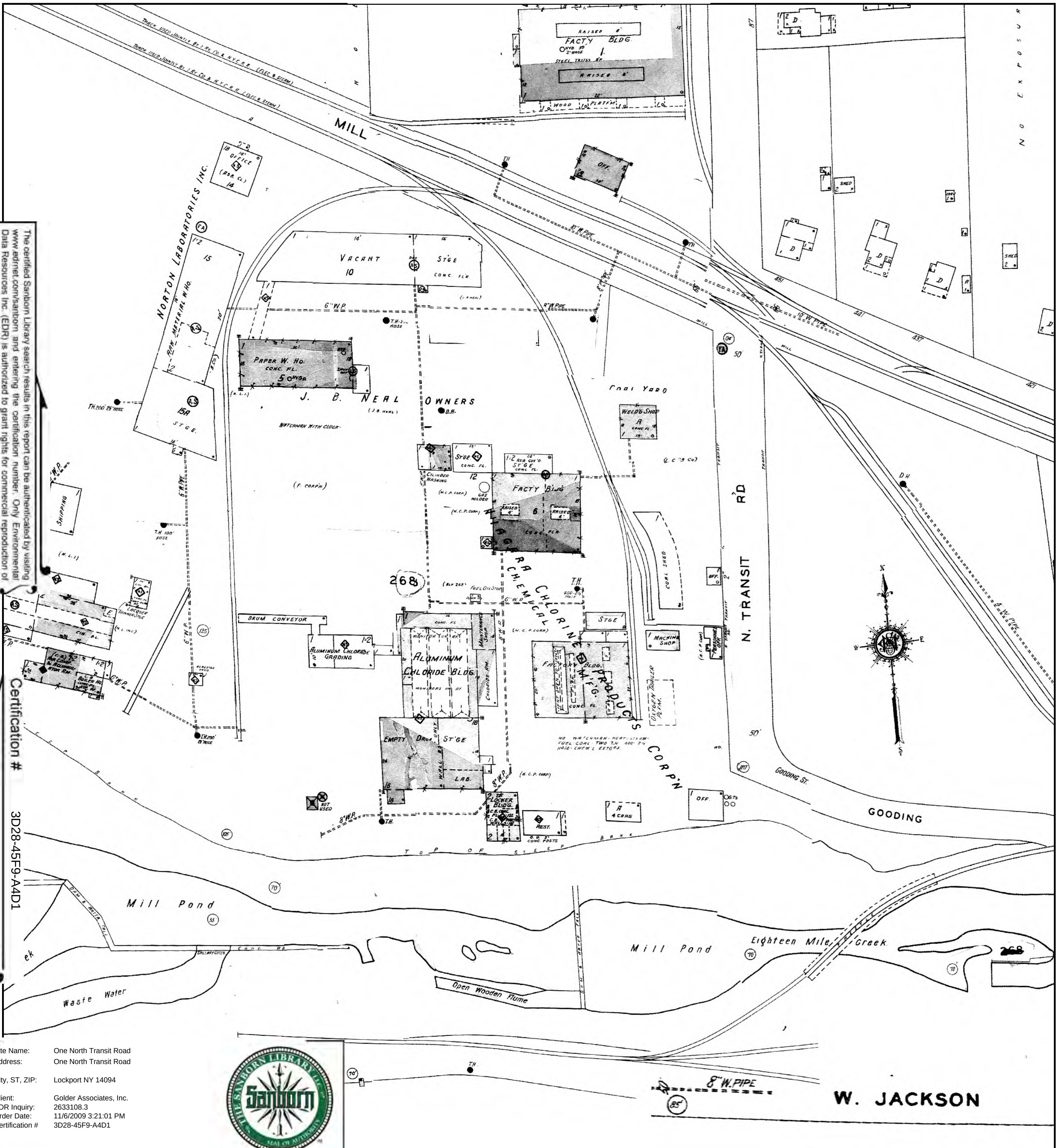
1948 Certified Sanborn Map



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Client: Golder Associates, Inc.
EDR Inquiry: 2633108.3
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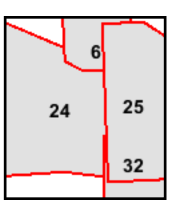
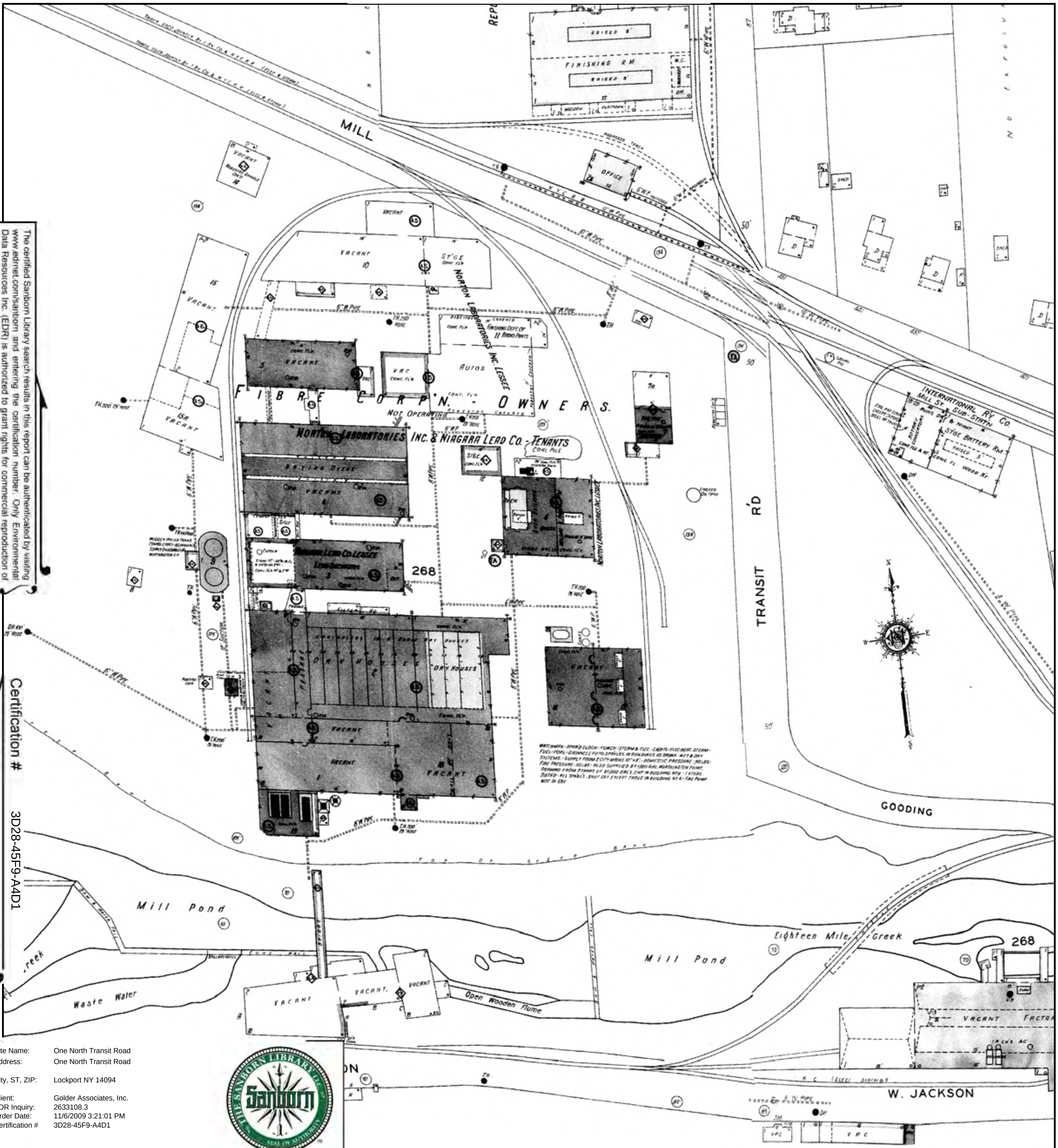


Volume 1, Sheet 24
Volume 1, Sheet 32
Volume 1, Sheet 6
Volume 1, Sheet 25

1928 Certified Sanborn Map



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Address: One North Transit Road
City, ST, ZIP: Lockport NY 14094
Client: Golder Associates, Inc.
EDR Inquiry: 2633108.3
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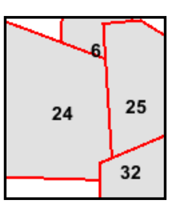
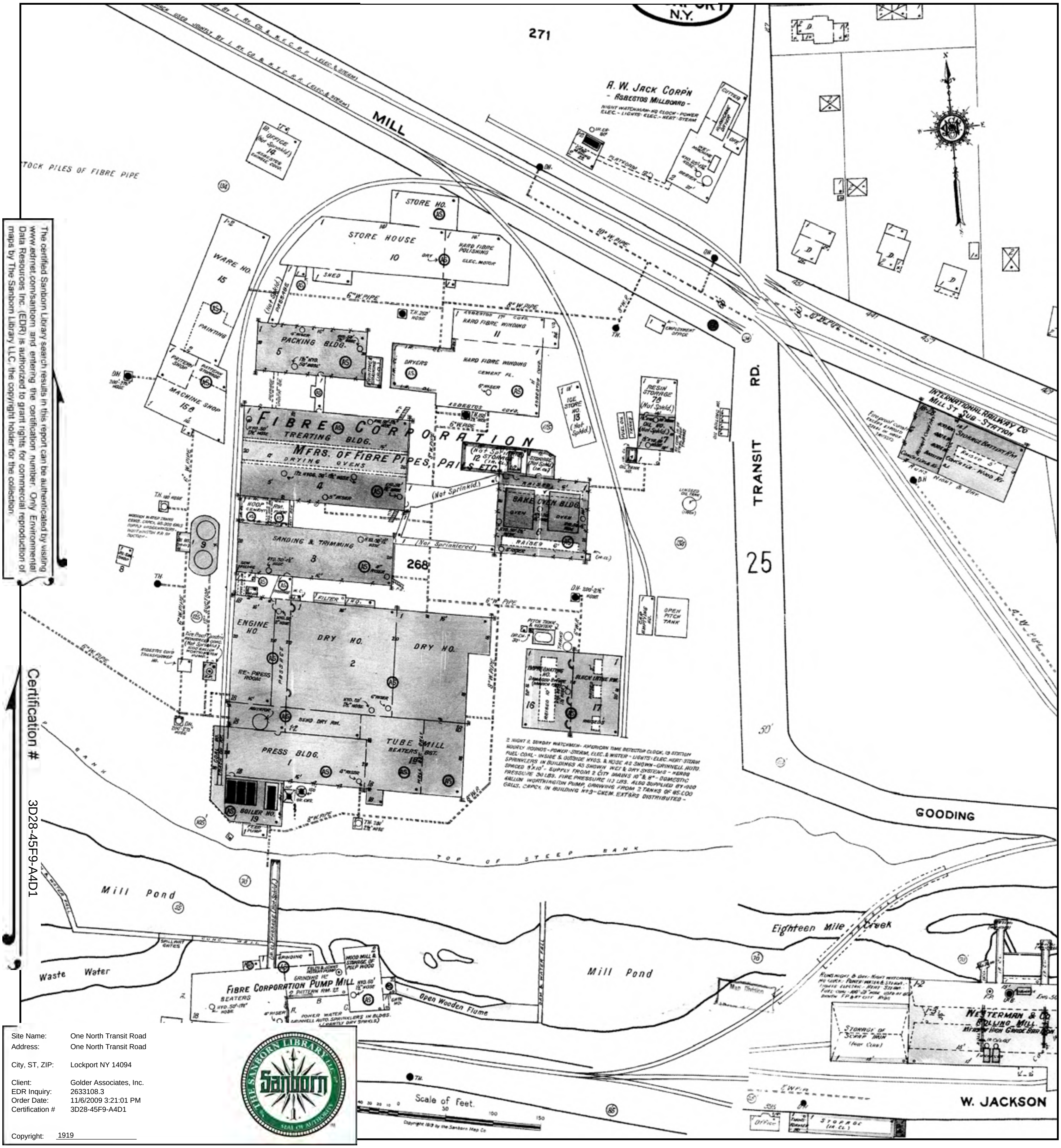


Volume 1, Sheet 6
Volume 1, Sheet 24
Volume 1, Sheet 25
Volume 1, Sheet 32

1919 Certified Sanborn Map



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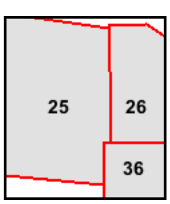

Volume 1, Sheet 25
Volume 1, Sheet 26
Volume 1, Sheet 36

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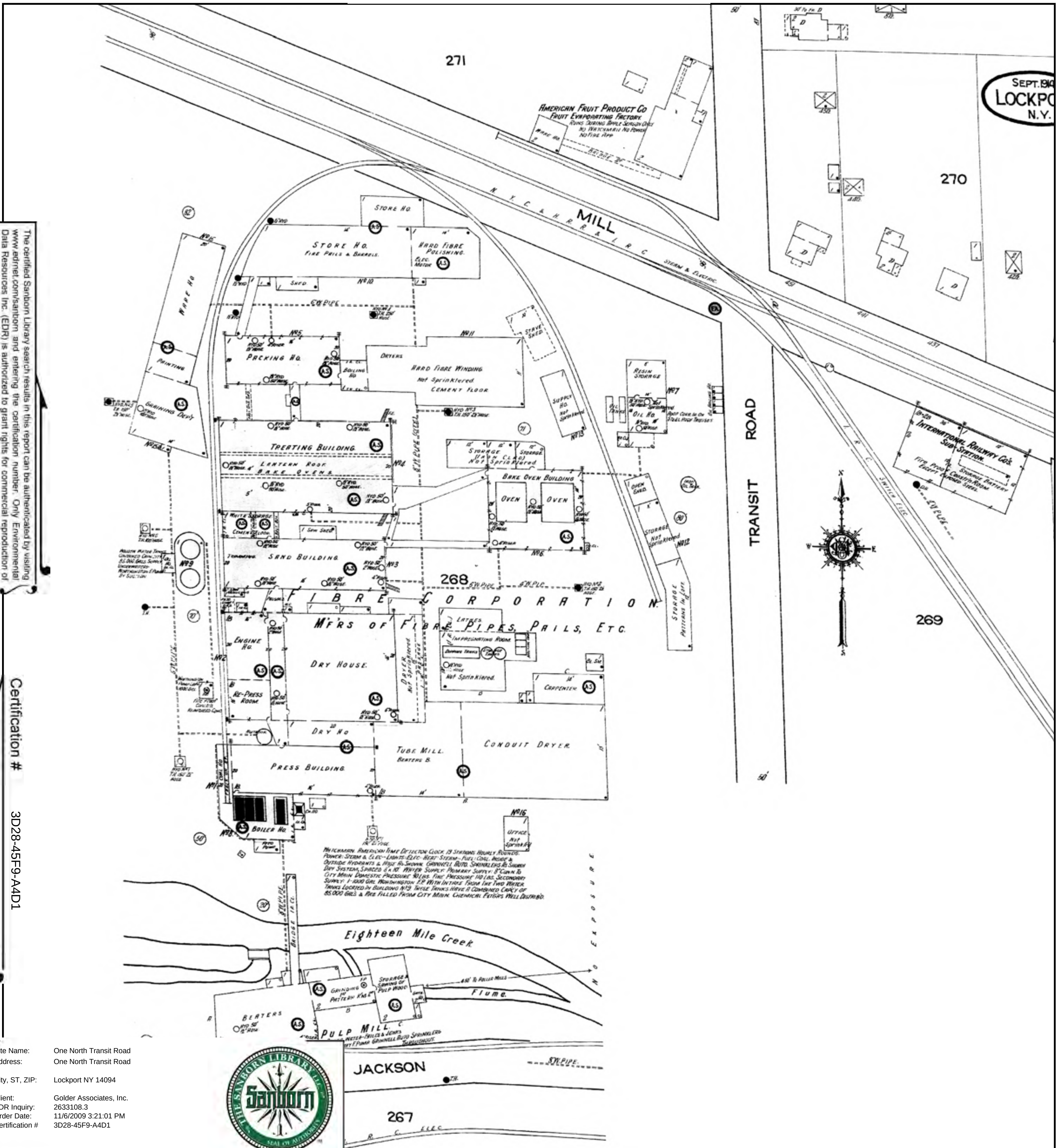
1914 Certified Sanborn Map



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Site Name: One North Transit Road
Address: One North Transit Road
City, ST, ZIP: Lockport NY 14094
Client: Golder Associates, Inc.
EDR Inquiry: 2633108.3
Order Date: 11/6/2009 3:21:01 PM
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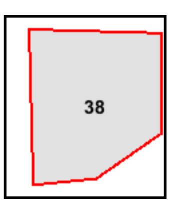

Volume 1, Sheet 38

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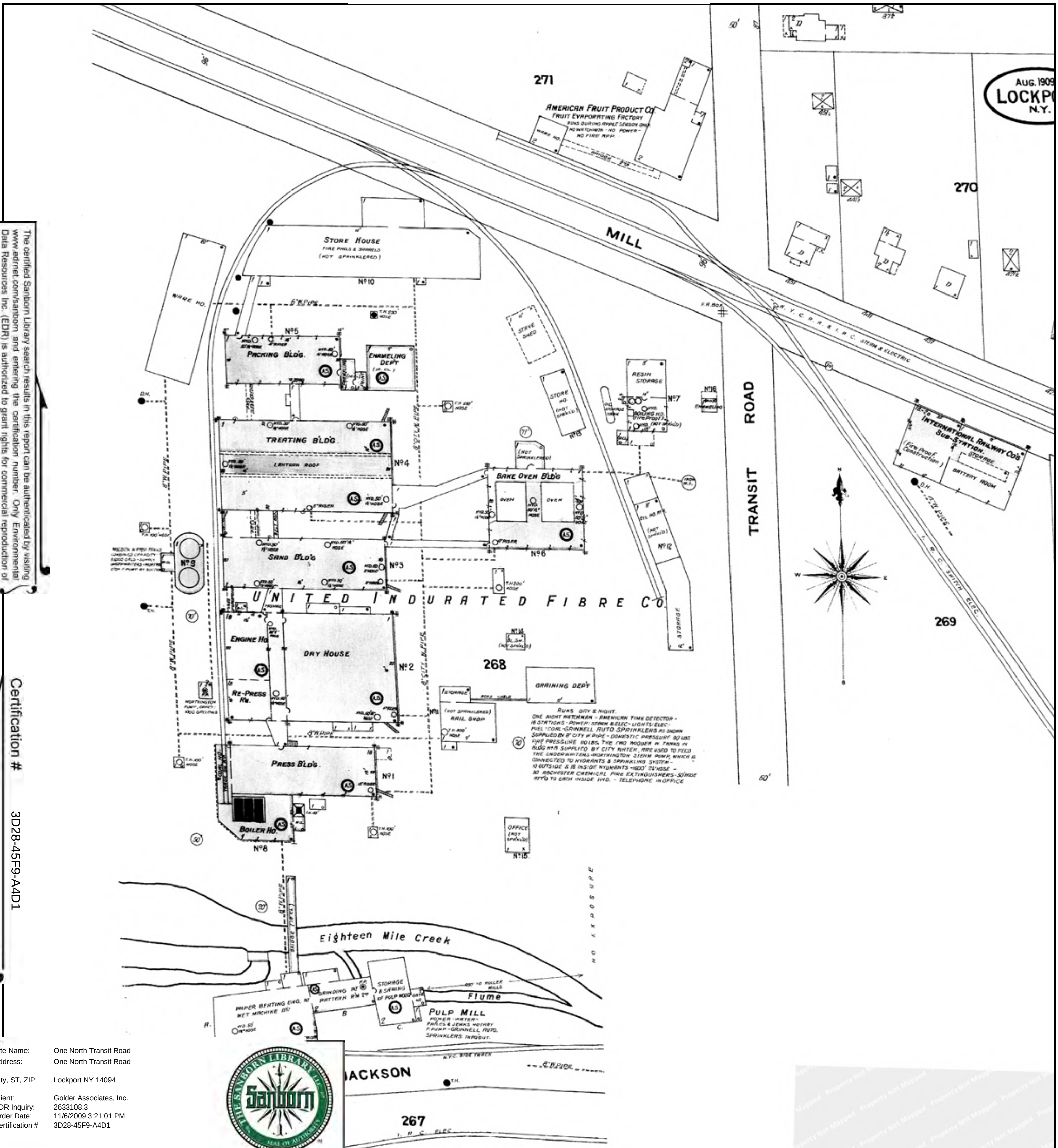

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City, ST, ZIP:	Lockport NY 14094
Client:	Golder Associates, Inc.
EDR Inquiry:	2633108.3
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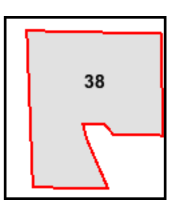

Volume 1, Sheet 38

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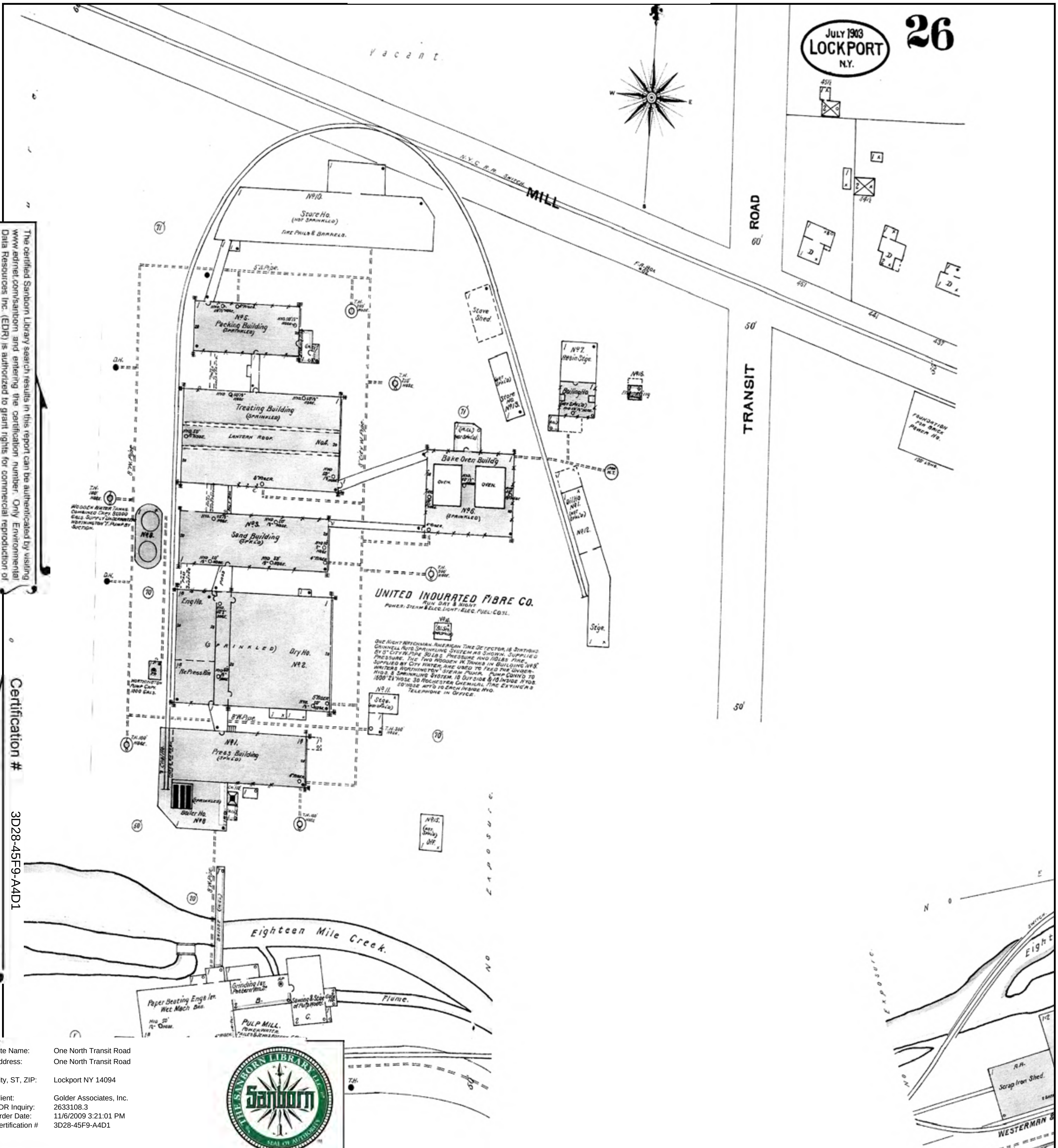

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Address:	One North Transit Road
City, ST, ZIP:	Lockport NY 14094
Client:	Golder Associates, Inc.
EDR Inquiry:	2633108.3
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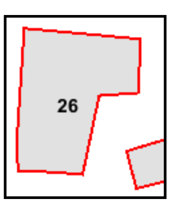

Volume 1, Sheet 26

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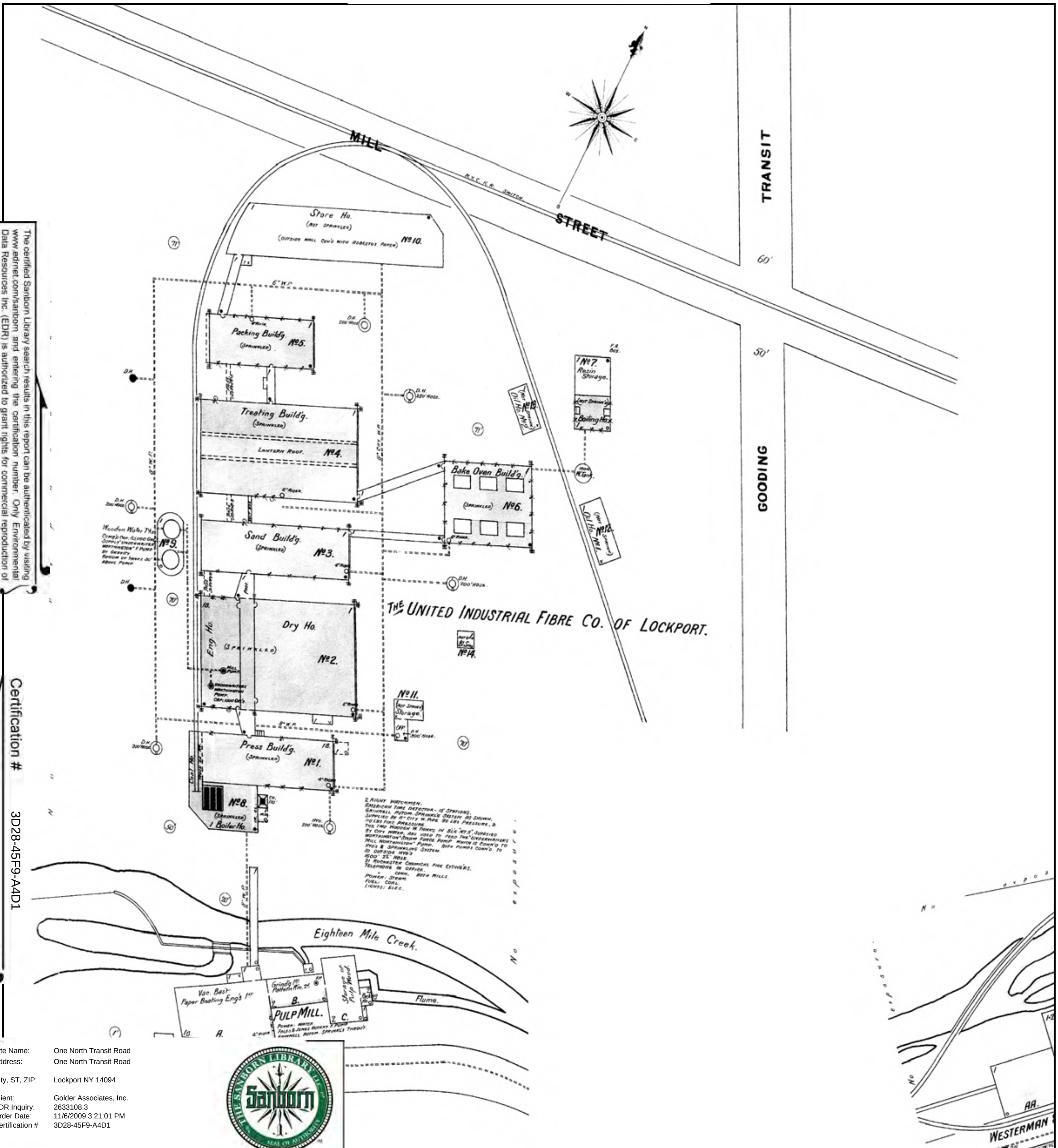

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Copyright:	1898

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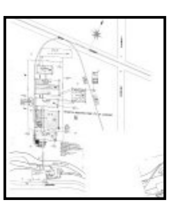
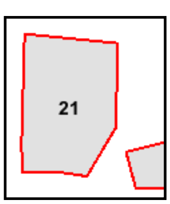




Volume 1, Sheet 21

N

ATTACHMENT B

AERIAL PHOTOGRAPHS

One North Transit Road
One North Transit Road
Lockport, NY 14094

Inquiry Number: 2633108.4
November 10, 2009

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDRs professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Date EDR Searched Historical Sources:
Aerial Photography November 10, 2009

Target Property:
One North Transit Road
Lockport, NY 14094

Year	***Scale***	***Details***	***Source***
1962	Aerial Photograph. Scale: 1"=750'	Panel #: 2443078-B6/Flight Date: October 19, 1962	EDR
1972	Aerial Photograph. Scale: 1"=500'	Panel #: 2443078-B6/Flight Date: May 13, 1972	EDR
1985	Aerial Photograph. Scale: 1"=1000'	Panel #: 2443078-B6/Flight Date: May 03, 1985	EDR
1995	Aerial Photograph. Scale: 1"=750'	Panel #: 2443078-B6/Flight Date: March 28, 1995	EDR
2006	Aerial Photograph. 1" = 604'	Flight Year: 2006	EDR


INQUIRY #: 2633108.4
YEAR: 1962
= 750'
N

INQUIRY #: 2633108.4

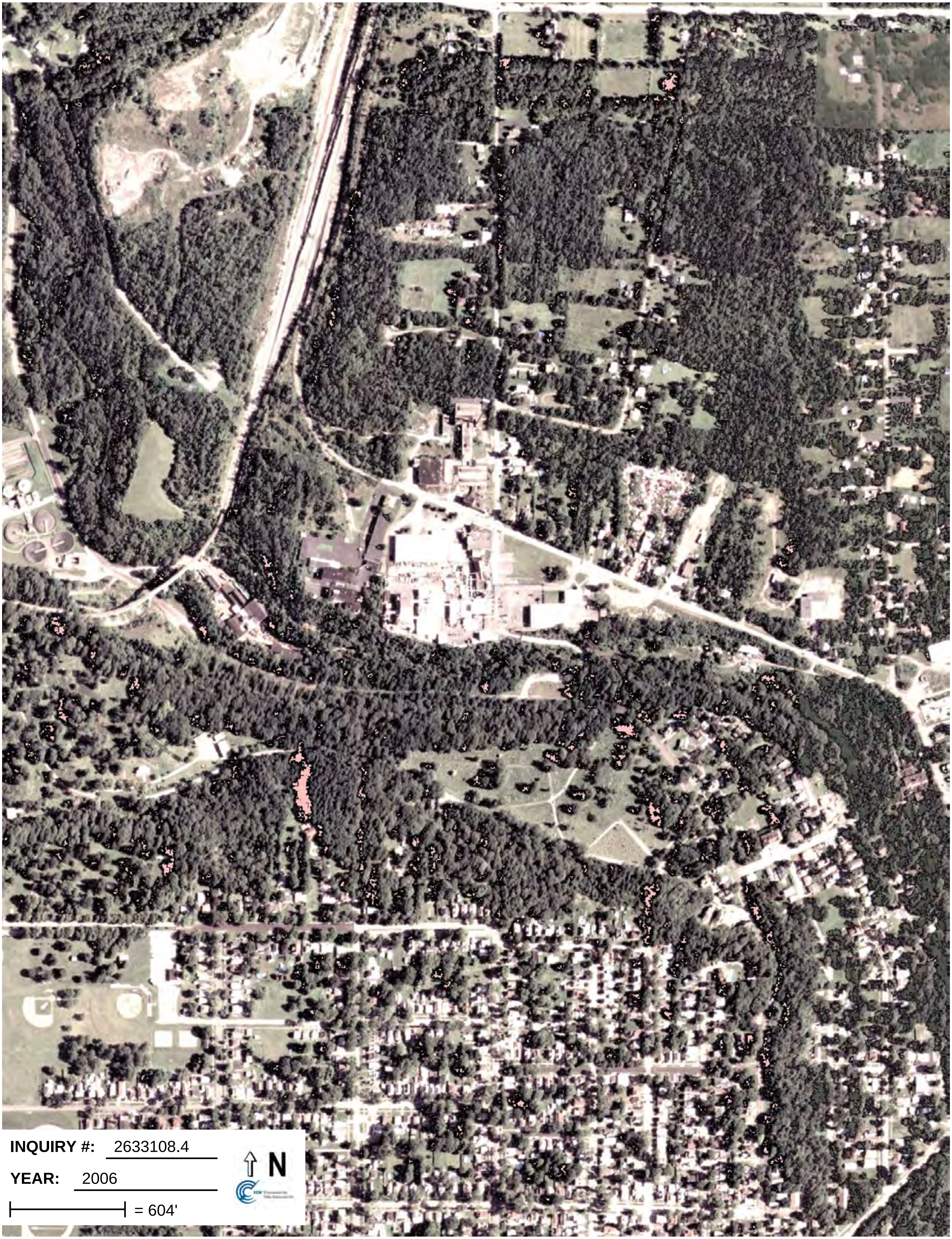
YEAR: 1972

= 500'

N


INQUIRY #: 2633108.4
YEAR: 1985
= 1000'
N


INQUIRY #: 2633108.4
YEAR: 1995
= 750'
N



INQUIRY #: 2633108.4

YEAR: 2006

= 604'

N

ATTACHMENT C

DNAPL ANALYSIS REPORT (TESTAMERICA, DECEMBER 2009)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Analytical Report

Work Order: RSK0944

Project Description
Golder - Vandermark/Isochem site

For:

Pat Martin

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Brian Fischer

Project Manager

Brian.Fischer@testamericainc.com

Thursday, December 10, 2009

TestAmerica Buffalo
Current Certifications

As of 1/27/2009

STATE	Program	Cert # / Lab ID
Arkansas	CWA, RCRA, SOIL	88-0686
California*	NELAP CWA, RCRA	01169CA
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida*	NELAP CWA, RCRA	E87672
Georgia*	SDWA,NELAP CWA, RCRA	956
Illinois*	NELAP SDWA, CWA, RCRA	200003
Iowa	SW/CS	374
Kansas*	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana*	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY0044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	SDWA,CWA, RCRA	036-999-337
New Hampshire*	NELAP SDWA, CWA	233701
New Jersey*	NELAP,SDWA, CWA, RCRA,	NY455
New York*	NELAP, AIR, SDWA, CWA, RCRA,CLP	10026
Oklahoma	CWA, RCRA	9421
Pennsylvania*	NELAP CWA,RCRA	68-00281
Tennessee	SDWA	02970
Texas*	NELAP CWA, RCRA	T104704412-08-TX
USDA	FOREIGN SOIL PERMIT	S-41579
USDOE	Department of Energy	DOECAP-STB
Virginia	SDWA	278
Washington*	NELAP CWA,RCRA	C1677
Wisconsin	CWA, RCRA	998310390
West Virginia	CWA,RCRA	252

*As required under the indicated accreditation, the test results in this report meet all NELAP requirements for parameters for which accre ditation is required or available. Any exceptions to NELAP requirements are noted in this report.

CASE NARRATIVE

According to 40CFR Part 136.3, pH, Chlorine Residual, Dissolved Oxygen, Sulfite, and Temperature analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. field-pH), they were not analyzed immediately, but as soon as possible after laboratory receipt.

A pertinent document is appended to this report, 1 page, is included and is an integral part of this report.

Reproduction of this analytical report is permitted only in its entirety. This report shall not be reproduced except in full without the written approval of the laboratory.

TestAmerica Laboratories, Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our Laboratory.

