

Rec D 7-24-09

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## 1.0 EXECUTIVE SUMMARY

The Ehrlich Family Limited Partnership (Ehrlich Family) owns a three-unit building on North Main Street, Racine, Wisconsin. Express Cleaners (3941 North Main Street) occupies the northern unit of the building (the Site). A March 2006 Phase I environmental site assessment (ESA) of the Site identified recognized environmental conditions associated with the dry cleaning business. During April 2006, a Phase II ESA identified released dry cleaning solvents in soil at the Site. The Phase II ESA results were submitted to the Wisconsin Department of Natural Resources (WDNR), who subsequently required additional investigation of the released dry cleaning solvents.

During March 2007, Northern Environmental Technologies, Incorporated (Northern Environmental) initiated a site investigation at the Site after approval by the WDNR. The investigation included the evaluation of the CVOCs release previously identified on the Site. During 2007 and 2008 Northern Environmental oversaw the completion of 33 boreholes and eleven groundwater monitoring wells. During May 2008, Northern Environmental submitted the site investigation summary report to the WDNR. The investigation results were used to define the extent of released CVOCs in soil and groundwater in all directions except the southwest. In a June 2008 letter the WDNR requested additional investigation to the west and southwest before remedial action activities. The Ehrlich Family requested the additional investigation be incorporated into the remedial action plan.

During November 2008, the WDNR conditionally approved the site investigation and requested the Ehrlich Family solicit remedial action bid proposals according to Section NR169.23 Wisconsin Administrative Code. During March 2009, the Ehrlich Family representative requested remedial action proposals. However, the proposal process was placed on hold to conduct additional investigation on the eastern portion of the Site at the WDNR's request. In a July 9, 2009 letter, Gonzalez, Saggio, & Harlan, LLP requested a revised remedial action proposal. The Request for Proposal includes the installation of additional groundwater monitoring wells, active soil and groundwater remediation, contaminated soil vapor mitigation, groundwater monitoring, and associated permitting and reporting.

This proposal outlines Bonestroo, Inc. (Bonestroo's) (formerly Northern Environmental) technical approach, schedule, cost, and personnel to remediate a chlorinated volatile organic compound (CVOC) release identified at the Site.

- Install Monitoring Wells
- Remedial Action Plan and Environmental Health and Safety Plan Submittal
- Prepare WDNR Injection Permit Application
- *In-Situ* Anaerobic Bioremediation Enhancement in Groundwater
- *In-Situ* and *Ex-Situ* Unsaturated Soil Remediation
- Post-Treatment Unsaturated Soil Sampling
- Install Vapor Mitigation System (if needed)
- Post-Remedial Groundwater Monitoring
- Remedial Action and Groundwater Monitoring Summary Report

Bonestroo employs more than 400 engineers, hydrogeologists, environmental scientists, and technical specialists in ten offices in Wisconsin, Illinois, Iowa, and Minnesota. Bonestroo has extensive experience working on similar projects in the local area and is well respected by local regulatory agency personnel and staff. We have worked with the Dry cleaners Emergency Response Fund (DERF) since its inception during early 2000 and have an excellent reimbursement track record.

To best serve you, the Bonestroo project team is experienced in:

- Soil and Groundwater Investigations for hazardous chemical releases
- WDNR Liaison and Negotiation
- Remedial Alternatives Evaluation
- Remedial Action Program Design and Implementation
- Commodity Service Bidding and Contract Administration

The project team includes licensed professional engineers and geologists and certified hydrogeologists experienced in providing investigative and remedial services. We believe the complementary capabilities and areas of specialization of the project team form a group of experts uniquely qualified to provide the requested services and achieve case closure.

## 2.0 WORKSCOPE AND REMEDIAL OBJECTIVES

Northern Environmental is pleased to submit this proposal to Ehrlich Family Limited Partnership (Ehrlich Family) for consulting services associated with a chlorinated volatile organic compound (CVOC) release at Express Cleaners, 3941 North Main Street, Racine, Wisconsin (the Site). The Site consists of a three-unit building with a dry cleaning business occupying the northern unit.

Northern Environmental completed site investigation activities at the Site during 2007 and 2008. During November 2008, the Wisconsin Department of Natural Resources (WDNR) conditionally approved the site investigation and requested the Ehrlich Family solicit remedial action bid proposals.

### 2.1 Requested Work Scope

In a July 9, 2009 letter, Gonzalez, Saggio, & Harlan, LLP (Gonzalez, Saggio, & Harlan) requested a revised remedial action proposal for the following scope of work.

- Collect additional soil samples to define the horizontal and vertical extent of contamination near B13/MW8.
- Install two additional water table monitoring wells to define the extent of shallow groundwater (one west and one south of MW8).
- Conduct two rounds of groundwater monitoring 3 months apart. Analyze samples for volatile organic compounds (VOCs) at all site wells, including temporary well TW-1. Generate groundwater flow maps for each sampling event.
- Remediate soil and groundwater according to Chapter NR 722, Wisconsin Administrative Code (NR 722, Wis. Adm. Code).
- Install vapor intrusion monitoring system

### 2.2 Remedial Action Objectives

The remedial action objective is a reduction of contaminant concentrations in the source area, improvement of groundwater quality, and prevention of chlorinated volatile organic compound (CVOC) vapors from entering the Property building, with the ultimate objective being case closure. Since the majority of CVOC contaminated soil is present within 4 feet of the ground surface, the U.S. Environmental Protection Agency (EPA) site-specific soil screening levels for ingestion listed below will be used as the target clean-up levels.

Cis 1,2-dichloroethene (cis-1,2-DCE)	156,000 micrograms per kilogram (µg/kg)
Trans 1,2-dichloroethene	313,000 µg/kg
Tetrachloroethene (PCE)	1230 µg/kg
Trichloroethene (TCE)	160 µg/kg

Public health-related groundwater quality standards are set forth by NR 140, Wis. Adm. Code. Standards are listed for substances of public health concern (defined as substances having carcinogenic, mutagenic, or teratogenic properties or interactive effects) and substances of public welfare concern (defined as having a negative aesthetic value, but with little threat to human health). Two levels of standards are listed, the preventive action limit (PAL) and the enforcement

standard (ES). The ES represents a concentration above which action generally must be taken to improve the quality of groundwater. The PAL represents a lower concentration (usually 10 to 20 percent of the ES) above which groundwater quality should be monitored.

The remedial action objective for groundwater contamination will be to reduce CVOC concentrations in groundwater below their respective ES. The ES for contaminants of concern are listed below.

Cis-1,2-DCE	70 µg/kg
Trans 1,2-dichloroethene	100 µg/kg
PCE	5 µg/kg
TCE	5 µg/kg

## 3.0 REMEDIAL OPTIONS REVIEW AND SELECTED REMEDIAL ALTERNATIVE

An initial screening was conducted in accordance with section NR 722.07(2), Wisconsin Administrative Code (s. NR 722.07[2]), Wis. Adm. Code) to identify feasible remedial action options. Both soil and groundwater require remediation; therefore, the evaluated remedial alternatives address both media. A list with general descriptions of the remedial action options that were screened is provided in Table 1. Justification is provided for elimination of the remedial action options that were not further evaluated.

Based on a review of feasible alternatives, Bonestroo recommends a phased approach to effectively remediate the Site. Unsaturated soil containing PCE concentrations above remedial objectives will be treated using a chemical oxidant (i.e., RegenOx™). Application of RegenOx™ to chemically oxidize CVOCs has been used successfully in unsaturated soil at many sites throughout the Midwest and Wisconsin. The chemical oxidant will be mixed into unsaturated contaminated soil accessible to excavation. This method most effectively distributes the chemical oxidant throughout the contaminated soil and reduces contaminant concentrations the quickest. Unsaturated soil inaccessible to excavation (i.e., beneath the Site building or surrounding utilities) will be treated with the chemical oxidant via injection. The silty sand soil present should allow a thorough application of the chemical oxidant throughout the contaminated soil. The combined treatment methods minimize the threat to public health or welfare associated with injection and chemical application.

Groundwater with CVOC concentrations exceeding their respective remedial action objective will be treated using *in-situ* anaerobic bioremediation enhancement (i.e., edible oil substrate [EOS]). *In-situ* groundwater treatment will be focused in the saturated silty sand since it is more transmissive than surrounding soil and CVOCs are highly concentrated in this area. Silty clay soil beneath the silty sand is providing a vertical migration barrier and will not be directly treated. However, EOS injection will bioremediate contaminated groundwater likely present near the silty sand/clay interface.

Injection of EOS to enhance bio-remediation in groundwater is a relatively new remedial method. However, it has been used with great success to reduce chlorinated solvent concentrations in groundwater at many sites in the United States and Wisconsin. The primary document used to design the proposed remedial action and address the prerequisites of s. NR 140.28(5), Wis. Adm. Code was the *Protocol for Enhanced In-Situ Bioremediation Using Emulsified Edible Oil* report prepared by Solutions-IES in cooperation with the U.S. Department of Defense. This alternative was designed to enhance the existing reductive dechlorination process within the groundwater plume. Based on the relatively high ratio of daughter product (cis-1,2-DCE) to parent product (TCE), a significant amount of reductive dechlorination has occurred at the Site. Commonly, the reductive chlorination process stagnates due to a depletion of carbon and/or nutrient sources. Introduction of a supplemental carbon/nutrient source (i.e., EOS) should greatly accelerate the reductive dechlorination process. Since it appears much of the residual soil contamination is below the water table, enhancing the reductive dechlorination process in groundwater should be effective in reducing concentrations of chlorinated compounds in saturated soil.

## 4.0 SCOPE OF SERVICES

The proposed workplan was designed to make maximum use of existing information, satisfy the regulatory requirements of Chapters NR 169 and the NR 700 Series, Wisconsin Administrative Code (NR 169 and NR 700 series, Wis. Adm. Code), minimize total project cost, and expedite project completion. To minimize project cost and time requirements, the project will be completed in a phased approach. Each phase uses information gathered in previous tasks to better focus subsequent portions of the investigation. A structured program facilitates efficient project completion and limits overall cost.

The proposed workplan consists of the following tasks.

- Task 1.0 Install Monitoring Wells
- Task 2.0 Remedial Action Plan (RAP) and Environmental Health and Safety Plan (HASP) Submittal
- Task 3.0 Prepare WDNR Injection Permit Application
- Task 4.0 *In-Situ* Anaerobic Bioremediation Enhancement in Groundwater
- Task 5.0 *In-Situ* and *Ex-Situ* Unsaturated Soil Remediation
  - Subtask 5.1 *In-Situ* Treatment
  - Subtask 5.2 *Ex-Situ* Treatment
- Task 6.0 Post-Treatment Unsaturated Soil Sampling
- Task 7.0 Install Vapor Mitigation System (if needed)
- Task 8.0 Post-Remedial Groundwater Monitoring
- Task 9.0 Remedial Action and Groundwater Monitoring Summary Report

Project assumptions and tasks are described below.

### **TASK 1.0 INSTALL MONITORING WELLS**

The WDNR requested two additional boreholes/groundwater monitoring wells at the Site to determine the extent of contaminated soil and groundwater to the west and southwest of the contaminant source. The proposed well locations are shown in Figure 1. Any permits required by the City of Racine to place well(s) in the right-of-way would be obtained by Bonestroo.

The boreholes will be advanced to approximately 15 feet below grade (fbg) using hollow-stem auger techniques and standard split-spoon soil sampling methods. Soil samples will be collected at 2.5-foot intervals from each borehole. A portable photoionization detector will be used to screen the samples for the presence of organic vapors. Stratigraphic borehole logs will be prepared by Bonestroo personnel in general conformance with the American Society for Testing and Materials Method D-2488. All soil sampling equipment will be washed with a detergent solution, and double rinsed with potable water before each soil sample is collected to prevent sample cross-contamination.

