CHLORINATED VOLATILE ORGANIC COMPOUND RELEASE

PROPOSED REMEDIAL ACTION PLAN

EXPRESS CLEANERS SITE
3941 NORTH MAIN STREET
RACINE, WISCONSIN

WDNR FID #252010000

BRRTS #02-52-547631

August 2011

Project Number M04238-11002-0

Bonestroo

Table of Contents

FIGURES

APPENDICES

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 chlorinated volatile organic compounds (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. During April 2011, Bonestroo collected soil samples from three boreholes and installed two additional monitoring wells to delineate the extent of released CVOCs in soil and groundwater.

In a July 27, 2011 letter, Gonzalez, Saggio, & Harlan, LLP requested a revised remedial action proposal. The Request for Proposal (RFP) included possible building demolition, active soil and groundwater remediation, contaminated soil vapor mitigation, groundwater monitoring, and associated permitting and reporting. This proposal was prepared in response to the RFP and outlines Bonestroo, Inc. (Bonestroo's) technical approach, schedule, cost, and personnel to remediate the CVOC release identified at the Site in response to the RFP.

Bonestroo employs more than 300 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

Bonestroo is pleased to submit this proposal to Gonzalez, Saggio, & Harlan, LLP (Gonzalez, Saggio, & Harlan) 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.

2.1 Requested Work Scope

In a July 27, 2011 letter, Gonzalez, Saggio, & Harlan requested a remedial action bid proposal for varying scopes of work.

- Remediation of on-site soil and groundwater following demolition of all of part of the building.
- Remediation of on-site soil and groundwater following without demolition of the building.
- Remediation of off-site contamination (adjacent SC Johnson property) utilizing accelerated anaerobic bioremediation (edible oil substrate or similar) and excavation of contaminated soils (approximately 100 tons)
- Remediation of soil and groundwater according to Chapter NR 722, Wisconsin Administrative Code (NR 722, Wis. Adm. Code).
- Pilot testing, if necessary
- Vapor mitigation, if necessary

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 CVOC vapors from entering the Site building or migrating off-site, 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 SCOPE OF SERVICES

The proposed workplan was designed to address the items identified in the Request for Remedial Action Bid Proposal (RFP), 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 remediation. A structured program facilitates efficient project completion and limits overall cost.

In response to the RFP, Bonestroo has designed a combined approach to remedial given each of the scenarios presented in the RFP, specifically items 3(a), 3(b), 4. They specific actions in each scenario are:

1. On-Site Remediation Including Complete Building Demolition (RFP Item 3(a))
    a. Building Demolition
    b. In-Situ Anaerobic Bioremediation Enhancement in Groundwater
    c. Chemical Oxidation via Soil Mixing in Unsaturated Soils
    d. Excavation of Residual Contamination
    e. Post Remediation Soil and Groundwater Sampling
2. On-Site Remediation Assuming No Building Demolition(RFP Item 3(b))
    a. In-Situ Anaerobic Bioremediation Enhancement in Groundwater
    b. Chemical Oxidation via Soil Mixing in Unsaturated Soils on the exterior of the building
    c. Chemical Oxidation via Injection in Unsaturated Soils beneath the building
    d. Post Remediation Soil and Groundwater Sampling
3. Off-Site Remediation (SC Johnson Property) (RFP Item 4)
    a. In-Situ Anaerobic Bioremediation Enhancement in Groundwater
    b. Excavation of contaminated unsaturated soils near MW-13
    c. Post Remediation Soil and Groundwater Sampling

The remedial alternatives and proposed scope of work are described in greater detail in the following section. Proposed timelines for each remedial alternative are presented in Appendix B.

On-Site Remediation- Including Complete Building Demolition (RFP Item 3(a))

RAP AND ENVIRONMENTAL HASP SUBMITTAL

Using information provided in the RFP and the results of previous investigative work, Bonestroo will submit a final Remedial Action Plan (RAP) to the WDNR for review and approval. In addition, Bonestroo will be prepare an environmental health and safety plan

(HASP) specifically addressing health and safety issues associated with the proposed remedial alternatives.