DATA QUALIFIERS AND DEFINITIONS

D04	Dilution required due to high levels of non-target compounds
D12	Dilution required due to sample viscosity
H8	The sample was extracted past the holding time.
J	Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). Concentrations within this range are estimated.
L	Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was above the acceptance limits. Analyte not detected, data not impacted.
L1	Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was above acceptance limits.
R2	The RPD exceeded the acceptance limit.
W1	Sample was prepared and analyzed utilizing the medium level extraction.
Z3	The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.
NR	Any inclusion of NR indicates that the project specific requirements do not require reporting estimated values below the laboratory reporting limit.

ADDITIONAL COMMENTS

Results are reported on a wet weight basis unless otherwise noted.

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RSK0944

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 11/19/09
Reported: 12/10/09 09:29

Executive Summary - Detections

Sample ID: RSK0944-01 (VANDEMARK DNAPL - Waste) **Sampled: 11/18/09 14:30** **Recvd: 11/19/09 17:45**

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Volatile Organic Compounds by EPA 8260B										
Ethylbenzene	**460**	W1, D04,J	560	38	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Xylenes, total	**370**	W1, D04,J	1100	94	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Semivolatile Organics by GC/MS										
2-Methylnaphthalene	**1500000**	H8, D12	280000	3300	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Acenaphthene	**1600000**	H8, D12	280000	3300	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Anthracene	**2000000**	H8, D12	280000	7200	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzo[a]anthracene	**2200000**	H8, D12	280000	4800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzo[a]pyrene	**1800000**	H8, D12	280000	6800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzo[b]fluoranthene	**1200000**	H8, D12	280000	5500	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzo[g,h,i]perylene	**860000**	H8, D12	280000	3300	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzo[k]fluoranthene	**500000**	H8, D12	280000	3200	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Chrysene	**2200000**	H8, D12	280000	2800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Fluoranthene	**3100000**	H8, D12	280000	4000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Fluorene	**1100000**	H8, D12	280000	6500	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Indeno[1,2,3-cd]pyrene	**530000**	H8, D12	280000	7800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Naphthalene	**1800000**	H8, D12	280000	4700	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Phenanthrene	**6800000**	H8, D12	280000	5800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Pyrene	**5000000**	H8, D12	280000	1800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
General Chemistry Parameters										
Percent Solids	**77**		0.010	NR	%	1.00	11/23/09 13:36	JRR	9K23026	Dry Weight

Golder Associates, Inc. - Niagara Falls, NY 2221 Niagara Falls Blvd., Ste 9 Niagara Falls, NY 14304	Work Order: RSK0944 Project: Golder - Vandermark/Isochem site Project Number: [none]	Received: 11/19/09 Reported: 12/10/09 09:29

Sample Summary

Sample Identification	Lab Number	Client Matrix	Date/Time Sampled	Date/Time Received	Sample Qualifiers
VANDEMARK DNAPL	RSK0944-01	Waste	11/18/09 14:30	11/19/09 17:45	

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THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RSK0944

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 11/19/09
Reported: 12/10/09 09:29

Analytical Report

Sample ID: RSK0944-01 (VANDEMARK DNAPL - Waste) **Sampled: 11/18/09 14:30** **Recvd: 11/19/09 17:45**

Volatile Organic Compounds by EPA 8260B

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
1,1,1-Trichloroethane	ND	W1, D04	560	41	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,1,2,2-Tetrachloroethane	ND	W1, D04	560	91	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,1,2-Trichloroethane	ND	W1, D04	560	28	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,1,2-Trichlorotrifluoroethane	ND	W1, D04	560	280	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,1-Dichloroethane	ND	W1, D04	560	28	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,1-Dichloroethene	ND	W1, D04	560	69	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,2,4-Trichlorobenzene	ND	W1, D04	560	34	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,2-Dibromo-3-chloropropane	ND	W1, D04	560	280	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,2-Dibromoethane (EDB)	ND	W1, D04	560	21	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,2-Dichlorobenzene	ND	W1, D04	560	44	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,2-Dichloroethane	ND	W1, D04	560	28	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,2-Dichloropropane	ND	W1, D04	560	280	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,3-Dichlorobenzene	ND	W1, D04	560	29	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,4-Dichlorobenzene	ND	W1, D04	560	78	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
2-Butanone (MEK)	ND	W1, D04	2800	200	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
2-Hexanone	ND	W1, D04	2800	190	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
4-Methyl-2-pentanone (MIBK)	ND	W1, D04	2800	180	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Acetone	ND	W1, D04	2800	120	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Benzene	ND	W1, D04	560	27	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Bromodichloromethane	ND	W1, D04	560	29	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Bromoform	ND	W1, D04	560	280	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Bromomethane	ND	W1, D04	560	120	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Carbon disulfide	ND	W1, D04	560	48	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Carbon Tetrachloride	ND	W1, D04	560	54	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Chlorobenzene	ND	W1, D04	560	74	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Chlorodibromomethane	ND	W1, D04	560	31	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Chloroethane	ND	W1, D04	560	240	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Chloroform	ND	W1, D04	560	34	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Chloromethane	ND	W1, D04	560	34	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
cis-1,2-Dichloroethene	ND	W1, D04	560	28	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
cis-1,3-Dichloropropene	ND	W1, D04	560	31	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Cyclohexane	ND	W1, D04	560	26	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Dichlorodifluoromethane	ND	W1, D04	560	46	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Ethylbenzene	**460**	W1, D04,J	560	38	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Isopropylbenzene	ND	W1, D04	560	84	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Methyl Acetate	ND	W1, D04	560	30	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Methyl tert-Butyl Ether	ND	W1, D04	560	55	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Methylcyclohexane	ND	W1, D04	560	36	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Methylene Chloride	ND	W1, D04	560	110	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Styrene	ND	W1, D04	560	28	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Tetrachloroethene	ND	W1, D04	560	75	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Toluene	ND	W1, D04	560	43	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
trans-1,2-Dichloroethene	ND	W1, D04	560	58	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
trans-1,3-Dichloropropene	ND	W1, D04	560	27	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Trichloroethene	ND	W1, D04	560	38	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Trichlorofluoromethane	ND	W1, D04	560	53	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RSK0944

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 11/19/09
Reported: 12/10/09 09:29

Analytical Report

Sample ID: RSK0944-01 (VANDEMARK DNAPL - Waste) - cont. **Sampled: 11/18/09 14:30** **Recvd: 11/19/09 17:45**

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Volatile Organic Compounds by EPA 8260B - cont.										
Vinyl chloride	ND	W1, D04	1100	68	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
Xylenes, total	**370**	W1, D04,J	1100	94	ug/kg dry	5.00	11/30/09 22:40	TWS	9K30023	8260B
1,2-Dichloroethane-d4	*104 %*	*W1, D04*	*Surr Limits:*	*(10-190%)*			*11/30/09 22:40*	*TWS*	*9K30023*	*8260B*
4-Bromofluorobenzene	*86 %*	*W1, D04*	*Surr Limits:*	*(10-190%)*			*11/30/09 22:40*	*TWS*	*9K30023*	*8260B*
Toluene-d8	*93 %*	*W1, D04*	*Surr Limits:*	*(10-190%)*			*11/30/09 22:40*	*TWS*	*9K30023*	*8260B*
Semivolatile Organics by GC/MS										
2,4,5-Trichlorophenol	ND	H8, D12	280000	62000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2,4,6-Trichlorophenol	ND	H8, D12,L	280000	18000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2,4-Dichlorophenol	ND	H8, D12	280000	15000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2,4-Dimethylphenol	ND	H8, D12	280000	77000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2,4-Dinitrophenol	ND	H8, D12	550000	98000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2,4-Dinitrotoluene	ND	H8, D12,L	280000	43000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2,6-Dinitrotoluene	ND	H8, D12	280000	68000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2-Chloronaphthalene	ND	H8, D12	280000	18000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2-Chlorophenol	ND	H8, D12	280000	14000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2-Methylnaphthalene	**1500000**	H8, D12	280000	3300	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2-Methylphenol	ND	H8, D12	280000	8700	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2-Nitroaniline	ND	H8, D12	550000	90000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2-Nitrophenol	ND	H8, D12	280000	13000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
3 & 4 Methylphenol	ND	H8, D12	550000	16000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
3,3'-Dichlorobenzidine	ND	H8, D12,L	280000	250000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
3-Nitroaniline	ND	H8, D12	550000	65000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
4,6-Dinitro-2-methylphenol	ND	H8, D12	550000	97000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
4-Bromophenyl phenyl ether	ND	H8, D12	280000	90000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
4-Chloro-3-methylphenol	ND	H8, D12	280000	12000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
4-Chloroaniline	ND	H8, D12	280000	83000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
4-Chlorophenyl phenyl ether	ND	H8, D12	280000	6000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
4-Nitroaniline	ND	H8, D12	550000	32000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
4-Nitrophenol	ND	H8, D12,L	550000	68000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Acenaphthene	**1600000**	H8, D12	280000	3300	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Acenaphthylene	ND	H8, D12	280000	2300	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Acetophenone	ND	H8, D12,L	280000	14000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Anthracene	**2000000**	H8, D12	280000	7200	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Atrazine	ND	H8, D12	280000	12000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzaldehyde	ND	H8, D12,L	280000	32000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzo[a]anthracene	**2200000**	H8, D12	280000	4800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzo[a]pyrene	**1800000**	H8, D12	280000	6800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzo[b]fluoranthene	**1200000**	H8, D12	280000	5500	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzo[g,h,i]perylene	**860000**	H8, D12	280000	3300	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Benzo[k]fluoranthene	**500000**	H8, D12	280000	3200	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Biphenyl	ND	H8, D12	280000	18000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Bis(2-chloroethoxy)methane	ND	H8, D12	280000	15000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Bis(2-chloroethyl)ether	ND	H8, D12	280000	25000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Bis(2-chloroisopropyl) ether	ND	H8, D12	280000	30000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C

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THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RSK0944

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 11/19/09
Reported: 12/10/09 09:29

Analytical Report

Sample ID: RSK0944-01 (VANDEMARK DNAPL - Waste) - cont. **Sampled: 11/18/09 14:30** **Recvd: 11/19/09 17:45**

Semivolatile Organics by GC/MS - cont.

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Bis(2-ethylhexyl) phthalate	ND	H8, D12	280000	90000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Butyl benzyl phthalate	ND	H8, D12	280000	75000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Caprolactam	ND	H8, D12	280000	120000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Carbazole	ND	H8, D12	280000	3300	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Chrysene	**2200000**	H8, D12	280000	2800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Dibenz[a,h]anthracene	ND	H8, D12	280000	3300	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Dibenzofuran	ND	H8, D12	280000	3000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Diethyl phthalate	ND	H8, D12	280000	8500	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Dimethyl phthalate	ND	H8, D12	280000	7300	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Di-n-butyl phthalate	ND	H8, D12	280000	97000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Di-n-octyl phthalate	ND	H8, D12	280000	6500	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Fluoranthene	**3100000**	H8, D12	280000	4000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Fluorene	**1100000**	H8, D12	280000	6500	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Hexachlorobenzene	ND	H8, D12	280000	14000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Hexachlorobutadiene	ND	H8, D12	280000	14000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Hexachlorocyclopentadiene	ND	H8, D12	280000	85000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Hexachloroethane	ND	H8, D12	280000	22000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Indeno[1,2,3-cd]pyrene	**530000**	H8, D12	280000	7800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Isophorone	ND	H8, D12	280000	14000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Naphthalene	**1800000**	H8, D12	280000	4700	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Nitrobenzene	ND	H8, D12	280000	12000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
N-Nitrosodi-n-propylamine	ND	H8, D12	280000	22000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
N-Nitrosodiphenylamine	ND	H8, D12,L	280000	15000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Pentachlorophenol	ND	H8, D12	550000	97000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Phenanthrene	**6800000**	H8, D12	280000	5800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Phenol	ND	H8, D12	280000	30000	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
Pyrene	**5000000**	H8, D12	280000	1800	ug/kg	100	12/04/09 17:33	MKP	9L03042	8270C
2,4,6-Tribromophenol	***	*H8, D12,Z3*	*Surr Limits:*	*(39-146%)*			*12/04/09 17:33*	*MKP*	*9L03042*	*8270C*
2-Fluorobiphenyl	*92 %*	*H8, D12*	*Surr Limits:*	*(37-120%)*			*12/04/09 17:33*	*MKP*	*9L03042*	*8270C*
2-Fluorophenol	*63 %*	*H8, D12*	*Surr Limits:*	*(18-120%)*			*12/04/09 17:33*	*MKP*	*9L03042*	*8270C*
Nitrobenzene-d5	*78 %*	*H8, D12*	*Surr Limits:*	*(34-132%)*			*12/04/09 17:33*	*MKP*	*9L03042*	*8270C*
Phenol-d5	*77 %*	*H8, D12*	*Surr Limits:*	*(11-120%)*			*12/04/09 17:33*	*MKP*	*9L03042*	*8270C*
p-Terphenyl-d14	*88 %*	*H8, D12*	*Surr Limits:*	*(58-147%)*			*12/04/09 17:33*	*MKP*	*9L03042*	*8270C*

General Chemistry Parameters

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Percent Solids	**77**		0.010	NR	%	1.00	11/23/09 13:36	JRR	9K23026	Dry Weight

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Received: 11/19/09
Reported: 12/10/09 09:29

SAMPLE EXTRACTION DATA

Parameter	Batch	Lab Number	Wt/Vol Extracte	Units	Extract Volume	Units	Date Prepared	Lab Tech	Extraction Method
General Chemistry Parameters									
Dry Weight	9K23026	RSK0944-01	10.00	g	10.00	g	11/23/09 10:35	JRR	Dry Weight
Semivolatile Organics by GC/MS									
8270C	9L03042	RSK0944-01	0.12	g	1.00	mL	12/03/09 21:00	KMB	3580A
Volatile Organic Compounds by EPA 8260B									
8260B	9K30023	RSK0944-01	5.78	g	500.00	mL	11/30/09 13:09	TRB	Methanol Prep

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LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Volatile Organic Compounds by EPA 8260B											
Blank Analyzed: 11/30/09 (Lab Number:9K30023-BLK1, Batch: 9K30023)											
1,1,1-Trichloroethane			98	7.1	ug/kg wet	ND					
1,1,2,2-Tetrachloroethane			98	16	ug/kg wet	ND					
1,1,2-Trichloroethane			98	4.9	ug/kg wet	ND					
1,1,2-Trichlorotrifluoroethane			98	49	ug/kg wet	ND					
1,1-Dichloroethane			98	4.9	ug/kg wet	ND					
1,1-Dichloroethene			98	12	ug/kg wet	ND					
1,2,4-Trichlorobenzene			98	6.0	ug/kg wet	ND					
1,2-Dibromo-3-chloropropane			98	49	ug/kg wet	ND					
1,2-Dibromoethane (EDB)			98	3.7	ug/kg wet	ND					
1,2-Dichlorobenzene			98	7.6	ug/kg wet	ND					
1,2-Dichloroethane			98	4.9	ug/kg wet	ND					
1,2-Dichloropropane			98	49	ug/kg wet	ND					
1,3-Dichlorobenzene			98	5.1	ug/kg wet	ND					
1,4-Dichlorobenzene			98	14	ug/kg wet	ND					
2-Butanone (MEK)			490	35	ug/kg wet	270					J
2-Hexanone			490	33	ug/kg wet	ND					
4-Methyl-2-pentanone (MIBK)			490	31	ug/kg wet	ND					
Acetone			490	22	ug/kg wet	ND					
Benzene			98	4.7	ug/kg wet	ND					
Bromodichloromethane			98	5.1	ug/kg wet	ND					
Bromoform			98	49	ug/kg wet	ND					
Bromomethane			98	22	ug/kg wet	ND					
Carbon disulfide			98	8.4	ug/kg wet	ND					
Carbon Tetrachloride			98	9.4	ug/kg wet	ND					
Chlorobenzene			98	13	ug/kg wet	ND					
Chlorodibromomethane			98	5.5	ug/kg wet	ND					
Chloroethane			98	41	ug/kg wet	ND					
Chloroform			98	6.0	ug/kg wet	ND					
Chloromethane			98	5.9	ug/kg wet	ND					
cis-1,2-Dichloroethene			98	4.9	ug/kg wet	ND					
cis-1,3-Dichloropropene			98	5.5	ug/kg wet	ND					
Cyclohexane			98	4.5	ug/kg wet	ND					
Dichlorodifluoromethane			98	8.0	ug/kg wet	ND					
Ethylbenzene			98	6.7	ug/kg wet	ND					
Isopropylbenzene			98	15	ug/kg wet	ND					

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LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Volatile Organic Compounds by EPA 8260B											
Blank Analyzed: 11/30/09 (Lab Number:9K30023-BLK1, Batch: 9K30023)											
Methyl Acetate			98	5.3	ug/kg wet	ND					
Methyl tert-Butyl Ether			98	9.6	ug/kg wet	ND					
Methylcyclohexane			98	6.4	ug/kg wet	ND					
Methylene Chloride			98	19	ug/kg wet	42					J
Styrene			98	4.9	ug/kg wet	ND					
Tetrachloroethene			98	13	ug/kg wet	ND					
Toluene			98	7.5	ug/kg wet	ND					
trans-1,2-Dichloroethene			98	10	ug/kg wet	ND					
trans-1,3-Dichloropropene			98	4.7	ug/kg wet	ND					
Trichloroethene			98	6.7	ug/kg wet	ND					
Trichlorofluoromethane			98	9.2	ug/kg wet	ND					
Vinyl chloride			200	12	ug/kg wet	ND					
Xylenes, total			200	16	ug/kg wet	ND					
Surrogate: 1,2-Dichloroethane-d4					*ug/kg wet*		*115*	*10-190*			
Surrogate: 4-Bromofluorobenzene					*ug/kg wet*		*102*	*10-190*			
Surrogate: Toluene-d8					*ug/kg wet*		*115*	*10-190*			
LCS Analyzed: 11/30/09 (Lab Number:9K30023-BS1, Batch: 9K30023)											
1,1-Dichloroethene		2490	100	12	ug/kg wet	2870	115	10-190			
Benzene		2490	100	4.8	ug/kg wet	2800	113	10-190			
Chlorobenzene		2490	100	13	ug/kg wet	2700	108	10-190			
Toluene		2490	100	7.6	ug/kg wet	2720	109	10-190			
Trichloroethene		2490	100	6.8	ug/kg wet	2670	107	10-190			
Surrogate: 1,2-Dichloroethane-d4					*ug/kg wet*		*116*	*10-190*			
Surrogate: 4-Bromofluorobenzene					*ug/kg wet*		*104*	*10-190*			
Surrogate: Toluene-d8					*ug/kg wet*		*116*	*10-190*			

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LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
Blank Analyzed: 12/04/09 (Lab Number:9L03042-BLK1, Batch: 9L03042)											
2,4,5-Trichlorophenol			3400	740	ug/kg	ND					
2,4,6-Trichlorophenol			3400	220	ug/kg	ND					
2,4-Dichlorophenol			3400	180	ug/kg	ND					
2,4-Dimethylphenol			3400	920	ug/kg	ND					
2,4-Dinitrophenol			6600	1200	ug/kg	ND					
2,4-Dinitrotoluene			3400	520	ug/kg	ND					
2,6-Dinitrotoluene			3400	820	ug/kg	ND					
2-Chloronaphthalene			3400	220	ug/kg	ND					
2-Chlorophenol			3400	170	ug/kg	ND					
2-Methylnaphthalene			3400	40	ug/kg	ND					
2-Methylphenol			3400	100	ug/kg	ND					
2-Nitroaniline			6600	1100	ug/kg	ND					
2-Nitrophenol			3400	150	ug/kg	ND					
3 & 4 Methylphenol			6600	190	ug/kg	ND					
3,3'-Dichlorobenzidine			3400	3000	ug/kg	ND					
3-Nitroaniline			6600	780	ug/kg	ND					
4,6-Dinitro-2-methylphenol			6600	1200	ug/kg	ND					
4-Bromophenyl phenyl ether			3400	1100	ug/kg	ND					
4-Chloro-3-methylphenol			3400	140	ug/kg	ND					
4-Chloroaniline			3400	1000	ug/kg	ND					
4-Chlorophenyl phenyl ether			3400	72	ug/kg	ND					
4-Nitroaniline			6600	380	ug/kg	ND					
4-Nitrophenol			6600	820	ug/kg	ND					
Acenaphthene			3400	40	ug/kg	ND					
Acenaphthylene			3400	28	ug/kg	ND					
Acetophenone			3400	170	ug/kg	ND					
Anthracene			3400	86	ug/kg	ND					
Atrazine			3400	150	ug/kg	ND					
Benzaldehyde			3400	380	ug/kg	ND					
Benzo[a]anthracene			3400	58	ug/kg	ND					
Benzo[a]pyrene			3400	82	ug/kg	ND					
Benzo[b]fluoranthene			3400	66	ug/kg	ND					
Benzo[g,h,i]perylene			3400	40	ug/kg	ND					
Benzo[k]fluoranthene			3400	38	ug/kg	ND					
Biphenyl			3400	220	ug/kg	ND					

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Project: Golder - Vandermark/Isochem site
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Received: 11/19/09
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LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
Blank Analyzed: 12/04/09 (Lab Number:9L03042-BLK1, Batch: 9L03042)											
Bis(2-chloroethoxy)methane			3400	180	ug/kg	ND					
Bis(2-chloroethyl)ether			3400	300	ug/kg	ND					
Bis(2-chloroisopropyl) ether			3400	360	ug/kg	ND					
Bis(2-ethylhexyl) phthalate			3400	1100	ug/kg	ND					
Butyl benzyl phthalate			3400	900	ug/kg	ND					
Caprolactam			3400	1500	ug/kg	ND					
Carbazole			3400	40	ug/kg	ND					
Chrysene			3400	34	ug/kg	ND					
Dibenz[a,h]anthracene			3400	40	ug/kg	ND					
Dibenzofuran			3400	36	ug/kg	ND					
Diethyl phthalate			3400	100	ug/kg	ND					
Dimethyl phthalate			3400	88	ug/kg	ND					
Di-n-butyl phthalate			3400	1200	ug/kg	ND					
Di-n-octyl phthalate			3400	78	ug/kg	ND					
Fluoranthene			3400	48	ug/kg	ND					
Fluorene			3400	78	ug/kg	ND					
Hexachlorobenzene			3400	170	ug/kg	ND					
Hexachlorobutadiene			3400	170	ug/kg	ND					
Hexachlorocyclopentadiene			3400	1000	ug/kg	ND					
Hexachloroethane			3400	260	ug/kg	ND					
Indeno[1,2,3-cd]pyrene			3400	94	ug/kg	ND					
Isophorone			3400	170	ug/kg	ND					
Naphthalene			3400	56	ug/kg	ND					
Nitrobenzene			3400	150	ug/kg	ND					
N-Nitrosodi-n-propylamine			3400	260	ug/kg	ND					
N-Nitrosodiphenylamine			3400	180	ug/kg	ND					
Pentachlorophenol			6600	1200	ug/kg	ND					
Phenanthrene			3400	70	ug/kg	ND					
Phenol			3400	360	ug/kg	ND					
Pyrene			3400	22	ug/kg	ND					
Surrogate: 2,4,6-Tribromophenol					*ug/kg*		*86*	*39-146*			
Surrogate: 2-Fluorobiphenyl					*ug/kg*		*116*	*37-120*			
Surrogate: 2-Fluorophenol					*ug/kg*		*100*	*18-120*			

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LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
Blank Analyzed: 12/04/09 (Lab Number:9L03042-BLK1, Batch: 9L03042)											
Surrogate: Nitrobenzene-d5					*ug/kg*		*121*	*34-132*			
Surrogate: Phenol-d5					*ug/kg*		*105*	*11-120*			
Surrogate: p-Terphenyl-d14					*ug/kg*		*107*	*58-147*			
LCS Analyzed: 12/04/09 (Lab Number:9L03042-BS1, Batch: 9L03042)											
2,4,5-Trichlorophenol		1000000	3400	740	ug/kg	1180000	118	59-126			
2,4,6-Trichlorophenol		1000000	3400	220	ug/kg	1240000	124	59-123			L
2,4-Dichlorophenol		1000000	3400	180	ug/kg	1160000	116				
2,4-Dimethylphenol		1000000	3400	920	ug/kg	1150000	115				
2,4-Dinitrophenol		1000000	6600	1200	ug/kg	1150000	115	35-146			
2,4-Dinitrotoluene		1000000	3400	520	ug/kg	1270000	127	55-125			L
2,6-Dinitrotoluene		1000000	3400	820	ug/kg	1220000	122	66-128			
2-Chloronaphthalene		1000000	3400	220	ug/kg	1120000	112				
2-Chlorophenol		1000000	3400	170	ug/kg	1040000	104	38-120			
2-Methylnaphthalene		1000000	3400	40	ug/kg	1190000	119				
2-Methylphenol		1000000	3400	100	ug/kg	1080000	108				
2-Nitroaniline		1000000	6600	1100	ug/kg	1280000	128	61-130			
2-Nitrophenol		1000000	3400	150	ug/kg	1130000	113	50-120			
3 & 4 Methylphenol		1000000	6600	190	ug/kg	1090000	109	50-119			
3,3'-Dichlorobenzidine		1000000	3400	3000	ug/kg	1390000	139	48-126			L
3-Nitroaniline		1000000	6600	780	ug/kg	1090000	109	61-127			
4,6-Dinitro-2-methylphenol		1000000	6600	1200	ug/kg	1420000	142	49-155			
4-Bromophenyl phenyl ether		1000000	3400	1100	ug/kg	1200000	120	58-131			
4-Chloro-3-methylphenol		1000000	3400	140	ug/kg	1220000	122	49-125			
4-Chloroaniline		1000000	3400	1000	ug/kg	1120000	112	49-120			
4-Chlorophenyl phenyl ether		1000000	3400	72	ug/kg	1150000	115	63-124			
4-Nitroaniline		1000000	6600	380	ug/kg	1120000	112	63-128			
4-Nitrophenol		1000000	6600	820	ug/kg	1390000	139	43-137			L
Acenaphthene		1000000	3400	40	ug/kg	1160000	116	60-120			
Acenaphthylene		1000000	3400	28	ug/kg	1190000	119				
Acetophenone		1000000	3400	170	ug/kg	1200000	120	66-120			L
Anthracene		1000000	3400	86	ug/kg	1170000	117				
Atrazine		1000000	3400	150	ug/kg	1170000	117				
Benzaldehyde		1000000	3400	380	ug/kg	1400000	140	21-120			L
Benzo[a]anthracene		1000000	3400	58	ug/kg	1140000	114				
Benzo[a]pyrene		1000000	3400	82	ug/kg	1260000	126				

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Golder Associates, Inc. - Niagara Falls, NY	Work Order: RSK0944	Received: 11/19/09
2221 Niagara Falls Blvd., Ste 9		Reported: 12/10/09 09:29
Niagara Falls, NY 14304	Project: Golder - Vandermark/Isochem site	
	Project Number: [none]	

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
LCS Analyzed: 12/04/09 (Lab Number:9L03042-BS1, Batch: 9L03042)											
Benzo[b]fluoranthene		1000000	3400	66	ug/kg	1100000	110				
Benzo[g,h,i]perylene		1000000	3400	40	ug/kg	1250000	125				
Benzo[k]fluoranthene		1000000	3400	38	ug/kg	1190000	119				
Biphenyl		1000000	3400	220	ug/kg	1120000	112	71-120			
Bis(2-chloroethoxy)methane		1000000	3400	180	ug/kg	1010000	101	61-133			
Bis(2-chloroethyl)ether		1000000	3400	300	ug/kg	955000	95	45-120			
Bis(2-chloroisopropyl) ether		1000000	3400	360	ug/kg	975000	97				
Bis(2-ethylhexyl) phthalate		1000000	3400	1100	ug/kg	1130000	113				
Butyl benzyl phthalate		1000000	3400	900	ug/kg	1160000	116				
Caprolactam		1000000	3400	1500	ug/kg	1170000	117	54-133			
Carbazole		1000000	3400	40	ug/kg	1160000	116	59-129			
Chrysene		1000000	3400	34	ug/kg	1140000	114				
Dibenz[a,h]anthracene		1000000	3400	40	ug/kg	1240000	124				
Dibenzofuran		1000000	3400	36	ug/kg	1140000	114	56-120			
Diethyl phthalate		1000000	3400	100	ug/kg	1210000	121				
Dimethyl phthalate		1000000	3400	88	ug/kg	1170000	117				
Di-n-butyl phthalate		1000000	3400	1200	ug/kg	1200000	120				
Di-n-octyl phthalate		1000000	3400	78	ug/kg	1110000	111				
Fluoranthene		1000000	3400	48	ug/kg	1190000	119				
Fluorene		1000000	3400	78	ug/kg	1180000	118				
Hexachlorobenzene		1000000	3400	170	ug/kg	1170000	117				
Hexachlorobutadiene		1000000	3400	170	ug/kg	1150000	115				
Hexachlorocyclopentadiene		1000000	3400	1000	ug/kg	1180000	118				
Hexachloroethane		1000000	3400	260	ug/kg	1120000	112	41-120			
Indeno[1,2,3-cd]pyrene		1000000	3400	94	ug/kg	1260000	126				
Isophorone		1000000	3400	170	ug/kg	1100000	110				
Naphthalene		1000000	3400	56	ug/kg	1130000	113				
Nitrobenzene		1000000	3400	150	ug/kg	1220000	122	42-131			
N-Nitrosodi-n-propylamine		1000000	3400	260	ug/kg	1040000	104	46-120			
N-Nitrosodiphenylamine		1000000	3400	180	ug/kg	1450000	145	20-119			L
Pentachlorophenol		1000000	6600	1200	ug/kg	1170000	117	39-136			
Phenanthrene		1000000	3400	70	ug/kg	1180000	118				
Phenol		1000000	3400	360	ug/kg	1060000	106	17-120			
Pyrene		1000000	3400	22	ug/kg	1160000	116	58-136			

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Work Order: RSK0944

Project: Golder - Vandermark/Isochem site
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LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
LCS Analyzed: 12/04/09 (Lab Number:9L03042-BS1, Batch: 9L03042)											
Surrogate: 2,4,6-Tribromophenol					*ug/kg*		*113*	*39-146*			
Surrogate: 2-Fluorobiphenyl					*ug/kg*		*110*	*37-120*			
Surrogate: 2-Fluorophenol					*ug/kg*		*101*	*18-120*			
Surrogate: Nitrobenzene-d5					*ug/kg*		*116*	*34-132*			
Surrogate: Phenol-d5					*ug/kg*		*103*	*11-120*			
Surrogate: p-Terphenyl-d14					*ug/kg*		*97*	*58-147*			
LCS Dup Analyzed: 12/04/09 (Lab Number:9L03042-BSD1, Batch: 9L03042)											
2,4,5-Trichlorophenol		1000000	3400	740	ug/kg	1080000	108	59-126	9	18	
2,4,6-Trichlorophenol		1000000	3400	220	ug/kg	1070000	107	59-123	15	19	
2,4-Dichlorophenol		1000000	3400	180	ug/kg	1030000	103		13		
2,4-Dimethylphenol		1000000	3400	920	ug/kg	973000	97		17		
2,4-Dinitrophenol		1000000	6600	1200	ug/kg	1030000	103	35-146	11	22	
2,4-Dinitrotoluene		1000000	3400	520	ug/kg	1140000	114	55-125	11	20	
2,6-Dinitrotoluene		1000000	3400	820	ug/kg	1090000	109	66-128	11	15	
2-Chloronaphthalene		1000000	3400	220	ug/kg	961000	96		15		
2-Chlorophenol		1000000	3400	170	ug/kg	970000	97	38-120	7	25	
2-Methylnaphthalene		1000000	3400	40	ug/kg	1020000	102		15		
2-Methylphenol		1000000	3400	100	ug/kg	1010000	101		7		
2-Nitroaniline		1000000	6600	1100	ug/kg	1140000	114	61-130	12	15	
2-Nitrophenol		1000000	3400	150	ug/kg	942000	94	50-120	19	18	R2
3 & 4 Methylphenol		1000000	6600	190	ug/kg	1000000	100	50-119	8	24	
3,3'-Dichlorobenzidine		1000000	3400	3000	ug/kg	1320000	132	48-126	5	25	L1
3-Nitroaniline		1000000	6600	780	ug/kg	1010000	101	61-127	8	19	
4,6-Dinitro-2-methylphenol		1000000	6600	1200	ug/kg	1360000	136	49-155	4	15	
4-Bromophenyl phenyl ether		1000000	3400	1100	ug/kg	1070000	107	58-131	11	15	
4-Chloro-3-methylphenol		1000000	3400	140	ug/kg	1080000	108	49-125	12	27	
4-Chloroaniline		1000000	3400	1000	ug/kg	1000000	100	49-120	11	22	
4-Chlorophenyl phenyl ether		1000000	3400	72	ug/kg	1020000	102	63-124	12	16	
4-Nitroaniline		1000000	6600	380	ug/kg	998000	100	63-128	11	24	
4-Nitrophenol		1000000	6600	820	ug/kg	1280000	128	43-137	9	25	
Acenaphthene		1000000	3400	40	ug/kg	1000000	100	60-120	14	35	
Acenaphthylene		1000000	3400	28	ug/kg	1020000	102		15		
Acetophenone		1000000	3400	170	ug/kg	1110000	111	66-120	8	20	

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Received: 11/19/09
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LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
LCS Dup Analyzed: 12/04/09 (Lab Number:9L03042-BSD1, Batch: 9L03042)											
Anthracene		1000000	3400	86	ug/kg	1060000	106		10		
Atrazine		1000000	3400	150	ug/kg	1060000	106		10		
Benzaldehyde		1000000	3400	380	ug/kg	1250000	125	21-120	12	20	L1
Benzo[a]anthracene		1000000	3400	58	ug/kg	1050000	105		7		
Benzo[a]pyrene		1000000	3400	82	ug/kg	1180000	118		6		
Benzo[b]fluoranthene		1000000	3400	66	ug/kg	1040000	104		5		
Benzo[g,h,i]perylene		1000000	3400	40	ug/kg	1180000	118		6		
Benzo[k]fluoranthene		1000000	3400	38	ug/kg	1130000	113		5		
Biphenyl		1000000	3400	220	ug/kg	957000	96	71-120	15	20	
Bis(2-chloroethoxy)methane		1000000	3400	180	ug/kg	885000	88	61-133	14	17	
Bis(2-chloroethyl)ether		1000000	3400	300	ug/kg	867000	87	45-120	10	21	
Bis(2-chloroisopropyl) ether		1000000	3400	360	ug/kg	873000	87		11		
Bis(2-ethylhexyl) phthalate		1000000	3400	1100	ug/kg	1020000	102		10		
Butyl benzyl phthalate		1000000	3400	900	ug/kg	1070000	107		8		
Caprolactam		1000000	3400	1500	ug/kg	1040000	104	54-133	12	20	
Carbazole		1000000	3400	40	ug/kg	1030000	103	59-129	12	20	
Chrysene		1000000	3400	34	ug/kg	1060000	106		7		
Dibenz[a,h]anthracene		1000000	3400	40	ug/kg	1170000	117		5		
Dibenzofuran		1000000	3400	36	ug/kg	1020000	102	56-120	11	15	
Diethyl phthalate		1000000	3400	100	ug/kg	1070000	107		12		
Dimethyl phthalate		1000000	3400	88	ug/kg	1040000	104		11		
Di-n-butyl phthalate		1000000	3400	1200	ug/kg	1070000	107		12		
Di-n-octyl phthalate		1000000	3400	78	ug/kg	1020000	102		9		
Fluoranthene		1000000	3400	48	ug/kg	1070000	107		10		
Fluorene		1000000	3400	78	ug/kg	1010000	101		15		
Hexachlorobenzene		1000000	3400	170	ug/kg	1040000	104		12		
Hexachlorobutadiene		1000000	3400	170	ug/kg	993000	99		15		
Hexachlorocyclopentadiene		1000000	3400	1000	ug/kg	958000	96		20		
Hexachloroethane		1000000	3400	260	ug/kg	1000000	100	41-120	11	46	
Indeno[1,2,3-cd]pyrene		1000000	3400	94	ug/kg	1200000	120		5		
Isophorone		1000000	3400	170	ug/kg	961000	96		13		
Naphthalene		1000000	3400	56	ug/kg	964000	96		16		
Nitrobenzene		1000000	3400	150	ug/kg	1030000	103	42-131	17	24	
N-Nitrosodi-n-propylamine		1000000	3400	260	ug/kg	967000	97	46-120	7	31	
N-Nitrosodiphenylamine		1000000	3400	180	ug/kg	1300000	130	20-119	11	15	L1

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
LCS Dup Analyzed: 12/04/09 (Lab Number:9L03042-BSD1, Batch: 9L03042)											
Pentachlorophenol		1000000	6600	1200	ug/kg	1100000	110	39-136	6	35	
Phenanthrene		1000000	3400	70	ug/kg	1070000	107		10		
Phenol		1000000	3400	360	ug/kg	959000	96	17-120	10	35	
Pyrene		1000000	3400	22	ug/kg	1070000	107	58-136	8	35	
Surrogate: 2,4,6-Tribromophenol					*ug/kg*		*102*	*39-146*			
Surrogate: 2-Fluorobiphenyl					*ug/kg*		*96*	*37-120*			
Surrogate: 2-Fluorophenol					*ug/kg*		*91*	*18-120*			
Surrogate: Nitrobenzene-d5					*ug/kg*		*95*	*34-132*			
Surrogate: Phenol-d5					*ug/kg*		*97*	*11-120*			
Surrogate: p-Terphenyl-d14					*ug/kg*		*91*	*58-147*			

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt ________

Drinking Water? Yes ☐ No ☒

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client	Project Manager	Date	Chain of Custody Number
GOLDER ASSOCIATES	PATRICK MARTIN	11/19/09	100079
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 **of** 1
2221 NIA FALLS BLVD, STE.9	716 - 215 - 0650		

City	State	Zip Code	Site Contact	Lab Contact
NIA. FALLS	NY	14304	—	BRIAN FISCHER

Project Name and Location (State): SNPE - VANDEMARK, LOCKPORT NY

Carrier/Waybill Number:

Contract/Purchase Order/Quote No.: 093 - 89168

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	DNAPL	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: 8260	8270	Special Instructions/ Conditions of Receipt
VANDEMARK DNAPL (2 x 4oz)	11/18/09	19:30					X							X	X	2x4 oZ JARS
	~~11/18/09~~	~~14:20~~					~~X~~									

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

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

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

QC Requirements (Specify):

1. Relinquished By	Date	Time	1. Received By	Date	Time
Patrick T. Martin	11/19/09	1745	[signature]	11/19/09	1745
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments

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

NS 1C4

APPENDIX B

2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY REPORT (AUGUST 2010)

August 18, 2010 093-89168

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials, Region 9
270 Michigan Ave.
Buffalo, New York 14203

Attention: Mr. Stanley Radon, Sr. Engineering Geologist

RE: SNPE - VANDEMARK CHEMICAL
2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY REPORT
VANDEMARK CHEMICAL FACILITY, LOCKPORT, NY

Dear Mr. Radon:

On behalf of SNPE Inc. (SNPE), Golder Associates Inc. (Golder) has prepared this report to summarize the results of recent investigation/characterization activities conducted in June 2010 and implemented as part of the Supplemental Work Plan activities proposed in the December 21, 2009 Dense Non-Aqueous Phase Liquid (DNAPL) Assessment and Supplemental Work Plan Report. SNPE, Inc. as the former site owner, has been conducting the agreed upon supplemental characterization activities with support from the current site owner, VanDeMark Chemical, Inc.