Up to two soil samples (one near-surface and one at the unsaturated/saturated soil interface) collected from each borehole will be submitted for analysis by a WDNR-certified laboratory to

confirm the field screening results and to evaluate contaminant concentrations and extent. Soil samples will be analyzed for VOCs by a WDNR-certified analytical laboratory using EPA Method 8021.

Each soil borehole will be converted into a groundwater monitoring well to evaluate groundwater quality and flow conditions. All monitoring wells will be constructed in accordance with state requirements (NR 141, Wis. Adm. Code). The horizontal and vertical location of each well will be surveyed to a mean sea level benchmark to determine the groundwater flow direction and gradient.

All soil cuttings generated during well construction will be stockpiled on asphalt pavement at the Site and covered by plastic. The soil will be treated as part of the remedial action described in Subtask 5.2.

### **Task 2.0 RAP and Environmental HASP Submittal**

Using information provided by this RAP proposal and the results provided in Task 1.0, Bonestroo will submit a final RAP to the WDNR for review and approval. In addition, Bonestroo will prepare an environmental health and safety plan (HASP) specifically addressing health and safety issues associated with the remedial alternatives proposed.

### **Task 3.0 Prepare WDNR Injection Permit Application**

A temporary exemption must be obtained from the WDNR for injection of a compound into the subsurface. For the proposed remedial action, RegenOx™ (a chemical oxidizer) will be used to treat unsaturated soil and an EOS will be used to treat saturated soil. Specifically, the following permits/approvals are required.

- Injection permit from the WDNR in accordance with ss. NR 140.28 (5) and NR 812.05, Wis. Adm. Code. The injection plan will include a description of the buried conduits in the injection zone, the natural discharge point for groundwater, means of recovering excess substrate, and expected injection rates, pressures, and volumes.
- General Wisconsin Pollutant Discharge Elimination System (WPDES) permit from the WDNR.

S. NR 140.28 (5), Wis. Adm. Code outlines the prerequisites required as part of the temporary exemption process. Generally the prerequisites include:

- Injection as the remedial action will effectively reduce contaminant concentrations within a reasonable period of time.
- The type, concentrations, and volume of injection substance will be minimized to the extent necessary to complete the remedial action.
- Injection substance will not significantly increase the threat to public health or welfare.
- Injection will not occur into an area where a floating non-aqueous phase liquid is present in contaminated soil or groundwater.
- There will be no expansion of soil or groundwater contamination beyond the edges of previously contaminated areas.
- All necessary federal, state, and local licenses and permits are obtained.

### **Task 4.0 *In-Situ* Anaerobic Bioremediation Enhancement in Groundwater**

Bonestroo is recommending the injection of an organic substrate (carbon and nutrient source) into groundwater in and around the source area to enhance the reductive dechlorination process as the



first part of the remediation process. Based on the remedial action options review, a pre-mixed emulsified edible oil substrate (EOS) will be the most-effective substrate to maximize anaerobic degradation of chlorinated solvents in groundwater. Injection of EOS prior to unsaturated soil treatment provides additional protection from potential contaminant plume expansion that can be associated with unsaturated soil treatment. EOS was chosen based on the following factors.

- EOS will effectively elevate the currently depressed carbon concentrations within the contaminant plumes.
- EOS is more easily distributed through the aquifer since it is less viscous than pure edible oil.
- Introducing a concentrated carbon source should increase anaerobic conditions within the aquifer allowing for greater anaerobic degradation of chlorinated solvents.

A pilot test for the proposed remedial action is not proposed since sufficient data was generated during the site investigation regarding site geology and hydrogeology, contaminant concentrations and extent, and existing site conditions to design an effective RAP. In addition, the selected remedial methods have been successful in significantly reducing CVOC concentrations in soil and groundwater at many sites with varying subsurface conditions.

Bonestroo proposes a series of injections using direct-push techniques. Based on soil and aquifer characteristics, an 8-foot radius of influence for each injection point is expected and a 33 percent overlap will be used to ensure adequate coverage. Approximately 53 injection locations will be used for treatment of contaminated groundwater contained within approximately 2600 cubic yards (yd<sup>3</sup>) of soil. The lateral extent of groundwater to be treated is shown on Figure 1. EOS will be injected from the base of the saturated silty sand to the approximate water table (2 to 9 fbg). Although only one injection event is anticipated to meet remediation goals, multiple injections may be necessary.

Bonestroo assumes we will be granted sufficient access to the building interior. Disruption of businesses located in the Site building will likely be necessary to complete the *in-situ* treatment in the building. However, Bonestroo will work with the Ehrlich Family and the occupants of the Site building to minimize disruptions.

#### **Task 5.0 *IN-SITU* AND *EX-SITU* Unsaturated Soil Remediation**

Unsaturated soil remediation will be completed using both *in-situ* and *ex-situ* treatment. All unsaturated soil accessible for excavation (paved and unpaved areas lacking significant underground utilities) will be treated *ex-situ*. In accessible soil beneath the Property building and surrounding shallow buried utilities will be treated *in-situ* via chemical injection. The targeted soil treatment zone will extend from the ground-surface or immediately below paved surfaces to approximately 3 fbg. Treatment methods are described below.

##### **SUBTASK 5.1 *IN-SITU* TREATMENT**

Existing pavement and building cover will prevent injection chemicals from surfacing and enhance the dispersal of treatment chemicals to contaminated unsaturated soil. Therefore *in-situ* treatment will be completed before removal of adjacent pavement during *ex-situ* treatment. Bonestroo proposes two injection events approximately 1 month apart inside the Site building using a 5 percent RegenOx™ solution via direct-push techniques. Based on soil and aquifer

characteristics, a 5-foot radius of influence for each injection point is expected and a 33 percent overlap will be applied to ensure adequate coverage.

Based on the field observations from the first injection event, injection point locations may be adjusted to maximize remedial effectiveness. It is anticipated that injection locations during the second injection would be offset from the first injection to create even better distribution of the RegenOx™. Approximately thirty injection locations will be used for treatment of 350 yd<sup>3</sup> of unsaturated contaminated soil. As stated in Section 4.0, access to the Site building is required and disruption of the businesses inside the building will occur while completing Subtask 5.1. The lateral extent of unsaturated soil to be treated *in-situ* is shown in Figure 2.

#### **SUBTASK 5.2 *Ex-SITU* TREATMENT**

Before *ex-situ* treatment, pavement overlying unsaturated contaminated soil targeted for treatment would be removed for off-site disposal or recycling. *Ex-situ* remediation at the Site will involve the application of the chemical oxidant RegenOx™ directly onto exposed soils. Approximately 390 yd<sup>3</sup> of unsaturated contaminated soil within 4 feet of the ground surface would be treated via *ex-situ* treatment. The shallowness of the treatment zone allows RegenOx™ to be applied directly to the targeted contaminated soil and mixed into the soil using a backhoe. After completing *ex-situ* treatment, the excavation area where pavement was removed will be covered by approximately 3 inches of traffic-bond gravel and compacted. Since asphalt resurfacing is not an eligible Dry cleaners Emergency Response Fund (DERF) expense, it is not included in the proposal. *Ex-situ* remediation is expected to achieve the desired reduction in CVOCs in one mobilization.

Any soil cuttings produced during the installation of groundwater monitoring wells in Task 1.0 will also be treated during this subtask. The treated soil cutting will be incorporated with Site soil.

#### **Task 6.0 Post-Treatment Unsaturated Soil Sampling**

Approximately 1 month after the completion of Task 5.0, Bonestroo would collect unsaturated soil samples from eight boreholes located within the treatment area using truck- and cart-mounted direct-push soil sampling methods. One unsaturated soil sample from each borehole would be laboratory analyzed for VOCs to document the soil treatment success.

#### **Task 7.0 Install Vapor Mitigation System (if needed)**

Since residual contamination will likely remain after soil and groundwater remediation activities, CVOc vapors may still pose a threat to human health and safety within the Site building. Therefore, Bonestroo will obtain bids from three qualified contractors to install the sub-slab depressurization system. Generally, the system will consist of two to four suction points installed through the Site building floor. The suction points will be connected via PVC piping to a fan discharging outside the building at the approximate building roofline. The actual design of the mitigation system may vary depending upon the chosen contractor's recommendations and pre-installation testing.

#### **Task 8.0 Post-Remedial Groundwater Monitoring**

Following completion of tasks 1.0 through 6.0, two groundwater sampling events will be completed to document the effectiveness of the remedial action. The injection permit will likely require the first post-remedial groundwater monitoring event to occur within 60 days of injection.

The second groundwater monitoring event would occur 3 months after the first event. If, at any time during the groundwater monitoring, it appears that reductive dechlorination is no longer occurring and contaminant concentrations begin to increase, the need for additional injection(s) will be evaluated and discussed with the WDNR.

Groundwater monitoring will include measuring depth to water at each monitoring point. This information will be used to evaluate groundwater flow. In addition, samples will be collected from all monitoring wells and piezometers and submitted for laboratory analysis. All groundwater samples will be collected using low-flow sampling techniques. The monitoring wells will be sampled according to WDNR groundwater sampling procedures (WDNR Publication No. WR-168). The groundwater samples will be submitted under chain-of-custody protocol to a WDNR-certified laboratory for analysis of VOCs. Duplicates and trip blanks will be collected pursuant to WDNR protocol and analyzed for VOCs. All water removed from the monitoring wells during purging will be temporarily stored in 55-gallon steel drums and properly disposed upon receipt of laboratory results.

Before sampling, each of the wells selected for laboratory analysis will be field analyzed for temperature, pH, specific conductance, dissolved oxygen, and oxidation reduction potential. Groundwater samples may also be submitted from select wells for laboratory analysis for carbon dioxide, nitrate + nitrite, sulfate, total organic carbon, ethane, ethene, and methane. Additional groundwater monitoring will likely be required to document long-term contaminant trends and provide sufficient evidence to support case closure by the WDNR.

#### **Task 9.0 Remedial Action and Groundwater Monitoring Summary Report**

The results of tasks 1.0 through 8.0 will be detailed in a final report that documents the additional investigation, remedial action and groundwater monitoring activities and summarizes results and conclusions. The report will include all text, tables, figures, field data, and laboratory reports necessary to support the findings and conclusions. The WDNR Form 4400-194 will also be completed and submitted to the WDNR with the summary report.

All activities, including preparation of the final report, will be under the supervision of a Bonestroo WDNR-certified hydrogeologist, a professional geologist, and/or a professional engineer registered to practice in the state of Wisconsin. After review and incorporation of any comments by the Ehrlich Family representatives, the report will be submitted to the WDNR.

## 5.0 PROBABLE SCHEDULE AND COST

Work can begin on this project immediately upon receipt of a signed Professional Service Agreement (PSA). Project work will be coordinated with you and the selected subcontractor(s). Bonestroo will furnish or arrange for necessary technical staff, labor, equipment, and materials to complete the proposed work. The probable cost associated with each task is presented below.