BUILDING DEMOLITION

Bonestroo will subcontract a qualified excavation and demolition contractor to demolish the entire on-site building for greater access to soil for remedial purposes. This contractor will be responsible for demolition of the building, including site supervision, dust control, permitting, utility disconnection and debris disposal. As noted in the RFP, it is assumed that no asbestos-containing materials will be present in the building.

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 3DMe™ (enhanced anaerobic bioremediation) 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 permit 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:

- A discussion of how 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.

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 Bonestroo's previous work at the Site, the use of a substrate which promotes accelerated anaerobic degradation is recommended to reduce the concentrations of chlorinated solvents in groundwater. The 3-D Microemulsion 75 (3DMe) substrate from Regenesis was selected due its performance in similar case studies and its greater ability for subsurface distribution in saturated soils as compared to emulsified vegetable oils Injection of 3DMe prior to unsaturated soil treatment provides additional protection from potential contaminant plume expansion that can be associated with unsaturated soil treatment.

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, a 10-foot radius of influence for each injection point is expected and a 33 percent overlap will be used to ensure adequate coverage. Approximately 80 injection locations will be used for treatment of contaminated groundwater contained within approximately 3100 cubic yards (yd^3) of soil. The lateral extent of groundwater to be treated is shown on Figure 1. 3DMe will be injected using a "bottom up" technique from the base of the saturated silty sand to the top of the water table (2 to 9 feet below grade [fbg]).

The injection will be completed in two phases, the first complete approximately one week prior to the treatment of unsaturated zone soils. This phase will include in injection of approximately 50% of the planned substrate into 50% of the planned injection points, located predominantly around the perimeter of the planned future excavation (discussed below). This will provide protection from potential contaminant plume expansion that may be associated with unsaturated soil treatment. The remainder of the injection will be completed approximately 2-4 weeks after the unsaturated zone treatment is completed and will focus on the interior portion of the groundwater plume.

IN-SITU AND EX-SITU UNSATURATED SOIL REMEDIATION

To address CVOC contamination present in unsaturated soils we propose an in-situ chemical oxidant application via soil mixing to treat soils to non-hazardous levels followed by the excavation and off-site disposal of any soils above the stated remedial goals (1230 µg/kg for PCE). Reduction of CVOC concentrations coupled with removal of all soils above the remedial goals will also prevent the need for a surface barrier (i.e., pavement or building cap) requirement as a future condition of case closure.

IN-SITU SOIL MIXING

Following the demolition of the building and removal of overlying pavement, soils which currently exceed the stated remedial goals be treated with RegenOx™, a chemical oxidant, to reduce the concentrations of CVOCs to near or below the stated remedial goals and to greatly reduce the disposal costs of any soils which to do not meet these goals for on-site reuse. Based on available soil data, approximately 1,200 cubic yards of soil will be treated. The lateral extent of unsaturated soil to be treated in-situ is shown in Figure 2.

The soil mixing operation will consist of the following elements:

- Dividing the remediation area into 12 foot by 12 foot treatment cells (approximately 40-45 cells)
- Excavation of soil in each treatment cell to 4 to 5 feet fbg,
- Stockpiling of soil on top adjacent treatment cells,
- Mixing using excavation equipment to break up any cohesive soils to allow for thorough distribution of the chemical oxidant
- Placement of the soil back into the excavation in 1 foot lifts,
- Spraying/flooding the soil with the chemical oxidant, and
- Mixing of soil and oxidant using excavation equipment.

POST-TREATMENT UNSATURATED SOIL SAMPLING

Approximately 1 month after the completion of soil mixing, Bonestroo will collect unsaturated soil samples from twenty boreholes (one from every two remedial cells) located within the treatment area using truck- and/or 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.

SOIL EXCAVATION

After confirming the reduction of CVOCs in soil, any remaining soils which exceed the remedial goal will be excavated and disposed off-site as non-hazardous waste. For the purposes of cost and scoping, we have assumed that approximately 80% of the 1,200 cubic yards of treated soil will require off-site disposal as a non-hazardous waste.