The investigation activities described herein were conducted to further assess and identify the potential source(s), distribution, and quantity of coal tar residual impacts that were first identified and partially remediated along the banks and adjacent slope of Eighteen Mile Creek directly south of the VanDeMark Chemical facility. In addition, this report will present recommendations for the remediation of coal tar residuals and additional monitoring provisions where appropriate.

1.0 BACKGROUND

Based on the information available at that time, the December 2009 DNAPL Assessment and Supplemental Work Plan proposed a detailed slope overburden mapping and survey to better define the slope and creek bank bedrock/overburden geology across the slope and understanding of the DNAPL transport mechanism. However, in April 2010, subsequent to the report issuance and review by the New York State Department of Environmental Conservation (NYSDEC), personnel from VanDeMark Chemical identified previously unknown solidified coal tar seeps along a steeply pitched segment of the creek bank approximately 70 feet long to the east of the creek bank area that was the primary focus of earlier remedial efforts in 2007 and 2008.

At about the same time, new information was obtained from a VanDeMark employee of tar seep observations that had occurred approximately 15 to 20 years ago in a localized paved area northwest of Building B-4 within the VanDeMark Chemical manufacturing facility. In consultation with the NYSDEC, it was agreed that the supplemental investigation activities would be expanded to encompass additional test pits easterly along the toe of the slope and upgradient of the newly observed creek bank coal tar residuals seeps and the performance of a separate soil boring and sampling program within the VanDeMark Chemical facility centered around the area of historical coal tar seeps in the pavement near Building B-4. In both cases the goal of the expanded investigations would be to define the areal and vertical extent of coal tar residuals in both areas

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Niagara Falls, NY 14304 USA
Tel: (716) 215-0650 Fax: (716) 215-0655 www.golder.com

Therefore, to implement this expanded investigation strategy, Golder conducted the following tasks:

- In-Plant Soil Boring Investigation - Northwest corner of Building B-4;
- Overburden/Bedrock Test Pit Investigation - Eighteen Mile Creek bank and toe of slope
- Slope and Investigation locations survey; and
- Summarization of findings and preparation of Proposed Remedial Strategies

2.0 IN-PLANT SOIL BORING INVESTIGATION

On Tuesday, June 22, 2010, Mr. David Wehn and Mr. Aaron Lange of Golder, along with two Zebra Environmental (Zebra) employees, the subcontracted drilling firm, arrived at the Site to begin the boring program. Mr. Stanley Radon of the NYSDEC was also onsite to observe the delineation program. A total of fifteen (15) direct push borings were advanced to refusal through the pavement to the northwest of building B-4. The borings were advanced utilizing direct-push drilling techniques and a 2-inch soil sampling tool (Geoprobe® Macrocore® sampler). Golder also screened the first 9 cores for volatile organic compounds (VOCs) using a photoionization detector (PID) and collected 4 samples from the borings for laboratory analysis.

2.1 Boring Layout

Based on an approximation of where historical observations of coal tar residuals seeps had occurred, Golder's first boring (B9-N5) was positioned 5 feet north of the northwest corner of building B-4. Borings were then spread out North and West in 5 feet increments. After consistent findings of a fairly uniform potential coal tar layer was discovered in the first 7 borings, the spacing was increased to ten (10) feet to the North and West. Again, after similar findings, Golder increased the distances to observe where coal tar layer diminished. A thin layer of coal tar was discovered in borings B9-W30-N36 and B9-N36. Borings could not be drilled further North or West of those borings due to a concrete wall and concrete tank pads. Also, underground utility locations and information for that area were unavailable making further exploration unsafe. However, the observed trends indicated that the coal tar layer was diminishing in those directions. Plant structures adjacent to or in the vicinity of the investigation area and boring locations are illustrated on Figure 1.

2.2 Boring Installation

The drill rig used by Zebra was a Geoprobe® 6620D with a Macrocore® sampler. All fifteen (15) borings were advanced until refusal, which was assumed to be at bedrock. The investigation determined that the average depth of the bedrock was approximately 5 feet, but varied between 4.5 to 8 feet below ground surface (bgs). The majority of the overburden was non-native fill materials which included crushed brick, concrete, wood, and foundry sands.

After the borings were advanced, the cores were examined by Mr. Radon and Mr. Wehn and then logged. The boring logs are provided as Attachment A. The drill cuttings were returned to the boring hole and the pavement was patched with asphalt.

2.3 Sample Collection and Results

Samples were collected from 4 borings (B9-W5, B9-N10, B9-W5-N10, and B9-W10-N5). Due to the consistency of the coal tar found in each subsequent boring, Mr. Wehn and Mr. Radon decided it was not necessary to collect any more samples for laboratory analysis. The first 9 borings were screened for VOCs by Golder using a PID. No VOCs were detected by the PID. During the 10th boring the PID malfunctioned indicating a "fan error". Olfactory observations were also made for all the borings. All borings exhibited coal tar odor except borings B9-W5, B9-W30-N10, B9-E20-N20, and B9-W24-S10, however, samples B9-W30-N10 and B9-W24-S10 did have a petroleum like odor.

The laboratory analysis was performed by Test America Inc. in Amherst, New York. The soil sample results detected high concentrations of polyaromatic hydrocarbons (PAHs) which are typically associated with coal tar residuals. For example, the following PAH compounds were consistently detected in each of the four samples at relatively high concentrations: anthracene, benzo(a)anthracene, chrysene, flouranthene, naphthalene, phenanthrene and pyrene. Table 1 presents a summary of the four sample results from the laboratory analysis. The full laboratory Analytical Report is provided as Attachment B.

3.0 OVERBURDEN/BEDROCK TEST PIT INVESTIGATION

The purpose of the test pit investigation was to further characterize the geologic aspects of the escarpment slope, define the depth of overburden and to survey the bedrock elevation in the areas down the slope and south of the facility towards Eighteen Mile Creek. The information gathered was used to develop a profile of the slope and the underlying bedrock in order to better quantify and assess the coal tar migration patterns and develop the most appropriate means of remediation for the coal tar contamination.

Mr. David Wehn and Mr. Patrick Martin of Golder deployed to the Site on June 6, 2010. Mr. Wehn observed the nature of the overburden and logged the descriptions for each test pit. A total of fourteen (14) test pits (TP1 through TP14) were dug along the North side of Eighteen Mile Creek as shown on Figure 2, starting at the west side of the historic seep area and working east towards the seeps discovered in the Spring of 2010. All test pits were dug by O'Regan's Landscaping with a small rubber-tracked excavator to refusal (assumed to be bedrock) except for TP10 and TP13 where bedrock was deeper than 7 feet below grade surface (bgs) – the maximum reach of the excavator used. The depths of bedrock at test pits where bedrock was found ranged from 2.4 to 7 feet bgs.

Mr. Wehn also noted where coal tar was found during the excavations. All test pits except for TP2, TP9, and TP14 had evidence of coal tar present. Though no samples or tests were performed on the soils during excavation, based on visual and olfactory evidence, TP7, TP8, TP10 appeared to have the heaviest deposits of coal tar.

The discovery of coal tar residuals in test pits TP10 through TP13 to the east of the previously remediated area is consistent with the understanding of the bedrock geology of the formation. The vertical fracture planes that would act as a conduit for DNAPL/coal tar residuals to be conveyed from the top of bedrock deeper into the formation are expected to be oriented in both a southwest and southeast directions. This would be consistent with the discovery of the two primary deposition areas along the toe of the slope separated by an area that appears to have little or no coal tar residuals (i.e., between TP9 and TP-10). Table C-1 summarizing the field observations noted during the test pit excavations is presented in Attachment C.

4.0 SLOPE AND SUPPLEMENTAL INVESTIGATION LOCATION SURVEY

Concurrent with the In-Plant soil boring and the Test Pit investigations, surveyors from Wendel Duchscherer determined the location and surface elevation of the In-Plant soil borings, the test pits conducted along the Eighteen Mile Creek bank and toe of slope, the edge of Eighteen Mile Creek, and other reference points in the test pit area and service road leading to the test pits. In addition, two north-south traverses of the slope were made.

The In-Plant borehole locations as surveyed are presented on Figure 1. Figure 2 presents the test pit locations, and well as an elevation contour map of the test pit area, service road, and slope area between the two traverses. Note the westernmost traverse was performed approximately along the line of Cross Section B-B' (Figure 3), which shows the slope in profile and passes very near test pit TP2. An East/West cross section of the test pit area is shown on Figure 4, which presents the surface and bedrock elevations (where they could be determined) in an area roughly parallel to Eighteen Mile Creek from the original remedial area in the east to the west past the newly discovered seep.

5.0 PROPOSED REMEDIAL ALTERNATIVES

5.1 In-Plant Coal Tar Overburden Remediation

The In-Plant soil boring investigation identified a distinct layer of coal tar residuals encompassing an area of approximately 50 feet by 50 feet to the north and northwest of Building B-4 within the VanDeMark Plant. The layer varied in thickness from approximately 12 inches to 2 inches and is estimated to comprise approximately 75 to 100 cubic yards of coal tar based on an average thickness of 9 inches. As described in Section 2, the top of the layer is generally located about 1.0 to 2.5 feet below the paved surface. In several borings (e.g., B9-N10, B9-W10-N10) evidence of small quantities of coal tar residuals was observed at the overburden/bedrock interface.

Based on the accessibility and relative proximity of this layer to the surface, excavation and off-site disposal of these residuals is proposed as the remedial approach. It is estimated based on the delineation volume calculated [and density of 1.5 tons per cubic yard] that approximately 100 to 125 tons of tar residuals mixed with overburden fill would be removed and disposed of utilizing this approach. At the boring locations where coal tar was detected on the top of bedrock, the excavation of this material would proceed until removal of residuals identified at this depth is achieved. It is assumed the existing pavement and overburden fill located above the coal tar residual layer would be removed and disposed of off-site due to the unsuitability for reuse as backfill within the completed excavation (I.e., due to potential compaction and settlement concerns).

If the coal tar residuals layer is found to extend to the north of the concrete barrier wall that defines the gaseous carbon monoxide storage and offloading area, further investigation within this area may be required to better evaluate the extent of removal feasible and these activities will have to be closely coordinated with VanDeMark to address operational and safety considerations.

As stated in the December 2009 Report, it would be impractical and nearly impossible to extract and remove DNAPL which has migrated into the rock fractures below this area of coal tar residuals, without significantly interrupting site operations. There are also considerable technical/cost limitations to removing very viscous liquids from small pore spaces/fractures, with a certain percentage of tar residuals likely to remain in place regardless of the extraction technique attempted.

5.2 Eighteen Mile Creek Slope and Bank Remediation

The creek bank test pit investigation indicates that the area of the creek bank that has been impacted by coal tar residuals extends a significant distance east along the creek bank from the originally delineated and remediated area. Coal tar residuals were found approximately 100 feet east of test pit TP8 (located at the eastern end of the remediated area) beginning with TP10 located near the top of the access road ramp and extending to TP13 about 80 feet further east along the toe of the slope. In general the coal tar was identified beginning five feet below grade surface in this area.

Although solidified coal tar seeps have been identified along an approximately 50 foot portion of the steeply pitched creek bank located south of this newly identified area, the amount/extent of coal tar deposits appears to be significantly less than that encountered to the west (previously remediated), where coal tar residuals were 2.5 to 3.5 feet thick in places. Therefore, based on observed thickness and areal distribution of the residuals in TP-10 through TP13, significant slope stability and slope undermining concerns and highly constrained physical access associated with conducting a major excavation (i.e., removal of over five feet of overburden and former rock structures at the base of the slope), Golder is not recommending the removal of the buried coal tar residuals in this area at this time as a prudent or practical remedial measure. The resulting environmental disruption of the creek bank and associated riparian area to access and remove a relatively small mass of accumulated coal residuals does not in our opinion warrant the excessive measures and damage that would be incurred to perform the removal.

Alternatively, it is recommended that the implementation of a linear DNAPL cutoff trench (as previously proposed) be performed at the toe of the slope south of monitoring well MW-2D where the majority of the coal tar residuals were found and continue to be exiting the fractured rock (i.e., approximately between TP1 and TP8). This structure would allow for the capture and periodic removal of DNAPL / coal tar residuals from what is confirmed to be an active transmission pathway and represents the most likely exposure pathway of these residuals into the environment. The cutoff mechanism will also allow for accurate tracking of the quantities and rate of DNAPL seepage to assess the potential mass that remains within the fractured bedrock formation.

In conjunction with the installation of this cutoff trench, it is proposed that visible coal tar residuals that have accumulated on the creek bank directly south of the test pits TP-10 through TP-13 (upper access road area) be removed at the surface. Quarterly visual monitoring is proposed along the creek bank slope in this area to determine if further seepage is occurring. If significant seepage is observed, additional alternatives for remediation of the coal tar residuals in this area will be reevaluated with the NYSDEC.

Development of detailed remedial design alternatives based on the DNAPL intercepting structure(s) concept presented above is proposed for NYSDEC review within 8 to 10 weeks of concept approval. Assessment of the suitability and effectiveness of each design alternative is anticipated to be a component of the design alternatives submittal with final remedy selection to be determined in conjunction with the NYSDEC.

If you have any questions concerning the investigation findings presented in this report or the proposed remedial strategies, please contact us at 716-215-0650.

Sincerely,

GOLDER ASSOCIATES INC.

Patrick T. Martin, P.E., BCEE
Senior Consultant

David C. Wehn, CPG
Associate

cc: D. Slick, SNPE, Inc.
P. Cook, VanDeMark Chemical

Attachments: Table 1
Figures 1, 2 and 3
Appendices A, B and C

PTM/DCW:dml

TABLES

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
SNPE VANDEMARK
DNAPL ASSESSMENT
LOCKPORT, NY

Lab ID	**RTF1262-01**	**RTF1262-02**	**RTF1262-03**	**RTF1262-04**
Sample Date	**6/22/2010**	**6/22/2010**	**6/22/2010**	**6/22/2010**
Sample ID	**B-9-W5-N5**	**B-9-N-10**	**B-9-W5-N10**	**B-9-W10-N5**
Units	**UG/KG**	**UG/KG**	**UG/KG**	**UG/KG**
Semivolatile Organics by GC/MS (US EPA Method 8270C)				
2,4,5-Trichlorophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,4,6-Trichlorophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,4-Dichlorophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,4-Dimethylphenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,4-Dinitrophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,4-Dinitrotoluene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,6-Dinitrotoluene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2-Chloronaphthalene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2-Chlorophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2-Methylnaphthalene	2200000 [1, 2]	1500000 [1, 2]	1200000 [1, 2]	530000 [1, 2]
2-Methylphenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2-Nitroaniline	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2-Nitrophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
3 & 4 Methylphenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
3,3'-Dichlorobenzidine	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
3-Nitroaniline	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4,6-Dinitro-2-methylphenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Bromophenyl phenyl ether	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Chloro-3-methylphenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Chloroaniline	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Chlorophenyl phenyl ether	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Nitroaniline	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Nitrophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Acenaphthene	2100000 [1, 2]	1500000 [1, 2]	1300000 [1, 2]	830000 [1, 2]
Acenaphthylene	30000 [1, 2, 3]	ND [1, 2]	ND [1, 2]	19000 [1, 2, 3]
Acetophenone	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Anthracene	3000000 [1, 2]	2700000 [1, 2]	1800000 [1, 2]	1300000 [1, 2]
Atrazine	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Benzaldehyde	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Benzo[a]anthracene	2900000 [1, 2]	3400000 [1, 2]	2000000 [1, 2]	1600000 [1, 2]
Benzo[a]pyrene	2000000 [1, 2]	2300000 [1, 2]	1300000 [1, 2]	1000000 [1, 2]
Benzo[b]fluoranthene	1400000 [1, 2]	1600000 [1, 2]	1000000 [1, 2]	1000000 [1, 2]
Benzo[g,h,i]perylene	1000000 [1, 2]	1100000 [1, 2]	720000 [1, 2, 3]	570000 [1, 2]
Benzo[k]fluoranthene	560000 [1, 2, 3]	610000 [1, 2, 3]	360000 [1, 2, 3]	ND [1, 2]
Biphenyl	260000 [1, 2, 3]	160000 [1, 2, 3]	150000 [1, 2, 3]	77000 [1, 2, 3]
Bis(2-chloroethoxy)methane	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Bis(2-chloroethyl)ether	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
SNPE VANDEMARK
DNAPL ASSESSMENT
LOCKPORT, NY

Lab ID	RTF1262-01	RTF1262-02	RTF1262-03	RTF1262-04
Sample Date	6/22/2010	6/22/2010	6/22/2010	6/22/2010
Sample ID	B-9-W5-N5	B-9-N-10	B-9-W5-N10	B-9-W10-N5
Units	UG/KG	UG/KG	UG/KG	UG/KG
Bis(2-chloroisopropyl) ether	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Bis(2-ethylhexyl) phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Butyl benzyl phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Caprolactam	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Carbazole	320000 [1, 2, 3]	280000 [1, 2, 3]	200000 [1, 2, 3]	97000 [1, 2, 3]
Chrysene	2800000 [1, 2]	3400000 [1, 2]	2000000 [1, 2]	1500000 [1, 2]
Dibenz[a,h]anthracene	300000 [1, 2, 3]	300000 [1, 2, 3]	200000 [1, 2, 3]	160000 [1, 2, 3]
Dibenzofuran	320000 [1, 2, 3]	260000 [1, 2, 3]	200000 [1, 2, 3]	110000 [1, 2, 3]
Diethyl phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Dimethyl phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Di-n-butyl phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Di-n-octyl phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Fluoranthene	3900000 [1, 2]	4000000 [1, 2]	2500000 [1, 2]	2000000 [1, 2]
Fluorene	1600000 [1, 2]	1300000 [1, 2]	940000 [1, 2]	640000 [1, 2]
Hexachlorobenzene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Hexachlorobutadiene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Hexachlorocyclopentadiene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Hexachloroethane	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Indeno[1,2,3-cd]pyrene	680000 [1, 2, 3, 4]	790000 [1, 2, 3, 4]	470000 [1, 2, 3, 4]	400000 [1, 2, 3, 4]
Isophorone	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Naphthalene	3000000 [1, 2]	2000000 [1, 2]	1500000 [1, 2]	590000 [1, 2]
Nitrobenzene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
N-Nitrosodi-n-propylamine	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
N-Nitrosodiphenylamine	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Pentachlorophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Phenanthrene	9400000 [1, 2]	9400000 [1, 2]	5900000 [1, 2]	4200000 [1, 2]
Phenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Pyrene	6200000 [1, 2]	7600000 [1, 2]	4300000 [1, 2]	3300000 [1, 2]

Footnotes:

Analyses performed by Test America Inc.

Qualifications:

[1] = Sample had an adjusted volume during extraction due to extract matrix and/or viscosity.

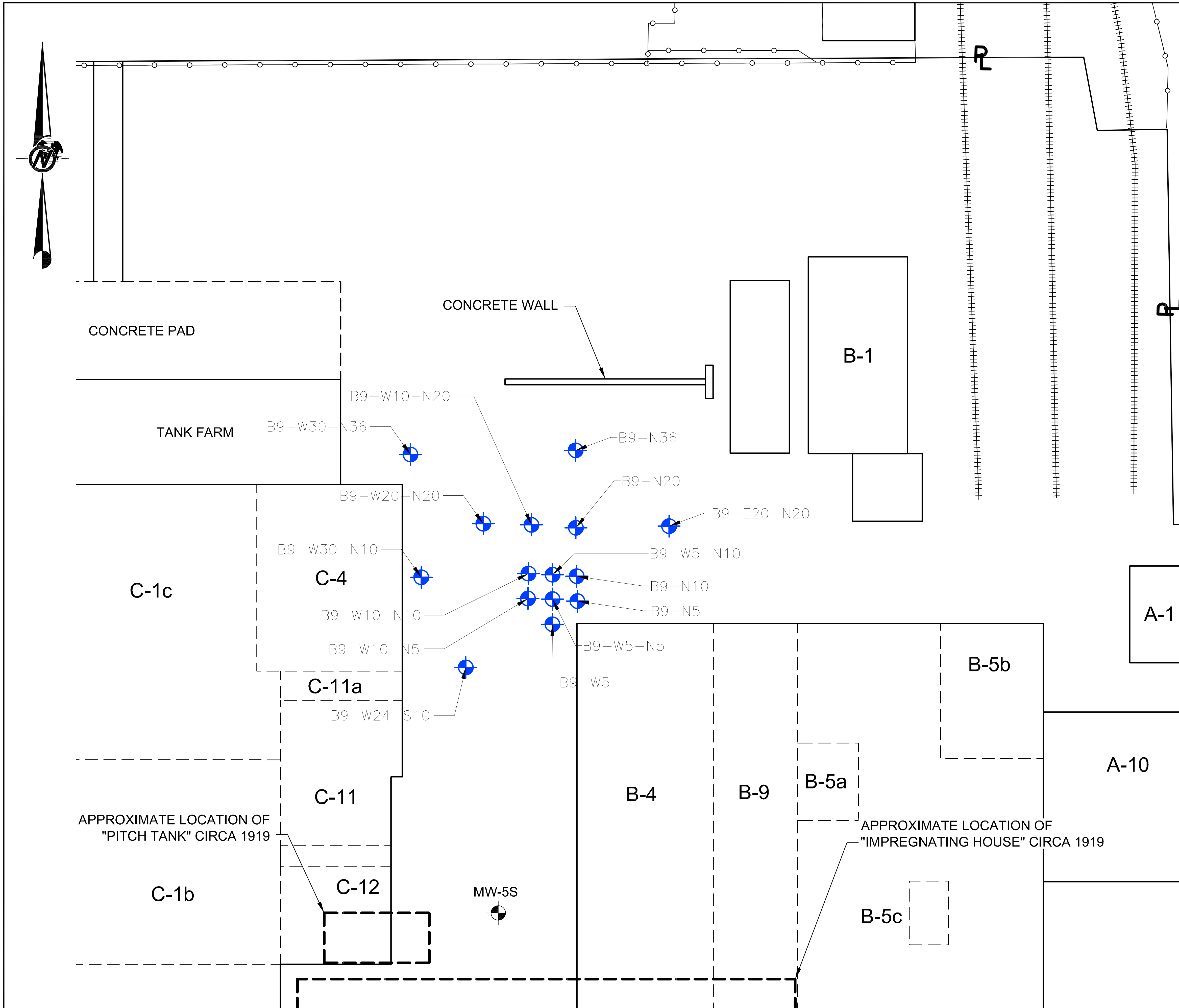
[2] = Dilution required due to high concentration of target analyte.

[3] = Analyte detected at a level less that Reporting Limit and greater than or equal to the Method Detection Limit. Concentrations in

[4] = Laboratory Control Sample and/or laboratory control sample duplicate recovery was below acceptance limits.

Table by: AML
Checked by: JRS
Reviewed by: PTM

FIGURES



LEGEND

- PROPERTY LINE
- FENCE
- RAILROAD
- 1999 INVESTIGATION OVERBURDEN MONITORING WELL
- "B9" SERIES BORE HOLES

REFERENCE

1.) "B9" SERIES BORE HOLES SHOWN ON THIS PLAN WERE TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

2.) PROPERTY LINE SHOWN ON THIS PLAN WAS TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

3.) MAP DIGITIZED FROM HARD COPY OF FIGURE 1 ENTITLED "SITE PLAN," PREPARED BY BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.

20 0 20
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
SNPE - VANDEMARK
2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY
LOCKPORT, NEW YORK

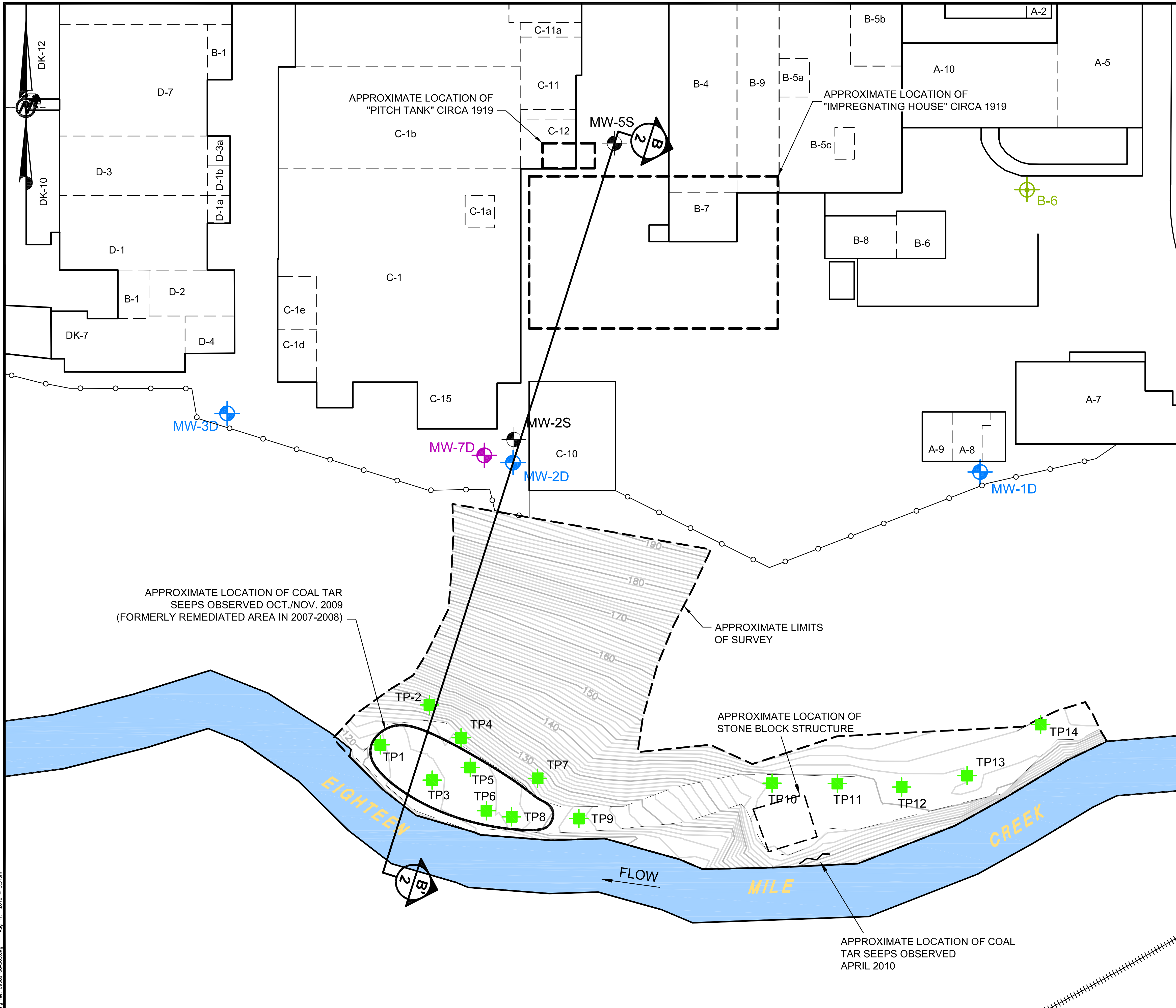
TITLE
COAL TAR DELINEATION IN PLANT BORING LOCATION MAP

NJ Authorization #24GA28029100
Golder Associates
Mt. Laurel, New Jersey

PROJECT No.		093-89168
DESIGN	DCW	07/16/10
CADD	GLS	07/21/10
CHECK		
REVIEW		

FILE No. 09389168A003
SCALE AS SHOWN
REV. 0

FIGURE 1



LEGEND

- FENCE
- RAILROAD
- 1999 INVESTIGATION BORING
- 1999 INVESTIGATION OVERBURDEN MONITORING WELL
- 1999 INVESTIGATION BEDROCK MONITORING WELL
- 2006 BEDROCK MONITORING WELL
- TEST PIT LOCATIONS
- EIGHTEEN-MILE CREEK

REFERENCE

1.) TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

2.) TEST PITS SHOWN ON THIS PLAN WHERE TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

3.) MAP DIGITIZED FROM HARD COPY OF FIGURE 1 ENTITLED "SITE PLAN," PREPARED BY BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.

40 0 40
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
SNPE - VANDEMARK
2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY
LOCKPORT, NEW YORK

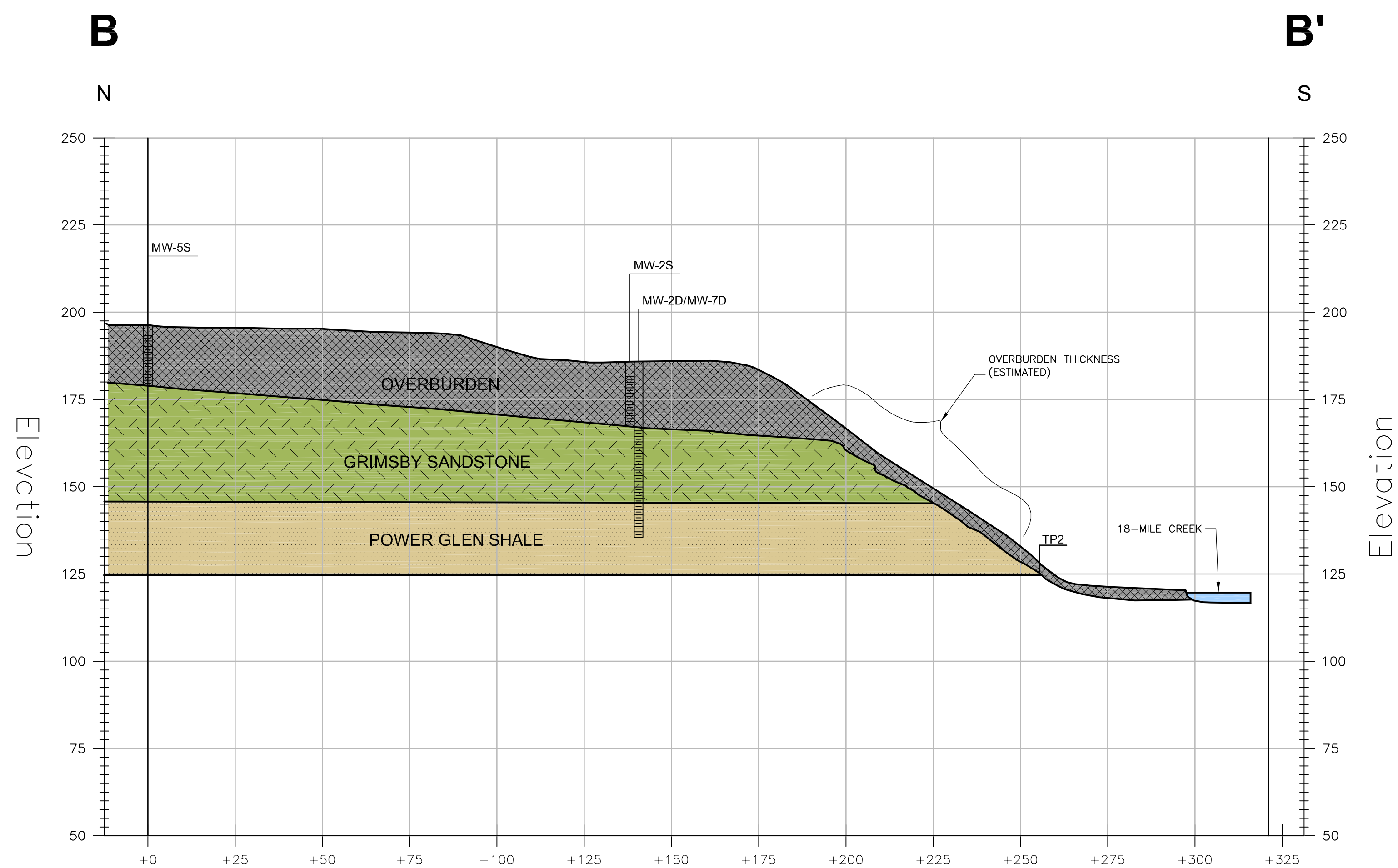
TITLE
COAL TAR DELINEATION OVERBURDEN/BEDROCK TEST PIT LOCATION MAP

NJ Authorization #24GA28029100
Golder Associates
Mt. Laurel, New Jersey

PROJECT No.		093-89168	FILE No.	09389168A005
DESIGN	DCW	07/16/10	SCALE AS SHOWN	REV. 0
CADD	GLS	08/09/10		
CHECK				
REVIEW				

FIGURE 2

Drawing file: 09389168A005.dwg Aug 17, 2010 - 3:51pm



LEGEND

- OVERBURDEN
- GRIMSBY SANDSTONE
- POWER GLEN SHALE
- WATER ELEVATION IN WELL

REFERENCES

1.) URS CORP. FIGURE 3 – PHASE I/II ENVIRONMENTAL AUDIT – VANDE/MARIL, INC. A VANCHEM, INC. SEPTEMBER 17, 1999.

2.) BENCHMARK BES, PLLC – SUMMARY OF SUPPLEMENTAL FIELD INVESTIGATION AND SAMPLING ACTIVITIES, ISOCHEM INC., NOVEMBER 30, 2006.