### TASK 1.0 INSTALL MONITORING WELLS

Consultant	\$ 1,931.00
Equipment	275.00
Subcontractors	<u>1,768.00</u>
<b>Total Task 1.0</b>	<b>\$3,974.00</b>

### Task 2.0 RAP and Environmental HASP Submittal

Consultant	<b>\$4,081.00</b>
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### Task 3.0 Prepare WDNR Injection Permit Application

Consultant	<b>\$2,975.00</b>
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### Task 4.0 *In-Situ* Anaerobic Bioremediation Enhancement in Groundwater

Consultant	\$ 5,907.00
Subcontractors	<u>52,290.00</u>
<b>Total Task 4.0</b>	<b>\$58,197.00</b>

### Task 5.0 *IN-SITU* AND *EX-SITU* Unsaturated Soil Remediation

#### SUBTASK 5.1 *IN-SITU* TREATMENT

Consultant	\$13,675.00
Equipment	2,100.00
Subcontractors	18,104.00

#### SUBTASK 5.2 *EX-SITU* TREATMENT

Consultant	8,411.00
Subcontractors	<u>22,849.00</u>

**Total Task 5.0** **\$65,138.00**

### Task 6.0 Post-Treatment Unsaturated Soil Sampling

Consultant	\$ 1,344.00
Equipment	125.00
Subcontractors	<u>1,676.00</u>

**Total Task 6.0** **\$3,145.00**

### Task 7.0 Install Vapor Mitigation System (if needed)

Consultant	\$1,145.00
Subcontractors	<u>2,000.00</u>

**Total Task 7.0** **\$3,145.00**

**Task 8.0 Post-Remedial Groundwater Monitoring**

Consultant	\$5,283.00
Equipment	610.00
Subcontractors	<u>4,010.00</u>
<b>Total Task 6.0</b>	<b>\$9,903.00</b>

**Task 10.0 Remedial Action and Groundwater Monitoring Summary Report**

Consultant	<u>\$ 7,734.00</u>
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**TOTAL PROBABLE COST** **\$158,292.00**

Please note, since costs to prepare a DERF claim are not eligible for reimbursement, it was not included in this proposal. If additional work is required, the additional costs will be outlined in an amendment to the PSA. Additional work will not proceed until your approval is obtained. A detailed cost summary is included in Appendix B.

## 6.0 SIMILAR PROJECTS AND SATISFIED CLIENTS

Founded during 1988, Northern Environmental Technologies, Incorporated (Northern Environmental) quickly established itself as a leading environmental consultant in the fields of property investigation and environmental remediation. Contaminant management was the company's hallmark expertise. During May 2009 Northern Environmental merged with Bonestroo, Inc. (Bonestroo). Now a part of Bonestroo, that same staff of professional engineers, geologists, hydrologists and scientists continues to assist clients with environmental site assessments, site investigations, remediation oversight, confirmation sampling, regulatory negotiation and liaison for site closure, and redevelopment planning. We provide innovative, practical solutions to the government, private, energy, and industrial markets.

Our staff has completed over 6000 environmental site assessments and over 3800 petroleum and chemical investigation/remediation projects. Whether a property is slated for redevelopment or needs to be sold, Bonestroo has assisted property owners in managing environmental concerns and maximizing the value of that property. Our firm's resume and list of professional certifications, registrations, and memberships is included in Appendix A.

Bonestroo has completed hundreds of similar contaminant investigation and remediation projects throughout Wisconsin and Illinois. Through these projects, we have developed an intimate knowledge of applicable regulations and personnel. We are proud of our reputation as a common-sense environmental consulting firm able to provide cost-effective solutions to complicated environmental problems. Specific examples of contaminant investigation-related projects completed in Wisconsin and Illinois are provided below.

### **HOMETOWN CLEANERS – HUBERTUS, WISCONSIN**

Mr. Gordy Helman retained Northern Environmental to evaluate soil and groundwater quality at the Hometown Cleaners facility. Elevated concentrations of chlorinated solvents were identified in soil and groundwater beneath the site building. The investigation determined the extent of released chlorinated solvents. Northern Environmental assisted Mr. Helman from contaminant discovery during January 2007 to site closure during June 2008.

Hometown Cleaners

Mr. Gordy Helman

262-628-1177

### **Model Cleaners – Fond du Lac, Wisconsin**

Model Cleaners retained Northern Environmental to evaluate soil and groundwater quality at its dry cleaning facility. Elevated concentrations of chlorinated solvents were identified in soil beneath the site building. In addition, released gasoline associated with a former underground storage tank was present in soil at the site. Northern Environmental conducted a site investigation to determine the extent of released dry cleaning solvents and gasoline in soil and groundwater. Based on the investigation results, natural attenuation of the released dry cleaning solvents and gasoline was successfully decreasing contaminant concentrations. The WDNR subsequently determined that no further investigation or remediation was necessary and closed the site.

Model Cleaners

Mr. Tom Lambeseder

920-922-3800

**Magic Touch Cleaners – Northridge, Illinois**

Magic Touch Cleaners retained Northern Environmental to develop and implement a remedial action plan based on the investigation conducted during 2001 by another consulting firm. Given the extremely high concentrations of chlorinated solvents detected beneath the floor dry cleaning facility, Northern Environmental opted to remediate the vacant facility using soil mixed with a chemical oxidant. Initially, a pilot test was conducted that involved comparing the results of three different oxidants in test cells at the site. The cost-effective oxidant was selected for use. The remedial action involved removing the concrete floor from the facility and treating soils to a depth of 8 to 10 feet below grade with the selected oxidant initial sampling indicated success through the excavation with limited follow up needed around the perimeters of the area to achieve the remedial goals. Results of additional soil mixing and oxidant injections are anticipated by the end of 2009.

Magic Touch Cleaners

Mr. Barry Kaliner

708-452-4600

**Garber's Cleaners – Champaign, Illinois**

Garber's Cleaners retained Northern Environmental to evaluate soil and groundwater quality and conduct necessary remedial activities at its dry cleaning facility. Elevated concentrations of chlorinated solvents were identified in soil beneath the site building in the area of former dry cleaning operations. Northern Environmental conducted a site investigation to determine the extent of released dry cleaning solvents prior to the preparation of a remedial action plan. The remedial action selected was injection of a chemical oxidant in the apparent source area. The goal of the investigation was to reduce contaminant levels in order to obtain a No Further Remediation letter for the current use of the property and reduce future remedial costs associated with the redevelopment of the property. Remedial action is expected to be completed by the end of 2009.

Garber's Cleaners

Mr. Stephen Hamburg

217-356-1355

**Former Mobile Home Park – Green Lake, Wisconsin**

After more than 10 years of investigation and remediation by various consultants, Ms Margaret Reich-Miner retained Northern Environmental to remediate groundwater contaminated with CVOCs at the site. Northern Environmental designed and coordinated a remedial action consisting of EOS injection in groundwater near the contaminant source area. Approximately 1.5 years after the injection, overall CVOC concentrations have decreased by over 95 percent in groundwater adjacent to the EOS injection area. Long-term monitoring continues as a means to document remediation success and to support case closure in the near future.

Former Mobile Home Park

Ms. Margaret Reich-Miner

262-242-2194

## 7.0 STAFF EXPERIENCE

To ensure this project is completed in a cost-effective manner within the established timeframe, Bonestroo has assembled a team of professionals with experience working on numerous contaminant and solid waste investigation projects. Key project personnel resumes are included in Appendix D. The project team includes the following staff members.

**Mr. Christopher C. Hatfield, PG** will serve as the project manager; act as the point of contact between Bonestroo and you and interface and negotiate with the WDNR. With over 14 years experience in completing contaminant investigations and remediation in southeastern Wisconsin, Mr. Hatfield possesses strong technical, customer service and communication skills. His expertise includes providing practical solutions to complicated environmental problems that has resulted in outstanding client loyalty and respect by regulatory personnel.

**Mr. Stuart J. Gross, PG and Ms. Hiedi Waller, PE** have over 15 years of professional geology and engineering experience, respectively. As an associate geologist (Mr. Gross) and as senior project manager (Ms. Waller) are continually involved with complex projects by providing technical advisor and QA/QC roles. Mr. Gross and Ms. Waller will be responsible for reviewing reports, plans, and bid specifications to ensure their professional quality and technical accuracy.

Project-related fieldwork will be completed using personnel from Bonestroo's Mequon office. **Mr. John Timm** will supervise and document the field activities completed as part of the remedial action plan. Mr. Timm has over 14 years experience conducting subsurface investigations and remedial action for a variety of contaminants.

**Mr. Judd Olsen** will coordinate and supervise application of RegenOx™ treatment chemicals. Mr. Olsen has successfully applied RegenOx™ to numerous sites contaminated with CVOCs and has over 5 years of experience conducting similar remedial actions.

In addition to the project-specific staff, Mr. Hatfield can draw on the talent of more than sixty experienced engineers, geologists, hydrogeologists, and environmental scientists employed by Bonestroo. All project staff have been trained for entry and work on hazardous waste sites as required by the Occupational Safety and Health Administration. In order to support the professional endeavors of the company, many Bonestroo employees have gained certification and/or registration in an area of practice or profession. In some cases, such as engineering, registration is a prerequisite to practice. Bonestroo staff are licensed to practice engineering, geology, hydrogeology and soil science in the state of Wisconsin. We ensure that we have all the necessary current, applicable Wisconsin/local registrations, licensures, etc., which may be required to complete this project.



## 8.0 DERF CONSIDERATIONS

The DERF program became effective February 1, 2000 and is administered by the WDNR to provide reimbursement of eligible costs incurred for investigation and remediation of soil and groundwater contaminated by dry cleaning solvents. Owners or operators of dry cleaning facilities are eligible for reimbursements of costs for immediate and interim actions, site investigations, and remedial actions associated with the release of dry cleaning solvents into the environment. Reimbursement for immediate actions, site investigation, and remedial actions for releases at an active dry cleaning facility are subject to a deductible amount of \$10,000 for eligible costs between \$0 and \$200,000. Costs between \$200,000 and \$400,000 are subject to an additional deductible of 8 percent of the costs greater than \$200,000. Costs between \$400,000 and \$500,000 are subject to an additional deductible of 10 percent for costs greater than \$400,000.

The DERF rule presents several important requirements that will affect this project. These requirements are presented below for your consideration.

- Consultant services must be selected by using a qualification-based selection process that includes at least three competitive proposals for the remedial action (including development, design, and implementation). The proposals must be evaluated based on qualifications, scope of work, references, and fee schedule. **The lowest-priced proposal need not be selected**, but rather, the engineering services should be selected based on qualifications. If you do not select the lowest cost proposal, you must justify your selection with the WDNR before entering a contract with the consultant.
- Proposals shall include cost estimates for professional or commodity services on an hourly basis or per unit basis.
- Proposals must include a statement of professional qualifications for every person whose professional services are included in the proposal.
- Costs for services beyond the scope of a consultant's initial proposal and greater than \$3,000 may not be reimbursed unless the consultant provides the applicant with a cost estimate for the additional services being performed, services are billed at the same or lower unit price as the initial proposal, and the applicant approves the cost estimate in writing before conducting the additional services. Additional costs that exceed \$3,000 may require competitive bidding. If the cost of additional services exceeds \$3,000, the applicant must provide the department with a copy of the cost estimate before authorizing the consultant to proceed.
- The consultant must certify that the consultant and contracting services will comply with applicable requirements of NR 169, Wis. Adm. Code.
- All consultants must maintain coverage for comprehensive general liability, which includes pollution impairment liability of \$1 million per claim and a minimum of \$1 million in annual aggregate claims. If the deductible for the insurance exceeds \$25,000, the consultant shall furnish proof of financial responsibility acceptable to the WDNR for the amount of the deductible.

In summary, you must evaluate three consultants before selecting a firm for your project. **You should select the consultant you feel is best qualified to represent your interests.** You do not need to select the lowest-cost proposal. However, if you do not select the lowest-cost proposal, you must justify the selection to the WDNR and obtain its approval before entering a contract with that consultant. Qualified consultants must have the necessary insurance, including pollution liability insurance.