POST-REMEDIAL GROUNDWATER MONITORING

Following completion of the injections and soil mixing, 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 60-90 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. 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.

REMEDIAL ACTION AND GROUNDWATER MONITORING SUMMARY REPORT

The results of remedial action and confirmatory sampling conducted both on- and off-site, 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 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.

On-Site Remediation- Assuming No Building Demolition (Item 3(b))

RAP AND ENVIRONMENTAL HASP SUBMITTAL

Bonestroo will prepare a final RAP and HASP as described above in the response to Item 3(a).

PREPARE WDNR INJECTION PERMIT APPLICATION

Bonestroo will prepare a WDNR Injection Permit Application as described above in the response to Item 3(a).

IN-SITU ANAEROBIC BIOREMEDIATION ENHANCEMENT IN GROUNDWATER

In-Situ anaerobic bioremediation enhancement will be conducted following the same scope of work as described above in the response to Item 3(a). As above, the injection will be completed in two phases; the first will be completed approximately one week

prior to the treatment of unsaturated zone soils. This phase will include in injection of approximately 50% of the planned substrate into 50% of the planned injection points, located predominantly around the perimeter of the planned future excavation (discussed below). This will provide protection from potential contaminant plume expansion that may be associated with unsaturated soil treatment. The remainder of the injection will be completed approximately 2-4 weeks after the unsaturated zone treatment is completed and will focus on the interior portions of the groundwater plume.

IN-SITU UNSATURATED SOIL REMEDIATION

Unsaturated soil remediation will be completed in-situ using the application of RegenOx via soil mixing and direct injection. All unsaturated soil accessible for excavation (paved and unpaved areas lacking significant underground utilities) will be treated by soil mixing. Inaccessible soil beneath the Property building and surrounding shallow buried utilities will be treated via chemical injection. The targeted soil treatment zone will extend from the ground-surface or immediately below paved surfaces to approximately 4 to 5 fbg. The lateral extent of unsaturated soil to be treated by each method is shown in Figure 3. Treatment methods are described below.

IN-SITU INJECTION

Existing pavement and building cover will prevent injection chemicals from surfacing and enhance the dispersal of treatment chemicals to contaminated unsaturated soil. Therefore injection will be completed before removal of adjacent pavement during soil mixing operations. Bonestroo proposes three injection events approximately 3 to four weeks 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 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 and third injections would be offset from the previous injection to create even better distribution of the RegenOx™. Approximately forty injection locations will be used for treatment of 510 yd^3 of unsaturated contaminated soil.

IN-SITU SOIL MIXING

Based on available soil data, approximately 690 cubic yards of soil is accessible for soil mixing. The soil mixing operation will be conducted as described above utilizing approximately 25 treatment cells.

POST-TREATMENT UNSATURATED SOIL SAMPLING

Approximately 1 month after the completion of soil mixing, Bonestroo would collect unsaturated soil samples from twenty boreholes (one from every two remedial cells on the building exterior and six to eighth boreholes on the building interior) located within the treatment area using truck- and/or 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.

The results of this sampling will determine if additional treatment of residual contamination is needed to reach remedial objectives.

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.

POST-REMEDIAL GROUNDWATER MONITORING

Post-remedial groundwater sampling will be conducted as described above in the response to Item 3(a).

REMEDIAL ACTION AND GROUNDWATER MONITORING SUMMARY REPORT

Bonestroo will prepare a Remedial Action and Groundwater Monitoring Summary Report as described above in the response to Item 3(a).

Remedial Work Required on the Adjacent SCJ Property (Item 4)

IN-SITU ANAEROBIC BIOREMEDIATION ENHANCEMENT IN GROUNDWATER

Based on the available groundwater data, the groundwater contamination present on the adjacent S.C. Johnson Company (SCJ) property extends eastward from the contamination identified on the Express Cleaners site. Therefore, groundwater on the SCJ property will be treated in same manner as the on-site groundwater. In-Situ anaerobic bioremediation enhancement will be conducted following the same scope of work as described above in the response to Item 3(a). The off-site injection will also be completed in two phases, the first complete approximately one week prior to the treatment of unsaturated zone soils. This will provide protection from potential contaminant plume expansion that may be associated with unsaturated soil treatment. The remainder of the injection will be completed approximately 2-4 weeks after the unsaturated zone treatment is completed.