3.) U.S.G.S. LOCKPORT QUADRANGLE (FOR ELEVATION OF EIGHTEEN–MILE CREEK)

25 0 25 50
HORIZONTAL SCALE FEET

25 0 25 50
VERTICAL SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SNPE - VANDEMARK
2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY
LOCKPORT, NEW YORK

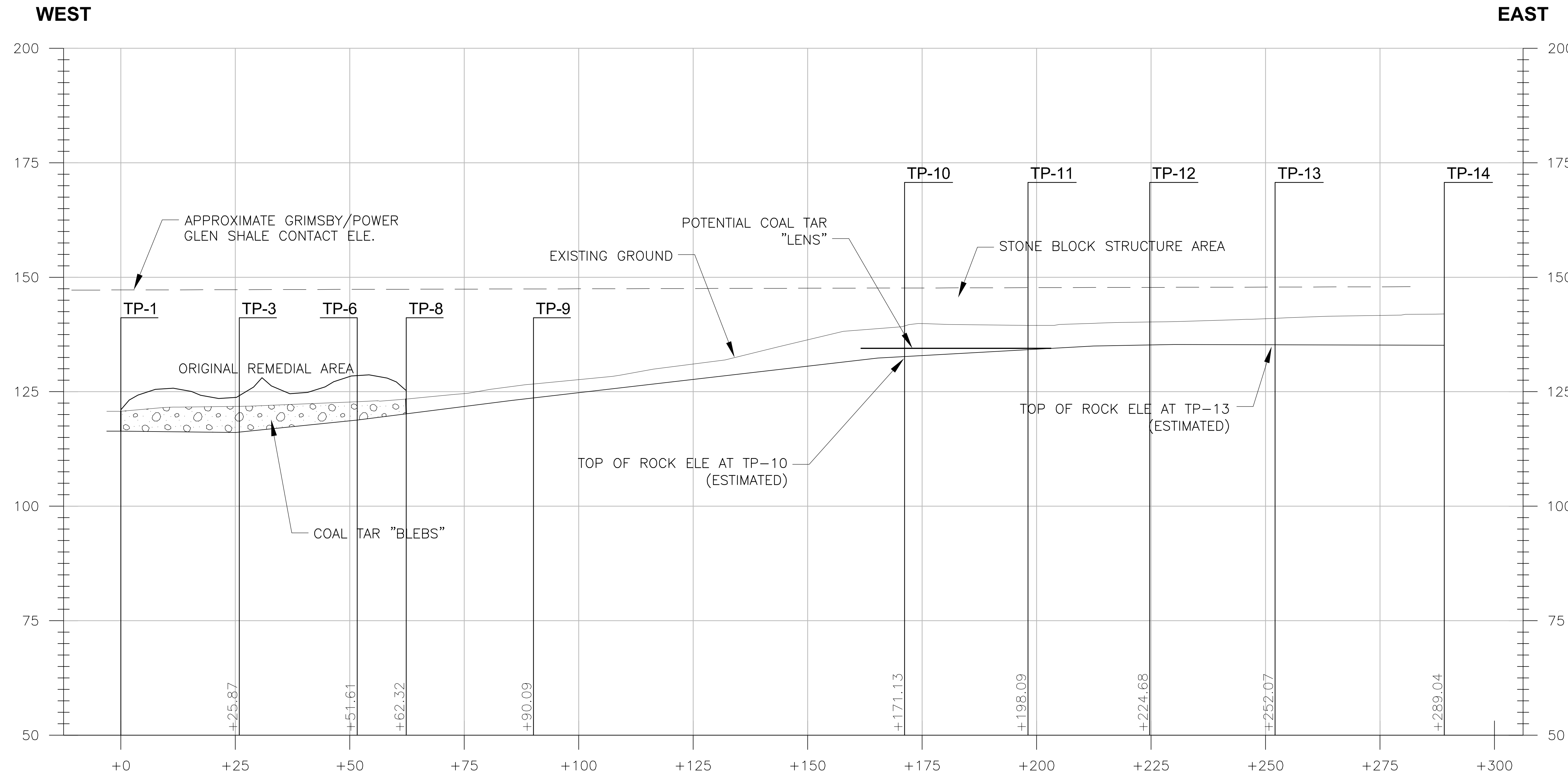
TITLE

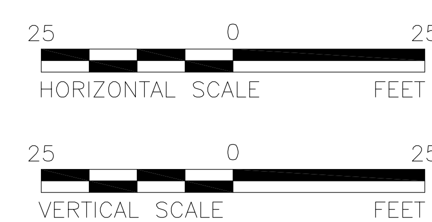
CROSS SECTION B-B'

NJ Authorization #24GA28029100

Golder Associates
Mt. Laurel, New Jersey

PROJECT No.		093–89168	FILE No.	09389168A002
DESIGN	DCW	08/09/10	SCALE AS SHOWN	REV. 0
CADD	AM	08/09/10	FIGURE 3	
CHECK				
REVIEW				





REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SNPE - VANDEMARK
2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY
LOCKPORT, NEW YOR

TITLE

TEST PIT CROSS SECTION

Golder Associates
Mt. Laurel, New Jersey
NJ Authorization #24GA28029100

PROJECT No.		093-89168	FILE No.	09389168A006
DESIGN	AL	07/29/10	SCALE AS SHOWN	REV. 0
CADD	GLS	08/09/10		
CHECK			FIGURE 4	
REVIEW				

ATTACHMENT A

BORING LOGS

Field Boring Log

DEPTH HOLE	7.5 FT	JOB NO	093-89168	PROJECT	Van DeMark	BORING NO.	39-N5
DEPTH SOIL DRILL	7.5 FT	GA INSP	D. WEHN	DRILLING METHOD	Geoprobe Macrocore	SHEET	1 OF 1
DEPTH ROCK CORE	N/A	WEATHER	L. RAIN	DRILLING COMPANY	Zebra Env.	SURFACE ELEV	
NO. DIST SA.	0 UD. SA. 2	TEMP	75°F	DRILL RIG	6620D DRILLER D. Pino	DATUM	
DEPTH WL	N/A	HRS. PROD.	N/A	WT. SAMPLER HAMMER	N/A DROP N/A	STARTED	9:30, 6/22/10
TIME WL.	N/A	HRS. DELAYED	0	WT CASING HAMMER	N/A DROP N/A	COMPLETED	9:45, 6/22/10

SAMPLE TYPES

- A S — AUGER SAMPLE
- C S — CHUNK SAMPLE
- D O — DRIVE OPEN
- D S — DENISON SAMPLE
- P S — PITCHER SAMPLE
- R C — ROCK CORE
- S T — SLOTTED TUBE
- T O — THIN-WALLED, OPEN
- T P — THIN-WALLED, PISTON
- W S — WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-5% SOME 12-30%
LITTLE 5-12% AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY	FINGER PRESSURE	
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	>50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 5 FT N of NW corner of B39.
1								0.0-0.3 FT roadbase GRAVEL.
2–3			1		PID= 0.0 ppm	4.2/5.0		0.3-4.2 FT Dark brown to reddish crushed brick, wood, silt, sand, gravel FILL.
4								Slight coal tar odor.
5–6			2		PID = 0.0 ppm	2.5/2.5		5.0-7.5 FT Dark brown sand, gravel, silt, FILL with some crushed brick.
7								Slight coal tar odor.
8								Refusal @ 7.5 FT
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.0	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-WS	
DEPTH SOIL DRILL 5.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER L. RAIN	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 1	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL. N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 9:45, 6/22/10	
TIME WL. N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 9:55, 6/22/10	

SAMPLE TYPES

AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THIN-WALLED, OPEN; TP THIN-WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-5%, LITTLE 5-12%, SOME 12-30%, AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 5 FT W of NW corner of J B9.
1								
2			1		PID= 0.0 ppm	3.5 / 5.0		0.0-5.0 FT Dark brown to reddish SILT SAND GRAVEL - FILL.
3								No coal tar odor.
4								Refusal @ 5.0 FT
5								
6								
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.5	JOB NO 093-89168	PROJECT Van DeMark			BORING NO. B9-W5-N5
DEPTH SOIL DRILL 5.5	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore			SHEET 1 OF 1
DEPTH ROCK CORE N/A	WEATHER L. RAIN	DRILLING COMPANY Zebra Env.			SURFACE ELEV
NO. DIST SA. 0 UD. SA. 2	TEMP 75°F	DRILL RIG 6620D		DRILLER D. Pino	DATUM
DEPTH WL N/A	HRS. PROD. N/A	WT SAMPLER HAMMER N/A		DROP N/A	STARTED 9:55, 6/22/10
TIME WL. N/A	HRS. DELAYED 0	WT CASING HAMMER N/A		DROP N/A	COMPLETED 10:10, 6/22/10

SAMPLE TYPES

AS AUGER SAMPLE
CS CHUNK SAMPLE
DO DRIVE OPEN
DS DENISON SAMPLE
PS PITCHER SAMPLE
RC ROCK CORE
ST SLOTTED TUBE
TO THIN-WALLED, OPEN
TP THIN-WALLED, PISTON
WS WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-10% SOME 12-30%
LITTLE 5-12% AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 5 FT N and 5 FT W of NW corner of B9.
1								
2			1		PID = 0.0 ppm	4.0/5.0		0.0-5.0 FT Dark brown to black to reddish SILT, SAND + GRAVEL. Fill. Some brick. Coal tar from 1.6-2.1 FT. Strong coal tar odor.
3								
4								Sample collected of coal tar.
5			2		PID: 0.0 ppm	0.9/0.5		5.0-5.5 FT Brown SILT, SAND + GRAVEL. Saturated. No coal tar odor.
6								Refusal @ 5.5 FT
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.0	JOB NO 093-89168	PROJECT Van DeMark			BORING NO. B9-N10
DEPTH SOIL DRILL 5.0	QA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore			SHEET 1 OF 1
DEPTH ROCK CORE N/A	WEATHER OVERCAST	DRILLING COMPANY Zebra Env.			SURFACE ELEV
NO. DIST SA. 0 UD. SA. 1	TEMP 75°F	DRILL RIG 6620D		DRILLER D. Pino	DATUM
DEPTH WL N/A	HRS. PROD. N/A	WT SAMPLER HAMMER N/A		DROP N/A	STARTED 10:15, 6/22/10
TIME WL N/A	HRS. DELAYED 0	WT CASING HAMMER N/A		DROP N/A	COMPLETED 10:25, 6/22/10

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
DO	DRIVE OPEN
DS	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
ST	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LTD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0 - [illegible] SOME [illegible]
LITTLE 5 - [illegible] AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS [illegible]

ELEV / DEPTH	DESCRIPTION	BLOWS / FT		SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
									Boring 10 FT N of NW corner of JB9.
1									0.0 - 5.0 FT Dark brown to reddish to light tan SILT, SAND + GRAVEL with some wood + brick. Light tan granular ~~substance~~ sandy substance near bottom of sample (several inches thick).
2				1		PID = 0.0 ppm	4.3 / 5.0		
3									
4									Coal tar from 2.3 - 2.8 FT and at tip of sample shoe on top of rock.
5									Coal tar odor.
6									Refusal @ 5.0 FT
									Collected sample of coal tar.
									Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.0	JOB NO 093-89168	PROJECT Van DeMark	BORING NO. B9-WS-N10
DEPTH SOIL DRILL 5.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore	SHEET 1 OF 1
DEPTH ROCK CORE N/A	WEATHER OVERCAST	DRILLING COMPANY Zebra Env.	SURFACE ELEV
NO. DIST SA 0 UD. SA 1	TEMP 75°F	DRILL RIG 6620D DRILLER D. Pino	DATUM
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A DROP N/A	STARTED 10:30, 6/22/10
TIME WL. N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A DROP N/A	COMPLETED 10:40, 6/22/10

SAMPLE TYPES
AS AUGER SAMPLE
CS CHUNK SAMPLE
DO DRIVE OPEN
DS DENISON SAMPLE
PS PITCHER SAMPLE
RC. ROCK CORE
ST SLOTTED TUBE
TO THIN-WALLED, OPEN
TP THIN-WALLED, PISTON
WS WASH SAMPLE

ABBREVIATIONS
BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE
M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK
SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION
TRACE 0-10%; SOME 12-30%; LITTLE 5-12%; AND 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 5 FT W and 10 FT N of NW corner of B9.
1								0.0-5.0 FT Dark brown SILT SAND, GRAVEL + BRICK. FILL. Dark gray sandy material from 3.7-4.3 FT
2			1		PID= 0.0 ppm	4.3 / 5.0		Coal tar from 1.7-2.1 FT
3								Coal tar odor.
4								Sample collected of coal tar.
5								Refusal @ 5 FT
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.0	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-W10-N5	
DEPTH SOIL DRILL 5.0	QA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER L. RAIN	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD SA. 1	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 10:40, 6/22/10	
TIME WL. N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 10:50, 6/22/10	

SAMPLE TYPES

AS AUGER SAMPLE
CS CHUNK SAMPLE
DO DRIVE OPEN
DS DENISON SAMPLE
PS PITCHER SAMPLE
RC ROCK CORE
ST SLOTTED TUBE
TO THIN-WALLED, OPEN
TP THIN-WALLED, PISTON
WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE
M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK
SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-5%, SOME 12-30%; LITTLE 5-12%, AND 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 10 FT W and 5 FT N of NW corner of B9.
1								
2			1		PID= 0.0ppm	4.0/5.0		0.0-5.0 FT Dark brown SILT SAND GRAVEL with some brick and wood. Fill. Tan sandy material just above refusal.
3								
4								Coal tar 1.3-1.6 FT Coal tar odor Sample collected of coal tar.
5								Refusal @ 5.0 FT
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE	6.0	JOB NO	093-89168	PROJECT	Van DeMark	BORING NO.	B9-W10-N10
DEPTH SOIL DRILL	6.0	GA INSP	D. WEHN	DRILLING METHOD	Geoprobe Macrocore	SHEET	1 OF 1
DEPTH ROCK CORE	N/A	WEATHER	L. RAIN	DRILLING COMPANY	Zebra Env.	SURFACE ELEV	
NO. DIST SA.	0 UD. SA. 2	TEMP	75°F	DRILL RIG	6620D DRILLER D. Pino	DATUM	
DEPTH WL	N/A	HRS. PROD.	N/A	WT. SAMPLER HAMMER	N/A DROP N/A	STARTED	10:55 6/22/10
TIME WL.	N/A	HRS. DELAYED	0	WT. CASING HAMMER	N/A DROP N/A	COMPLETED	11:05 6/22/10

SAMPLE TYPES
AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC. ROCK CORE; ST SLOTTED TUBE; TO THIN-WALLED, OPEN; TP THIN-WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS
BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION
TRACE 0-10%, LITTLE 10-20%, SOME 20-35%, AND 35-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 10 FT W and 10 FT N of NW corner of B9.
1								0.0 - 5.0 FT
2			1		PID = 0.0 ppm	4.1/5.0		Coal tar from 1.0 - 2.1 FT, 3.0 - 3.9 FT, and at bottom of shoe. Coal tar odor.
3								
4								Crushed GRAVEL 1.1 - 1.4 FT then crushed brick, SAND + GRAVEL - FILL.
5			2		PID = 0.0 ppm	0.8/1.0		5.0 - 6.0 FT Dark brown SAND. Coal tar odor.
6								

Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.0	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-N20	
DEPTH SOIL DRILL 5.0	QA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER L. RAIN	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 1	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 11:05, 6/22/10	
TIME WL N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 11:20, 6/22/10	

SAMPLE TYPES

- AS AUGER SAMPLE
- CS CHUNK SAMPLE
- DO DRIVE OPEN
- DS DENISON SAMPLE
- PS PITCHER SAMPLE
- RC ROCK CORE
- ST SLOTTED TUBE
- TO THIN-WALLED, OPEN
- TP THIN-WALLED, PISTON
- WS WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-5% SOME 12-30%; LITTLE 5-12% AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 20 FT N of NW corner of B9.
1								0.0-5.0 Dark brown to tan SILT SAND + GRAVEL with some wood. FILL.
2			1		PID= 0.0 ppm	3.1/5.0		
3								Coal tar from 1.5-1.9 FT. Coal tar odor
4								
5								Refusal @ 5.0 FT
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 4.5	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-W10-N20	
DEPTH SOIL DRILL 4.5	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER L. RAIN	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 1	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL. N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 11:20 6/22/10	
TIME WL. N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 11:30 6/22/10	

SAMPLE TYPES
- AS AUGER SAMPLE
- CS CHUNK SAMPLE
- DO DRIVE OPEN
- DS DENISON SAMPLE
- PS PITCHER SAMPLE
- RC ROCK CORE
- ST SLOTTED TUBE
- TO THIN-WALLED, OPEN
- TP THIN-WALLED, PISTON
- WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-1%; LITTLE 5-12%; SOME 12-30%; AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 10 FT W and 20 FT N of NW corner of B9.
1								0.0-4.5 FT Dark brown SILT SAND + GRAVEL with Some brick. FILL.
2					PID = 0.0ppm	4.2/4.5		
3								Coal tar 2.5-2.9 and 3.2-3.5 FT. Coal tar odor.
4								Refusal @ 4.5 FT
5								
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 4.0	JOB NO 093-89168	PROJECT Van DeMark			BORING NO. B9-W20-N20
DEPTH SOIL DRILL 4.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore			SHEET 1 OF 1
DEPTH ROCK CORE N/A	WEATHER	DRILLING COMPANY Zebra Env.			SURFACE ELEV
NO. DIST SA. 0 UD. SA. 1	TEMP 75°F	DRILL RIG 6620D		DRILLER D. Pino	DATUM
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A		DROP N/A	STARTED 11:30, 6/22/10
TIME WL. N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A		DROP N/A	COMPLETED 11:40, 6/22/10

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
DO	DRIVE OPEN
DS	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
ST	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-5% SOME 12-30%
LITTLE 5-12% AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
1								Boring 20 FT W and 20 FT N of NW corner of building B9.
2						3.0 / 4.0		0.0-4.0 Tan SAND and GRAVEL FILL. Coal tar from 2.0-2.9 FT. Coal tar odor.
3								
4								Refusal @ 4.0 FT
5								PID displayed "fan error" - no readings possible for remainder of day.
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 7.0	JOB NO 093-89168	PROJECT Van DeMark	BORING NO. B9-W30-N10
DEPTH SOIL DRILL 7.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore	SHEET 1 OF 1
DEPTH ROCK CORE N/A	WEATHER OVERCAST	DRILLING COMPANY Zebra Env.	SURFACE ELEV
NO. DIST SA. 0 UD SA. 2	TEMP 75°F	DRILL RIG 6620D — DRILLER D. Pino	DATUM
DEPTH WL. N/A	HRS. PROD. N/A	WT SAMPLER HAMMER N/A — DROP N/A	STARTED 11:45, 6/22/10
TIME WL. N/A	HRS. DELAYED 0	WT CASING HAMMER N/A — DROP N/A	COMPLETED 12:00, 6/22/10

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
DO	DRIVE OPEN
DS	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
ST	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RR	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0 - [illegible] SOME 12 - [illegible]
LITTLE 5 - [illegible] AND 30 - 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS/FT	SAMPLE NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 30 FT W and 10 FT N of NW corner of B9
1								0.0-5.0 FT Gray to black SAND & GRAVEL. FILL. Some brick.
2			1			3.2/5.0		
3								No coal tar or tar odor.
4								Petroliferous odor.
5								5.0-7.0 FT Reddish brown GRAVEL. Slight petroliferous odor.
6			2			1.8/2.0		
7								Refusal @ 7.0 FT.
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 8.0	JOB NO 093-89168	PROJECT Van DeMark			BORING NO. B9-W30-N36
DEPTH SOIL DRILL 8.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore			SHEET 1 OF 1
DEPTH ROCK CORE N/A	WEATHER OVERCAST	DRILLING COMPANY Zebra Env.			SURFACE ELEV
NO. DIST SA. 0 UD. SA. 2	TEMP 75°F	DRILL RIG 6620D		DRILLER D. Pino	DATUM
DEPTH WL. N/A	HRS. PROD. N/A	WT SAMPLER HAMMER N/A		DROP N/A	STARTED 12:45, 6/22/10
TIME WL. N/A	HRS. DELAYED 0	WT CASING HAMMER N/A		DROP N/A	COMPLETED 13:00, 6/22/10

SAMPLE TYPES

- AS AUGER SAMPLE
- CS CHUNK SAMPLE
- DO DRIVE OPEN
- DS DENISON SAMPLE
- PS PITCHER SAMPLE
- RC. ROCK CORE
- ST SLOTTED TUBE
- TO THIN-WALLED, OPEN
- TP THIN-WALLED, PISTON
- WS WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-10% SOME 12-30%
LITTLE 5-12% AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 30 FT W and 36 FT N of NW corner of B9
0–5			1			4.2 / 5.0		0.0-5.0 FT Dark brown to black gravelly SAND. FILL. Crushed brick ~~[illegible]~~ 2.9-3.7 FT. Coal tar 1.8-2.0 FT. Coal tar odor.
5–8			2			1.8 / 3.0		5.0-8.0 FT Dark brown coarse SAND + GRAVEL. Petroliferous odor. Refusal @ 8.0 FT
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 4.5	JOB NO 093-89168	PROJECT	Van DeMark			BORING NO.	B9-N36
DEPTH SOIL DRILL 4.5	GA INSP D. WEHN	DRILLING METHOD	Geoprobe Macrocore			SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER OVERCAST	DRILLING COMPANY	Zebra Env.			SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 1	TEMP 75°F	DRILL RIG	6620D	DRILLER	D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER	N/A	DROP	N/A	STARTED	13:05, 6/22/10
TIME WL N/A	HRS. DELAYED 0	WT. CASING HAMMER	N/A	DROP	N/A	COMPLETED	13:15, 6/22/10

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
DO	DRIVE OPEN
DS	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
ST	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	[illegible]
LOOSE	LS	4-10	SOFT	S	[illegible]
COMPACT	CP	10-30	FIRM	FM	[illegible]
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	[illegible]

ELEV / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 36 FT N of NW corner of B9.
1								0.0 - 4.5 FT
2			1			3.5 / 4.5		Black to dark gray SAND + GRAVEL to 1.9 FT, then reddish SILT + CLAY.
3								Coal tar 1.3 - 1.7 FT. Coal tar odor.
4								Refusal @ 4.5 FT
5								
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE	5.0	JOB NO	093-89168	PROJECT	Van DeMark	BORING NO.	B9-E20-N20
DEPTH SOIL DRILL	5.0	GA INSP	D. WEHN	DRILLING METHOD	Geoprobe Macrocore	SHEET	1 OF 1
DEPTH ROCK CORE	N/A	WEATHER	OVERCAST	DRILLING COMPANY	Zebra Env.	SURFACE ELEV	
NO. DIST SA.	0	UD. SA.	1	TEMP	75°F	DRILL RIG	6620D
DRILLER	D. Pino	DATUM					
DEPTH WL	N/A	HRS. PROD.	N/A	WT. SAMPLER HAMMER	N/A	DROP	N/A
TIME WL	N/A	HRS. DELAYED	0	WT. CASING HAMMER	N/A	DROP	N/A
STARTED	13:16, 6/22/10	COMPLETED	13:25, 6/22/10				

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
DO	DRIVE OPEN
DS	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
ST	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-5% SOME 12-30%
LITTLE 5-12% AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS/FT		SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
									Boring 20 FT E and 20 FT N of NW corner of B9
1									
2				1			3.9 / 5.0		0-1.4 FT croshed concrete.
3									1.4-3.9 FT reddish brown SILT with some sand.
4									
5									
									Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.3	JOB NO 093-89168	PROJECT Van DeMark			BORING NO. B9-L24-S10
DEPTH SOIL DRILL 5.3	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore			SHEET 1 OF 1
DEPTH ROCK CORE N/A	WEATHER	DRILLING COMPANY Zebra Env.			SURFACE ELEV
NO. DIST SA. 0 UD. SA. 2	TEMP 75°F	DRILL RIG 6620D		DRILLER D. Pino	DATUM
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A		DROP N/A	STARTED 13:28, 6/22/10
TIME WL N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A		DROP N/A	COMPLETED 13:40, 6/22/10

SAMPLE TYPES

AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THIN-WALLED, OPEN; TP THIN-WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0 - 5%; LITTLE 5 - 12%; SOME 12 - 30%; AND 30 - 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 24 FT W and 10 FT S of NW corner of B9
1								0.0-5.0 FT Gray GRAVEL and SAND to 1.6 FT then black GRAVEL and SAND.
2			1			3.8/5.0		
3								Petroliferous odor
4								
5			2			0.3/0.3		5.0-5.3 FT Black SAND + GRAVEL
6								

Cuttings returned to borehole, tamped, and covered with asphalt patch.

ATTACHMENT B

LABORATORY ANALYSIS REPORT (TESTAMERICA, JUNE 2010)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Analytical Report

Work Order: RTF1262

Project Description
Golder - Vandermark/Isochem site

For:

Pat Martin

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Brian Fischer

Project Manager
Brian.Fischer@testamericainc.com

Friday, July 2, 2010

TestAmerica Buffalo
Current Certifications

As of 06/17/2010

STATE	Program	Cert # / Lab ID
Arkansas	CWA, RCRA, SOIL	88-0686
California*	NELAP CWA, RCRA	01169CA
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida*	NELAP CWA, RCRA	E87672
Georgia*	SDWA,NELAP CWA, RCRA	956
Illinois*	NELAP SDWA, CWA, RCRA	200003
Iowa	SW/CS	374
Kansas*	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana*	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY0044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	SDWA,CWA, RCRA	036-999-337
New Hampshire*	NELAP SDWA, CWA	233701
New Jersey*	NELAP,SDWA, CWA, RCRA,	NY455
New York*	NELAP, AIR, SDWA, CWA, RCRA,CLP	10026
North Dakota	CWA, RCRA	R-176
Oklahoma	CWA, RCRA	9421
Oregon*	CWA,RCRA	NY200003
Pennsylvania*	NELAP CWA,RCRA	68-00281
Tennessee	SDWA	02970
Texas*	NELAP CWA, RCRA	T104704412 -08-TX
USDA	FOREIGN SOIL PERMIT	S-41579
Virginia	SDWA	278
Washington*	NELAP CWA,RCRA	C1677
Wisconsin	CWA, RCRA	998310390
West Virginia	CWA,RCRA	252

*As required under the indicated accreditation, the test results in this report meet all NELAP requirements for p arameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report.

CASE NARRATIVE

According to 40CFR Part 136.3, pH, Chlorine Residual, Dissolved Oxygen, Sulfite, and Temperature analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. field-pH), they were not analyzed immediately, but as soon as possible after laboratory receipt.

A pertinent document is appended to this report, 1 page, is included and is an integral part of this report.

TestAmerica Laboratories, Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our Laboratory.

DATA QUALIFIERS AND DEFINITIONS

D08	Dilution required due to high concentration of target analyte(s)
J	Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). Concentrations within this range are estimated.
L2	Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was below acceptance limits.
T10	Sample had an adjusted final volume during extraction due to extract matrix and / or viscosity.
Z3	The sample required a dilution, the surrogate spike concentration in the sample are reduced to a level where the recovery calculation does not provide useful information.
NR	Any inclusion of NR indicates that the project specific requirements do not require reporting estimated values below the laboratory reporting limit.

ADDITIONAL COMMENTS

Results are reported on a wet weight basis unless otherwise noted.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Executive Summary - Detections

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-01 (B-9-W5-N5 - Solid)						**Sampled: 06/22/10 10:05**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS										
2-Methylnaphthalene	**2200000**	T10, D08	740000	8900	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Acenaphthene	**2100000**	T10, D08	740000	8600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Acenaphthylene	**30000**	T10, D08,J	740000	6000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Anthracene	**3000000**	T10, D08	740000	19000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[a]anthracene	**2900000**	T10, D08	740000	13000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[a]pyrene	**2000000**	T10, D08	740000	18000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1400000**	T10, D08	740000	14000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**1000000**	T10, D08	740000	8800	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[k]fluoranthene	**560000**	T10, D08,J	740000	8100	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Biphenyl	**260000**	T10, D08,J	740000	46000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Carbazole	**320000**	T10, D08,J	740000	8500	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Chrysene	**2800000**	T10, D08	740000	7300	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**300000**	T10, D08,J	740000	8600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Dibenzofuran	**320000**	T10, D08,J	740000	7600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Fluoranthene	**3900000**	T10, D08	740000	11000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Fluorene	**1600000**	T10, D08	740000	17000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**680000**	T10, D08,L2, J	740000	20000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Naphthalene	**3000000**	T10, D08	740000	12000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Phenanthrene	**9400000**	T10, D08	740000	15000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Pyrene	**6200000**	T10, D08	740000	4800	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
General Chemistry Parameters										
Percent Solids	**91**		0.010	NR	%	1.00	06/24/10 13:46	JRR	10F2079	Dry Weight
Sample ID: RTF1262-02 (B-9-N-10 - Solid)						**Sampled: 06/22/10 10:25**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS										
2-Methylnaphthalene	**1500000**	T10, D08	840000	10000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Acenaphthene	**1500000**	T10, D08	840000	9800	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Anthracene	**2700000**	T10, D08	840000	21000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[a]anthracene	**3400000**	T10, D08	840000	14000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[a]pyrene	**2300000**	T10, D08	840000	20000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1600000**	T10, D08	840000	16000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**1100000**	T10, D08	840000	10000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[k]fluoranthene	**610000**	T10, D08,J	840000	9200	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Biphenyl	**160000**	T10, D08,J	840000	52000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Carbazole	**280000**	T10, D08,J	840000	9700	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Chrysene	**3400000**	T10, D08	840000	8400	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**300000**	T10, D08,J	840000	9800	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Dibenzofuran	**260000**	T10, D08,J	840000	8700	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Fluoranthene	**4000000**	T10, D08	840000	12000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Fluorene	**1300000**	T10, D08	840000	19000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**790000**	T10, D08,L2, J	840000	23000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Naphthalene	**2000000**	T10, D08	840000	14000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Phenanthrene	**9400000**	T10, D08	840000	18000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Pyrene	**7600000**	T10, D08	840000	5400	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Executive Summary - Detections

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-02 (B-9-N-10 - Solid) - cont.					**Sampled: 06/22/10 10:25**			**Recvd: 06/22/10 14:20**		
General Chemistry Parameters										
Percent Solids	**79**		0.010	NR	%	1.00	06/24/10 13:48	JRR	10F2079	Dry Weight
Sample ID: RTF1262-03 (B-9-W5-N10 - Solid)					**Sampled: 06/22/10 10:35**			**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS										
2-Methylnaphthalene	**1200000**	T10, D08	740000	8900	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Acenaphthene	**1300000**	T10, D08	740000	8600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Anthracene	**1800000**	T10, D08	740000	19000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[a]anthracene	**2000000**	T10, D08	740000	13000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[a]pyrene	**1300000**	T10, D08	740000	18000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1000000**	T10, D08	740000	14000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**720000**	T10, D08,J	740000	8800	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[k]fluoranthene	**360000**	T10, D08,J	740000	8100	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Biphenyl	**150000**	T10, D08,J	740000	46000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Carbazole	**200000**	T10, D08,J	740000	8500	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Chrysene	**2000000**	T10, D08	740000	7300	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**200000**	T10, D08,J	740000	8600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Dibenzofuran	**200000**	T10, D08,J	740000	7600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Fluoranthene	**2500000**	T10, D08	740000	11000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Fluorene	**940000**	T10, D08	740000	17000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**470000**	T10, D08,L2, J	740000	20000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Naphthalene	**1500000**	T10, D08	740000	12000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Phenanthrene	**5900000**	T10, D08	740000	15000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Pyrene	**4300000**	T10, D08	740000	4800	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
General Chemistry Parameters										
Percent Solids	**92**		0.010	NR	%	1.00	06/24/10 13:50	JRR	10F2079	Dry Weight
Sample ID: RTF1262-04 (B-9-W10-N5 - Solid)					**Sampled: 06/22/10 10:45**			**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS										
2-Methylnaphthalene	**530000**	T10, D08	410000	4900	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Acenaphthene	**830000**	T10, D08	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Acenaphthylene	**19000**	T10, D08,J	410000	3300	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Anthracene	**1300000**	T10, D08	410000	10000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[a]anthracene	**1600000**	T10, D08	410000	7000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[a]pyrene	**1000000**	T10, D08	410000	9700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1000000**	T10, D08	410000	7800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**570000**	T10, D08	410000	4800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Biphenyl	**77000**	T10, D08,J	410000	25000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Carbazole	**97000**	T10, D08,J	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Chrysene	**1500000**	T10, D08	410000	4000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**160000**	T10, D08,J	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Dibenzofuran	**110000**	T10, D08,J	410000	4200	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Fluoranthene	**2000000**	T10, D08	410000	5800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Fluorene	**640000**	T10, D08	410000	9300	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**400000**	T10, D08,L2, J	410000	11000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Naphthalene	**590000**	T10, D08	410000	6700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Executive Summary - Detections

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-04 (B-9-W10-N5 - Solid) - cont.						**Sampled: 06/22/10 10:45**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS - cont.										
Phenanthrene	**4200000**	T10, D08	410000	8500	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Pyrene	**3300000**	T10, D08	410000	2600	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
General Chemistry Parameters										
Percent Solids	**82**		0.010	NR	%	1.00	06/24/10 13:52	JRR	10F2079	Dry Weight

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Sample Summary

Sample Identification	Lab Number	Client Matrix	Date/Time Sampled	Date/Time Received	Sample Qualifiers
B-9-W5-N5	RTF1262-01	Solid	06/22/10 10:05	06/22/10 14:20	
B-9-N-10	RTF1262-02	Solid	06/22/10 10:25	06/22/10 14:20	
B-9-W5-N10	RTF1262-03	Solid	06/22/10 10:35	06/22/10 14:20	
B-9-W10-N5	RTF1262-04	Solid	06/22/10 10:45	06/22/10 14:20	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-01 (B-9-W5-N5 - Solid)						**Sampled: 06/22/10 10:05**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS										
2,4,5-Trichlorophenol	ND	T10, D08	740000	160000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4,6-Trichlorophenol	ND	T10, D08	740000	48000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4-Dichlorophenol	ND	T10, D08	740000	39000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4-Dimethylphenol	ND	T10, D08	740000	200000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4-Dinitrophenol	ND	T10, D08	1400000	260000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4-Dinitrotoluene	ND	T10, D08	740000	110000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,6-Dinitrotoluene	ND	T10, D08	740000	180000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Chloronaphthalene	ND	T10, D08	740000	49000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Chlorophenol	ND	T10, D08	740000	37000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Methylnaphthalene	**2200000**	T10, D08	740000	8900	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Methylphenol	ND	T10, D08	740000	23000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Nitroaniline	ND	T10, D08	1400000	240000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Nitrophenol	ND	T10, D08	740000	34000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
3 & 4 Methylphenol	ND	T10, D08	1400000	41000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
3,3'-Dichlorobenzidine	ND	T10, D08	740000	640000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
3-Nitroaniline	ND	T10, D08	1400000	170000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4,6-Dinitro-2-methylphenol	ND	T10, D08	1400000	250000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Bromophenyl phenyl ether	ND	T10, D08	740000	230000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Chloro-3-methylphenol	ND	T10, D08	740000	30000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Chloroaniline	ND	T10, D08	740000	220000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Chlorophenyl phenyl ether	ND	T10, D08	740000	16000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Nitroaniline	ND	T10, D08	1400000	82000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Nitrophenol	ND	T10, D08	1400000	180000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Acenaphthene	**2100000**	T10, D08	740000	8600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Acenaphthylene	**30000**	T10, D08,J	740000	6000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Acetophenone	ND	T10, D08	740000	38000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Anthracene	**3000000**	T10, D08	740000	19000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Atrazine	ND	T10, D08	740000	33000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzaldehyde	ND	T10, D08	740000	81000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[a]anthracene	**2900000**	T10, D08	740000	13000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[a]pyrene	**2000000**	T10, D08	740000	18000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1400000**	T10, D08	740000	14000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**1000000**	T10, D08	740000	8800	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[k]fluoranthene	**560000**	T10, D08,J	740000	8100	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Biphenyl	**260000**	T10, D08,J	740000	46000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Bis(2-chloroethoxy)methane	ND	T10, D08	740000	40000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Bis(2-chloroethyl)ether	ND	T10, D08	740000	63000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Bis(2-chloroisopropyl) ether	ND	T10, D08	740000	77000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Bis(2-ethylhexyl) phthalate	ND	T10, D08	740000	240000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Butyl benzyl phthalate	ND	T10, D08	740000	200000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Caprolactam	ND	T10, D08	740000	320000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Carbazole	**320000**	T10, D08,J	740000	8500	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Chrysene	**2800000**	T10, D08	740000	7300	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**300000**	T10, D08,J	740000	8600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Dibenzofuran	**320000**	T10, D08,J	740000	7600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C

Golder Associates, Inc. - Niagara Falls, NY 2221 Niagara Falls Blvd., Ste 9 Niagara Falls, NY 14304	Work Order: RTF1262 Project: Golder - Vandermark/Isochem site Project Number: [none]	Received: 06/22/10 Reported: 07/02/10 11:35

Analytical Report

Sample ID: RTF1262-01 (B-9-W5-N5 - Solid) - cont. **Sampled: 06/22/10 10:05** **Recvd: 06/22/10 14:20**

Semivolatile Organics by GC/MS - cont.