## 9.0 OUR ASSURANCE

Strict procedures are followed during all sampling and laboratory analysis to ensure the accuracy of our results. Inaccurate data can add significant cost to the project and may jeopardize your DERF reimbursement. Bonestroo adheres to accepted regulatory policies and procedures and industry standards. All of the Bonestroo work is protected by our professional error and omissions (E&O) insurance and accompanying engineers' pollution liability (EPL) policy.

Bonestroo will provide necessary staff and facilities for all phases of planning, investigation, design, construction and operation. We will also retain and confer with specialists on unusual matters; provide qualified technical reviewers, who will keep the owner advised on technical and regulatory matters and work toward planned remediation goals. Bonestroo will perform all services in an ethical, professional, and timely manner.

## 10.0 CERTIFICATIONS

Under NR 712, Wis. Adm. Code, minimum standards for experience and professional qualifications are established for persons providing environmental response actions. Specifically, all groundwater assessment submittals must be prepared by a Wisconsin-certified hydrogeologist, and all corrective action submittals must be prepared by a Wisconsin-registered professional engineer. Bonestroo meets all requirements of NR 712, Wis. Adm. Code. According to s. NR 169.23(3)(b) and 169.23(9)(a) Wis. Adm. Code, Bonestroo also certifies the following:

- Bonestroo is fully informed about the project scope and has the expertise to analyze alternatives and to design the most-suitable response action
- Bonestroo will provide necessary staff and facilities for all phases of planning, design, construction, and operation
- Bonestroo will provide qualified technical reviewers to advise the owner and work toward the remedial goals
- Bonestroo will perform all services in an ethical, professional, and timely manner
- All consultant and contract services will comply with applicable requirements under NR 700 to 728 Wis. Adm. Code.
- Bonestroo will make all consultant documents and records available to the WDNR for inspection and copying.
- Bonestroo certifies that this proposal was not prepared in collusion with any other consultant submitting a bid on this Site.

Selecting Bonestroo ensures complete regulatory compliance. Bonestroo is fully informed about the project's scope and required services, and have the experience and ability to analyze alternatives and design the most suitable response action consistent with technical and economic feasibility, environmental statutes and rules, restoration timeframes, and the latest technical advances. Using a firm without our qualifications may jeopardize your DERF reimbursement.

## 11.0 INSTITUTIONAL ISSUES

### 11.1 TERMS AND CONDITIONS

The terms and conditions of the work proposed by Bonestroo will be governed by the enclosed PSA. If you find our proposal acceptable, please sign and return the enclosed PSA. A signed copy of the PSA must be returned to Bonestroo before initiation of project work. Any additional work will be handled as an amendment to the PSA.

### 11.2 INSURANCE

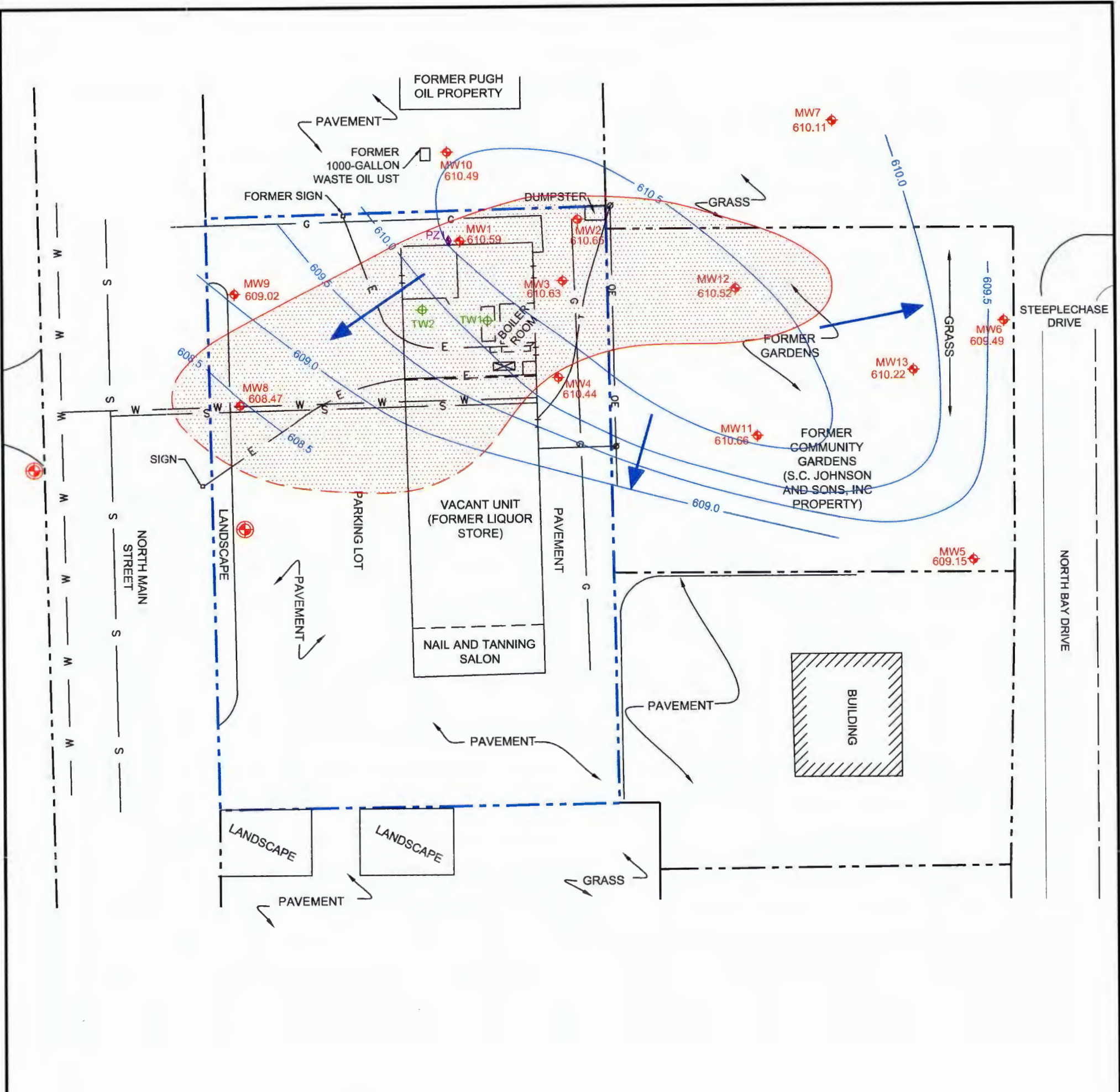
In conjunction with the necessary technical expertise, Bonestroo offers our clients a complete package of insurance, including statutory liability, comprehensive general liability, and automobile liability, E&O, and EPL policy. The EPL carried by Bonestroo is a companion policy to our regular E&O coverage containing the standard pollution exclusion. Together, our E&O and EPL policies provide our clients the best professional liability coverage available on the market today. Bonestroo believes our clients desire this type of coverage and that it is necessary for any responsible engineering firm, such as Bonestroo. Specimen copies of our insurance certificates are included in Appendix D. Copies naming the Client as additional insured can be sent following receipt of a signed PSA.

### 11.3 SUBSURFACE WORK

The proposed work includes subsurface investigative work. Bonestroo will require the drilling/excavation contractor contact public utility locating services (e.g., Diggers Hotline and local municipalities) and make a good faith effort to locate underground improvements that could be potentially damaged by the proposed work. Since the owner or operator of the Site usually has the most detailed and intimate knowledge of the type and locations of such improvements, the owner/operator will be called upon to assist in locating buried improvements. Consequently, the owner/operator may be requested to review the proposed work to ensure damage is not done to structures and sign an agreement affirming the drilling/excavation contractor has made a conscientious effort to avoid damaging buried improvements.

### 11.4 HEALTH AND SAFETY

All work at the Site will be performed in conformance with Chapter 20 Code of Federal Regulation, Section 1910.22 by trained personnel. Based on the current conditions, we anticipate work will proceed under EPA Safety Level D conditions. The safety level will continuously be monitored and revised, as necessary, based on the conditions encountered.



**LEGEND**

- SUBJECT PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARIES
- OVERHEAD ELECTRIC LINE
- FENCE
- UNDERGROUND GAS LINE
- WATERMAIN
- BURIED ELECTRIC LINE
- BURIED SANITARY SEWER
- BURIED TELEPHONE LINE
- UTILITY POLE
- FORMER DRY CLEANING MACHINE LOCATION
- EXISTING DRY CLEANING MACHINE
- MW1 2" MONITORING WELL LOCATION AND IDENTIFICATION WITH GROUNDWATER ELEVATION
- PZ1 PIEZOMETER LOCATION AND IDENTIFICATION
- TW2 1" TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION
- PROPOSED GROUNDWATER MONITORING WELL LOCATION
- GROUNDWATER FLOW DIRECTION
- 608.5 GROUNDWATER ELEVATION CONTOUR
- ESTIMATED EXTENT OF GROUNDWATER WITH PCE CONCENTRATIONS EXCEEDING NR140 ES AND EOS INJECTION AREA



SCALE IN FEET



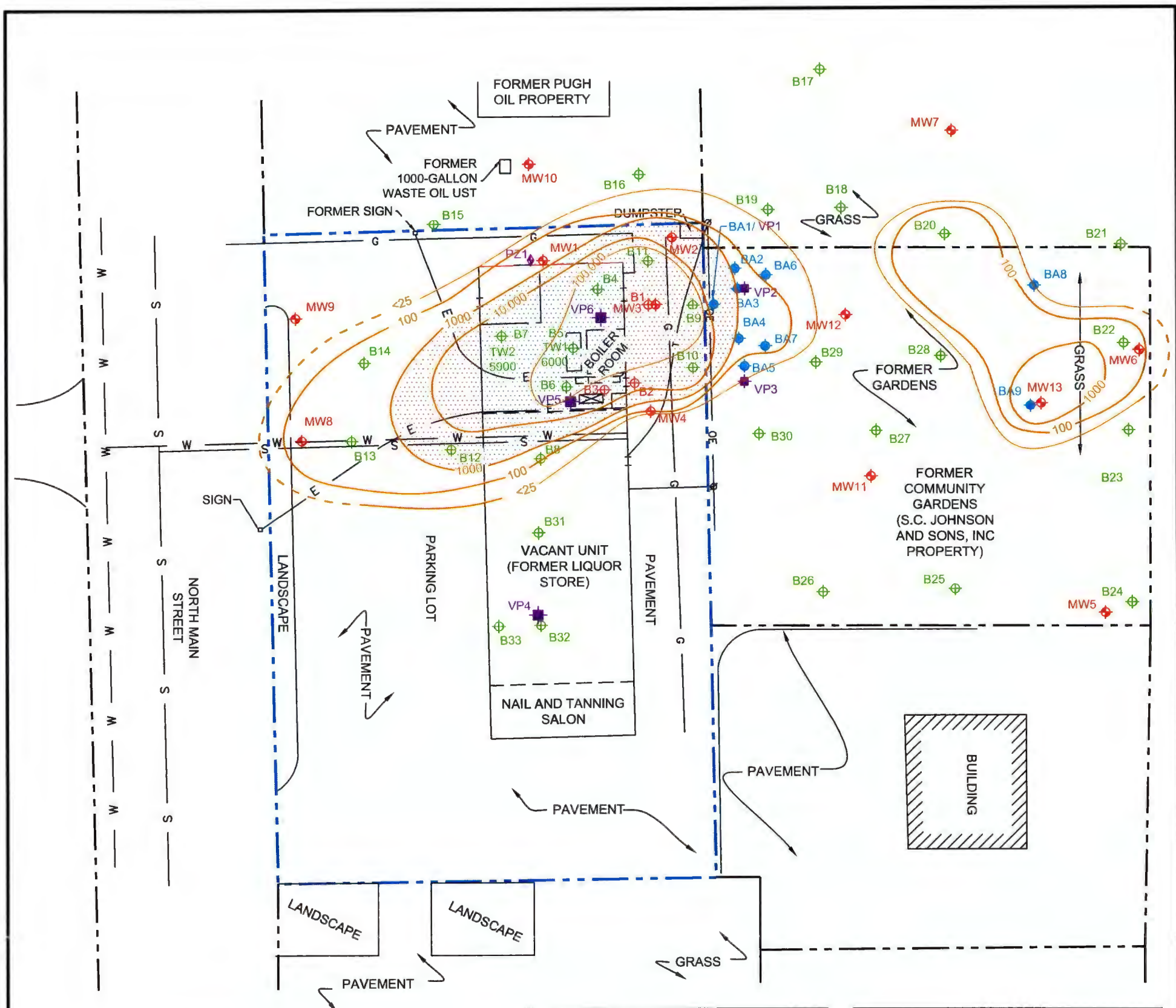
**Northern Environmental**  
 Hydrologists • Engineers • Surveyors • Scientists  
 330 South 4th Avenue, Park Falls, Wisconsin 54552  
 Phone: 800-498-3913 Fax: 715-762-1844