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Diethyl phthalate	ND	T10, D08	740000	22000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Dimethyl phthalate	ND	T10, D08	740000	19000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Di-n-butyl phthalate	ND	T10, D08	740000	250000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Di-n-octyl phthalate	ND	T10, D08	740000	17000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Fluoranthene	**3900000**	T10, D08	740000	11000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Fluorene	**1600000**	T10, D08	740000	17000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Hexachlorobenzene	ND	T10, D08	740000	36000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Hexachlorobutadiene	ND	T10, D08	740000	38000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Hexachlorocyclopentadiene	ND	T10, D08	740000	220000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Hexachloroethane	ND	T10, D08	740000	57000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**680000**	T10, D08,L2, J	740000	20000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Isophorone	ND	T10, D08	740000	37000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Naphthalene	**3000000**	T10, D08	740000	12000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Nitrobenzene	ND	T10, D08	740000	33000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
N-Nitrosodi-n-propylamine	ND	T10, D08	740000	58000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
N-Nitrosodiphenylamine	ND	T10, D08	740000	40000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Pentachlorophenol	ND	T10, D08	1400000	250000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Phenanthrene	**9400000**	T10, D08	740000	15000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Phenol	ND	T10, D08	740000	77000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Pyrene	**6200000**	T10, D08	740000	4800	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4,6-Tribromophenol	*	*T10, D08,Z3*	*Surr Limits: (39-146%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*
2-Fluorobiphenyl	*360 %*	*T10, D08,Z3*	*Surr Limits: (37-120%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*
2-Fluorophenol	*	*T10, D08,Z3*	*Surr Limits: (18-120%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*
Nitrobenzene-d5	*	*T10, D08,Z3*	*Surr Limits: (34-132%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*
Phenol-d5	*	*T10, D08,Z3*	*Surr Limits: (11-120%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*
p-Terphenyl-d14	*360 %*	*T10, D08,Z3*	*Surr Limits: (58-147%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*

General Chemistry Parameters

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Percent Solids	**91**		0.010	NR	%	1.00	06/24/10 13:46	JRR	10F2079	Dry Weight

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Sample ID: RTF1262-02 (B-9-N-10 - Solid) **Sampled: 06/22/10 10:25** **Recvd: 06/22/10 14:20**

Semivolatile Organics by GC/MS

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
2,4,5-Trichlorophenol	ND	T10, D08	840000	180000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4,6-Trichlorophenol	ND	T10, D08	840000	55000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4-Dichlorophenol	ND	T10, D08	840000	44000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4-Dimethylphenol	ND	T10, D08	840000	230000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4-Dinitrophenol	ND	T10, D08	1600000	290000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4-Dinitrotoluene	ND	T10, D08	840000	130000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,6-Dinitrotoluene	ND	T10, D08	840000	200000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Chloronaphthalene	ND	T10, D08	840000	56000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Chlorophenol	ND	T10, D08	840000	43000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Methylnaphthalene	**1500000**	T10, D08	840000	10000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Methylphenol	ND	T10, D08	840000	26000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Nitroaniline	ND	T10, D08	1600000	270000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Nitrophenol	ND	T10, D08	840000	38000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
3 & 4 Methylphenol	ND	T10, D08	1600000	47000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
3,3'-Dichlorobenzidine	ND	T10, D08	840000	730000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
3-Nitroaniline	ND	T10, D08	1600000	190000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4,6-Dinitro-2-methylphenol	ND	T10, D08	1600000	290000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Bromophenyl phenyl ether	ND	T10, D08	840000	270000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Chloro-3-methylphenol	ND	T10, D08	840000	34000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Chloroaniline	ND	T10, D08	840000	250000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Chlorophenyl phenyl ether	ND	T10, D08	840000	18000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Nitroaniline	ND	T10, D08	1600000	93000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Nitrophenol	ND	T10, D08	1600000	200000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Acenaphthene	**1500000**	T10, D08	840000	9800	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Acenaphthylene	ND	T10, D08	840000	6800	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Acetophenone	ND	T10, D08	840000	43000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Anthracene	**2700000**	T10, D08	840000	21000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Atrazine	ND	T10, D08	840000	37000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzaldehyde	ND	T10, D08	840000	92000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[a]anthracene	**3400000**	T10, D08	840000	14000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[a]pyrene	**2300000**	T10, D08	840000	20000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1600000**	T10, D08	840000	16000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**1100000**	T10, D08	840000	10000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[k]fluoranthene	**610000**	T10, D08,J	840000	9200	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Biphenyl	**160000**	T10, D08,J	840000	52000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Bis(2-chloroethoxy)methane	ND	T10, D08	840000	46000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Bis(2-chloroethyl)ether	ND	T10, D08	840000	72000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Bis(2-chloroisopropyl) ether	ND	T10, D08	840000	87000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Bis(2-ethylhexyl) phthalate	ND	T10, D08	840000	270000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Butyl benzyl phthalate	ND	T10, D08	840000	220000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Caprolactam	ND	T10, D08	840000	360000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Carbazole	**280000**	T10, D08,J	840000	9700	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Chrysene	**3400000**	T10, D08	840000	8400	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**300000**	T10, D08,J	840000	9800	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Dibenzofuran	**260000**	T10, D08,J	840000	8700	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-02 (B-9-N-10 - Solid) - cont.						**Sampled: 06/22/10 10:25**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS - cont.										
Diethyl phthalate	ND	T10, D08	840000	25000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Dimethyl phthalate	ND	T10, D08	840000	22000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Di-n-butyl phthalate	ND	T10, D08	840000	290000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Di-n-octyl phthalate	ND	T10, D08	840000	20000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Fluoranthene	**4000000**	T10, D08	840000	12000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Fluorene	**1300000**	T10, D08	840000	19000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Hexachlorobenzene	ND	T10, D08	840000	42000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Hexachlorobutadiene	ND	T10, D08	840000	43000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Hexachlorocyclopentadiene	ND	T10, D08	840000	250000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Hexachloroethane	ND	T10, D08	840000	65000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**790000**	T10, D08,L2, J	840000	23000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Isophorone	ND	T10, D08	840000	42000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Naphthalene	**2000000**	T10, D08	840000	14000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Nitrobenzene	ND	T10, D08	840000	37000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
N-Nitrosodi-n-propylamine	ND	T10, D08	840000	66000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
N-Nitrosodiphenylamine	ND	T10, D08	840000	46000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Pentachlorophenol	ND	T10, D08	1600000	290000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Phenanthrene	**9400000**	T10, D08	840000	18000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Phenol	ND	T10, D08	840000	88000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Pyrene	**7600000**	T10, D08	840000	5400	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4,6-Tribromophenol	*	*T10, D08,Z3*	*Surr Limits: (39-146%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
2-Fluorobiphenyl	*440 %*	*T10, D08,Z3*	*Surr Limits: (37-120%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
2-Fluorophenol	*	*T10, D08,Z3*	*Surr Limits: (18-120%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
Nitrobenzene-d5	*	*T10, D08,Z3*	*Surr Limits: (34-132%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
Phenol-d5	*	*T10, D08,Z3*	*Surr Limits: (11-120%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
p-Terphenyl-d14	*120 %*	*T10, D08*	*Surr Limits: (58-147%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
General Chemistry Parameters										
Percent Solids	**79**		0.010	NR	%	1.00	06/24/10 13:48	JRR	10F2079	Dry Weight

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-03 (B-9-W5-N10 - Solid)						**Sampled: 06/22/10 10:35**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS										
2,4,5-Trichlorophenol	ND	T10, D08	740000	160000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4,6-Trichlorophenol	ND	T10, D08	740000	48000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4-Dichlorophenol	ND	T10, D08	740000	39000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4-Dimethylphenol	ND	T10, D08	740000	200000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4-Dinitrophenol	ND	T10, D08	1400000	260000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4-Dinitrotoluene	ND	T10, D08	740000	110000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,6-Dinitrotoluene	ND	T10, D08	740000	180000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Chloronaphthalene	ND	T10, D08	740000	49000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Chlorophenol	ND	T10, D08	740000	37000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Methylnaphthalene	**1200000**	T10, D08	740000	8900	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Methylphenol	ND	T10, D08	740000	23000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Nitroaniline	ND	T10, D08	1400000	240000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Nitrophenol	ND	T10, D08	740000	34000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
3 & 4 Methylphenol	ND	T10, D08	1400000	41000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
3,3'-Dichlorobenzidine	ND	T10, D08	740000	640000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
3-Nitroaniline	ND	T10, D08	1400000	170000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4,6-Dinitro-2-methylphenol	ND	T10, D08	1400000	250000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Bromophenyl phenyl ether	ND	T10, D08	740000	230000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Chloro-3-methylphenol	ND	T10, D08	740000	30000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Chloroaniline	ND	T10, D08	740000	220000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Chlorophenyl phenyl ether	ND	T10, D08	740000	16000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Nitroaniline	ND	T10, D08	1400000	82000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Nitrophenol	ND	T10, D08	1400000	180000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Acenaphthene	**1300000**	T10, D08	740000	8600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Acenaphthylene	ND	T10, D08	740000	6000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Acetophenone	ND	T10, D08	740000	38000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Anthracene	**1800000**	T10, D08	740000	19000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Atrazine	ND	T10, D08	740000	33000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzaldehyde	ND	T10, D08	740000	81000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[a]anthracene	**2000000**	T10, D08	740000	13000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[a]pyrene	**1300000**	T10, D08	740000	18000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1000000**	T10, D08	740000	14000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**720000**	T10, D08,J	740000	8800	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[k]fluoranthene	**360000**	T10, D08,J	740000	8100	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Biphenyl	**150000**	T10, D08,J	740000	46000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Bis(2-chloroethoxy)methane	ND	T10, D08	740000	40000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Bis(2-chloroethyl)ether	ND	T10, D08	740000	63000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Bis(2-chloroisopropyl) ether	ND	T10, D08	740000	77000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Bis(2-ethylhexyl) phthalate	ND	T10, D08	740000	240000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Butyl benzyl phthalate	ND	T10, D08	740000	200000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Caprolactam	ND	T10, D08	740000	320000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Carbazole	**200000**	T10, D08,J	740000	8500	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Chrysene	**2000000**	T10, D08	740000	7300	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**200000**	T10, D08,J	740000	8600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Dibenzofuran	**200000**	T10, D08,J	740000	7600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Sample ID: RTF1262-03 (B-9-W5-N10 - Solid) - cont. **Sampled: 06/22/10 10:35** **Recvd: 06/22/10 14:20**

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Semivolatile Organics by GC/MS - cont.										
Diethyl phthalate	ND	T10, D08	740000	22000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Dimethyl phthalate	ND	T10, D08	740000	19000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Di-n-butyl phthalate	ND	T10, D08	740000	250000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Di-n-octyl phthalate	ND	T10, D08	740000	17000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Fluoranthene	**2500000**	T10, D08	740000	11000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Fluorene	**940000**	T10, D08	740000	17000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Hexachlorobenzene	ND	T10, D08	740000	36000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Hexachlorobutadiene	ND	T10, D08	740000	38000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Hexachlorocyclopentadiene	ND	T10, D08	740000	220000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Hexachloroethane	ND	T10, D08	740000	57000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**470000**	T10, D08,L2, J	740000	20000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Isophorone	ND	T10, D08	740000	37000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Naphthalene	**1500000**	T10, D08	740000	12000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Nitrobenzene	ND	T10, D08	740000	33000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
N-Nitrosodi-n-propylamine	ND	T10, D08	740000	58000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
N-Nitrosodiphenylamine	ND	T10, D08	740000	40000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Pentachlorophenol	ND	T10, D08	1400000	250000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Phenanthrene	**5900000**	T10, D08	740000	15000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Phenol	ND	T10, D08	740000	77000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Pyrene	**4300000**	T10, D08	740000	4800	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4,6-Tribromophenol	*	*T10, D08,Z3*	*Surr Limits: (39-146%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
2-Fluorobiphenyl	*440 %*	*T10, D08,Z3*	*Surr Limits: (37-120%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
2-Fluorophenol	*	*T10, D08,Z3*	*Surr Limits: (18-120%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
Nitrobenzene-d5	*	*T10, D08,Z3*	*Surr Limits: (34-132%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
Phenol-d5	*	*T10, D08,Z3*	*Surr Limits: (11-120%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
p-Terphenyl-d14	*200 %*	*T10, D08,Z3*	*Surr Limits: (58-147%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
General Chemistry Parameters										
Percent Solids	**92**		0.010	NR	%	1.00	06/24/10 13:50	JRR	10F2079	Dry Weight

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Sample ID: RTF1262-04 (B-9-W10-N5 - Solid) **Sampled: 06/22/10 10:45** **Recvd: 06/22/10 14:20**

Semivolatile Organics by GC/MS

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
2,4,5-Trichlorophenol	ND	T10, D08	410000	88000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4,6-Trichlorophenol	ND	T10, D08	410000	27000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4-Dichlorophenol	ND	T10, D08	410000	21000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4-Dimethylphenol	ND	T10, D08	410000	110000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4-Dinitrophenol	ND	T10, D08	790000	140000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4-Dinitrotoluene	ND	T10, D08	410000	62000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,6-Dinitrotoluene	ND	T10, D08	410000	99000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Chloronaphthalene	ND	T10, D08	410000	27000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Chlorophenol	ND	T10, D08	410000	21000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Methylnaphthalene	**530000**	T10, D08	410000	4900	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Methylphenol	ND	T10, D08	410000	12000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Nitroaniline	ND	T10, D08	790000	130000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Nitrophenol	ND	T10, D08	410000	18000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
3 & 4 Methylphenol	ND	T10, D08	790000	22000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
3,3'-Dichlorobenzidine	ND	T10, D08	410000	350000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
3-Nitroaniline	ND	T10, D08	790000	93000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4,6-Dinitro-2-methylphenol	ND	T10, D08	790000	140000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Bromophenyl phenyl ether	ND	T10, D08	410000	130000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Chloro-3-methylphenol	ND	T10, D08	410000	17000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Chloroaniline	ND	T10, D08	410000	120000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Chlorophenyl phenyl ether	ND	T10, D08	410000	8600	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Nitroaniline	ND	T10, D08	790000	45000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Nitrophenol	ND	T10, D08	790000	98000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Acenaphthene	**830000**	T10, D08	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Acenaphthylene	**19000**	T10, D08,J	410000	3300	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Acetophenone	ND	T10, D08	410000	21000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Anthracene	**1300000**	T10, D08	410000	10000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Atrazine	ND	T10, D08	410000	18000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzaldehyde	ND	T10, D08	410000	44000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[a]anthracene	**1600000**	T10, D08	410000	7000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[a]pyrene	**1000000**	T10, D08	410000	9700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1000000**	T10, D08	410000	7800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**570000**	T10, D08	410000	4800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[k]fluoranthene	ND	T10, D08	410000	4400	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Biphenyl	**77000**	T10, D08,J	410000	25000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Bis(2-chloroethoxy)methane	ND	T10, D08	410000	22000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Bis(2-chloroethyl)ether	ND	T10, D08	410000	35000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Bis(2-chloroisopropyl) ether	ND	T10, D08	410000	42000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Bis(2-ethylhexyl) phthalate	ND	T10, D08	410000	130000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Butyl benzyl phthalate	ND	T10, D08	410000	110000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Caprolactam	ND	T10, D08	410000	170000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Carbazole	**97000**	T10, D08,J	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Chrysene	**1500000**	T10, D08	410000	4000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**160000**	T10, D08,J	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Dibenzofuran	**110000**	T10, D08,J	410000	4200	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Sample ID: RTF1262-04 (B-9-W10-N5 - Solid) - cont. **Sampled: 06/22/10 10:45** **Recvd: 06/22/10 14:20**

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Semivolatile Organics by GC/MS - cont.										
Diethyl phthalate	ND	T10, D08	410000	12000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Dimethyl phthalate	ND	T10, D08	410000	11000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Di-n-butyl phthalate	ND	T10, D08	410000	140000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Di-n-octyl phthalate	ND	T10, D08	410000	9400	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Fluoranthene	**2000000**	T10, D08	410000	5800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Fluorene	**640000**	T10, D08	410000	9300	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Hexachlorobenzene	ND	T10, D08	410000	20000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Hexachlorobutadiene	ND	T10, D08	410000	21000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Hexachlorocyclopentadiene	ND	T10, D08	410000	120000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Hexachloroethane	ND	T10, D08	410000	31000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**400000**	T10, D08,L2, J	410000	11000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Isophorone	ND	T10, D08	410000	20000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Naphthalene	**590000**	T10, D08	410000	6700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Nitrobenzene	ND	T10, D08	410000	18000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
N-Nitrosodi-n-propylamine	ND	T10, D08	410000	32000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
N-Nitrosodiphenylamine	ND	T10, D08	410000	22000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Pentachlorophenol	ND	T10, D08	790000	140000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Phenanthrene	**4200000**	T10, D08	410000	8500	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Phenol	ND	T10, D08	410000	42000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Pyrene	**3300000**	T10, D08	410000	2600	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4,6-Tribromophenol	*	*T10, D08,Z3*	*Surr Limits:*	*(39-146%)*			*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
2-Fluorobiphenyl	*240 %*	*T10, D08,Z3*	*Surr Limits:*	*(37-120%)*			*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
2-Fluorophenol	*	*T10, D08,Z3*	*Surr Limits:*	*(18-120%)*			*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
Nitrobenzene-d5	*	*T10, D08,Z3*	*Surr Limits:*	*(34-132%)*			*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
Phenol-d5	*	*T10, D08,Z3*	*Surr Limits:*	*(11-120%)*			*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
p-Terphenyl-d14	*60 %*	*T10, D08,Z3*	*Surr Limits:*	*(58-147%)*			*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
General Chemistry Parameters										
Percent Solids	**82**		0.010	NR	%	1.00	06/24/10 13:52	JRR	10F2079	Dry Weight

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

SAMPLE EXTRACTION DATA

Parameter	Batch	Lab Number	Wt/Vol Extracte	Units	Extract Volume	Units	Date Prepared	Lab Tech	Extraction Method
General Chemistry Parameters									
Dry Weight	10F2079	RTF1262-01	10.00	g	10.00	g	06/24/10 09:56	JRR	Dry Weight
Dry Weight	10F2079	RTF1262-02	10.00	g	10.00	g	06/24/10 09:56	JRR	Dry Weight
Dry Weight	10F2079	RTF1262-03	10.00	g	10.00	g	06/24/10 09:56	JRR	Dry Weight
Dry Weight	10F2079	RTF1262-04	10.00	g	10.00	g	06/24/10 09:56	JRR	Dry Weight
Semivolatile Organics by GC/MS									
8270C	10F2051	RTF1262-03	30.04	g	20.00	mL	06/24/10 08:00	CJM	3550B MB
8270C	10F2051	RTF1262-01	30.25	g	20.00	mL	06/24/10 08:00	CJM	3550B MB
8270C	10F2051	RTF1262-02	30.63	g	20.00	mL	06/24/10 08:00	CJM	3550B MB
8270C	10F2051	RTF1262-04	30.65	g	20.00	mL	06/24/10 08:00	CJM	3550B MB

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Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
Blank Analyzed: 06/30/10 (Lab Number:10F2051-BLK1, Batch: 10F2051)											
2,4,5-Trichlorophenol			170	36	ug/kg wet	ND					
2,4,6-Trichlorophenol			170	11	ug/kg wet	ND					
2,4-Dichlorophenol			170	8.7	ug/kg wet	ND					
2,4-Dimethylphenol			170	45	ug/kg wet	ND					
2,4-Dinitrophenol			330	58	ug/kg wet	ND					
2,4-Dinitrotoluene			170	26	ug/kg wet	ND					
2,6-Dinitrotoluene			170	41	ug/kg wet	ND					
2-Chloronaphthalene			170	11	ug/kg wet	ND					
2-Chlorophenol			170	8.5	ug/kg wet	ND					
2-Methylnaphthalene			170	2.0	ug/kg wet	ND					
2-Methylphenol			170	5.1	ug/kg wet	ND					
2-Nitroaniline			330	54	ug/kg wet	ND					
2-Nitrophenol			170	7.6	ug/kg wet	ND					
3 & 4 Methylphenol			330	9.3	ug/kg wet	ND					
3,3'-Dichlorobenzidine			170	150	ug/kg wet	ND					
3-Nitroaniline			330	38	ug/kg wet	ND					
4,6-Dinitro-2-methylphenol			330	58	ug/kg wet	ND					
4-Bromophenyl phenyl ether			170	53	ug/kg wet	ND					
4-Chloro-3-methylphenol			170	6.9	ug/kg wet	ND					
4-Chloroaniline			170	49	ug/kg wet	ND					
4-Chlorophenyl phenyl ether			170	3.6	ug/kg wet	ND					
4-Nitroaniline			330	19	ug/kg wet	ND					
4-Nitrophenol			330	40	ug/kg wet	ND					
Acenaphthene			170	2.0	ug/kg wet	ND					
Acenaphthylene			170	1.4	ug/kg wet	ND					
Acetophenone			170	8.6	ug/kg wet	ND					
Anthracene			170	4.3	ug/kg wet	ND					
Atrazine			170	7.4	ug/kg wet	ND					
Benzaldehyde			170	18	ug/kg wet	ND					
Benzo[a]anthracene			170	2.9	ug/kg wet	ND					
Benzo[a]pyrene			170	4.0	ug/kg wet	ND					
Benzo[b]fluoranthene			170	3.2	ug/kg wet	ND					
Benzo[g,h,i]perylene			170	2.0	ug/kg wet	ND					
Benzo[k]fluoranthene			170	1.8	ug/kg wet	ND					
Biphenyl			170	10	ug/kg wet	ND					

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
Blank Analyzed: 06/30/10 (Lab Number:10F2051-BLK1, Batch: 10F2051)											
Bis(2-chloroethoxy)methane			170	9.1	ug/kg wet	ND					
Bis(2-chloroethyl)ether			170	14	ug/kg wet	ND					
Bis(2-chloroisopropyl) ether			170	17	ug/kg wet	ND					
Bis(2-ethylhexyl) phthalate			170	54	ug/kg wet	ND					
Butyl benzyl phthalate			170	45	ug/kg wet	ND					
Caprolactam			170	72	ug/kg wet	ND					
Carbazole			170	1.9	ug/kg wet	ND					
Chrysene			170	1.7	ug/kg wet	ND					
Dibenz[a,h]anthracene			170	2.0	ug/kg wet	ND					
Dibenzofuran			170	1.7	ug/kg wet	ND					
Diethyl phthalate			170	5.0	ug/kg wet	ND					
Dimethyl phthalate			170	4.4	ug/kg wet	ND					
Di-n-butyl phthalate			170	58	ug/kg wet	ND					
Di-n-octyl phthalate			170	3.9	ug/kg wet	ND					
Fluoranthene			170	2.4	ug/kg wet	ND					
Fluorene			170	3.8	ug/kg wet	ND					
Hexachlorobenzene			170	8.3	ug/kg wet	ND					
Hexachlorobutadiene			170	8.5	ug/kg wet	ND					
Hexachlorocyclopentadiene			170	50	ug/kg wet	ND					
Hexachloroethane			170	13	ug/kg wet	ND					
Indeno[1,2,3-cd]pyrene			170	4.6	ug/kg wet	ND					
Isophorone			170	8.3	ug/kg wet	ND					
Naphthalene			170	2.8	ug/kg wet	ND					
Nitrobenzene			170	7.4	ug/kg wet	ND					
N-Nitrosodi-n-propylamine			170	13	ug/kg wet	ND					
N-Nitrosodiphenylamine			170	9.1	ug/kg wet	ND					
Pentachlorophenol			330	57	ug/kg wet	ND					
Phenanthrene			170	3.5	ug/kg wet	ND					
Phenol			170	18	ug/kg wet	ND					
Pyrene			170	1.1	ug/kg wet	ND					
Surrogate: 2,4,6-Tribromophenol					*ug/kg wet*		*106*	*39-146*			
Surrogate: 2-Fluorobiphenyl					*ug/kg wet*		*99*	*37-120*			
Surrogate: 2-Fluorophenol					*ug/kg wet*		*79*	*18-120*			

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Received: 06/22/10
Reported: 07/02/10 11:35

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
Blank Analyzed: 06/30/10 (Lab Number:10F2051-BLK1, Batch: 10F2051)											
Surrogate: Nitrobenzene-d5					*ug/kg wet*		*87*	*34-132*			
Surrogate: Phenol-d5					*ug/kg wet*		*85*	*11-120*			
Surrogate: p-Terphenyl-d14					*ug/kg wet*		*101*	*58-147*			
LCS Analyzed: 06/30/10 (Lab Number:10F2051-BS1, Batch: 10F2051)											
2,4,5-Trichlorophenol			170	36	ug/kg wet	ND		59-126			
2,4,6-Trichlorophenol			170	11	ug/kg wet	ND		59-123			
2,4-Dichlorophenol			170	8.7	ug/kg wet	ND		52-120			
2,4-Dimethylphenol			170	45	ug/kg wet	ND		36-120			
2,4-Dinitrophenol			330	58	ug/kg wet	ND		35-146			
2,4-Dinitrotoluene		3290	170	26	ug/kg wet	3140	95	55-125			
2,6-Dinitrotoluene			170	41	ug/kg wet	ND		66-128			
2-Chloronaphthalene			170	11	ug/kg wet	ND		57-120			
2-Chlorophenol		3290	170	8.5	ug/kg wet	2490	76	38-120			
2-Methylnaphthalene			170	2.0	ug/kg wet	ND		47-120			
2-Methylphenol			170	5.1	ug/kg wet	ND		48-120			
2-Nitroaniline			330	53	ug/kg wet	ND		61-130			
2-Nitrophenol			170	7.6	ug/kg wet	ND		50-120			
3 & 4 Methylphenol			330	9.3	ug/kg wet	ND		50-119			
3,3'-Dichlorobenzidine			170	150	ug/kg wet	ND		48-126			
3-Nitroaniline			330	38	ug/kg wet	ND		61-127			
4,6-Dinitro-2-methylphenol			330	58	ug/kg wet	ND		49-155			
4-Bromophenyl phenyl ether			170	53	ug/kg wet	ND		58-131			
4-Chloro-3-methylphenol		3290	170	6.9	ug/kg wet	2790	85	49-125			
4-Chloroaniline			170	49	ug/kg wet	ND		49-120			
4-Chlorophenyl phenyl ether			170	3.6	ug/kg wet	ND		63-124			
4-Nitroaniline			330	19	ug/kg wet	ND		63-128			
4-Nitrophenol		3290	330	40	ug/kg wet	2850	87	43-137			
Acenaphthene		3290	170	2.0	ug/kg wet	3020	92	53-120			
Acenaphthylene			170	1.4	ug/kg wet	ND		58-121			
Acetophenone			170	8.6	ug/kg wet	ND		66-120			
Anthracene			170	4.3	ug/kg wet	ND		62-129			
Atrazine			170	7.4	ug/kg wet	ND		73-133			
Benzaldehyde			170	18	ug/kg wet	ND		21-120			
Benzo[a]anthracene			170	2.9	ug/kg wet	ND		65-133			
Benzo[a]pyrene			170	4.0	ug/kg wet	ND		64-127			

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LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
LCS Analyzed: 06/30/10 (Lab Number:10F2051-BS1, Batch: 10F2051)											
Benzo[b]fluoranthene			170	3.2	ug/kg wet	ND		64-135			
Benzo[g,h,i]perylene			170	2.0	ug/kg wet	ND		50-152			
Benzo[k]fluoranthene			170	1.8	ug/kg wet	ND		58-138			
Biphenyl			170	10	ug/kg wet	ND		71-120			
Bis(2-chloroethoxy)methane			170	9.1	ug/kg wet	ND		61-133			
Bis(2-chloroethyl)ether			170	14	ug/kg wet	ND		45-120			
Bis(2-chloroisopropyl) ether			170	17	ug/kg wet	ND		44-120			
Bis(2-ethylhexyl) phthalate		3290	170	54	ug/kg wet	3710	113	61-133			
Butyl benzyl phthalate			170	45	ug/kg wet	ND		61-129			
Caprolactam			170	72	ug/kg wet	ND		54-133			
Carbazole			170	1.9	ug/kg wet	ND		59-129			
Chrysene			170	1.7	ug/kg wet	ND		64-131			
Dibenz[a,h]anthracene			170	2.0	ug/kg wet	ND		54-148			
Dibenzofuran			170	1.7	ug/kg wet	ND		56-120			
Diethyl phthalate			170	5.0	ug/kg wet	ND		66-126			
Dimethyl phthalate			170	4.3	ug/kg wet	ND		65-124			
Di-n-butyl phthalate			170	58	ug/kg wet	ND		58-130			
Di-n-octyl phthalate			170	3.9	ug/kg wet	ND		62-133			
Fluoranthene			170	2.4	ug/kg wet	ND		62-131			
Fluorene			170	3.8	ug/kg wet	ND		63-126			
Hexachlorobenzene			170	8.3	ug/kg wet	ND		60-132			
Hexachlorobutadiene			170	8.5	ug/kg wet	ND		45-120			
Hexachlorocyclopentadiene			170	50	ug/kg wet	ND		31-120			
Hexachloroethane		3290	170	13	ug/kg wet	2300	70	41-120			
Indeno[1,2,3-cd]pyrene		3290	170	4.6	ug/kg wet	2310	70	56-149			L2
Isophorone			170	8.3	ug/kg wet	ND		56-120			
Naphthalene			170	2.8	ug/kg wet	ND		46-120			
Nitrobenzene			170	7.4	ug/kg wet	ND		49-120			
N-Nitrosodi-n-propylamine		3290	170	13	ug/kg wet	2760	84	46-120			
N-Nitrosodiphenylamine			170	9.1	ug/kg wet	ND		20-119			
Pentachlorophenol		3290	330	57	ug/kg wet	2500	76	33-136			
Phenanthrene			170	3.5	ug/kg wet	ND		60-130			
Phenol		3290	170	18	ug/kg wet	2440	74	36-120			
Pyrene		3290	170	1.1	ug/kg wet	3930	119	51-133			

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Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

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Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
LCS Analyzed: 06/30/10 (Lab Number:10F2051-BS1, Batch: 10F2051)											
Surrogate: 2,4,6-Tribromophenol					*ug/kg wet*		*102*	*39-146*			
Surrogate: 2-Fluorobiphenyl					*ug/kg wet*		*91*	*37-120*			
Surrogate: 2-Fluorophenol					*ug/kg wet*		*67*	*18-120*			
Surrogate: Nitrobenzene-d5					*ug/kg wet*		*77*	*34-132*			
Surrogate: Phenol-d5					*ug/kg wet*		*76*	*11-120*			
Surrogate: p-Terphenyl-d14					*ug/kg wet*		*108*	*58-147*			

Chain of Custody Record

Temperature on Receipt ______

Drinking Water? Yes ☐ No ☐

TestAmerica
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TAL-4124 (1007)

Client: Golder Associates	Project Manager: Pat Martin	Date: 6-22-10	Chain of Custody Number: 148801
Address: 2221 Niagara Falls Blvd. suite 9	Telephone Number (Area Code)/Fax Number: 716-215-0650	Lab Number	Page 1 of 1
City: Niagara Falls; State: NY; Zip Code: 14304	Site Contact: Pam Cook; Lab Contact:		
Project Name and Location (State): SNPE Van	Carrier/Waybill Number		
Contract/Purchase Order/Quote No			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: SVOCs	Special Instructions/ Conditions of Receipt
B-9-W5-N5	6-22-10	1005				X							X	
B-9-N10	6-22-10	1025				X							X	
B-9-W5-N10	6-22-10	1035				X							X	
B-4-W10-N15	6-22-10	1045				X							X	

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

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

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

QC Requirements (Specify)

1. Relinquished By: [signature]	Date: 6-22-10	Time: 1420	1. Received By: [signature]	Date: 6/22/10	Time: 1420
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments: 3.5°C

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

ATTACHMENT C

TEST PIT SUMMARY TABLE

TABLE C-1

SNPE - VANDEMARK
2010 SUPPLEMENTAL DNAPL INVESTIGATION
SUMMARY OF TEST PIT OBSERVATIONS – JUNE 9, 2010

Test Pit No.	Observations/Notes	Total Depth (ft)
TP-1	Test pit located in West end of the remedial area. Several 6-inch coal tar chunks were observed. Test pit was excavated to refusal at 4 feet below ground surface (bgs).	4
TP-2	Test pit located in West end of the remedial area just North (i.e. upslope) of the toe of the slope. No tar was observed. Test pit was excavated to refusal at 3 feet bgs.	3
TP-3	Test pit located in West-central area of the remedial area. Several 6-inch diameter coal tar chunks were observed. Test pit was excavated to refusal at 5.5 feet bgs.	5.5
TP-4	Test pit located in North-central area of the remedial area just upslope from the toe of the slope. A small number of tar blebs, a few inches in diameter, were observed. Test pit was excavated to refusal at 4.5 feet bgs.	4.5
TP-5	Test pit located in North-central area of the remedial area. Several fist-sized tar blebs were present. Test pit was excavated to refusal at 4 feet bgs.	4
TP-6	Test pit located in South-central area of remedial area. Several fist-sized tar blebs were present. Test pit was excavated to refusal at 4.7 feet bgs.	4.7
TP-7	Test pit located in Eastern end of remedial area North of the top of the slope. A large amount of tar was observed and estimated to be 5-10% of the total material excavated. Test pit was excavated to refusal at 2.4 feet bgs.	2.4
TP-8	Test pit located in the flat portion of the Eastern end of the remedial area. A large amount of tar was observed and estimated to be 10% of the total material excavated. Test pit was excavated to refusal at 3.6 feet bgs.	3.6
TP-9	Test pit located near the roadway at the Eastern end of the remedial area. No tar was observed. Test pit was excavated to refusal at 3.2 feet bgs.	3.2
TP-10	Test pit located near the upper seep area near the stone block structure. Tar was observed and estimated to be 2% of the total material excavated. The tar was observed approximately 5-6 feet bgs. Due to the limits of the excavation equipment, the test pit was dug to 7 feet bgs without reaching the bedrock (max reach of excavator). The final pit size was approximately 2 feet wide and 10 feet long. Bedrock was not encountered at 7 feet bgs.	7
TP-11	Test pit located near the upper seep area. A tar vein was observed approximately 5-6 feet bgs. There was also greenish sand present. The final pit size was approximately 2 feet wide and 8 feet long. Bedrock was not encountered at 7 feet bgs.	7
TP-12	Test pit located near the upper seep area. Several tar blebs were observed on the top of the bedrock at 5.6 feet bgs. There was also some greenish granular material present.	5.6
TP-13	Test pit located East of the stone block structure on the road. A few tar blebs were observed but appear to have been placed there as fill and not having flowed to that location. The pit was excavated to a depth of 7 feet bgs without encountering bedrock.	7
TP-14	Test pit located East of the stone block structure on the road. No tar was observed. Some pieces of green pipe were present. The final depth to refusal was 6.5 feet bgs.	6.5

APPENDIX C

RESPONSES TO NYSDEC COMMENTS ON THE 2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY REPORT (NOVEMBER 2010)

August 18, 2010 093-89168

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials, Region 9
270 Michigan Ave.
Buffalo, New York 14203

Attention: Mr. Stanley Radon, Sr. Engineering Geologist

RE: SNPE - VANDEMARK CHEMICAL
2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY REPORT
VANDEMARK CHEMICAL FACILITY, LOCKPORT, NY

Dear Mr. Radon:

On behalf of SNPE Inc. (SNPE), Golder Associates Inc. (Golder) has prepared this report to summarize the results of recent investigation/characterization activities conducted in June 2010 and implemented as part of the Supplemental Work Plan activities proposed in the December 21, 2009 Dense Non-Aqueous Phase Liquid (DNAPL) Assessment and Supplemental Work Plan Report. SNPE, Inc. as the former site owner, has been conducting the agreed upon supplemental characterization activities with support from the current site owner, VanDeMark Chemical, Inc.