WISCONSIN ▲ MINNESOTA ▲ ILLINOIS ▲ IOWA

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**GROUNDWATER REMEDIATION AREA**

**EXPRESS CLEANERS, INCORPORATED**  
 3941 N. MAIN STREET  
 RACINE, WISCONSIN



**LEGEND**

- SUBJECT PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARIES
- OVERHEAD ELECTRIC LINE
- FENCE
- UNDERGROUND GAS LINE
- WATERMAIN
- BURIED ELECTRIC LINE
- BURIED SANITARY SEWER
- BURIED TELEPHONE LINE
- UTILITY POLE
- FORMER DRY CLEANING MACHINE LOCATION
- EXISTING DRY CLEANING MACHINE
- VP1 SOIL VAPOR SAMPLING POINT LOCATION AND IDENTIFICATION
- BA1 HAND AUGER NEAR SURFACE SAMPLE LOCATION AND IDENTIFICATION
- B5 BOREHOLE LOCATION AND IDENTIFICATION
- B3 GABRIEL ENVIRONMENTAL BOREHOLE LOCATION AND IDENTIFICATION
- MW1 2" MONITORING WELL LOCATION AND IDENTIFICATION
- PZ1 PIEZOMETER LOCATION AND IDENTIFICATION
- TW2 1" TEMPORARY MONITORING WELL LOCATION
- 1000 SOIL PCE ISOCONCENTRATION LINE IN MICROGRAMS PER KILOGRAM
- UNSATURATED SOIL REMEDIATION AREA BY IN-SITU INJECTION TREATMENT
- UNSATURATED SOIL REMEDIATION AREA BY EX-SITU SOIL TREATMENT AND MIXING

Sample Location	Sample Depth (feet)	Soil PCE Concentration (ug/kg)
PZ1	1-3	370
MW1	3.5-5.5	430
MW2	1-3	1740
MW3	1-3	8400
MW4	1-3	<25
MW6	2-4	48
MW8	1-3	330
MW12	1-3	<18
B1	4	121,000
B2	2	9900
B2	12	465
B3	4	21,100
B4	2-4	270,000
B4	4-6	1,380
B4	14-16	270
B5	2-4	66,000
B5	10-12	305
B6	2-4	136,000
B6	12-14	174
B7	2-4	10,200
B7	6-8	77,000
B8	2-4	67
B9	0-2	92,000
B9	8-10	770,000
B10	2-4	14,000
B10	8-10	28
B11	2-4	63,000
B11	6-8	590,000
B12	2-4	1370
B13	2-4	112
B13	6-8	68,000
B14	2-4	131
B15	2-4	<25
B15	4-6	<25
B16	2-4	<25

Sample Location	Sample Depth (feet)	Soil PCE Concentration (ug/kg)
B17	2-4	<25
B18	2-4	<25
B19	2-4	<25
B20	2-4	104
B21	2-4	<25
B22	2-4	670
B23	2-4	<25
B24	2-4	<25
B25	2-4	<25
B26	2-4	<25
B27	2-4	<25
B28	2-4	<25
B29	2-4	<25
B30	2-4	<25
B31	2-4	<25
B32	2-4	<25
B33	2-4	<25
MW6	2-4	48
MW8	1-3	330
BA1	2	130
BA2	0.5	650
BA2	2	700
BA3	0.5	1200
BA3	2	1300
BA4	0.5	690
BA4	2	100
BA5	30	43
BA6	0.5	56
BA6	2	74
BA7	0.5	84
BA7	2	380
BA8	1.5	<25
BA9	0.5	33
BA9	2	1200

**Northern Environmental**  
Hydrologists • Engineers • Surveyors • Scientists

330 South 4th Avenue, Park Falls, Wisconsin 54552  
Phone: 800-498-3913 Fax: 715-762-1844

WISCONSIN MINNESOTA ILLINOIS IOWA

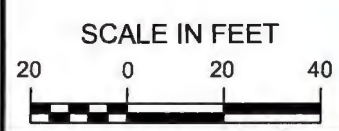
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DATE: 04/15/08 DRAWN BY: BMP REVISED: 07/21/09 MSM

**SOIL REMEDIATION AREA**

**EXPRESS CLEANERS, INCORPORATED**  
3941 N. MAIN STREET  
RACINE, WISCONSIN

PROJECT NUMBER: 003592-09001-0 FIGURE 2



**Table 1: Listing of Remedial Action Options, Express Cleaners, Racine, Wisconsin**

REMEDIAL ACTION OPTION	ZONES AND MEDIA TREATED	OPTIMAL CONTAMINANT CHARACTERISTICS	OPTIMUM MEDIA CHARACTERISTICS	LENGTH OF TREATMENT	EFFECTIVENESS	ADVANTAGES	DISADVANTAGES	COMBINED WITH OTHER REMEDIAL ACTION OPTIONS	RATIONALE FOR ELIMINATION
<b>Chemical Oxidation</b>	<i>In-situ</i> , saturated and unsaturated soil	- Chlorinated ethenes	- Intrinsic permeability > $10^{-10}$ cm <sup>2</sup> (preferably > $10^{-8}$ cm <sup>2</sup> ) (e.g., gravel, clean sand, silty sand) - Applicable to lower permeable soils, however, will require closure injection spacing	Depends on how many injection events are necessary. Single injections typically completed in a few days with the oxidant persisting up to 12 weeks	Average reductions of 80% achievable during initial injection events	- Can be used under buildings and other locations that cannot be excavated	Multiple injections may be required to achieve cleanup goals.	Easily combined with other remedial methods	Evaluated and selected as the remedial alternative for unsaturated contaminated soil
<b>Excavation and Landfilling</b>	<i>Ex-situ</i> , unsaturated soil	- Heavy metals - Chlorinated compounds - All petroleum fuels and lubricants including gasoline, jet fuels, kerosene, diesel fuel, heating oils, and lubricating oils	- Fine-grained soils (e.g., silts and clays) - Maximum moisture content < 85% (may require dewatering)	Excavation usually requires less than 1 week	Very effective for source area removal if extent is defined. Minimizes contaminant migration and maximizes contaminant containment	- Low capital and no O&M costs - Easily implemented - High technical feasibility if soils are fine grained and excavation is less than 17 ft deep	- Removed soils must be treated <i>ex-situ</i> - Cannot be used under buildings - Highly disruptive to site use - High capital cost and reduced technical feasibility if soils are coarse-grained and excavation is greater than 17 ft deep - Fill must be carefully re-compacted to prevent differential settlement - Transportation and disposal/ characterization costs can be high	Easily combined with natural attenuation monitoring	Evaluated and not selected due to high cost associated with disposal of soil classified as hazardous waste.
<b>Enhanced Groundwater Bioremediation (i.e. carbon source injection)</b>	<i>In-situ</i> saturated soil and groundwater	- Short-chain, low molecular weight, more water-soluble constituents - Constituents should be biodegradable - TPH < 50,000 ppm - Total heavy metals < 2500 ppm - Organic solvent concentrations < 7000 ppm	- Hydraulic conductivity > $10^{-4}$ cm/sec - Dissolved iron concentrations < 10 mg/l - Groundwater pH between 6 - 8 - Groundwater temperature between 10 - 45° C - Total heterotrophic bacteria > 1000 CFU/gram in dry soil - C:N:P ratio in the range of 100:10:1 to 100:1:0.5	May be shorter than pump-and-treat options	Difficult to achieve a constituent concentration < 0.1 ppm or TPH reduction > 95%	- Remediates contaminants that are adsorbed to, or trapped within, the geologic materials of which the aquifer is composed along with dissolved groundwater contaminants - In many cases, does not produce waste products that need to be disposed	- Injection wells and/or infiltration galleries may become plugged by microbial growth or mineral precipitates - Requires continuous monitoring and maintenance - Remediation may only occur in more permeable layers or channels within the aquifer - LNAPLs should be removed prior to operation	Can be combined with AS and SVE or bioventing	Evaluated and selected as the remedial alternative for contaminated groundwater.
<b>Natural Attenuation (NA) using reductive dechlorination.</b>	<i>In-situ</i> , groundwater and unsaturated soil	- Product constituents should be at most slightly soluble in water (generally > 0.1 mg/l) - Low volatility - $K_{oc}$ and $K_d$ values should be high enough to adequately retard migration - Biodegradable constituents - High concentration of heavy metals and other toxic compounds could inhibit microbial activity - Shrinking or stable plume	- Intrinsic permeability > $10^{-8}$ cm <sup>2</sup> - Hydraulic conductivity < $10^{-7}$ cm/sec - Groundwater dissolved oxygen less than or equal to 0.5 mg/l - Temperature greater than 20 C - ORP less than -100 mV - Iron II greater than 1mg/l - Nitrate less than 1 mg/l - Sulfate less than 20 mg/l - Sulfide greater than 1mg/l - Total Organic Carbon greater than 20 mg/l - Groundwater pH between 5 - 9	Longer period of time may be required to mitigate contamination than active remedial measures	May not always achieve the desired cleanup levels within a reasonable amount of time.	- Low cost - Minimal disturbance to the site operations - Increasing regulatory support - Increasing public support - Potential use below buildings and other areas that cannot be excavated	- Some migration of constituents may occur - Not suitable if potential receptors may be exposed to contaminated soil, groundwater, or vapors - Rainfall > 60 inches/year could be a problem - Climate should be moderate to warm, 5-45° C (microbial activity typically doubles for every 100° rise in temperature) - May not be suitable if potable water wells are in the contaminant plume	NA is usually completed alone for low level contaminant concentrations or following other remedial action options	Evaluated and not selected due to elevated concentrations and length of time necessary to achieve compliance.

**Table 1: Listing of Remedial Action Options, Express Cleaners, Racine, Wisconsin**

REMEDIAL ACTION OPTION	ZONES AND MEDIA TREATED	OPTIMAL CONTAMINANT CHARACTERISTICS	OPTIMUM MEDIA CHARACTERISTICS	LENGTH OF TREATMENT	EFFECTIVENESS	ADVANTAGES	DISADVANTAGES	COMBINED WITH OTHER REMEDIAL ACTION OPTIONS	RATIONALE FOR ELIMINATION
<b>Groundwater Pumping and Treatment</b>	<i>Ex-situ</i> groundwater	<ul style="list-style-type: none"> <li>- Petroleum products, including gasoline, jet fuels, kerosene, diesel fuel, heating oils, and lubricating oils</li> <li>- Chlorinated solvents</li> </ul>	<ul style="list-style-type: none"> <li>- Hydraulic conductivity &gt; 10<sup>-4</sup> cm/sec</li> <li>- Initial dissolved iron (Fe+2) concentration at the site &lt; 10 mg/l</li> <li>- Free of impermeable layers or other conditions that would disrupt/reduce water flow</li> </ul>	Total remediation time usually exceeds 2 yrs	<ul style="list-style-type: none"> <li>- Groundwater treatment can consistently achieve constituent concentration reductions approaching 100%</li> <li>- Achievable cleanup level will vary greatly depending upon soil and contaminant type</li> </ul>	<ul style="list-style-type: none"> <li>- Proven to be very effective in treating/remediating aqueous-phase VOC</li> <li>- Hydraulically controls groundwater migration</li> </ul>	<ul style="list-style-type: none"> <li>- Requires continuous monitoring and maintenance</li> <li>- Requires pump testing</li> <li>- Extracted groundwater may require additional treatment (such as oil-water separation)</li> <li>- LNAPL and DNAPL VOC should be removed before treatment</li> </ul>	Can be combined with SVE or bioventing and groundwater bioremediation	Evaluated and not selected because of more-effective remedial options given site conditions and long cleanup time.
<b>Soil Vapor Extraction (SVE)</b>	<i>In-situ</i> , unsaturated soil	<ul style="list-style-type: none"> <li>- VOCs and certain SVOCs (e.g., lighter products such as gasoline)</li> <li>- Vapor pressure &gt; 0.5 mm Hg</li> <li>- Boiling points &lt; 300° C</li> <li>- Henry's Law constant &gt; 100 atm</li> <li>- Is not effective against diesel fuel, heating oils, kerosene, and lubricating oils</li> </ul>	<ul style="list-style-type: none"> <li>- Intrinsic permeability &gt; 10<sup>-9</sup> cm<sup>2</sup> (e.g., gravel, clean sand, silty sand)</li> <li>- Dry soil (wet soil decreases permeability)</li> <li>- Depth to groundwater &gt; 3 ft (preferably &gt; 10 ft)</li> </ul>	6 months to 2 years under optimal conditions	Difficult to achieve constituent concentration reductions > 90%	Can be used under buildings and other locations that cannot be excavated	Off-gas often requires treatment during early phases of remediation	Easily combined with AS, groundwater bioremediation, or dual-phase extraction	Evaluated and not selected.

BTEX =Benzene, Toluene, Ethylbenzene, and Xylenes (total)  
 C:N:P =Carbon:Nitrogen:Phosphorus ratio  
 K<sub>d</sub> =Soil-water partition coefficient  
 K<sub>ow</sub> =Octanal-water partition coefficient  
 SVOC =Semi-Volatile Organic Compounds  
 VOC =Volatile Organic Compounds

CFU =Colony-Forming Units  
 f<sub>oc</sub> =Fractional content of soil organic carbon  
 K<sub>oc</sub> =Organic carbon-water partition coefficient  
 ppm =parts per million  
 TPH =Total Petroleum Hydrocarbons  
 NAPLs =non-aqueous phase liquids



**APPENDIX A – FIRM RESUME AND LIST OF PROFESSIONAL  
CERTIFICATIONS, REGISTRATIONS AND MEMBERSHIPS**

## Firm Profile

**OFFICES:**

ST. PAUL, MN  
 ROCHESTER, MN  
 ST. CLOUD, MN  
 MILWAUKEE, WI  
 ELKHORN, WI  
 CRIVITZ, WI  
 GREEN BAY, WI  
 PARK FALLS, WI  
 WAUPUN, WI  
 LIBERTYVILLE, IL  
 NORTHBROOK, IL  
 HOUGHTON, MI  
 CEDAR RAPIDS, IA

**1-800-880-4700**  
**www.bonestroo.com**

**FIRM INFORMATION:** Founded in 1956, Bonestroo is ranked 209th nationally in Engineering News Record’s list of Top 500 Design Firms. A full-service engineering, planning, and environmental science firm, Bonestroo provides innovative, practical solutions to the government, private, energy, and industrial markets.

**FIELDS OF PRACTICE:** Civil and environmental engineering, surveying and construction services, earth and biological sciences, transportation, planning, landscape architecture, and urban design, permitting, inspection, and compliance, development and redevelopment, structural, electrical, and mechanical engineering, sports and recreation

PERSONNEL CATEGORY	STAFF
• Biologists.....	2
• CADD Technicians.....	27
• Civil Engineers.....	66
• Construction Inspectors.....	39
• Construction Managers.....	17
• Ecologists.....	8
• Electrical Engineers.....	3
• Environmental Engineers.....	18
• Environmental Scientists.....	33
• Geographic Information System Specialists.....	6
• Geologists.....	14
• Hydrologists.....	1
• Industrial Hygienist.....	1
• Land Surveyors.....	11
• Landscape Architects.....	11
• Mechanical Engineers.....	1
• Mining Engineers.....	2
• Planners.....	7
• Structural Engineers.....	5
• Technician/Analysts.....	45
• Transportation Engineers.....	13
• Water Resources Engineers.....	9
• Architects.....	1
• Administrative and Support Staff.....	71
<b>Total Employees</b>	<b>411</b>

## Firm Background



From every stage between nurturing the first spark of a good idea through construction, maintenance, and redevelopment—we are there to support your vision for the future.



Bonestroo provides a comprehensive range of property assessment and improvement services.



We bring a big-picture, lifecycle-conscious approach to infrastructure planning and design.

### CORPORATE PROFILE

Ranked 209<sup>th</sup> among design firms nationally in Engineering News Record's list of Top 500 Design Firms, Bonestroo is one of the Midwest's largest full-service engineering, planning, and environmental science firms. We provide innovative, practical solutions to the government, private, energy, and industrial markets.

Our recent merger with Northern Environmental, an environmental consulting firm, enables us to provide our clients with additional services in compliance and industrial hygiene, property assessment and brownfield redevelopment, and contaminant investigation and remediation.

### SERVICE AREAS:

- Civil and environmental engineering
- Surveying and construction services
- Earth and biological sciences
- Transportation
- Planning, landscape architecture, and urban design
- Permitting, inspection, and compliance
- Development and redevelopment
- Structural, electrical, and mechanical engineering
- Sports and recreation

Founded in 1956, Bonestroo is headquartered in St. Paul, MN, and has offices in Rochester and St. Cloud, MN; Milwaukee, Crivitz, Elkhorn, Green Bay, Park Falls, and Waupun, WI; Libertyville and Northbrook, IL; Cedar Rapids, IA; and Houghton, MI. Our multiple office locations enable us to provide responsive service to clients throughout the region and nationwide.

### COMMITMENT TO SUSTAINABILITY

Dedicated to improving places and improving lives, our firm is committed to sustainable practices internally and externally. As a builder of communities, an employer, and a corporate citizen, we are conscious of the environmental, economic, and social impacts of our actions. We strive for steady and meaningful progress toward a sustainable future as purposeful stewards of the environment.



	MN			WI				IL	IA	MI				
	ST. PAUL	ROCHESTER	ST. CLOUD	MILWAUKEE	GREEN BAY	PARK FALLS	WAUPUN	ELKHORN	CRIVITZ	LIBERTYVILLE	NORTHBROOK	CEDAR RAPIDS	HOUGHTON	Total
Civil Engineers	43	2	11	5			1	1		4				67
Environmental Engineers	13			1			1				2		1	18
Transportation Engineers	12		1											13
Structural Engineers	5													5
Electrical Engineers	3													3
Mechanical Engineers	1													1
Water Resources Engineers	4			3						2				9
Mining Engineers				2										2
<b>Total Registered Engineers</b>	<b>81</b>	<b>2</b>	<b>12</b>	<b>11</b>			<b>2</b>	<b>1</b>		<b>6</b>	<b>2</b>		<b>1</b>	<b>118</b>
Construction Staff	34	3	9	4				1		5				56
Professional Land Surveyors	1		6	2		2								11
Designers/Technicians	27		11	4	1	2								45
CADD Technicians	15	4	2	1		1				4				27
GIS Specialists	6		1											7
Geologists	1		1	6		1	1		1		1	2		14
Hydrologists				1										1
Ecologists				2		2	4							8
Biologists	2													2
Environmental Scientists	9			6	9	3	3			1	3			34
Planners	7									1				8
Landscape Architects	9			1						1				11
Industrial Hygienists				1										1
Architects	1													1
Administrative	48	2	4	10	2	2	1			1	1			71
<b>TOTAL Staff</b>	<b>241</b>	<b>11</b>	<b>46</b>	<b>49</b>	<b>12</b>	<b>13</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>19</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>415</b>

APPENDIX B – COST SUMMARY

## PROBABLE COSTS

Promotional Number M03592-09002-0										Prepared By Chris Hatfield 7/22/2009		
Project Name Express Cleaners, Racine, Wisconsin												
Project Manager Chris Hatfield												
LABOR												
Employee & Title	Assoc Geologist	Sr Proj Mgr	Project Manager	Geologist	Graduate Geologist	Drafting	Sr Admin	Admin	Corp Admin	Total Hours	Total Dollars	
Billing Rate	\$ 139.00	\$ 125.00	\$ 105.00	\$ 85.00	\$ 75.00	\$ 70.00	\$ 85.00	\$ 55.00	\$ 54.00			
Phase/Task Name	Hours											
Install Monitoring Wells	0.50		2.00	16.00		2.00	0.50	1.00	1.00	23.00	\$ 1,931.00	
Remedial Action Plan and Health and Safety Plan Submittal	3.00	3.00	10.00	20.00		1.00	1.00	6.00	1.00	45.00	\$ 4,081.00	
Prepare Injection Permit Application	1.50	1.00	8.00	16.00		1.00	0.50	5.00	1.00	34.00	\$ 2,975.00	
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (5 field days)	1.00	1.00	6.00		60.00	3.00	1.00	2.00	2.00	76.00	\$ 5,907.00	
Remediate Unsaturated Soil - In-Situ (2 Injection events, 7 total field days)	3.00	2.00	12.00		150.00	2.00	1.00	2.00	3.00	175.00	\$ 13,674.00	
Remediate Unsaturated Soil - Ex-Situ (6 field days)	2.00	1.00	12.00	8.00	75.00	2.00	1.00	2.00	2.00	105.00	\$ 8,411.00	
Unsaturated Soil Post-Treatment Soil Sampling			2.00		12.00	1.00		2.00	1.00	18.00	\$ 1,344.00	
Install Vapor Mitigation System		1.00	4.00		8.00					13.00	\$ 1,145.00	
Post-Remediation Groundwater Monitoring	1.00		5.00	24.00	24.00	6.00	1.00	4.00	1.00	66.00	\$ 5,283.00	
Remedial Action and Groundwater Monitoring Summary Report	4.00	4.00	20.00	28.00	9.00	8.00	1.00	14.00	2.00	90.00	\$ 7,734.00	
<b>Total Hours by Employee</b>	16.00	13.00	81.00	112.00	338.00	26.00	7.00	38.00	14.00	645.00		
<b>Total Dollars by Employee</b>	\$2,224.00	\$1,625.00	\$8,505.00	\$9,520.00	\$25,350.00	\$1,820.00	\$595.00	\$2,090.00	\$756.00		\$ 52,485.00	
										<b>Total Consultant Cost</b>	<b>\$52,485.00</b>	