The investigation activities described herein were conducted to further assess and identify the potential source(s), distribution, and quantity of coal tar residual impacts that were first identified and partially remediated along the banks and adjacent slope of Eighteen Mile Creek directly south of the VanDeMark Chemical facility. In addition, this report will present recommendations for the remediation of coal tar residuals and additional monitoring provisions where appropriate.

1.0 BACKGROUND

Based on the information available at that time, the December 2009 DNAPL Assessment and Supplemental Work Plan proposed a detailed slope overburden mapping and survey to better define the slope and creek bank bedrock/overburden geology across the slope and understanding of the DNAPL transport mechanism. However, in April 2010, subsequent to the report issuance and review by the New York State Department of Environmental Conservation (NYSDEC), personnel from VanDeMark Chemical identified previously unknown solidified coal tar seeps along a steeply pitched segment of the creek bank approximately 70 feet long to the east of the creek bank area that was the primary focus of earlier remedial efforts in 2007 and 2008.

At about the same time, new information was obtained from a VanDeMark employee of tar seep observations that had occurred approximately 15 to 20 years ago in a localized paved area northwest of Building B-4 within the VanDeMark Chemical manufacturing facility. In consultation with the NYSDEC, it was agreed that the supplemental investigation activities would be expanded to encompass additional test pits easterly along the toe of the slope and upgradient of the newly observed creek bank coal tar residuals seeps and the performance of a separate soil boring and sampling program within the VanDeMark Chemical facility centered around the area of historical coal tar seeps in the pavement near Building B-4. In both cases the goal of the expanded investigations would be to define the areal and vertical extent of coal tar residuals in both areas

Golder Associates Inc.
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Therefore, to implement this expanded investigation strategy, Golder conducted the following tasks:

- In-Plant Soil Boring Investigation - Northwest corner of Building B-4;
- Overburden/Bedrock Test Pit Investigation - Eighteen Mile Creek bank and toe of slope
- Slope and Investigation locations survey; and
- Summarization of findings and preparation of Proposed Remedial Strategies

2.0 IN-PLANT SOIL BORING INVESTIGATION

On Tuesday, June 22, 2010, Mr. David Wehn and Mr. Aaron Lange of Golder, along with two Zebra Environmental (Zebra) employees, the subcontracted drilling firm, arrived at the Site to begin the boring program. Mr. Stanley Radon of the NYSDEC was also onsite to observe the delineation program. A total of fifteen (15) direct push borings were advanced to refusal through the pavement to the northwest of building B-4. The borings were advanced utilizing direct-push drilling techniques and a 2-inch soil sampling tool (Geoprobe® Macrocore® sampler). Golder also screened the first 9 cores for volatile organic compounds (VOCs) using a photoionization detector (PID) and collected 4 samples from the borings for laboratory analysis.

2.1 Boring Layout

Based on an approximation of where historical observations of coal tar residuals seeps had occurred, Golder's first boring (B9-N5) was positioned 5 feet north of the northwest corner of building B-4. Borings were then spread out North and West in 5 feet increments. After consistent findings of a fairly uniform potential coal tar layer was discovered in the first 7 borings, the spacing was increased to ten (10) feet to the North and West. Again, after similar findings, Golder increased the distances to observe where coal tar layer diminished. A thin layer of coal tar was discovered in borings B9-W30-N36 and B9-N36. Borings could not be drilled further North or West of those borings due to a concrete wall and concrete tank pads. Also, underground utility locations and information for that area were unavailable making further exploration unsafe. However, the observed trends indicated that the coal tar layer was diminishing in those directions. Plant structures adjacent to or in the vicinity of the investigation area and boring locations are illustrated on Figure 1.

2.2 Boring Installation

The drill rig used by Zebra was a Geoprobe® 6620D with a Macrocore® sampler. All fifteen (15) borings were advanced until refusal, which was assumed to be at bedrock. The investigation determined that the average depth of the bedrock was approximately 5 feet, but varied between 4.5 to 8 feet below ground surface (bgs). The majority of the overburden was non-native fill materials which included crushed brick, concrete, wood, and foundry sands.

After the borings were advanced, the cores were examined by Mr. Radon and Mr. Wehn and then logged. The boring logs are provided as Attachment A. The drill cuttings were returned to the boring hole and the pavement was patched with asphalt.

2.3 Sample Collection and Results

Samples were collected from 4 borings (B9-W5, B9-N10, B9-W5-N10, and B9-W10-N5). Due to the consistency of the coal tar found in each subsequent boring, Mr. Wehn and Mr. Radon decided it was not necessary to collect any more samples for laboratory analysis. The first 9 borings were screened for VOCs by Golder using a PID. No VOCs were detected by the PID. During the 10th boring the PID malfunctioned indicating a "fan error". Olfactory observations were also made for all the borings. All borings exhibited coal tar odor except borings B9-W5, B9-W30-N10, B9-E20-N20, and B9-W24-S10, however, samples B9-W30-N10 and B9-W24-S10 did have a petroleum like odor.

The laboratory analysis was performed by Test America Inc. in Amherst, New York. The soil sample results detected high concentrations of polyaromatic hydrocarbons (PAHs) which are typically associated with coal tar residuals. For example, the following PAH compounds were consistently detected in each of the four samples at relatively high concentrations: anthracene, benzo(a)anthracene, chrysene, flouranthene, naphthalene, phenanthrene and pyrene. Table 1 presents a summary of the four sample results from the laboratory analysis. The full laboratory Analytical Report is provided as Attachment B.

3.0 OVERBURDEN/BEDROCK TEST PIT INVESTIGATION

The purpose of the test pit investigation was to further characterize the geologic aspects of the escarpment slope, define the depth of overburden and to survey the bedrock elevation in the areas down the slope and south of the facility towards Eighteen Mile Creek. The information gathered was used to develop a profile of the slope and the underlying bedrock in order to better quantify and assess the coal tar migration patterns and develop the most appropriate means of remediation for the coal tar contamination.

Mr. David Wehn and Mr. Patrick Martin of Golder deployed to the Site on June 6, 2010. Mr. Wehn observed the nature of the overburden and logged the descriptions for each test pit. A total of fourteen (14) test pits (TP1 through TP14) were dug along the North side of Eighteen Mile Creek as shown on Figure 2, starting at the west side of the historic seep area and working east towards the seeps discovered in the Spring of 2010. All test pits were dug by O'Regan's Landscaping with a small rubber-tracked excavator to refusal (assumed to be bedrock) except for TP10 and TP13 where bedrock was deeper than 7 feet below grade surface (bgs) – the maximum reach of the excavator used. The depths of bedrock at test pits where bedrock was found ranged from 2.4 to 7 feet bgs.

Mr. Wehn also noted where coal tar was found during the excavations. All test pits except for TP2, TP9, and TP14 had evidence of coal tar present. Though no samples or tests were performed on the soils during excavation, based on visual and olfactory evidence, TP7, TP8, TP10 appeared to have the heaviest deposits of coal tar.

The discovery of coal tar residuals in test pits TP10 through TP13 to the east of the previously remediated area is consistent with the understanding of the bedrock geology of the formation. The vertical fracture planes that would act as a conduit for DNAPL/coal tar residuals to be conveyed from the top of bedrock deeper into the formation are expected to be oriented in both a southwest and southeast directions. This would be consistent with the discovery of the two primary deposition areas along the toe of the slope separated by an area that appears to have little or no coal tar residuals (i.e., between TP9 and TP-10). Table C-1 summarizing the field observations noted during the test pit excavations is presented in Attachment C.

4.0 SLOPE AND SUPPLEMENTAL INVESTIGATION LOCATION SURVEY

Concurrent with the In-Plant soil boring and the Test Pit investigations, surveyors from Wendel Duchscherer determined the location and surface elevation of the In-Plant soil borings, the test pits conducted along the Eighteen Mile Creek bank and toe of slope, the edge of Eighteen Mile Creek, and other reference points in the test pit area and service road leading to the test pits. In addition, two north-south traverses of the slope were made.

The In-Plant borehole locations as surveyed are presented on Figure 1. Figure 2 presents the test pit locations, and well as an elevation contour map of the test pit area, service road, and slope area between the two traverses. Note the westernmost traverse was performed approximately along the line of Cross Section B-B' (Figure 3), which shows the slope in profile and passes very near test pit TP2. An East/West cross section of the test pit area is shown on Figure 4, which presents the surface and bedrock elevations (where they could be determined) in an area roughly parallel to Eighteen Mile Creek from the original remedial area in the east to the west past the newly discovered seep.

5.0 PROPOSED REMEDIAL ALTERNATIVES

5.1 In-Plant Coal Tar Overburden Remediation

The In-Plant soil boring investigation identified a distinct layer of coal tar residuals encompassing an area of approximately 50 feet by 50 feet to the north and northwest of Building B-4 within the VanDeMark Plant. The layer varied in thickness from approximately 12 inches to 2 inches and is estimated to comprise approximately 75 to 100 cubic yards of coal tar based on an average thickness of 9 inches. As described in Section 2, the top of the layer is generally located about 1.0 to 2.5 feet below the paved surface. In several borings (e.g., B9-N10, B9-W10-N10) evidence of small quantities of coal tar residuals was observed at the overburden/bedrock interface.

Based on the accessibility and relative proximity of this layer to the surface, excavation and off-site disposal of these residuals is proposed as the remedial approach. It is estimated based on the delineation volume calculated [and density of 1.5 tons per cubic yard] that approximately 100 to 125 tons of tar residuals mixed with overburden fill would be removed and disposed of utilizing this approach. At the boring locations where coal tar was detected on the top of bedrock, the excavation of this material would proceed until removal of residuals identified at this depth is achieved. It is assumed the existing pavement and overburden fill located above the coal tar residual layer would be removed and disposed of off-site due to the unsuitability for reuse as backfill within the completed excavation (I.e., due to potential compaction and settlement concerns).

If the coal tar residuals layer is found to extend to the north of the concrete barrier wall that defines the gaseous carbon monoxide storage and offloading area, further investigation within this area may be required to better evaluate the extent of removal feasible and these activities will have to be closely coordinated with VanDeMark to address operational and safety considerations.

As stated in the December 2009 Report, it would be impractical and nearly impossible to extract and remove DNAPL which has migrated into the rock fractures below this area of coal tar residuals, without significantly interrupting site operations. There are also considerable technical/cost limitations to removing very viscous liquids from small pore spaces/fractures, with a certain percentage of tar residuals likely to remain in place regardless of the extraction technique attempted.

5.2 Eighteen Mile Creek Slope and Bank Remediation

The creek bank test pit investigation indicates that the area of the creek bank that has been impacted by coal tar residuals extends a significant distance east along the creek bank from the originally delineated and remediated area. Coal tar residuals were found approximately 100 feet east of test pit TP8 (located at the eastern end of the remediated area) beginning with TP10 located near the top of the access road ramp and extending to TP13 about 80 feet further east along the toe of the slope. In general the coal tar was identified beginning five feet below grade surface in this area.

Although solidified coal tar seeps have been identified along an approximately 50 foot portion of the steeply pitched creek bank located south of this newly identified area, the amount/extent of coal tar deposits appears to be significantly less than that encountered to the west (previously remediated), where coal tar residuals were 2.5 to 3.5 feet thick in places. Therefore, based on observed thickness and areal distribution of the residuals in TP-10 through TP13, significant slope stability and slope undermining concerns and highly constrained physical access associated with conducting a major excavation (i.e., removal of over five feet of overburden and former rock structures at the base of the slope), Golder is not recommending the removal of the buried coal tar residuals in this area at this time as a prudent or practical remedial measure. The resulting environmental disruption of the creek bank and associated riparian area to access and remove a relatively small mass of accumulated coal residuals does not in our opinion warrant the excessive measures and damage that would be incurred to perform the removal.

Alternatively, it is recommended that the implementation of a linear DNAPL cutoff trench (as previously proposed) be performed at the toe of the slope south of monitoring well MW-2D where the majority of the coal tar residuals were found and continue to be exiting the fractured rock (i.e., approximately between TP1 and TP8). This structure would allow for the capture and periodic removal of DNAPL / coal tar residuals from what is confirmed to be an active transmission pathway and represents the most likely exposure pathway of these residuals into the environment. The cutoff mechanism will also allow for accurate tracking of the quantities and rate of DNAPL seepage to assess the potential mass that remains within the fractured bedrock formation.

In conjunction with the installation of this cutoff trench, it is proposed that visible coal tar residuals that have accumulated on the creek bank directly south of the test pits TP-10 through TP-13 (upper access road area) be removed at the surface. Quarterly visual monitoring is proposed along the creek bank slope in this area to determine if further seepage is occurring. If significant seepage is observed, additional alternatives for remediation of the coal tar residuals in this area will be reevaluated with the NYSDEC.

Development of detailed remedial design alternatives based on the DNAPL intercepting structure(s) concept presented above is proposed for NYSDEC review within 8 to 10 weeks of concept approval. Assessment of the suitability and effectiveness of each design alternative is anticipated to be a component of the design alternatives submittal with final remedy selection to be determined in conjunction with the NYSDEC.

If you have any questions concerning the investigation findings presented in this report or the proposed remedial strategies, please contact us at 716-215-0650.

Sincerely,

GOLDER ASSOCIATES INC.

Patrick T. Martin, P.E., BCEE
Senior Consultant

David C. Wehn, CPG
Associate

cc: D. Slick, SNPE, Inc.
P. Cook, VanDeMark Chemical

Attachments: Table 1
Figures 1, 2 and 3
Appendices A, B and C

PTM/DCW:dml

TABLES

SOIL SAMPLE ANALYTICAL RESULTS
SNPE VANDEMARK
DNAPL ASSESSMENT
LOCKPORT, NY

Lab ID	RTF1262-01	RTF1262-02	RTF1262-03	RTF1262-04
Sample Date	6/22/2010	6/22/2010	6/22/2010	6/22/2010
Sample ID	B-9-W5-N5	B-9-N-10	B-9-W5-N10	B-9-W10-N5
Units	UG/KG	UG/KG	UG/KG	UG/KG
Semivolatile Organics by GC/MS (US EPA Method 8270C)				
2,4,5-Trichlorophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,4,6-Trichlorophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,4-Dichlorophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,4-Dimethylphenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,4-Dinitrophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,4-Dinitrotoluene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2,6-Dinitrotoluene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2-Chloronaphthalene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2-Chlorophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2-Methylnaphthalene	2200000 [1, 2]	1500000 [1, 2]	1200000 [1, 2]	530000 [1, 2]
2-Methylphenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2-Nitroaniline	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
2-Nitrophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
3 & 4 Methylphenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
3,3'-Dichlorobenzidine	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
3-Nitroaniline	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4,6-Dinitro-2-methylphenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Bromophenyl phenyl ether	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Chloro-3-methylphenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Chloroaniline	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Chlorophenyl phenyl ether	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Nitroaniline	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
4-Nitrophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Acenaphthene	2100000 [1, 2]	1500000 [1, 2]	1300000 [1, 2]	830000 [1, 2]
Acenaphthylene	30000 [1, 2, 3]	ND [1, 2]	ND [1, 2]	19000 [1, 2, 3]
Acetophenone	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Anthracene	3000000 [1, 2]	2700000 [1, 2]	1800000 [1, 2]	1300000 [1, 2]
Atrazine	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Benzaldehyde	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Benzo[a]anthracene	2900000 [1, 2]	3400000 [1, 2]	2000000 [1, 2]	1600000 [1, 2]
Benzo[a]pyrene	2000000 [1, 2]	2300000 [1, 2]	1300000 [1, 2]	1000000 [1, 2]
Benzo[b]fluoranthene	1400000 [1, 2]	1600000 [1, 2]	1000000 [1, 2]	1000000 [1, 2]
Benzo[g,h,i]perylene	1000000 [1, 2]	1100000 [1, 2]	720000 [1, 2, 3]	570000 [1, 2]
Benzo[k]fluoranthene	560000 [1, 2, 3]	610000 [1, 2, 3]	360000 [1, 2, 3]	ND [1, 2]
Biphenyl	260000 [1, 2, 3]	160000 [1, 2, 3]	150000 [1, 2, 3]	77000 [1, 2, 3]
Bis(2-chloroethoxy)methane	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Bis(2-chloroethyl)ether	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]

SOIL SAMPLE ANALYTICAL RESULTS
SNPE VANDEMARK
DNAPL ASSESSMENT
LOCKPORT, NY

Lab ID	RTF1262-01	RTF1262-02	RTF1262-03	RTF1262-04
Sample Date	6/22/2010	6/22/2010	6/22/2010	6/22/2010
Sample ID	B-9-W5-N5	B-9-N-10	B-9-W5-N10	B-9-W10-N5
Units	UG/KG	UG/KG	UG/KG	UG/KG
Bis(2-chloroisopropyl) ether	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Bis(2-ethylhexyl) phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Butyl benzyl phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Caprolactam	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Carbazole	320000 [1, 2, 3]	280000 [1, 2, 3]	200000 [1, 2, 3]	97000 [1, 2, 3]
Chrysene	2800000 [1, 2]	3400000 [1, 2]	2000000 [1, 2]	1500000 [1, 2]
Dibenz[a,h]anthracene	300000 [1, 2, 3]	300000 [1, 2, 3]	200000 [1, 2, 3]	160000 [1, 2, 3]
Dibenzofuran	320000 [1, 2, 3]	260000 [1, 2, 3]	200000 [1, 2, 3]	110000 [1, 2, 3]
Diethyl phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Dimethyl phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Di-n-butyl phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Di-n-octyl phthalate	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Fluoranthene	3900000 [1, 2]	4000000 [1, 2]	2500000 [1, 2]	2000000 [1, 2]
Fluorene	1600000 [1, 2]	1300000 [1, 2]	940000 [1, 2]	640000 [1, 2]
Hexachlorobenzene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Hexachlorobutadiene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Hexachlorocyclopentadiene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Hexachloroethane	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Indeno[1,2,3-cd]pyrene	680000 [1, 2, 3, 4]	790000 [1, 2, 3, 4]	470000 [1, 2, 3, 4]	400000 [1, 2, 3, 4]
Isophorone	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Naphthalene	3000000 [1, 2]	2000000 [1, 2]	1500000 [1, 2]	590000 [1, 2]
Nitrobenzene	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
N-Nitrosodi-n-propylamine	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
N-Nitrosodiphenylamine	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Pentachlorophenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Phenanthrene	9400000 [1, 2]	9400000 [1, 2]	5900000 [1, 2]	4200000 [1, 2]
Phenol	ND [1, 2]	ND [1, 2]	ND [1, 2]	ND [1, 2]
Pyrene	6200000 [1, 2]	7600000 [1, 2]	4300000 [1, 2]	3300000 [1, 2]

Footnotes:

Analyses performed by Test America Inc.

Qualifications:

[1] = Sample had an adjusted volume during extraction due to extract matrix and/or viscosity.

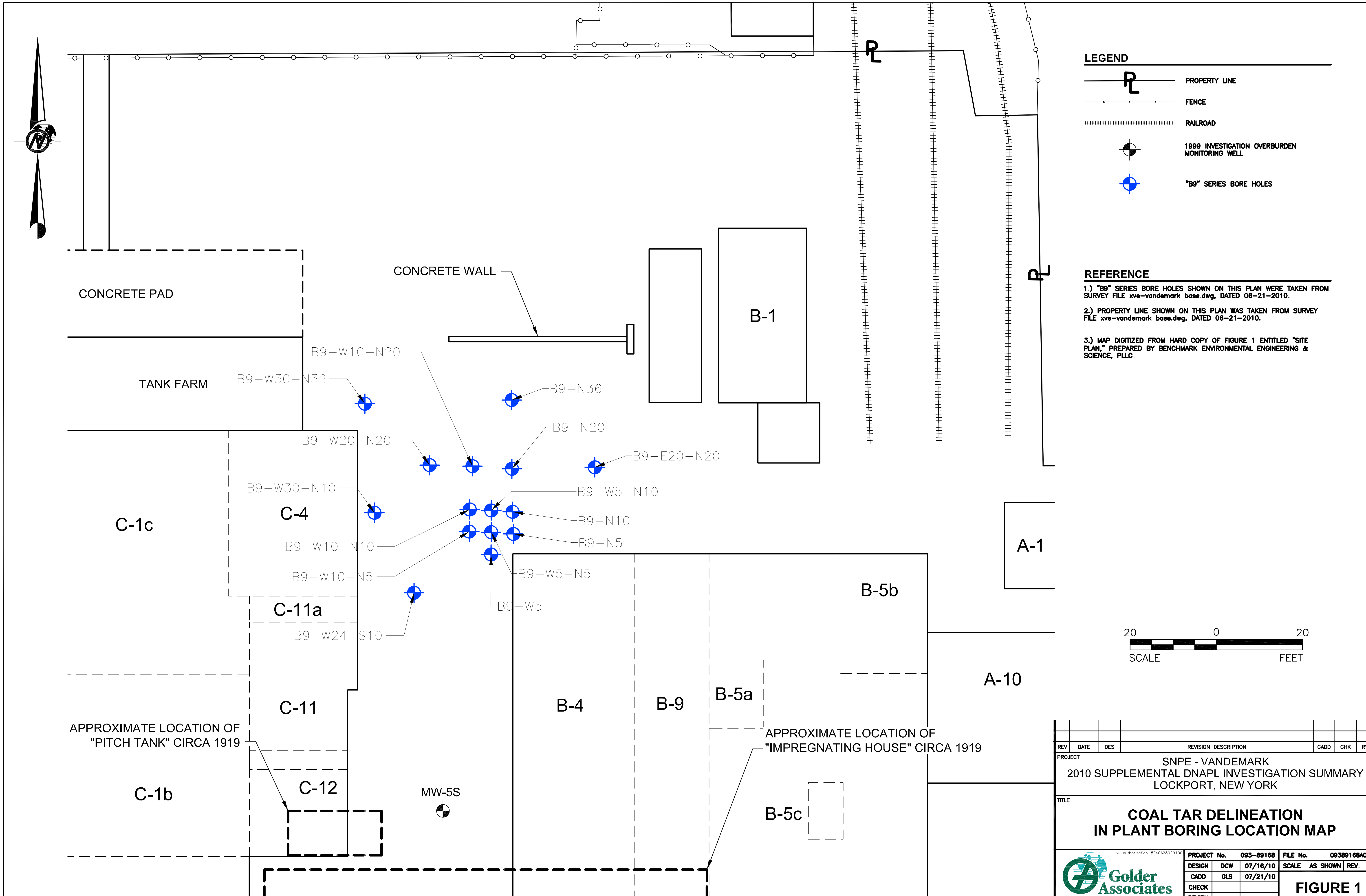
[2] = Dilution required due to high concentration of target analyte.

[3] = Analyte detected at a level less that Reporting Limit and greater than or equal to the Method Detection Limit. Concentrations in

[4] = Laboratory Control Sample and/or laboratory control sample duplicate recovery was below acceptance limits.

Table by: AML
Checked by: JRS
Reviewed by: PTM

FIGURES



REFERENCE

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2.) PROPERTY LINE SHOWN ON THIS PLAN WAS TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

3.) MAP DIGITIZED FROM HARD COPY OF FIGURE 1 ENTITLED "SITE PLAN," PREPARED BY BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
SNPE - VANDEMARK
2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY
LOCKPORT, NEW YORK

TITLE
COAL TAR DELINEATION IN PLANT BORING LOCATION MAP

NJ Authorization #24GA28029100
Golder Associates
Mt. Laurel, New Jersey

PROJECT No.	093-89168		FILE No.	09389168A003
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CADD	GLS	07/21/10	FIGURE 1	
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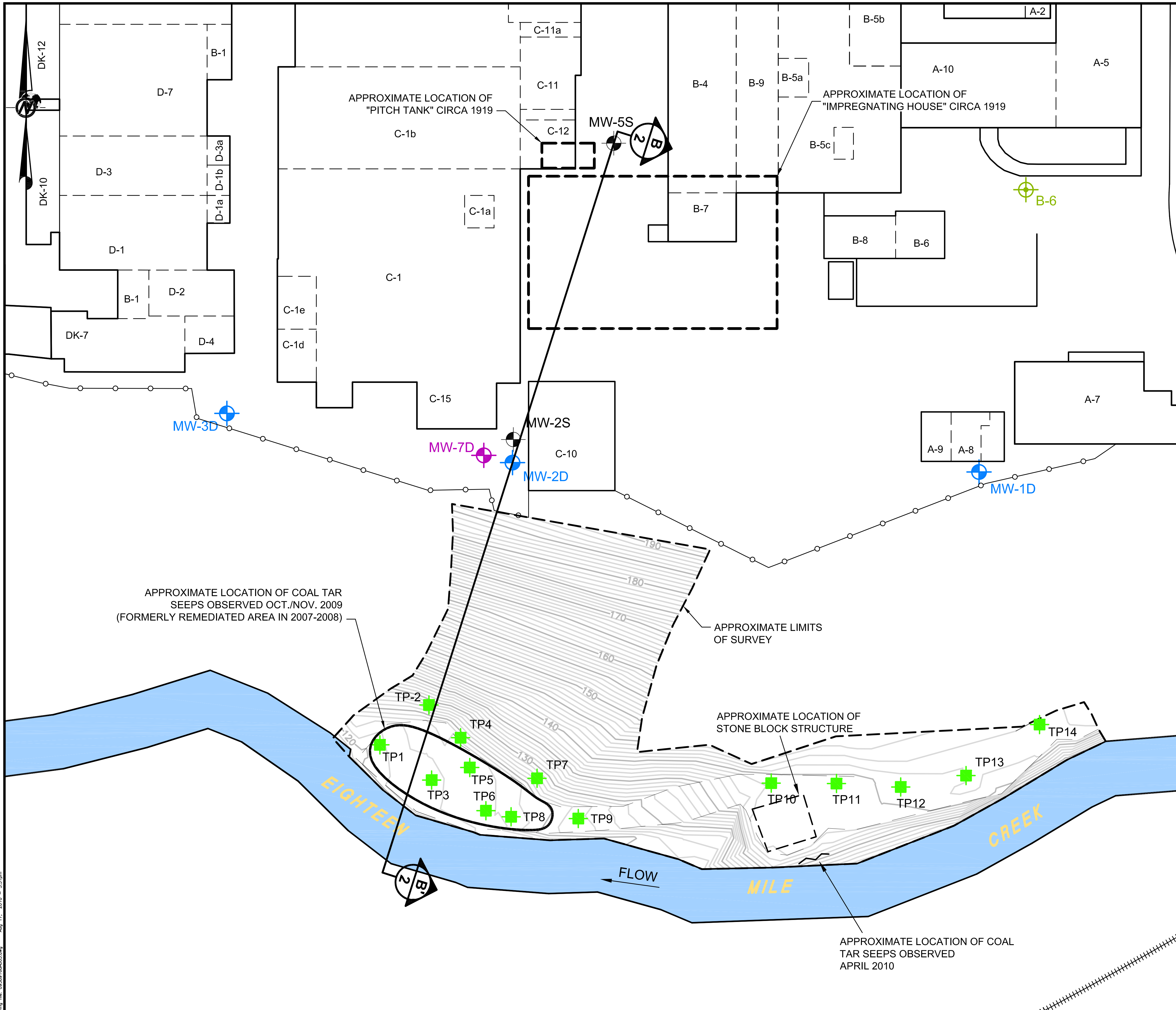
REVIEW				



LEGEND

- FENCE
- RAILROAD
- 1999 INVESTIGATION BORING
- 1999 INVESTIGATION OVERBURDEN MONITORING WELL
- 1999 INVESTIGATION BEDROCK MONITORING WELL
- 2006 BEDROCK MONITORING WELL
- TEST PIT LOCATIONS
- EIGHTEEN-MILE CREEK

REFERENCE

1.) TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

2.) TEST PITS SHOWN ON THIS PLAN WHERE TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

3.) MAP DIGITIZED FROM HARD COPY OF FIGURE 1 ENTITLED "SITE PLAN," PREPARED BY BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.

40 0 40
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
SNPE - VANDEMARK
2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY
LOCKPORT, NEW YORK

TITLE
COAL TAR DELINEATION OVERBURDEN/BEDROCK TEST PIT LOCATION MAP

NJ Authorization #24GA28029100
Golder Associates
Mt. Laurel, New Jersey

PROJECT No.	093-89168		FILE No. 09389168A005
DESIGN	DCW	07/16/10	SCALE AS SHOWN / REV. 0
CADD	GLS	08/09/10	FIGURE 2
CHECK			
REVIEW			

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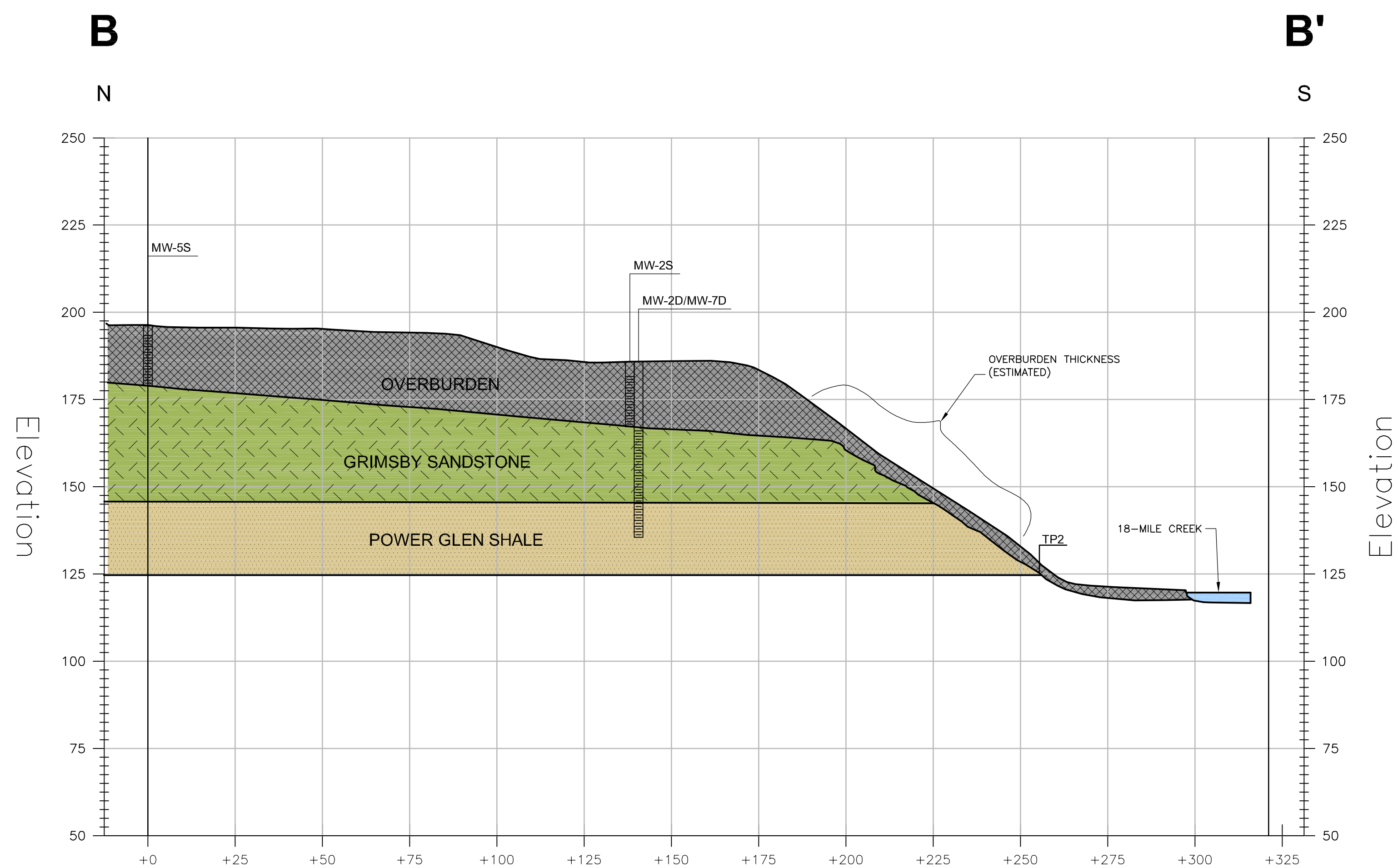

LEGEND

- OVERBURDEN
- GRIMSBY SANDSTONE
- POWER GLEN SHALE
- WATER ELEVATION IN WELL

REFERENCES

1.) URS CORP. FIGURE 3 – PHASE I/II ENVIRONMENTAL AUDIT – VANDE/MARIL, INC. A VANCHEM, INC. SEPTEMBER 17, 1999.

2.) BENCHMARK BES, PLLC – SUMMARY OF SUPPLEMENTAL FIELD INVESTIGATION AND SAMPLING ACTIVITIES, ISOCHEM INC., NOVEMBER 30, 2006.