EQUIPMENT (UNITS)											
Equipment Item	55-Gallon Barrel	Groundwater Sampling Equipment	Laser Level	Soil Sampling Equipment	Carbon Dioxide Testing	Injection Equipment					Total Dollars
Billing Rate	\$50/each	\$200/day	\$100/day	\$125/day	\$5/test	\$350/day					
<b>Phase/Task Name</b>											
Install Monitoring Wells	1.00		1.00	1.00							\$ 275.00
Remedial Action Plan and Health and Safety Plan Submittal											\$ -
Prepare Injection Permit Application											\$ -
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (						6.00					\$ -
Remediate Unsaturated Soil - In-Situ (2 Injection events, 7 total f											\$ 2,100.00
Remediate Unsaturated Soil - Ex-Situ (6 field days)											\$ -
Unsaturated Soil Post-Treatment Soil Sampling				1.00							\$ 125.00
Install Vapor Mitigation System											\$ -
Post-Remediation Groundwater Monitoring	3.00	2.00			12.00						\$ 610.00
Remedial Action and Groundwater Monitoring Summary Report											\$ -
<b>Total Units</b>	4.00	2.00	1.00	2.00	12.00	6.00	0.00	0.00	0.00	0.00	\$3,110.00
										<b>Total Equipment Cost</b>	<b>\$3,110.00</b>

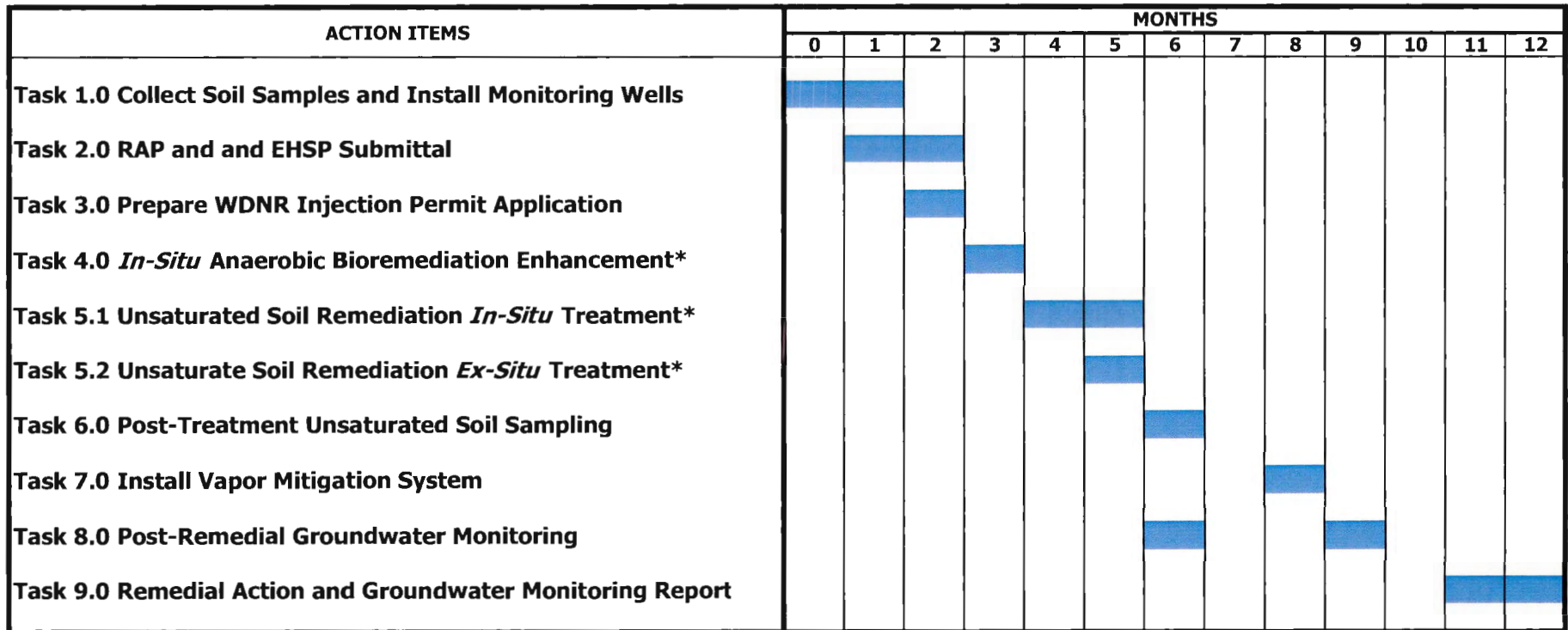
SUBCONTRACTORS												
Phase/Task Name	Orin Remediation	Vapor Mitigation System Install	Lab	Driller	RegenOx Chemical Delivery	Geoprobe	Excavator					Total Dollars
	Dollar Amount											
Install Monitoring Wells			\$268.00	\$1,500.00								\$1,768.00
Remedial Action Plan and Health and Safety Plan Submittal												\$0.00
Prepare Injection Permit Application												\$0.00
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (	\$52,290.00											\$52,290.00
Remediate Unsaturated Soil - In-Situ (2 injection events, 7 total fi					\$10,504.00	\$7,600.00						\$18,104.00
Remediate Unsaturated Soil - Ex-Situ (6 field days)					\$11,824.00		\$11,025.00					\$22,849.00
Unsaturated Soil Post-Treatment Soil Sampling			\$536.00			\$1,140.00						\$1,676.00
Install Vapor Mitigation System		\$2,000.00										\$2,000.00
Post-Remediation Groundwater Monitoring			\$4,010.00									\$4,010.00
Remedial Action and Groundwater Monitoring Summary Report												\$0.00
<b>Total Subcontractors</b>	<b>\$52,290.00</b>	<b>\$2,000.00</b>	<b>\$4,814.00</b>	<b>\$1,500.00</b>	<b>\$22,328.00</b>	<b>\$8,740.00</b>	<b>\$11,025.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$102,697.00</b>
											<b>Total Subcontractor Amount</b>	<b>\$102,697.00</b>

TOTALS		Subcontractor	Bid Item	Estimated Units	Unit	Unit Cost	Total Cost
Install Monitoring Wells	\$ 3,974.00						
Remedial Action Plan and Health and Safety Plan Submittal	\$ 4,081.00	Geoprobe	Mobilization - limited access equipment	2	lump sum	\$400	\$400
Prepare Injection Permit Application	\$ 2,975.00	Geoprobe	Injection Point Installation	6	day	\$1,200	\$7,200
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (	\$ 58,197.00						
Remediate Unsaturated Soil - In-Situ (2 injection events, 7 total fi	\$ 33,878.00					Subtotal	\$7,600
Remediate Unsaturated Soil - Ex-Situ (6 field days)	\$ 31,260.00	Laboratory	VOC Analysis (soil)	12	each	\$67	\$804
Unsaturated Soil Post-Treatment Soil Sampling	\$ 3,145.00	Laboratory	VOC Analysis (water)	38	each	\$67	\$2,546
Install Vapor Mitigation System	\$ 3,145.00	Laboratory	nitrate+nitrite (water)	12	each	\$11	\$132
Post-Remediation Groundwater Monitoring	\$ 9,903.00	Laboratory	sulfate (water)	12	each	\$10	\$120
Remedial Action and Groundwater Monitoring Summary Report	\$ 7,734.00	Laboratory	ethane/ethene/methane (water)	12	each	\$50	\$600
<b>Total Project</b>	<b>\$ 158,292.00</b>	Laboratory	TOC (water)	12	each	\$51	\$612
						Subtotal	\$4,814
		Well Installer	Mobilization	1	lump sum	\$400	\$400
		Well Installer	Drill and Sample	26	feet	\$10	\$260
		Well Installer	Monitoring Well Construction	26	feet	\$15	\$390
		Well Installer	Protective Cover	2	each	\$150	\$300
		Well Installer	Decontamination	1	hour	\$150	\$150
						Subtotal	\$1,500
		Excavator	Mobilization	1	lump sum	\$300	\$300
		Excavator	Excavator and Operator	6	days	\$1,200	\$7,200
		Excavator	Traffic Bond Gravel Fill	70	tons	\$15	\$1,050
		Excavator	Asphalt Removal and Disposal	3,300	square feet	\$0.75	\$2,475
						Subtotal	\$11,025
		Geoprobe	Mobilization - limited access equipment	1	lump sum	\$500	\$500
		Geoprobe	soil sample collection/borehole abandonment	32	foot	\$20	\$640
						Subtotal	\$1,140
		Regenesis	RegenOx Injection Chemical	3600	pounds	\$2.64	\$9,504
		Regenesis	Chemical Delivery to Site	1	lump sum	\$1,000	\$1,000
						Subtotal	\$10,504
		Regenesis	RegenOx Soil Mixing Chemical	4100	pounds	\$2.64	\$10,824
		Regenesis	Chemical Delivery to Site	1	lump sum	\$1,000	\$1,000
						Subtotal	\$11,824

**APPENDIX C – PROBABLE PROJECT SCHEDULE**



## Express Cleaners Proposed Remedial Action Probable Schedule



Note: assumes WDNR RAP and injection permit approval within 3 weeks of submittal

APPENDIX D – RESUMES OF KEY PROJECT PERSONNEL

# Christopher C. Hatfield, PG

## REGISTERED GEOLOGIST

### PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

- Qualified Hydrogeologist – Wisconsin
- Professional Geologist – Wisconsin
- Certified Site Assessor – Wisconsin
- Health & Safety Training for Hazardous Waste Operations (40-Hr. OSHA)

### QUALIFICATIONS

As a registered geologist, Mr. Hatfield assists with geologic, hydrogeologic, and environmental studies. He has 14 years of experience in environmental consulting and project management. Mr. Hatfield's project management responsibilities include technical direction, data analysis, report writing, budget development and tracking, scheduling, and coordination of fieldwork.

Mr. Hatfield has participated in and managed a variety of projects that include Phase I and II Environmental Site Assessments; underground storage tank site assessments; regulatory permitting and compliance in Wisconsin and Illinois; and investigation and remediation of sites involving soil and groundwater contaminated with petroleum compounds, agricultural chemicals, chlorinated compounds, and metals. His skills in dealing with a wide range of contaminants and his diligent site investigations have helped many clients protect and enhance their property values.

In addition, Mr. Hatfield is experienced at assisting clients with applications to obtain government funding for their projects. His strong understanding of grants and funding programs is a valuable asset to clients who are looking to enhance their property values and reduce liability. Mr. Hatfield guides them through their funding options and helps them maintain compliance with program requirements so that they can make the most of these funding mechanisms.

### AREAS OF EXPERTISE

- Contaminant investigation, feasibility studies, and remediation
- Groundwater exploration and modeling
- Aquifer performance testing and analysis
- Underground storage tank closure assessments and remediation
- Natural attenuation evaluation for petroleum hydrocarbons and chlorinated solvents
- Phase I and II Environmental Site Assessments
- Spill response coordination and implementation
- Brownfield redevelopment planning and implementation
- Regulatory agency negotiation and liaison

### EDUCATION

BS Geology, University of Wisconsin – Madison, 1995

# Stuart J. Gross, PG

## DIVISION LEADER – COMMERCIAL & INSTITUTIONAL REAL ESTATE

### PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

- Professional Geologist – Wisconsin
- Certified Hydrogeologist
- Certified Underground Storage Tank Professional
- Health & Safety Training for Hazardous Waste Operations (40-hr. OSHA)

### QUALIFICATIONS

Mr. Gross's knowledge and experience in environmental consulting and project management spans over 14 years. His project experience includes property assessment, improvement, development and redevelopment of a wide range of commercial and municipal properties. From retail developments to industrial brownfield sites and municipal facilities, he has evaluated sites and helped facilitate real estate transactions for numerous clients. His understanding of property conditions and end-use potential allow him to make recommendations and assist clients in maximizing property values. He also specializes in identifying and minimizing environmental concerns, including petroleum and chemical contamination. Mr. Gross's well-rounded understanding of commercial properties is an asset to clients who buy, sell, or lease such properties.

Presently, Mr. Gross serves as the firm's Commercial and Institutional Real Estate division leader. His responsibilities include direct oversight of technical project managers, tracking division profit/loss and capital expenditures, marketing and business development, and enforcement of practical standards and company policies to ensure quality workmanship and employee safety. In addition, Mr. Gross handles project scoping and budget development/control, client and regulatory agency coordination, development and execution of investigative and remedial workplans, report preparation and technical review, and project team coordination..

### AREAS OF EXPERTISE

- Phase I and II Environmental Site Assessments
- Brownfield redevelopment planning and implementation
- Wellhead protection plan development
- Groundwater exploration and modeling
- Aquifer performance testing and analysis
- Natural attenuation of petroleum compounds
- Spill response coordination and implementation
- Contaminant investigation, feasibility studies, and remedial design
- Regulatory agency negotiation and liaison
- Non-metallic mine reclamation
- Contract administration

### EDUCATION

BS Geology (emphasis on Hydrology), University of Wisconsin – Madison, 1994

# Hiedi A. Waller, PE

## SENIOR REGISTERED ENGINEER

### NOTABLE PROJECTS

- Forest County Potawatomi Community – Carter Water System Evaluation
- Forest County Potawatomi Community – Carter Wastewater System Evaluation
- Forest County Potawatomi Community – Swan Creek Engineering Improvements
- Forest County Potawatomi Community – Air Monitoring Station Design
- Forest County Potawatomi Community – Arlyn Alloway Pond Improvements

### PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

- Professional Engineer – Wisconsin, Michigan
- Health & Safety Training for Hazardous Waste Operations (40-hr. OSHA)
- Certified Technical Service Provider – Natural Resources Conservation Service
- Soil Erosion Inspector – Wisconsin Department of Commerce

### QUALIFICATIONS

Ms. Waller's knowledge and experience in engineering and project management spans almost 20 years. She specializes in evaluating and optimizing the performance of utility systems. Her expertise includes water and wastewater treatment systems, engineering feasibility reports, and community development plans.

As a senior registered engineer at Bonestroo, Hiedi regularly provides contract administration, project management and Tribal coordination. Serving as Northern Environmental's Tribal technical expert, Hiedi has completed a variety of projects with the Forest County Potawatomi Community and other Tribes. Her experience includes water and wastewater system evaluations, funding assistance, and community development plan coordination. Before joining Northern Environmental, Hiedi worked for the Indian Health Service in Wisconsin and Arizona, designing water and wastewater systems.

### AREAS OF EXPERTISE

- Third-party compliance monitoring
- Water supply and wastewater treatment system surveys
- Wastewater treatment lagoon modifications
- Bid specification design, engineering, and development
- Regulatory agency negotiation and liaison
- Utility capacity studies
- Community development planning
- Brownfield redevelopment planning
- Stormwater treatment and detention system designs
- HydroCAD stormwater quantity modeling
- WinSLAMM and SMADA stormwater quality modeling
- Erosion control and stormwater management plans
- Soil and groundwater contaminant investigation and remediation

### EDUCATION

MS coursework Civil/Environmental Engineering, University of New Mexico – Albuquerque, 1992

BS Mining Engineering, University of Wisconsin – Platteville, 1987

Graduate coursework included water chemistry, water quality, hazardous waste management, radioactive waste management, well drilling, and construction contracting. Additional advanced training attained by completing a course through the University of Wisconsin – Madison on Source Loading and Management Model (SLAMM) software.

# John J. Timm

## PROJECT GEOLOGIST

### PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

- Health & Safety Training for Hazardous Waste Operations (40-hr. OSHA)
- Petroleum Environmental Cleanup Fund Act (PECFA) – Wisconsin

### PROFESSIONAL EXPERIENCE

Mr. Timm has over 12 years of experience completing Environmental Site Assessments, data collection and interpretation, historical data interpretation, construction management, and inspection of remedial systems. He also specializes in field investigations for leaking underground storage tank closure assessments along with remedial programs.

As a project geologist, Mr. Timm has acted as field coordinator with large-scale remedial excavation and treatment programs for several thousand cubic yards of heavily contaminated soil. He has performed landfill closure projects that involved consolidating and capping incinerator ash, hazardous waste spill investigations and remediation, and emergency responses following accidental petroleum releases and spills.

### PROFESSIONAL SKILLS

- ASTM Transaction Screens, Phase I and Phase II Environmental Site Assessments
- Contaminant investigations, feasibility studies, and remedial design
- Emergency spill response coordination and implementation
- Regulatory agency negotiation and liaison
- Natural attenuation of petroleum hydrocarbons and chlorinated solvents
- Geologic and hydrogeologic analysis
- Groundwater exploration and modeling
- Soil and aquifer testing and analysis
- Borehole logging, screening, and sampling
- Landfill groundwater quality sampling and methane monitoring
- Indoor air quality assessments and sampling
- Construction management and oversight
- Mapping and surveying
- Property transfer assessments

### EDUCATION

MS Geology, University of Nevada – Las Vegas, 1984

BS Geology, University of Wisconsin – Oshkosh, 1981

# Judd H. Olson

## GRADUATE GEOLOGIST

### PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

- Health & Safety Training for Hazardous Waste Operations (40-hour OSHA)

### QUALIFICATIONS

As a graduate geologist, Mr. Olson's responsibilities include coordinating field operations, sampling and monitoring, working with subcontractors to ensure that fieldwork runs smoothly, and completing post-field analysis and report writing. He also constructs geologic and hydrogeologic maps and cross sections, and he evaluates distribution data.

Mr. Olson's project experience includes work on numerous sites that have contaminated soil and/or groundwater. His specific areas of expertise include petroleum-contaminated sites and dry cleaners. He is skilled at overseeing remediation efforts and documenting them to achieve site closure. His work often helps improve property values and protect landowners from liability. Mr. Olson's detailed field documentation also helps property owners maximize their eligibility for federal and state reimbursement programs.

### AREAS OF EXPERTISE

- Geologic mapping
- Soil and aquifer testing and analysis
- Borehole logging, screening and sampling
- Monitoring well installation, development and sampling
- Geologic, hydrogeologic and contaminant data evaluation
- Groundwater exploration and modeling
- Underground storage tank closure assessments and remediation
- Remediation documentation and oversight
- Non-metallic mine reclamation

### EDUCATION

BS Geology, Western Michigan University, Kalamazoo, 2006

Associate Degree, General Studies, Kalamazoo Valley Community College

APPENDIX E – CERTIFICATES OF INSURANCE



# ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
04/29/2009

<b>PRODUCER</b> <b>MN-A/E</b> <b>COBB STRECKER DUNPHY &amp; ZIMMERMANN</b> 150 S FIFTH STREET STE 2800 MINNEAPOLIS, MN 55402	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.												
<b>INSURED</b> <b>BONESTROO, INC</b> 2335 W HWY 36 ST PAUL, MN 55113	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:70%;">INSURERS AFFORDING COVERAGE</th> <th style="width:30%;">NAIC #</th> </tr> <tr> <td>INSURER A: <b>BEAZLEY INSURANCE COMPANY INC</b></td> <td><b>37540</b></td> </tr> <tr> <td>INSURER B:</td> <td></td> </tr> <tr> <td>INSURER C:</td> <td></td> </tr> <tr> <td>INSURER D:</td> <td></td> </tr> <tr> <td>INSURER E:</td> <td></td> </tr> </table>	INSURERS AFFORDING COVERAGE	NAIC #	INSURER A: <b>BEAZLEY INSURANCE COMPANY INC</b>	<b>37540</b>	INSURER B:		INSURER C:		INSURER D:		INSURER E:	
INSURERS AFFORDING COVERAGE	NAIC #												
INSURER A: <b>BEAZLEY INSURANCE COMPANY INC</b>	<b>37540</b>												
INSURER B:													
INSURER C:													
INSURER D:													
INSURER E:													

**COVERAGES**

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR	ADD'L TR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS												
		<b>GENERAL LIABILITY</b> <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR <hr/> GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC				EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$												
		<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$												
		<b>GARAGE LIABILITY</b> <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN EA ACC \$ AUTO ONLY: AGG \$												
		<b>EXCESS/UMBRELLA LIABILITY</b> <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <hr/> <input type="checkbox"/> DEDUCTIBLE RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$												
		<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:5%;">WC STATU-TORY LIMITS</td> <td style="width:5%;">OTH-ER</td> <td style="width:10%;"></td> </tr> <tr> <td colspan="2"></td> <td>E.L. EACH ACCIDENT \$</td> </tr> <tr> <td colspan="2"></td> <td>E.L. DISEASE - EA EMPLOYEE \$</td> </tr> <tr> <td colspan="2"></td> <td>E.L. DISEASE - POLICY LIMIT \$</td> </tr> </table>	WC STATU-TORY LIMITS	OTH-ER				E.L. EACH ACCIDENT \$			E.L. DISEASE - EA EMPLOYEE \$			E.L. DISEASE - POLICY LIMIT \$
WC STATU-TORY LIMITS	OTH-ER																	
		E.L. EACH ACCIDENT \$																
		E.L. DISEASE - EA EMPLOYEE \$																
		E.L. DISEASE - POLICY LIMIT \$																
<b>A</b>		<b>OTHER ARCHITECTS &amp; ENGR PROF LIAB (CLAIMS MADE)</b>	<b>V15SK309PNPA</b> <b>INCL'G POLLUTION</b>	<b>04/29/09</b>	<b>04/29/10</b>	<b>EACH CLAIM: \$5,000,000</b> <b>ANNUAL AGG: \$5,000,000</b>												

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS  
 FOR PROPOSAL PURPOSES ONLY

**CERTIFICATE HOLDER**

SAMPLE

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

SAMPLE

## **IMPORTANT**

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

## **DISCLAIMER**

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

# ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
04/29/09

**PRODUCER**  
**MN-A/E**  
**COBB STRECKER DUNPHY & ZIMMERMANN**  
 150 S FIFTH STREET STE 2800  
 MINNEAPOLIS, MN 55402

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

**INSURED**  
**BONESTROO, INC**  
 2335 W HWY 36  
 ST PAUL, MN 55113

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: <b>CINCINNATI INSURANCE COMPANY</b>	
INSURER B: <b>CINCINNATI CASUALTY COMPANY</b>	
INSURER C:	
INSURER D:	
INSURER E:	

**COVERAGES**

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR ADD'L TR	INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A		<b>GENERAL LIABILITY</b> <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> XCU <input checked="" type="checkbox"/> BROAD FORM PD GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input checked="" type="checkbox"/> LOC	CPP3666870	01/01/09	01/01/10	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	\$1,000,000 \$500,000 \$5,000 \$1,000,000 \$2,000,000 \$2,000,000
		<b>INCLUDES:</b> OPERATIONS OF SUBS-CONTINGENT CONTRACTUAL LIAB					
A		<b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	CAA5870245	01/01/09	01/01/10	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	\$1,000,000 \$ \$ \$
		<b>GARAGE LIABILITY</b> <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN EA ACC AUTO ONLY: AGG	\$ \$ \$
A		<b>EXCESS/UMBRELLA LIABILITY</b> <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> DEDUCTIBLE <input checked="" type="checkbox"/> RETENTION \$ 0	CPP3666870	01/01/09	01/01/10	EACH OCCURRENCE AGGREGATE	\$5,000,000 \$5,000,000 \$ \$
B		<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below OTHER	WC896071014	01/01/09	01/01/10	<input checked="" type="checkbox"/> WC STATU-TORY LIMITS <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	\$100,000 \$100,000 \$500,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS  
**FOR PROPOSAL PURPOSES ONLY**

**CERTIFICATE HOLDER**

SAMPLE

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

**SAMPLE**

## **IMPORTANT**

If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

## **DISCLAIMER**

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.