3.) U.S.G.S. LOCKPORT QUADRANGLE (FOR ELEVATION OF EIGHTEEN–MILE CREEK)

25 0 25 50
HORIZONTAL SCALE FEET

25 0 25 50
VERTICAL SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SNPE - VANDEMARK
2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY
LOCKPORT, NEW YORK

TITLE

CROSS SECTION B-B'

NJ Authorization #24GA28029100

Golder Associates
Mt. Laurel, New Jersey

PROJECT No.	093-89168		FILE No.	09389168A002
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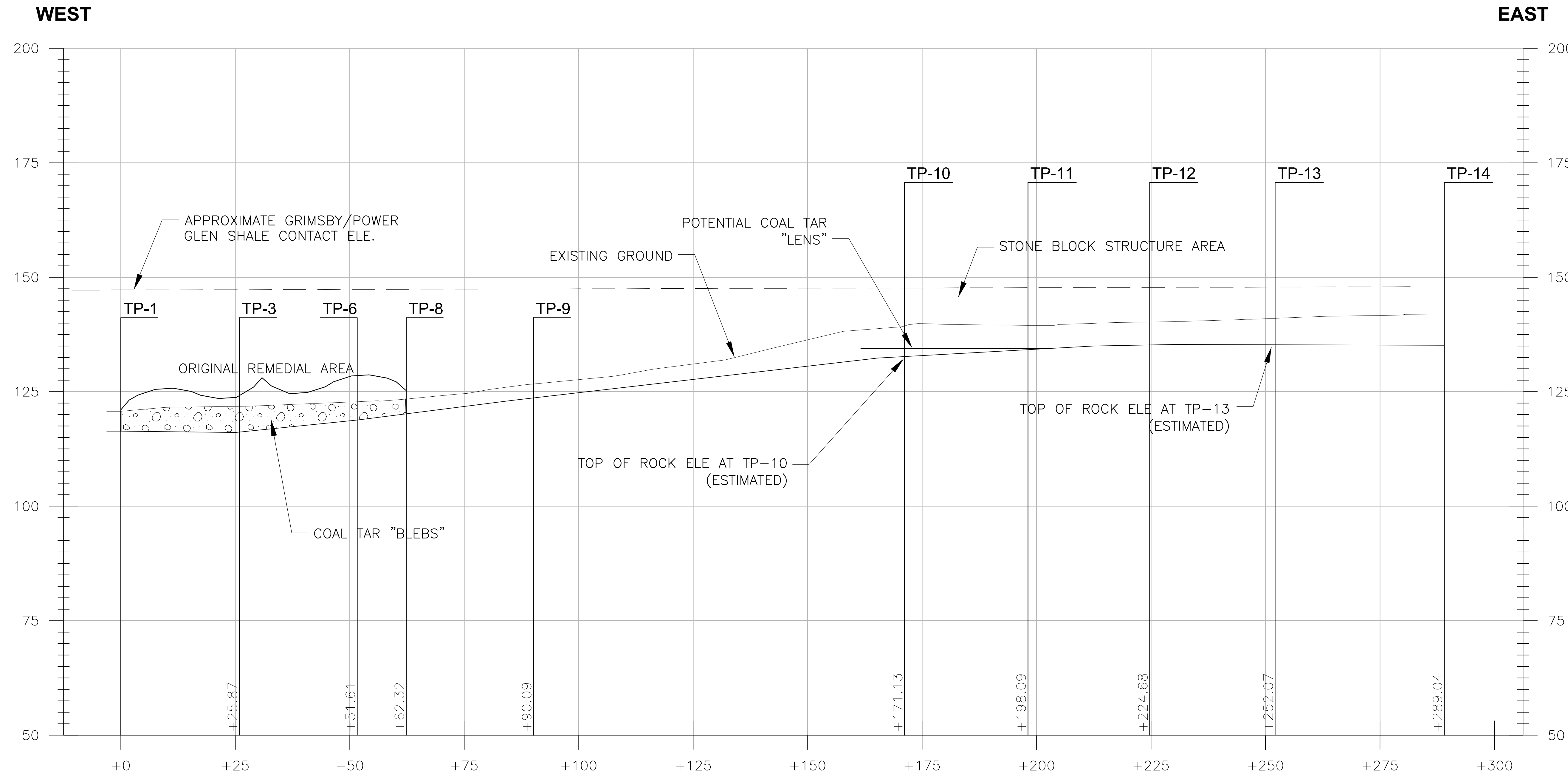
CADD	AM	08/09/10	FIGURE 3	
CHECK				
REVIEW				



25 0 25
HORIZONTAL SCALE FEET

25 0 25
VERTICAL SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
SNPE - VANDEMARK
2010 SUPPLEMENTAL DNAPL INVESTIGATION SUMMARY
LOCKPORT, NEW YOR

TITLE
TEST PIT CROSS SECTION

NJ Authorization #24GA28029100
Golder Associates
Mt. Laurel, New Jersey

PROJECT No.		093-89168
DESIGN	AL	07/29/10
CADD	GLS	08/09/10
CHECK		
REVIEW		

FILE No. 09389168A006
SCALE AS SHOWN REV. 0

FIGURE 4

ATTACHMENT A

BORING LOGS

Field Boring Log

DEPTH HOLE 7.5 FT	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. 39-NS	
DEPTH SOIL DRILL 7.5 FT	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER L. RAIN	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 2	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 9:30, 6/22/10	
TIME WL. N/A	HRS. DELAYED 0	WT CASING HAMMER N/A	DROP N/A	COMPLETED 9:45, 6/22/10	

SAMPLE TYPES

AS	AUGER SAMPLE
CS	CHUNK SAMPLE
DO	DRIVE OPEN
DS	DENISON SAMPLE
PS	PITCHER SAMPLE
RC	ROCK CORE
ST	SLOTTED TUBE
TO	THIN-WALLED, OPEN
TP	THIN-WALLED, PISTON
WS	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	NP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0 - [illegible] SOME [illegible]
LITTLE [illegible] AND [illegible]

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	>50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS/FT		SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
									Boring 5 FT N of NW corner of J39.
1									0.0 - 0.3 FT roadbase GRAVEL.
2–4				1		PID = 0.0 ppm	4.2/5.0		0.3 - 4.2 FT Dark brown to reddish crushed brick, wood, silt, sand, gravel FILL. Slight coal tar odor.
5–7				2		PID = 0.0 ppm	2.5/2.5		5.0 - 7.5 FT Dark brown sand, gravel, silt, FILL with some crushed brick. Slight coal tar odor.
8									Refusal @ 7.5 FT
									Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE	5.0	JOB NO	093-89168	PROJECT	Van DeMark	BORING NO.	B9-WS
DEPTH SOIL DRILL	5.0	GA INSP	D. WEHN	DRILLING METHOD	Geoprobe Macrocore	SHEET	1 OF 1
DEPTH ROCK CORE	N/A	WEATHER	L. RAIN	DRILLING COMPANY	Zebra Env.	SURFACE ELEV	
NO. DIST SA.	0 UD. SA. 1	TEMP	75°F	DRILL RIG	6620D DRILLER D. Pino	DATUM	
DEPTH WL	N/A	HRS. PROD.	N/A	WT. SAMPLER HAMMER	N/A DROP N/A	STARTED	9:45 6/22/10
TIME WL.	N/A	HRS. DELAYED	0	WT. CASING HAMMER	N/A DROP N/A	COMPLETED	9:55 6/22/10

SAMPLE TYPES

AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THIN-WALLED, OPEN; TP THIN-WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-5%, LITTLE 5-12%, SOME 12-30%, AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 5 FT W of NW corner of J B9.
1								
2			1		PID= 0.0 ppm	3.5/5.0		0.0-5.0 FT Dark brown to reddish SILT SAND GRAVEL - FILL.
3								No coal tar odor.
4								Refusal @ 5.0 FT
5								
6								
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.5	JOB NO 093-89168	PROJECT	Van DeMark	BORING NO.	B9-W5-N5
DEPTH SOIL DRILL 5.5	GA INSP D. WEHN	DRILLING METHOD	Geoprobe Macrocore	SHEET	1 OF 1
DEPTH ROCK CORE N/A	WEATHER L. RAIN	DRILLING COMPANY	Zebra Env.	SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 2	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT SAMPLER HAMMER N/A	DROP N/A	STARTED	9:55, 6/22/10
TIME WL N/A	HRS. DELAYED 0	WT CASING HAMMER N/A	DROP N/A	COMPLETED	10:10, 6/22/10

SAMPLE TYPES

AS AUGER SAMPLE
CS CHUNK SAMPLE
DO DRIVE OPEN
DS DENISON SAMPLE
PS PITCHER SAMPLE
RC ROCK CORE
ST SLOTTED TUBE
TO THIN-WALLED, OPEN
TP THIN-WALLED, PISTON
WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-10%; LITTLE 10-20%; SOME 20-35%; AND 35-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 5 FT N and 5 FT W of NW corner of B9.
1								
2			1		PID = 0.0 ppm	4.0 / 5.0		0.0-5.0 FT Dark brown to black to reddish SILT, SAND + GRAVEL. Fill. Some brick. Coal tar from 1.6-2.1 FT. Strong coal tar odor.
3								
4								Sample collected of coal tar.
5			2		PID=0.0 ppm	0.9 / 0.5		5.0-5.5 FT Brown SILT, SAND + GRAVEL. Saturated. No coal tar odor.
6								Refusal @ 5.5 FT

Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.0	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-N10	
DEPTH SOIL DRILL 5.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER OVERCAST	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 1	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT SAMPLER HAMMER N/A	DROP N/A	STARTED 10:15, 6/22/10	
TIME WL N/A	HRS. DELAYED 0	WT CASING HAMMER N/A	DROP N/A	COMPLETED 10:25, 6/22/10	

SAMPLE TYPES

AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THIN-WALLED, OPEN; TP THIN-WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-10%; LITTLE 10-20%; SOME 20-35%; AND 35-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 10 FT N of NW corner of JB9.
1								
2					PID =	4.3		0.0 - 5.0 FT Dark brown to reddish to light tan SILT, SAND + GRAVEL. with some wood + brick. Light tan granular ~~substance~~ sandy substance near bottom of sample (several inches thick).
3			1		0.0 ppm	5.0		
4								Coal tar from 2.3 - 2.8 FT and at tip of sample shoe on top of rock.
5								
6								Coal tar odor.
								Refusal @ 5.0 FT
								Collected sample of coal tar.
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.0	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-WS-N10	
DEPTH SOIL DRILL 5.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER OVERCAST	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA 0 UD. SA 1	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 10:30, 6/22/10	
TIME WL. N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 10:40, 6/22/10	

SAMPLE TYPES

A S AUGER SAMPLE
C S CHUNK SAMPLE
D O DRIVE OPEN
D S DENISON SAMPLE
P S PITCHER SAMPLE
R C. ROCK CORE
S T SLOTTED TUBE
T O THIN-WALLED, OPEN
T P THIN-WALLED, PISTON
W S WASH SAMPLE

ABBREVIATIONS

BL BLACK, BR BROWN, C COARSE, CA CASING, CL CLAY, CLY CLAYEY, F FINE, FRAG FRAGMENTS, GL GRAVEL, LYD LAYERED, LI LITTLE, M MEDIUM, MIC MICACEOUS, MOT MOTTLED, NP NON-PLASTIC, OG ORANGE, ORG ORGANIC, PH PRESSURE HYDRAULIC, PM PRESSURE MANUAL, R RED, RES RESIDUAL, RX ROCK, SA SAMPLE, SAT SATURATED, SD SAND, SI SILT, SIY SILTY, SM SOME, TR TRACE, WL WATER LEVEL, WH WEIGHT OF HAMMER, Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0 - 10%, SOME 12 - 30%, LITTLE 10 - 20%, AND 30 - 50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENTS
		HARD H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 5 FT W and 10 FT N of NW corner of B9.
1								0.0-5.0 FT Dark brown SILT SAND, GRAVEL + BRICK. FILL.
2					PID =	4.3		Dark gray sandy material from 3.7-4.3 FT
3			1		0.0 ppm	5.0		Coal tar from 1.7-2.1 FT
4								Coal tar odor.
5								Sample collected of coal tar.
								Refusal @ 5 FT
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE	5.0	JOB NO	093-89168	PROJECT	Van DeMark	BORING NO.	B9-W10-N5
DEPTH SOIL DRILL	5.0	QA INSP	D. WEHN	DRILLING METHOD	Geoprobe Macrocore	SHEET	1 OF 1
DEPTH ROCK CORE	N/A	WEATHER	L. RAIN	DRILLING COMPANY	Zebra Env.	SURFACE ELEV	
NO. DIST SA.	0 UD SA. 1	TEMP	75°F	DRILL RIG	6620D DRILLER D. Pino	DATUM	
DEPTH WL	N/A	HRS. PROD.	N/A	WT. SAMPLER HAMMER	N/A DROP N/A	STARTED	10:40, 6/22/10
TIME WL	N/A	HRS. DELAYED	0	WT. CASING HAMMER	N/A DROP N/A	COMPLETED	10:50, 6/22/10

SAMPLE TYPES
AS AUGER SAMPLE
CS CHUNK SAMPLE
DO DRIVE OPEN
DS DENISON SAMPLE
PS PITCHER SAMPLE
RC ROCK CORE
ST SLOTTED TUBE
TO THIN-WALLED, OPEN
TP THIN-WALLED, PISTON
WS WASH SAMPLE

ABBREVIATIONS
BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE
M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK
SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION
TRACE 0-5%, LITTLE 5-12%, SOME 12-30%, AND 30-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	>50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 10 FT W and 5 FT N of NW corner of B9.
1								0.0-5.0 FT Dark brown SILT SAND GRAVEL with some brick and wood. Fill. Tan sandy material just above refusal.
2			1		PID = 0.0 ppm	4.0/5.0		
3								
4								Coal tar 1.3-1.6 FT. Coal tar odor. Sample collected of coal tar.
5								Refusal @ 5.0 FT
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 6.0	JOB NO 093-89168	PROJECT Van DeMark			BORING NO. B9-W10-N10
DEPTH SOIL DRILL 6.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore			SHEET 1 OF 1
DEPTH ROCK CORE N/A	WEATHER L. RAIN	DRILLING COMPANY Zebra Env.			SURFACE ELEV
NO. DIST SA. 0 UD. SA. 2	TEMP 75°F	DRILL RIG 6620D		DRILLER D. Pino	DATUM
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A		DROP N/A	STARTED 10:55 6/22/10
TIME WL. N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A		DROP N/A	COMPLETED 11:05 6/22/10

SAMPLE TYPES
AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC. ROCK CORE; ST SLOTTED TUBE; TO THIN-WALLED, OPEN; TP THIN-WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS
BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION
TRACE 0-10%; LITTLE 10-20%; SOME 20-35%; AND 35-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 10 FT W and 10 FT N of NW corner of B9.
1								0.0 - 5.0 FT
2			1		PID = 0.0 ppm	4.1 / 5.0		Coal tar from 1.0 - 2.1 FT, 3.0 - 3.9 FT, and at bottom of shoe. Coal tar odor.
3								
4								Crushed GRAVEL 1.1 - 1.4 FT then crushed brick, SAND + GRAVEL - FILL.
5			2		PID = 0.0 ppm	0.8 / 1.0		5.0 - 6.0 FT Dark brown SAND. Coal tar odor.
6								
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.0	JOB NO 093-89168	PROJECT Van DeMark			BORING NO. B9-N20
DEPTH SOIL DRILL 5.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore			SHEET 1 OF 1
DEPTH ROCK CORE N/A	WEATHER L. RAIN	DRILLING COMPANY Zebra Env.			SURFACE ELEV
NO. DIST SA. 0 UD. SA. 1	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino		DATUM
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A		STARTED 11:05, 6/22/10
TIME WL N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A	DROP N/A		COMPLETED 11:20, 6/22/10

SAMPLE TYPES
- A.S. AUGER SAMPLE
- C.S. CHUNK SAMPLE
- D.O. DRIVE OPEN
- D.S. DENISON SAMPLE
- P.S. PITCHER SAMPLE
- R.C. ROCK CORE
- S.T. SLOTTED TUBE
- T.O. THIN-WALLED, OPEN
- T.P. THIN-WALLED, PISTON
- W.S. WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-5%, LITTLE 5-12%, SOME 12-30%, AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 20 FT N of NW corner of B9.
1								0.0-5.0 Dark brown to tan SILT SAND + GRAVEL with some wood. FILL.
2			1		PID= 0.0 ppm	3.1 / 5.0		
3								Coal tar from 1.5-1.9 FT. Coal tar odor
4								
5								Refusal @ 5.0 FT
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 4.5	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-W10-N20	
DEPTH SOIL DRILL 4.5	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER L. RAIN	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 1	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL. N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 11:20, 6/22/10	
TIME WL. N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 11:30, 6/22/10	

SAMPLE TYPES

AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THIN-WALLED, OPEN; TP THIN-WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-5%; LITTLE 5-12%; SOME 12-30%; AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 10 FT W and 20 FT N of NW corner of B9.
1								0.0-4.5 FT Dark brown SILT SAND + GRAVEL with some brick. FILL.
2					PID = 0.0 ppm	4.2/4.5		
3								Coal tar 2.5-2.9 and 3.2-3.5 FT. Coal tar odor.
4								Refusal @ 4.5 FT
5								
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 4.0	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-W20-N20	
DEPTH SOIL DRILL 4.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 1	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 11:30, 6/22/10	
TIME WL. N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 11:40, 6/22/10	

SAMPLE TYPES

AS AUGER SAMPLE
CS CHUNK SAMPLE
DO DRIVE OPEN
DS DENISON SAMPLE
PS PITCHER SAMPLE
RC. ROCK CORE
ST SLOTTED TUBE
TO THIN-WALLED, OPEN
TP THIN-WALLED, PISTON
WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE
M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK
SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0 - ?% SOME 12 - 30%
LITTLE 5 - ?% AND 30 - 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 - 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 - 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 - 30	FIRM	FM	MOLDS
DENSE	DN	30 - 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV. DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 20 FT W and 20 FT N of NW corner of building B9.
1								
2						3.0 / 4.0		0.0-4.0 Tan SAND and GRAVEL FILL. Coal tar from 2.0-2.9 FT. Coal tar odor.
3								
4								Refusal @ 4.0 FT
5								PID displayed "fan error" - no readings possible for remainder of day.
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 7.0	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-W30-N10	
DEPTH SOIL DRILL 7.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER OVERCAST	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD SA. 2	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL. N/A	HRS. PROD. N/A	WT SAMPLER HAMMER N/A	DROP N/A	STARTED 11:45, 6/22/10	
TIME WL. N/A	HRS. DELAYED 0	WT CASING HAMMER N/A	DROP N/A	COMPLETED 12:00, 6/22/10	

SAMPLE TYPES

AS AUGER SAMPLE
CS CHUNK SAMPLE
DO DRIVE OPEN
DS DENISON SAMPLE
PS PITCHER SAMPLE
RC ROCK CORE
ST SLOTTED TUBE
TO THIN-WALLED, OPEN
TP THIN-WALLED, PISTON
WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE
M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RR ROCK
SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-10%; LITTLE 10-20%; SOME 20-35%; AND 35-50%

RELATIVE DENSITY	BLOWS	CONSISTENCY	FINGER PRESSURE
VERY LOOSE VLS	0-4	VERY SOFT VS	EXTRUDES
LOOSE LS	4-10	SOFT S	MOLDS EASILY
COMPACT CP	10-30	FIRM FM	MOLDS
DENSE DN	30-50	STIFF ST	THUMB INDENTS
VERY DENSE VDN	50	VERY STIFF VST	THUMBNAIL INDENT
		HARD H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 30 FT W and 10 FT N of NW corner of B9
1								0.0-5.0 FT Gray to black SAND + GRAVEL. FILL. Some brick.
2			1			3.2/5.0		
3								No coal tar or tar odor.
4								Petroliferous odor.
5								5.0-7.0 FT Reddish brown GRAVEL. Slight petroliferous odor.
6			2			1.8/2.0		
7								Refusal @ 7.0 FT.
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 8.0	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-W30-N36	
DEPTH SOIL DRILL 8.0	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER OVERCAST	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 2	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT SAMPLER HAMMER N/A	DROP N/A	STARTED 12:45, 6/22/10	
TIME WL. N/A	HRS. DELAYED 0	WT CASING HAMMER N/A	DROP N/A	COMPLETED 13:00, 6/22/10	

SAMPLE TYPES

AS AUGER SAMPLE
CS CHUNK SAMPLE
DO DRIVE OPEN
DS DENISON SAMPLE
PS PITCHER SAMPLE
RC ROCK CORE
ST SLOTTED TUBE
TO THIN-WALLED, OPEN
TP THIN-WALLED, PISTON
WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE
M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK
SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-10%; LITTLE 10-20%; SOME 20-35%; AND 35-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
0–5			1			4.2 / 5.0		Boring 30 FT W and 36 FT N of NW corner of B9 0.0-5.0 FT Dark brown to black gravelly SAND. FILL. Crushed brick ~~[struck out]~~ 2.9-3.7 FT Coal tar 1.8-2.0 FT. Coal tar odor.
5–8			2			1.8 / 3.0		5.0-8.0 FT Dark brown coarse SAND + GRAVEL. Petroliferous odor. Refusal @ 8.0 FT
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE	4.5	JOB NO	093-89168	PROJECT	Van DeMark	BORING NO.	B9-N36
DEPTH SOIL DRILL	4.5	GA INSP	D. WEHN	DRILLING METHOD	Geoprobe Macrocore	SHEET	1 OF 1
DEPTH ROCK CORE	N/A	WEATHER	OVERCAST	DRILLING COMPANY	Zebra Env.	SURFACE ELEV	
NO. DIST SA.	0 UD. SA. 1	TEMP	75°F	DRILL RIG	6620D DRILLER D. Pino	DATUM	
DEPTH WL	N/A	HRS. PROD.	N/A	WT. SAMPLER HAMMER	N/A DROP N/A	STARTED	13:05, 6/22/10
TIME WL	N/A	HRS. DELAYED	0	WT. CASING HAMMER	N/A DROP N/A	COMPLETED	13:15, 6/22/10

SAMPLE TYPES

AS AUGER SAMPLE
CS CHUNK SAMPLE
DO DRIVE OPEN
DS DENISON SAMPLE
PS PITCHER SAMPLE
RC ROCK CORE
ST SLOTTED TUBE
TO THIN-WALLED, OPEN
TP THIN-WALLED, PISTON
WS WASH SAMPLE

ABBREVIATIONS

BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE
M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK
SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION

TRACE 0-10%; SOME 12-30%; LITTLE 5-12%; AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 36 FT N of NW corner of B9.
1								0.0-4.5 FT
2			1			3.5/4.5		Black to dark gray SAND + GRAVEL to 1.9 FT, then reddish SILT + CLAY.
3								Coal tar 1.3-1.7 FT. Coal tar odor.
4								Refusal @ 4.5 FT
5								
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.0	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-E20-N20	
DEPTH SOIL DRILL 5.0	QA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER OVERCAST	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO DIST SA 0 UD. SA 1	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 13:16, 6/22/10	
TIME WL N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 13:25, 6/22/10	

SAMPLE TYPES
AS AUGER SAMPLE
CS CHUNK SAMPLE
DO DRIVE OPEN
DS DENISON SAMPLE
PS PITCHER SAMPLE
RC ROCK CORE
ST SLOTTED TUBE
TO THIN-WALLED, OPEN
TP THIN-WALLED, PISTON
WS WASH SAMPLE

ABBREVIATIONS
BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE
M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK
SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION
TRACE 0 - 5%; SOME 12 - 30%; LITTLE 5 - 12%; AND 30 - 50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0 - 4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4 - 10	SOFT	S	MOLDS EASILY
COMPACT	CP	10 - 30	FIRM	FM	MOLDS
DENSE	DN	30 - 50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV DEPTH	DESCRIPTION	BLOWS / FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC / ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 20 FT E and 20 FT N of NW corner of B9
1								
2			1			3.9 / 5.0		0-1.4 FT crushed concrete.
3								1.4-3.9 FT reddish brown SILT with some sand.
4								
5								
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

Field Boring Log

DEPTH HOLE 5.3	JOB NO 093-89168	PROJECT Van DeMark		BORING NO. B9-W4-S10	
DEPTH SOIL DRILL 5.3	GA INSP D. WEHN	DRILLING METHOD Geoprobe Macrocore		SHEET 1 OF 1	
DEPTH ROCK CORE N/A	WEATHER	DRILLING COMPANY Zebra Env.		SURFACE ELEV	
NO. DIST SA. 0 UD. SA. 2	TEMP 75°F	DRILL RIG 6620D	DRILLER D. Pino	DATUM	
DEPTH WL N/A	HRS. PROD. N/A	WT. SAMPLER HAMMER N/A	DROP N/A	STARTED 13:28, 6/22/10	
TIME WL N/A	HRS. DELAYED 0	WT. CASING HAMMER N/A	DROP N/A	COMPLETED 13:40, 6/22/10	

SAMPLE TYPES
AS AUGER SAMPLE; CS CHUNK SAMPLE; DO DRIVE OPEN; DS DENISON SAMPLE; PS PITCHER SAMPLE; RC ROCK CORE; ST SLOTTED TUBE; TO THIN-WALLED, OPEN; TP THIN-WALLED, PISTON; WS WASH SAMPLE

ABBREVIATIONS
BL BLACK; BR BROWN; C COARSE; CA CASING; CL CLAY; CLY CLAYEY; F FINE; FRAG FRAGMENTS; GL GRAVEL; LYD LAYERED; LI LITTLE; M MEDIUM; MIC MICACEOUS; MOT MOTTLED; NP NON-PLASTIC; OG ORANGE; ORG ORGANIC; PH PRESSURE HYDRAULIC; PM PRESSURE MANUAL; R RED; RES RESIDUAL; RX ROCK; SA SAMPLE; SAT SATURATED; SD SAND; SI SILT; SIY SILTY; SM SOME; TR TRACE; WL WATER LEVEL; WH WEIGHT OF HAMMER; Y YELLOW

SOIL DESCRIPTION - RANGE OF PROPORTION
TRACE 0-5%; LITTLE 5-12%; SOME 12-30%; AND 30-50%

RELATIVE DENSITY		BLOWS	CONSISTENCY		FINGER PRESSURE
VERY LOOSE	VLS	0-4	VERY SOFT	VS	EXTRUDES
LOOSE	LS	4-10	SOFT	S	MOLDS EASILY
COMPACT	CP	10-30	FIRM	FM	MOLDS
DENSE	DN	30-50	STIFF	ST	THUMB INDENTS
VERY DENSE	VDN	50	VERY STIFF	VST	THUMBNAIL INDENT
			HARD	H	RESISTS THUMBNAIL

ELEV / DEPTH	DESCRIPTION	BLOWS/FT	SAMPLES NO.	TYPE	HAMM. BLOWS PER 6 IN (FORCE)	REC/ATT	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES
								Boring 24 FT W and 10 FT S of NW corner of B9
1								0.0-5.0 FT Gray GRAVEL and SAND to 1.6 FT then black GRAVEL and SAND.
2			1			3.8/5.0		
3								Petroliferous odor
4								
5			2			0.3/0.3		5.0-5.3 FT Black SAND + GRAVEL
6								
								Cuttings returned to borehole, tamped, and covered with asphalt patch.

ATTACHMENT B

LABORATORY ANALYSIS REPORT (TESTAMERICA, JUNE 2010)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Analytical Report

Work Order: RTF1262

Project Description
Golder - Vandermark/Isochem site

For:

Pat Martin

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Brian Fischer

Project Manager
Brian.Fischer@testamericainc.com

Friday, July 2, 2010

TestAmerica Buffalo
Current Certifications

As of 06/17/2010

STATE	Program	Cert # / Lab ID
Arkansas	CWA, RCRA, SOIL	88-0686
California*	NELAP CWA, RCRA	01169CA
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida*	NELAP CWA, RCRA	E87672
Georgia*	SDWA,NELAP CWA, RCRA	956
Illinois*	NELAP SDWA, CWA, RCRA	200003
Iowa	SW/CS	374
Kansas*	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana*	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY0044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	SDWA,CWA, RCRA	036-999-337
New Hampshire*	NELAP SDWA, CWA	233701
New Jersey*	NELAP,SDWA, CWA, RCRA,	NY455
New York*	NELAP, AIR, SDWA, CWA, RCRA,CLP	10026
North Dakota	CWA, RCRA	R-176
Oklahoma	CWA, RCRA	9421
Oregon*	CWA,RCRA	NY200003
Pennsylvania*	NELAP CWA,RCRA	68-00281
Tennessee	SDWA	02970
Texas*	NELAP CWA, RCRA	T104704412-08-TX
USDA	FOREIGN SOIL PERMIT	S-41579
Virginia	SDWA	278
Washington*	NELAP CWA,RCRA	C1677
Wisconsin	CWA, RCRA	998310390
West Virginia	CWA,RCRA	252

*As required under the indicated accreditation, the test results in this report meet all NELAP requirements for p arameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report.

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

CASE NARRATIVE

According to 40CFR Part 136.3, pH, Chlorine Residual, Dissolved Oxygen, Sulfite, and Temperature analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. field-pH), they were not analyzed immediately, but as soon as possible after laboratory receipt.

A pertinent document is appended to this report, 1 page, is included and is an integral part of this report.

Reproduction of this analytical report is permitted only in its entirety. This report shall not be reproduced except in full without the written approval of the laboratory.

TestAmerica Laboratories, Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our Laboratory.

DATA QUALIFIERS AND DEFINITIONS

D08	Dilution required due to high concentration of target analyte(s)
J	Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). Concentrations within this range are estimated.
L2	Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was below acceptance limits.
T10	Sample had an adjusted final volume during extraction due to extract matrix and / or viscosity.
Z3	The sample required a dilution, the surrogate spike concentration in the sample are reduced to a level where the recovery calculation does not provide useful information.
NR	Any inclusion of NR indicates that the project specific requirements do not require reporting estimated values below the laboratory reporting limit.

ADDITIONAL COMMENTS

Results are reported on a wet weight basis unless otherwise noted.

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Executive Summary - Detections

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-01 (B-9-W5-N5 - Solid)						**Sampled: 06/22/10 10:05**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS										
2-Methylnaphthalene	**2200000**	T10, D08	740000	8900	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Acenaphthene	**2100000**	T10, D08	740000	8600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Acenaphthylene	**30000**	T10, D08,J	740000	6000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Anthracene	**3000000**	T10, D08	740000	19000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[a]anthracene	**2900000**	T10, D08	740000	13000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[a]pyrene	**2000000**	T10, D08	740000	18000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1400000**	T10, D08	740000	14000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**1000000**	T10, D08	740000	8800	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[k]fluoranthene	**560000**	T10, D08,J	740000	8100	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Biphenyl	**260000**	T10, D08,J	740000	46000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Carbazole	**320000**	T10, D08,J	740000	8500	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Chrysene	**2800000**	T10, D08	740000	7300	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**300000**	T10, D08,J	740000	8600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Dibenzofuran	**320000**	T10, D08,J	740000	7600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Fluoranthene	**3900000**	T10, D08	740000	11000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Fluorene	**1600000**	T10, D08	740000	17000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**680000**	T10, D08,L2, J	740000	20000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Naphthalene	**3000000**	T10, D08	740000	12000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Phenanthrene	**9400000**	T10, D08	740000	15000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Pyrene	**6200000**	T10, D08	740000	4800	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
General Chemistry Parameters										
Percent Solids	**91**		0.010	NR	%	1.00	06/24/10 13:46	JRR	10F2079	Dry Weight
Sample ID: RTF1262-02 (B-9-N-10 - Solid)						**Sampled: 06/22/10 10:25**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS										
2-Methylnaphthalene	**1500000**	T10, D08	840000	10000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Acenaphthene	**1500000**	T10, D08	840000	9800	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Anthracene	**2700000**	T10, D08	840000	21000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[a]anthracene	**3400000**	T10, D08	840000	14000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[a]pyrene	**2300000**	T10, D08	840000	20000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1600000**	T10, D08	840000	16000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**1100000**	T10, D08	840000	10000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[k]fluoranthene	**610000**	T10, D08,J	840000	9200	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Biphenyl	**160000**	T10, D08,J	840000	52000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Carbazole	**280000**	T10, D08,J	840000	9700	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Chrysene	**3400000**	T10, D08	840000	8400	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**300000**	T10, D08,J	840000	9800	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Dibenzofuran	**260000**	T10, D08,J	840000	8700	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Fluoranthene	**4000000**	T10, D08	840000	12000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Fluorene	**1300000**	T10, D08	840000	19000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**790000**	T10, D08,L2, J	840000	23000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Naphthalene	**2000000**	T10, D08	840000	14000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Phenanthrene	**9400000**	T10, D08	840000	18000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Pyrene	**7600000**	T10, D08	840000	5400	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Executive Summary - Detections

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-02 (B-9-N-10 - Solid) - cont.						**Sampled: 06/22/10 10:25**		**Recvd: 06/22/10 14:20**		
General Chemistry Parameters										
Percent Solids	**79**		0.010	NR	%	1.00	06/24/10 13:48	JRR	10F2079	Dry Weight
Sample ID: RTF1262-03 (B-9-W5-N10 - Solid)						**Sampled: 06/22/10 10:35**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS										
2-Methylnaphthalene	**1200000**	T10, D08	740000	8900	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Acenaphthene	**1300000**	T10, D08	740000	8600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Anthracene	**1800000**	T10, D08	740000	19000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[a]anthracene	**2000000**	T10, D08	740000	13000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[a]pyrene	**1300000**	T10, D08	740000	18000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1000000**	T10, D08	740000	14000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**720000**	T10, D08,J	740000	8800	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[k]fluoranthene	**360000**	T10, D08,J	740000	8100	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Biphenyl	**150000**	T10, D08,J	740000	46000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Carbazole	**200000**	T10, D08,J	740000	8500	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Chrysene	**2000000**	T10, D08	740000	7300	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**200000**	T10, D08,J	740000	8600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Dibenzofuran	**200000**	T10, D08,J	740000	7600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Fluoranthene	**2500000**	T10, D08	740000	11000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Fluorene	**940000**	T10, D08	740000	17000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**470000**	T10, D08,L2, J	740000	20000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Naphthalene	**1500000**	T10, D08	740000	12000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Phenanthrene	**5900000**	T10, D08	740000	15000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Pyrene	**4300000**	T10, D08	740000	4800	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
General Chemistry Parameters										
Percent Solids	**92**		0.010	NR	%	1.00	06/24/10 13:50	JRR	10F2079	Dry Weight
Sample ID: RTF1262-04 (B-9-W10-N5 - Solid)						**Sampled: 06/22/10 10:45**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS										
2-Methylnaphthalene	**530000**	T10, D08	410000	4900	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Acenaphthene	**830000**	T10, D08	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Acenaphthylene	**19000**	T10, D08,J	410000	3300	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Anthracene	**1300000**	T10, D08	410000	10000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[a]anthracene	**1600000**	T10, D08	410000	7000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[a]pyrene	**1000000**	T10, D08	410000	9700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1000000**	T10, D08	410000	7800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**570000**	T10, D08	410000	4800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Biphenyl	**77000**	T10, D08,J	410000	25000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Carbazole	**97000**	T10, D08,J	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Chrysene	**1500000**	T10, D08	410000	4000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**160000**	T10, D08,J	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Dibenzofuran	**110000**	T10, D08,J	410000	4200	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Fluoranthene	**2000000**	T10, D08	410000	5800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Fluorene	**640000**	T10, D08	410000	9300	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**400000**	T10, D08,L2, J	410000	11000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Naphthalene	**590000**	T10, D08	410000	6700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Executive Summary - Detections

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-04 (B-9-W10-N5 - Solid) - cont.						**Sampled: 06/22/10 10:45**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS - cont.										
Phenanthrene	**4200000**	T10, D08	410000	8500	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Pyrene	**3300000**	T10, D08	410000	2600	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
General Chemistry Parameters										
Percent Solids	**82**		0.010	NR	%	1.00	06/24/10 13:52	JRR	10F2079	Dry Weight

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Sample Summary

Sample Identification	Lab Number	Client Matrix	Date/Time Sampled	Date/Time Received	Sample Qualifiers
B-9-W5-N5	RTF1262-01	Solid	06/22/10 10:05	06/22/10 14:20	
B-9-N-10	RTF1262-02	Solid	06/22/10 10:25	06/22/10 14:20	
B-9-W5-N10	RTF1262-03	Solid	06/22/10 10:35	06/22/10 14:20	
B-9-W10-N5	RTF1262-04	Solid	06/22/10 10:45	06/22/10 14:20	

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Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Sample ID: RTF1262-01 (B-9-W5-N5 - Solid) **Sampled: 06/22/10 10:05** **Recvd: 06/22/10 14:20**

Semivolatile Organics by GC/MS

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
2,4,5-Trichlorophenol	ND	T10, D08	740000	160000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4,6-Trichlorophenol	ND	T10, D08	740000	48000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4-Dichlorophenol	ND	T10, D08	740000	39000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4-Dimethylphenol	ND	T10, D08	740000	200000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4-Dinitrophenol	ND	T10, D08	1400000	260000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4-Dinitrotoluene	ND	T10, D08	740000	110000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,6-Dinitrotoluene	ND	T10, D08	740000	180000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Chloronaphthalene	ND	T10, D08	740000	49000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Chlorophenol	ND	T10, D08	740000	37000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Methylnaphthalene	**2200000**	T10, D08	740000	8900	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Methylphenol	ND	T10, D08	740000	23000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Nitroaniline	ND	T10, D08	1400000	240000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2-Nitrophenol	ND	T10, D08	740000	34000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
3 & 4 Methylphenol	ND	T10, D08	1400000	41000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
3,3'-Dichlorobenzidine	ND	T10, D08	740000	640000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
3-Nitroaniline	ND	T10, D08	1400000	170000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4,6-Dinitro-2-methylphenol	ND	T10, D08	1400000	250000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Bromophenyl phenyl ether	ND	T10, D08	740000	230000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Chloro-3-methylphenol	ND	T10, D08	740000	30000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Chloroaniline	ND	T10, D08	740000	220000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Chlorophenyl phenyl ether	ND	T10, D08	740000	16000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Nitroaniline	ND	T10, D08	1400000	82000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
4-Nitrophenol	ND	T10, D08	1400000	180000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Acenaphthene	**2100000**	T10, D08	740000	8600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Acenaphthylene	**30000**	T10, D08,J	740000	6000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Acetophenone	ND	T10, D08	740000	38000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Anthracene	**3000000**	T10, D08	740000	19000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Atrazine	ND	T10, D08	740000	33000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzaldehyde	ND	T10, D08	740000	81000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[a]anthracene	**2900000**	T10, D08	740000	13000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[a]pyrene	**2000000**	T10, D08	740000	18000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1400000**	T10, D08	740000	14000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**1000000**	T10, D08	740000	8800	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Benzo[k]fluoranthene	**560000**	T10, D08,J	740000	8100	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Biphenyl	**260000**	T10, D08,J	740000	46000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Bis(2-chloroethoxy)methane	ND	T10, D08	740000	40000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Bis(2-chloroethyl)ether	ND	T10, D08	740000	63000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Bis(2-chloroisopropyl) ether	ND	T10, D08	740000	77000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Bis(2-ethylhexyl) phthalate	ND	T10, D08	740000	240000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Butyl benzyl phthalate	ND	T10, D08	740000	200000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Caprolactam	ND	T10, D08	740000	320000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Carbazole	**320000**	T10, D08,J	740000	8500	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Chrysene	**2800000**	T10, D08	740000	7300	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**300000**	T10, D08,J	740000	8600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Dibenzofuran	**320000**	T10, D08,J	740000	7600	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C

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THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Sample ID: RTF1262-01 (B-9-W5-N5 - Solid) - cont. **Sampled: 06/22/10 10:05** **Recvd: 06/22/10 14:20**

Semivolatile Organics by GC/MS - cont.

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Diethyl phthalate	ND	T10, D08	740000	22000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Dimethyl phthalate	ND	T10, D08	740000	19000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Di-n-butyl phthalate	ND	T10, D08	740000	250000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Di-n-octyl phthalate	ND	T10, D08	740000	17000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Fluoranthene	**3900000**	T10, D08	740000	11000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Fluorene	**1600000**	T10, D08	740000	17000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Hexachlorobenzene	ND	T10, D08	740000	36000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Hexachlorobutadiene	ND	T10, D08	740000	38000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Hexachlorocyclopentadiene	ND	T10, D08	740000	220000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Hexachloroethane	ND	T10, D08	740000	57000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**680000**	T10, D08,L2, J	740000	20000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Isophorone	ND	T10, D08	740000	37000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Naphthalene	**3000000**	T10, D08	740000	12000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Nitrobenzene	ND	T10, D08	740000	33000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
N-Nitrosodi-n-propylamine	ND	T10, D08	740000	58000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
N-Nitrosodiphenylamine	ND	T10, D08	740000	40000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Pentachlorophenol	ND	T10, D08	1400000	250000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Phenanthrene	**9400000**	T10, D08	740000	15000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Phenol	ND	T10, D08	740000	77000	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
Pyrene	**6200000**	T10, D08	740000	4800	ug/kg dry	200	06/30/10 19:16	MAF	10F2051	8270C
2,4,6-Tribromophenol	*	*T10, D08,Z3*	*Surr Limits: (39-146%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*
2-Fluorobiphenyl	*360 %*	*T10, D08,Z3*	*Surr Limits: (37-120%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*
2-Fluorophenol	*	*T10, D08,Z3*	*Surr Limits: (18-120%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*
Nitrobenzene-d5	*	*T10, D08,Z3*	*Surr Limits: (34-132%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*
Phenol-d5	*	*T10, D08,Z3*	*Surr Limits: (11-120%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*
p-Terphenyl-d14	*360 %*	*T10, D08,Z3*	*Surr Limits: (58-147%)*				*06/30/10 19:16*	*MAF*	*10F2051*	*8270C*

General Chemistry Parameters

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Percent Solids	**91**		0.010	NR	%	1.00	06/24/10 13:46	JRR	10F2079	Dry Weight

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Sample ID: RTF1262-02 (B-9-N-10 - Solid) **Sampled: 06/22/10 10:25** **Recvd: 06/22/10 14:20**

Semivolatile Organics by GC/MS

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
2,4,5-Trichlorophenol	ND	T10, D08	840000	180000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4,6-Trichlorophenol	ND	T10, D08	840000	55000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4-Dichlorophenol	ND	T10, D08	840000	44000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4-Dimethylphenol	ND	T10, D08	840000	230000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4-Dinitrophenol	ND	T10, D08	1600000	290000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4-Dinitrotoluene	ND	T10, D08	840000	130000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,6-Dinitrotoluene	ND	T10, D08	840000	200000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Chloronaphthalene	ND	T10, D08	840000	56000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Chlorophenol	ND	T10, D08	840000	43000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Methylnaphthalene	**1500000**	T10, D08	840000	10000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Methylphenol	ND	T10, D08	840000	26000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Nitroaniline	ND	T10, D08	1600000	270000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2-Nitrophenol	ND	T10, D08	840000	38000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
3 & 4 Methylphenol	ND	T10, D08	1600000	47000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
3,3'-Dichlorobenzidine	ND	T10, D08	840000	730000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
3-Nitroaniline	ND	T10, D08	1600000	190000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4,6-Dinitro-2-methylphenol	ND	T10, D08	1600000	290000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Bromophenyl phenyl ether	ND	T10, D08	840000	270000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Chloro-3-methylphenol	ND	T10, D08	840000	34000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Chloroaniline	ND	T10, D08	840000	250000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Chlorophenyl phenyl ether	ND	T10, D08	840000	18000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Nitroaniline	ND	T10, D08	1600000	93000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
4-Nitrophenol	ND	T10, D08	1600000	200000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Acenaphthene	**1500000**	T10, D08	840000	9800	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Acenaphthylene	ND	T10, D08	840000	6800	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Acetophenone	ND	T10, D08	840000	43000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Anthracene	**2700000**	T10, D08	840000	21000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Atrazine	ND	T10, D08	840000	37000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzaldehyde	ND	T10, D08	840000	92000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[a]anthracene	**3400000**	T10, D08	840000	14000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[a]pyrene	**2300000**	T10, D08	840000	20000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1600000**	T10, D08	840000	16000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**1100000**	T10, D08	840000	10000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Benzo[k]fluoranthene	**610000**	T10, D08,J	840000	9200	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Biphenyl	**160000**	T10, D08,J	840000	52000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Bis(2-chloroethoxy)methane	ND	T10, D08	840000	46000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Bis(2-chloroethyl)ether	ND	T10, D08	840000	72000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Bis(2-chloroisopropyl) ether	ND	T10, D08	840000	87000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Bis(2-ethylhexyl) phthalate	ND	T10, D08	840000	270000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Butyl benzyl phthalate	ND	T10, D08	840000	220000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Caprolactam	ND	T10, D08	840000	360000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Carbazole	**280000**	T10, D08,J	840000	9700	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Chrysene	**3400000**	T10, D08	840000	8400	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**300000**	T10, D08,J	840000	9800	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Dibenzofuran	**260000**	T10, D08,J	840000	8700	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-02 (B-9-N-10 - Solid) - cont.							**Sampled: 06/22/10 10:25**		**Recvd: 06/22/10 14:20**	
Semivolatile Organics by GC/MS - cont.										
Diethyl phthalate	ND	T10, D08	840000	25000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Dimethyl phthalate	ND	T10, D08	840000	22000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Di-n-butyl phthalate	ND	T10, D08	840000	290000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Di-n-octyl phthalate	ND	T10, D08	840000	20000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Fluoranthene	**4000000**	T10, D08	840000	12000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Fluorene	**1300000**	T10, D08	840000	19000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Hexachlorobenzene	ND	T10, D08	840000	42000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Hexachlorobutadiene	ND	T10, D08	840000	43000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Hexachlorocyclopentadiene	ND	T10, D08	840000	250000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Hexachloroethane	ND	T10, D08	840000	65000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**790000**	T10, D08,L2, J	840000	23000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Isophorone	ND	T10, D08	840000	42000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Naphthalene	**2000000**	T10, D08	840000	14000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Nitrobenzene	ND	T10, D08	840000	37000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
N-Nitrosodi-n-propylamine	ND	T10, D08	840000	66000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
N-Nitrosodiphenylamine	ND	T10, D08	840000	46000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Pentachlorophenol	ND	T10, D08	1600000	290000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Phenanthrene	**9400000**	T10, D08	840000	18000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Phenol	ND	T10, D08	840000	88000	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
Pyrene	**7600000**	T10, D08	840000	5400	ug/kg dry	200	06/30/10 19:40	MAF	10F2051	8270C
2,4,6-Tribromophenol	*	*T10, D08,Z3*	*Surr Limits: (39-146%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
2-Fluorobiphenyl	*440 %*	*T10, D08,Z3*	*Surr Limits: (37-120%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
2-Fluorophenol	*	*T10, D08,Z3*	*Surr Limits: (18-120%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
Nitrobenzene-d5	*	*T10, D08,Z3*	*Surr Limits: (34-132%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
Phenol-d5	*	*T10, D08,Z3*	*Surr Limits: (11-120%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
p-Terphenyl-d14	*120 %*	*T10, D08*	*Surr Limits: (58-147%)*				*06/30/10 19:40*	*MAF*	*10F2051*	*8270C*
General Chemistry Parameters										
Percent Solids	**79**		0.010	NR	%	1.00	06/24/10 13:48	JRR	10F2079	Dry Weight

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Sample ID: RTF1262-03 (B-9-W5-N10 - Solid) **Sampled: 06/22/10 10:35** **Recvd: 06/22/10 14:20**

Semivolatile Organics by GC/MS

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
2,4,5-Trichlorophenol	ND	T10, D08	740000	160000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4,6-Trichlorophenol	ND	T10, D08	740000	48000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4-Dichlorophenol	ND	T10, D08	740000	39000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4-Dimethylphenol	ND	T10, D08	740000	200000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4-Dinitrophenol	ND	T10, D08	1400000	260000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4-Dinitrotoluene	ND	T10, D08	740000	110000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,6-Dinitrotoluene	ND	T10, D08	740000	180000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Chloronaphthalene	ND	T10, D08	740000	49000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Chlorophenol	ND	T10, D08	740000	37000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Methylnaphthalene	**1200000**	T10, D08	740000	8900	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Methylphenol	ND	T10, D08	740000	23000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Nitroaniline	ND	T10, D08	1400000	240000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2-Nitrophenol	ND	T10, D08	740000	34000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
3 & 4 Methylphenol	ND	T10, D08	1400000	41000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
3,3'-Dichlorobenzidine	ND	T10, D08	740000	640000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
3-Nitroaniline	ND	T10, D08	1400000	170000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4,6-Dinitro-2-methylphenol	ND	T10, D08	1400000	250000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Bromophenyl phenyl ether	ND	T10, D08	740000	230000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Chloro-3-methylphenol	ND	T10, D08	740000	30000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Chloroaniline	ND	T10, D08	740000	220000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Chlorophenyl phenyl ether	ND	T10, D08	740000	16000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Nitroaniline	ND	T10, D08	1400000	82000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
4-Nitrophenol	ND	T10, D08	1400000	180000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Acenaphthene	**1300000**	T10, D08	740000	8600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Acenaphthylene	ND	T10, D08	740000	6000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Acetophenone	ND	T10, D08	740000	38000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Anthracene	**1800000**	T10, D08	740000	19000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Atrazine	ND	T10, D08	740000	33000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzaldehyde	ND	T10, D08	740000	81000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[a]anthracene	**2000000**	T10, D08	740000	13000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[a]pyrene	**1300000**	T10, D08	740000	18000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1000000**	T10, D08	740000	14000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**720000**	T10, D08,J	740000	8800	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Benzo[k]fluoranthene	**360000**	T10, D08,J	740000	8100	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Biphenyl	**150000**	T10, D08,J	740000	46000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Bis(2-chloroethoxy)methane	ND	T10, D08	740000	40000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Bis(2-chloroethyl)ether	ND	T10, D08	740000	63000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Bis(2-chloroisopropyl) ether	ND	T10, D08	740000	77000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Bis(2-ethylhexyl) phthalate	ND	T10, D08	740000	240000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Butyl benzyl phthalate	ND	T10, D08	740000	200000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Caprolactam	ND	T10, D08	740000	320000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Carbazole	**200000**	T10, D08,J	740000	8500	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Chrysene	**2000000**	T10, D08	740000	7300	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**200000**	T10, D08,J	740000	8600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Dibenzofuran	**200000**	T10, D08,J	740000	7600	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Sample ID: RTF1262-03 (B-9-W5-N10 - Solid) - cont. **Sampled: 06/22/10 10:35** **Recvd: 06/22/10 14:20**

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Semivolatile Organics by GC/MS - cont.										
Diethyl phthalate	ND	T10, D08	740000	22000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Dimethyl phthalate	ND	T10, D08	740000	19000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Di-n-butyl phthalate	ND	T10, D08	740000	250000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Di-n-octyl phthalate	ND	T10, D08	740000	17000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Fluoranthene	**2500000**	T10, D08	740000	11000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Fluorene	**940000**	T10, D08	740000	17000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Hexachlorobenzene	ND	T10, D08	740000	36000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Hexachlorobutadiene	ND	T10, D08	740000	38000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Hexachlorocyclopentadiene	ND	T10, D08	740000	220000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Hexachloroethane	ND	T10, D08	740000	57000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**470000**	T10, D08,L2, J	740000	20000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Isophorone	ND	T10, D08	740000	37000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Naphthalene	**1500000**	T10, D08	740000	12000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Nitrobenzene	ND	T10, D08	740000	33000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
N-Nitrosodi-n-propylamine	ND	T10, D08	740000	58000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
N-Nitrosodiphenylamine	ND	T10, D08	740000	40000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Pentachlorophenol	ND	T10, D08	1400000	250000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Phenanthrene	**5900000**	T10, D08	740000	15000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Phenol	ND	T10, D08	740000	77000	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
Pyrene	**4300000**	T10, D08	740000	4800	ug/kg dry	200	06/30/10 20:04	MAF	10F2051	8270C
2,4,6-Tribromophenol	*	*T10, D08,Z3*	*Surr Limits: (39-146%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
2-Fluorobiphenyl	*440 %*	*T10, D08,Z3*	*Surr Limits: (37-120%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
2-Fluorophenol	*	*T10, D08,Z3*	*Surr Limits: (18-120%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
Nitrobenzene-d5	*	*T10, D08,Z3*	*Surr Limits: (34-132%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
Phenol-d5	*	*T10, D08,Z3*	*Surr Limits: (11-120%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
p-Terphenyl-d14	*200 %*	*T10, D08,Z3*	*Surr Limits: (58-147%)*				*06/30/10 20:04*	*MAF*	*10F2051*	*8270C*
General Chemistry Parameters										
Percent Solids	**92**		0.010	NR	%	1.00	06/24/10 13:50	JRR	10F2079	Dry Weight

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THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method

Sample ID: RTF1262-04 (B-9-W10-N5 - Solid) **Sampled: 06/22/10 10:45** **Recvd: 06/22/10 14:20**

Semivolatile Organics by GC/MS

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
2,4,5-Trichlorophenol	ND	T10, D08	410000	88000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4,6-Trichlorophenol	ND	T10, D08	410000	27000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4-Dichlorophenol	ND	T10, D08	410000	21000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4-Dimethylphenol	ND	T10, D08	410000	110000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4-Dinitrophenol	ND	T10, D08	790000	140000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4-Dinitrotoluene	ND	T10, D08	410000	62000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,6-Dinitrotoluene	ND	T10, D08	410000	99000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Chloronaphthalene	ND	T10, D08	410000	27000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Chlorophenol	ND	T10, D08	410000	21000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Methylnaphthalene	**530000**	T10, D08	410000	4900	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Methylphenol	ND	T10, D08	410000	12000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Nitroaniline	ND	T10, D08	790000	130000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2-Nitrophenol	ND	T10, D08	410000	18000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
3 & 4 Methylphenol	ND	T10, D08	790000	22000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
3,3'-Dichlorobenzidine	ND	T10, D08	410000	350000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
3-Nitroaniline	ND	T10, D08	790000	93000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4,6-Dinitro-2-methylphenol	ND	T10, D08	790000	140000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Bromophenyl phenyl ether	ND	T10, D08	410000	130000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Chloro-3-methylphenol	ND	T10, D08	410000	17000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Chloroaniline	ND	T10, D08	410000	120000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Chlorophenyl phenyl ether	ND	T10, D08	410000	8600	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Nitroaniline	ND	T10, D08	790000	45000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
4-Nitrophenol	ND	T10, D08	790000	98000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Acenaphthene	**830000**	T10, D08	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Acenaphthylene	**19000**	T10, D08,J	410000	3300	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Acetophenone	ND	T10, D08	410000	21000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Anthracene	**1300000**	T10, D08	410000	10000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Atrazine	ND	T10, D08	410000	18000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzaldehyde	ND	T10, D08	410000	44000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[a]anthracene	**1600000**	T10, D08	410000	7000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[a]pyrene	**1000000**	T10, D08	410000	9700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[b]fluoranthene	**1000000**	T10, D08	410000	7800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[g,h,i]perylene	**570000**	T10, D08	410000	4800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Benzo[k]fluoranthene	ND	T10, D08	410000	4400	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Biphenyl	**77000**	T10, D08,J	410000	25000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Bis(2-chloroethoxy)methane	ND	T10, D08	410000	22000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Bis(2-chloroethyl)ether	ND	T10, D08	410000	35000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Bis(2-chloroisopropyl) ether	ND	T10, D08	410000	42000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Bis(2-ethylhexyl) phthalate	ND	T10, D08	410000	130000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Butyl benzyl phthalate	ND	T10, D08	410000	110000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Caprolactam	ND	T10, D08	410000	170000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Carbazole	**97000**	T10, D08,J	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Chrysene	**1500000**	T10, D08	410000	4000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Dibenz[a,h]anthracene	**160000**	T10, D08,J	410000	4700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Dibenzofuran	**110000**	T10, D08,J	410000	4200	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C

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THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

Analytical Report

Analyte	Sample Result	Data Qualifiers	RL	MDL	Units	Dil Fac	Date Analyzed	Lab Tech	Batch	Method
Sample ID: RTF1262-04 (B-9-W10-N5 - Solid) - cont.						**Sampled: 06/22/10 10:45**		**Recvd: 06/22/10 14:20**		
Semivolatile Organics by GC/MS - cont.										
Diethyl phthalate	ND	T10, D08	410000	12000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Dimethyl phthalate	ND	T10, D08	410000	11000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Di-n-butyl phthalate	ND	T10, D08	410000	140000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Di-n-octyl phthalate	ND	T10, D08	410000	9400	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Fluoranthene	**2000000**	T10, D08	410000	5800	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Fluorene	**640000**	T10, D08	410000	9300	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Hexachlorobenzene	ND	T10, D08	410000	20000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Hexachlorobutadiene	ND	T10, D08	410000	21000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Hexachlorocyclopentadiene	ND	T10, D08	410000	120000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Hexachloroethane	ND	T10, D08	410000	31000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Indeno[1,2,3-cd]pyrene	**400000**	T10, D08,L2, J	410000	11000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Isophorone	ND	T10, D08	410000	20000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Naphthalene	**590000**	T10, D08	410000	6700	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Nitrobenzene	ND	T10, D08	410000	18000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
N-Nitrosodi-n-propylamine	ND	T10, D08	410000	32000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
N-Nitrosodiphenylamine	ND	T10, D08	410000	22000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Pentachlorophenol	ND	T10, D08	790000	140000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Phenanthrene	**4200000**	T10, D08	410000	8500	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Phenol	ND	T10, D08	410000	42000	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
Pyrene	**3300000**	T10, D08	410000	2600	ug/kg dry	100	06/30/10 20:27	MAF	10F2051	8270C
2,4,6-Tribromophenol	*	*T10, D08,Z3*	*Surr Limits: (39-146%)*				*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
2-Fluorobiphenyl	*240 %*	*T10, D08,Z3*	*Surr Limits: (37-120%)*				*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
2-Fluorophenol	*	*T10, D08,Z3*	*Surr Limits: (18-120%)*				*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
Nitrobenzene-d5	*	*T10, D08,Z3*	*Surr Limits: (34-132%)*				*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
Phenol-d5	*	*T10, D08,Z3*	*Surr Limits: (11-120%)*				*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
p-Terphenyl-d14	*60 %*	*T10, D08,Z3*	*Surr Limits: (58-147%)*				*06/30/10 20:27*	*MAF*	*10F2051*	*8270C*
General Chemistry Parameters										
Percent Solids	**82**		0.010	NR	%	1.00	06/24/10 13:52	JRR	10F2079	Dry Weight

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

SAMPLE EXTRACTION DATA

Parameter	Batch	Lab Number	Wt/Vol Extracte	Units	Extract Volume	Units	Date Prepared	Lab Tech	Extraction Method
General Chemistry Parameters									
Dry Weight	10F2079	RTF1262-01	10.00	g	10.00	g	06/24/10 09:56	JRR	Dry Weight
Dry Weight	10F2079	RTF1262-02	10.00	g	10.00	g	06/24/10 09:56	JRR	Dry Weight
Dry Weight	10F2079	RTF1262-03	10.00	g	10.00	g	06/24/10 09:56	JRR	Dry Weight
Dry Weight	10F2079	RTF1262-04	10.00	g	10.00	g	06/24/10 09:56	JRR	Dry Weight
Semivolatile Organics by GC/MS									
8270C	10F2051	RTF1262-03	30.04	g	20.00	mL	06/24/10 08:00	CJM	3550B MB
8270C	10F2051	RTF1262-01	30.25	g	20.00	mL	06/24/10 08:00	CJM	3550B MB
8270C	10F2051	RTF1262-02	30.63	g	20.00	mL	06/24/10 08:00	CJM	3550B MB
8270C	10F2051	RTF1262-04	30.65	g	20.00	mL	06/24/10 08:00	CJM	3550B MB

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THE LEADER IN ENVIRONMENTAL TESTING

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2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
Blank Analyzed: 06/30/10 (Lab Number:10F2051-BLK1, Batch: 10F2051)											
2,4,5-Trichlorophenol			170	36	ug/kg wet	ND					
2,4,6-Trichlorophenol			170	11	ug/kg wet	ND					
2,4-Dichlorophenol			170	8.7	ug/kg wet	ND					
2,4-Dimethylphenol			170	45	ug/kg wet	ND					
2,4-Dinitrophenol			330	58	ug/kg wet	ND					
2,4-Dinitrotoluene			170	26	ug/kg wet	ND					
2,6-Dinitrotoluene			170	41	ug/kg wet	ND					
2-Chloronaphthalene			170	11	ug/kg wet	ND					
2-Chlorophenol			170	8.5	ug/kg wet	ND					
2-Methylnaphthalene			170	2.0	ug/kg wet	ND					
2-Methylphenol			170	5.1	ug/kg wet	ND					
2-Nitroaniline			330	54	ug/kg wet	ND					
2-Nitrophenol			170	7.6	ug/kg wet	ND					
3 & 4 Methylphenol			330	9.3	ug/kg wet	ND					
3,3'-Dichlorobenzidine			170	150	ug/kg wet	ND					
3-Nitroaniline			330	38	ug/kg wet	ND					
4,6-Dinitro-2-methylphenol			330	58	ug/kg wet	ND					
4-Bromophenyl phenyl ether			170	53	ug/kg wet	ND					
4-Chloro-3-methylphenol			170	6.9	ug/kg wet	ND					
4-Chloroaniline			170	49	ug/kg wet	ND					
4-Chlorophenyl phenyl ether			170	3.6	ug/kg wet	ND					
4-Nitroaniline			330	19	ug/kg wet	ND					
4-Nitrophenol			330	40	ug/kg wet	ND					
Acenaphthene			170	2.0	ug/kg wet	ND					
Acenaphthylene			170	1.4	ug/kg wet	ND					
Acetophenone			170	8.6	ug/kg wet	ND					
Anthracene			170	4.3	ug/kg wet	ND					
Atrazine			170	7.4	ug/kg wet	ND					
Benzaldehyde			170	18	ug/kg wet	ND					
Benzo[a]anthracene			170	2.9	ug/kg wet	ND					
Benzo[a]pyrene			170	4.0	ug/kg wet	ND					
Benzo[b]fluoranthene			170	3.2	ug/kg wet	ND					
Benzo[g,h,i]perylene			170	2.0	ug/kg wet	ND					
Benzo[k]fluoranthene			170	1.8	ug/kg wet	ND					
Biphenyl			170	10	ug/kg wet	ND					

Golder Associates, Inc. - Niagara Falls, NY
2221 Niagara Falls Blvd., Ste 9
Niagara Falls, NY 14304

Work Order: RTF1262

Project: Golder - Vandermark/Isochem site
Project Number: [none]

Received: 06/22/10
Reported: 07/02/10 11:35

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
Blank Analyzed: 06/30/10 (Lab Number:10F2051-BLK1, Batch: 10F2051)											
Bis(2-chloroethoxy)methane			170	9.1	ug/kg wet	ND					
Bis(2-chloroethyl)ether			170	14	ug/kg wet	ND					
Bis(2-chloroisopropyl) ether			170	17	ug/kg wet	ND					
Bis(2-ethylhexyl) phthalate			170	54	ug/kg wet	ND					
Butyl benzyl phthalate			170	45	ug/kg wet	ND					
Caprolactam			170	72	ug/kg wet	ND					
Carbazole			170	1.9	ug/kg wet	ND					
Chrysene			170	1.7	ug/kg wet	ND					
Dibenz[a,h]anthracene			170	2.0	ug/kg wet	ND					
Dibenzofuran			170	1.7	ug/kg wet	ND					
Diethyl phthalate			170	5.0	ug/kg wet	ND					
Dimethyl phthalate			170	4.4	ug/kg wet	ND					
Di-n-butyl phthalate			170	58	ug/kg wet	ND					
Di-n-octyl phthalate			170	3.9	ug/kg wet	ND					
Fluoranthene			170	2.4	ug/kg wet	ND					
Fluorene			170	3.8	ug/kg wet	ND					
Hexachlorobenzene			170	8.3	ug/kg wet	ND					
Hexachlorobutadiene			170	8.5	ug/kg wet	ND					
Hexachlorocyclopentadiene			170	50	ug/kg wet	ND					
Hexachloroethane			170	13	ug/kg wet	ND					
Indeno[1,2,3-cd]pyrene			170	4.6	ug/kg wet	ND					
Isophorone			170	8.3	ug/kg wet	ND					
Naphthalene			170	2.8	ug/kg wet	ND					
Nitrobenzene			170	7.4	ug/kg wet	ND					
N-Nitrosodi-n-propylamine			170	13	ug/kg wet	ND					
N-Nitrosodiphenylamine			170	9.1	ug/kg wet	ND					
Pentachlorophenol			330	57	ug/kg wet	ND					
Phenanthrene			170	3.5	ug/kg wet	ND					
Phenol			170	18	ug/kg wet	ND					
Pyrene			170	1.1	ug/kg wet	ND					
Surrogate: 2,4,6-Tribromophenol					*ug/kg wet*		*106*	*39-146*			
Surrogate: 2-Fluorobiphenyl					*ug/kg wet*		*99*	*37-120*			
Surrogate: 2-Fluorophenol					*ug/kg wet*		*79*	*18-120*			

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Golder Associates, Inc. - Niagara Falls, NY 2221 Niagara Falls Blvd., Ste 9 Niagara Falls, NY 14304	Work Order: RTF1262 Project: Golder - Vandermark/Isochem site Project Number: [none]	Received: 06/22/10 Reported: 07/02/10 11:35

LABORATORY QC DATA

Analyte	Source Result	Spike Level	RL	MDL	Units	Result	% REC	% REC Limits	% RPD	RPD Limit	Data Qualifiers
Semivolatile Organics by GC/MS											
Blank Analyzed: 06/30/10 (Lab Number:10F2051-BLK1, Batch: 10F2051)											
Surrogate: Nitrobenzene-d5					*ug/kg wet*		*87*	*34-132*			
Surrogate: Phenol-d5					*ug/kg wet*		*85*	*11-120*			
Surrogate: p-Terphenyl-d14					*ug/kg wet*		*101*	*58-147*			
LCS Analyzed: 06/30/10 (Lab Number:10F2051-BS1, Batch: 10F2051)											
2,4,5-Trichlorophenol			170	36	ug/kg wet	ND		59-126			
2,4,6-Trichlorophenol			170	11	ug/kg wet	ND		59-123			
2,4-Dichlorophenol			170	8.7	ug/kg wet	ND		52-120			
2,4-Dimethylphenol			170	45	ug/kg wet	ND		36-120			
2,4-Dinitrophenol			330	58	ug/kg wet	ND		35-146			
2,4-Dinitrotoluene		3290	170	26	ug/kg wet	3140	95	55-125			
2,6-Dinitrotoluene			170	41	ug/kg wet	ND		66-128			
2-Chloronaphthalene			170	11	ug/kg wet	ND		57-120			
2-Chlorophenol		3290	170	8.5	ug/kg wet	2490	76	38-120			
2-Methylnaphthalene			170	2.0	ug/kg wet	ND		47-120			
2-Methylphenol			170	5.1	ug/kg wet	ND		48-120			
2-Nitroaniline			330	53	ug/kg wet	ND		61-130			
2-Nitrophenol			170	7.6	ug/kg wet	ND		50-120			
3 & 4 Methylphenol			330	9.3	ug/kg wet	ND		50-119			
3,3'-Dichlorobenzidine			170	150	ug/kg wet	ND		48-126			
3-Nitroaniline			330	38	ug/kg wet	ND		61-127			
4,6-Dinitro-2-methylphenol			330	58	ug/kg wet	ND		49-155			
4-Bromophenyl phenyl ether			170	53	ug/kg wet	ND		58-131			
4-Chloro-3-methylphenol		3290	170	6.9	ug/kg wet	2790	85	49-125			
4-Chloroaniline			170	49	ug/kg wet	ND		49-120			
4-Chlorophenyl phenyl ether			170	3.6	ug/kg wet	ND		63-124			
4-Nitroaniline			330	19	ug/kg wet	ND		63-128			
4-Nitrophenol		3290	330	40	ug/kg wet	2850	87	43-137			
Acenaphthene		3290	170	2.0	ug/kg wet	3020	92	53-120			
Acenaphthylene			170	1.4	ug/kg wet	ND		58-121			
Acetophenone			170	8.6	ug/kg wet	ND		66-120			
Anthracene			170	4.3	ug/kg wet	ND		62-129			
Atrazine			170	7.4	ug/kg wet	ND		73-133			
Benzaldehyde			170	18	ug/kg wet	ND		21-120			
Benzo[a]anthracene			170	2.9	ug/kg wet	ND		65-133			
Benzo[a]pyrene			170	4.0	ug/kg wet	ND		64-127			

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2221 Niagara Falls Blvd., Ste 9
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Project Number: [none]

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Semivolatile Organics by GC/MS											
LCS Analyzed: 06/30/10 (Lab Number:10F2051-BS1, Batch: 10F2051)											
Benzo[b]fluoranthene			170	3.2	ug/kg wet	ND		64-135			
Benzo[g,h,i]perylene			170	2.0	ug/kg wet	ND		50-152			
Benzo[k]fluoranthene			170	1.8	ug/kg wet	ND		58-138			
Biphenyl			170	10	ug/kg wet	ND		71-120			
Bis(2-chloroethoxy)methane			170	9.1	ug/kg wet	ND		61-133			
Bis(2-chloroethyl)ether			170	14	ug/kg wet	ND		45-120			
Bis(2-chloroisopropyl) ether			170	17	ug/kg wet	ND		44-120			
Bis(2-ethylhexyl) phthalate		3290	170	54	ug/kg wet	3710	113	61-133			
Butyl benzyl phthalate			170	45	ug/kg wet	ND		61-129			
Caprolactam			170	72	ug/kg wet	ND		54-133			
Carbazole			170	1.9	ug/kg wet	ND		59-129			
Chrysene			170	1.7	ug/kg wet	ND		64-131			
Dibenz[a,h]anthracene			170	2.0	ug/kg wet	ND		54-148			
Dibenzofuran			170	1.7	ug/kg wet	ND		56-120			
Diethyl phthalate			170	5.0	ug/kg wet	ND		66-126			
Dimethyl phthalate			170	4.3	ug/kg wet	ND		65-124			
Di-n-butyl phthalate			170	58	ug/kg wet	ND		58-130			
Di-n-octyl phthalate			170	3.9	ug/kg wet	ND		62-133			
Fluoranthene			170	2.4	ug/kg wet	ND		62-131			
Fluorene			170	3.8	ug/kg wet	ND		63-126			
Hexachlorobenzene			170	8.3	ug/kg wet	ND		60-132			
Hexachlorobutadiene			170	8.5	ug/kg wet	ND		45-120			
Hexachlorocyclopentadiene			170	50	ug/kg wet	ND		31-120			
Hexachloroethane		3290	170	13	ug/kg wet	2300	70	41-120			
Indeno[1,2,3-cd]pyrene		3290	170	4.6	ug/kg wet	2310	70	56-149			L2
Isophorone			170	8.3	ug/kg wet	ND		56-120			
Naphthalene			170	2.8	ug/kg wet	ND		46-120			
Nitrobenzene			170	7.4	ug/kg wet	ND		49-120			
N-Nitrosodi-n-propylamine		3290	170	13	ug/kg wet	2760	84	46-120			
N-Nitrosodiphenylamine			170	9.1	ug/kg wet	ND		20-119			
Pentachlorophenol		3290	330	57	ug/kg wet	2500	76	33-136			
Phenanthrene			170	3.5	ug/kg wet	ND		60-130			
Phenol		3290	170	18	ug/kg wet	2440	74	36-120			
Pyrene		3290	170	1.1	ug/kg wet	3930	119	51-133			

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Semivolatile Organics by GC/MS											
LCS Analyzed: 06/30/10 (Lab Number:10F2051-BS1, Batch: 10F2051)											
Surrogate: 2,4,6-Tribromophenol					*ug/kg wet*		*102*	*39-146*			
Surrogate: 2-Fluorobiphenyl					*ug/kg wet*		*91*	*37-120*			
Surrogate: 2-Fluorophenol					*ug/kg wet*		*67*	*18-120*			
Surrogate: Nitrobenzene-d5					*ug/kg wet*		*77*	*34-132*			
Surrogate: Phenol-d5					*ug/kg wet*		*76*	*11-120*			
Surrogate: p-Terphenyl-d14					*ug/kg wet*		*108*	*58-147*			

Chain of Custody Record

Temperature on Receipt ______

Drinking Water? Yes ☐ No ☐

TestAmerica

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TAL-4124 (1007)

Client	Golder Associates
Address	2221 Niagara Falls Blvd. suite 9
City	Niagara Falls
State	NY
Zip Code	14304
Project Name and Location (State)	SNPE Van
Contract/Purchase Order/Quote No	
Project Manager	Pat Martin
Telephone Number (Area Code)/Fax Number	716-215-0650
Site Contact	Pam Cook
Lab Contact	
Carrier/Waybill Number	
Date	6-22-10
Lab Number	
Chain of Custody Number	148801
Page	1 of 1

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	SVOCs	Special Instructions/ Conditions of Receipt
B-9-W5-N5	6-22-10	1005				X							X	
B-9-N10	6-22-10	1025				X							X	
B-9-W5-N10	6-22-10	1035				X							X	
B-9-W10-N15	6-22-10	1045				X							X	

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

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

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

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	6-22-10	1420	1. Received By: [signature]	6/22/10	1420
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

3.5°C

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

ATTACHMENT C
TEST PIT SUMMARY TABLE

TABLE C-1

SNPE - VANDEMARK
2010 SUPPLEMENTAL DNAPL INVESTIGATION
SUMMARY OF TEST PIT OBSERVATIONS – JUNE 9, 2010

Test Pit No.	Observations/Notes	Total Depth (ft)
TP-1	Test pit located in West end of the remedial area. Several 6-inch coal tar chunks were observed. Test pit was excavated to refusal at 4 feet below ground surface (bgs).	4
TP-2	Test pit located in West end of the remedial area just North (i.e. upslope) of the toe of the slope. No tar was observed. Test pit was excavated to refusal at 3 feet bgs.	3
TP-3	Test pit located in West-central area of the remedial area. Several 6-inch diameter coal tar chunks were observed. Test pit was excavated to refusal at 5.5 feet bgs.	5.5
TP-4	Test pit located in North-central area of the remedial area just upslope from the toe of the slope. A small number of tar blebs, a few inches in diameter, were observed. Test pit was excavated to refusal at 4.5 feet bgs.	4.5
TP-5	Test pit located in North-central area of the remedial area. Several fist-sized tar blebs were present. Test pit was excavated to refusal at 4 feet bgs.	4
TP-6	Test pit located in South-central area of remedial area. Several fist-sized tar blebs were present. Test pit was excavated to refusal at 4.7 feet bgs.	4.7
TP-7	Test pit located in Eastern end of remedial area North of the top of the slope. A large amount of tar was observed and estimated to be 5-10% of the total material excavated. Test pit was excavated to refusal at 2.4 feet bgs.	2.4
TP-8	Test pit located in the flat portion of the Eastern end of the remedial area. A large amount of tar was observed and estimated to be 10% of the total material excavated. Test pit was excavated to refusal at 3.6 feet bgs.	3.6
TP-9	Test pit located near the roadway at the Eastern end of the remedial area. No tar was observed. Test pit was excavated to refusal at 3.2 feet bgs.	3.2
TP-10	Test pit located near the upper seep area near the stone block structure. Tar was observed and estimated to be 2% of the total material excavated. The tar was observed approximately 5-6 feet bgs. Due to the limits of the excavation equipment, the test pit was dug to 7 feet bgs without reaching the bedrock (max reach of excavator). The final pit size was approximately 2 feet wide and 10 feet long. Bedrock was not encountered at 7 feet bgs.	7
TP-11	Test pit located near the upper seep area. A tar vein was observed approximately 5-6 feet bgs. There was also greenish sand present. The final pit size was approximately 2 feet wide and 8 feet long. Bedrock was not encountered at 7 feet bgs.	7
TP-12	Test pit located near the upper seep area. Several tar blebs were observed on the top of the bedrock at 5.6 feet bgs. There was also some greenish granular material present.	5.6
TP-13	Test pit located East of the stone block structure on the road. A few tar blebs were observed but appear to have been placed there as fill and not having flowed to that location. The pit was excavated to a depth of 7 feet bgs without encountering bedrock.	7
TP-14	Test pit located East of the stone block structure on the road. No tar was observed. Some pieces of green pipe were present. The final depth to refusal was 6.5 feet bgs.	6.5