SOIL EXCAVATION

In response to your request, Bonestroo will direct and oversee the removal of approximately 100 tons of soil around monitoring well MW-13. The selected excavation contractor will provide verified-clean, topsoil fill and seed all disturbed areas with a high quality native seed mix.

POST-REMEDIAL GROUNDWATER MONITORING

Post-remedial groundwater sampling will be conducted as described above in the response to Item 3(a).

REMEDIAL ACTION AND GROUNDWATER MONITORING SUMMARY REPORT

Bonestroo will include the activities conducted in on the SCJ Property in the Remedial Action and Groundwater Monitoring Summary Report as described above in the response to Item 3(a).

Other Considerations

Based on your Request, we would like to provide the following additional information to address issues of potential concern.

PILOT TESTING

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. The geology (mainly permeable sandy soils) and relatively high hydraulic conductivity observed at the Site are conducive to the selected combination of remedial methods. Existing soil and groundwater data also demonstrates that reductive dechlorination is occurring naturally and should be accelerated by the treatments.

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.

VAPOR MITIGATION

We believe that as designed, the currently proposed remedial action plan will reduce concentrations of CVOCs in soil and groundwater to levels which do not pose a vapor mitigation threat. If the on-site building is not demolished and remedial goals cannot be met (or are not cost-effective) due to the limited access to the soil, a vapor mitigation system for the on-site building may be required.

VPLE PROGRAM

Wisconsin's Voluntary Party Liability Exemption (VPLE) program is a process by which certain liability exemptions can be provided following the successful completion of environmental investigation and remediation. Interested parties can enroll in the VPLE program at any time during the investigation or remediation but additional assessment, investigation, or cleanup work at the property, where actions were taken prior to being in the VPLE process, may be required. At this point, the investigation completed at the Site has been deemed sufficient to allow the remedial action to proceed. Enrolling in the VPLE process now would likely delay the remedial process and could prompt additional investigation of areas on and off-site; ultimately extending the timeframe to obtain case closure.

The WDNR will take a more "hands on" approach if it is decided to enter the Site in the VPLE process. Estimating the additional time and expense of doing so is difficult but could add several months to the project timeline and require at least $10,000 in additional expense.

4.0 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 scope of work in RFP is presented below.

On-Site Remediation- Including Complete Building Demolition (RFP Item 3(a))

Building Demolition	
Consultant	$ 697.50
Subcontractors	78,800.00
Task Subtotal	**$79,497.50**
RAP and Environmental HASP Submittal	
Consultant	**$4,239.00**
Prepare WDNR Injection Permit Application	
Consultant	**$3,091.00**
In-Situ Anaerobic Bioremediation Enhancement in Groundwater	
Consultant	$ 12,421.00
Equipment	600.00
Subcontractors	44,965.00
Task Subtotal	**$57,986.00**
Unsaturated Soil Remediation- Chemical Oxidation by Soil Mixing	
Consultant	$6,357.00
Equipment	500.00
Subcontractors	74,822.00
Task Subtotal	**$81,679.00**
Post-Treatment Unsaturated Soil Sampling	
Consultant	$ 2,521.00
Equipment	450.00
Subcontractors	4,150.00
Task Subtotal	**$7,121.00**
Unsaturated Soil Remediation- Excavation and Disposal	
Consultant	$4,231.00
Equipment	300.00
Subcontractors	105,422.00
Task Subtotal	**$109,953.00**

Post-Remedial Groundwater Monitoring	
Consultant	$3,637.00
Equipment	810.00
Subcontractors	3,072.00
Task Subtotal	**$7,519.00**
Remedial Action and Groundwater Monitoring Summary Report	
Consultant	**$ 8,032.00**
TOTAL PROBABLE COST RELATED TO RFP ITEM 3(a)	**$359,117.50**

On-Site Remediation- Assuming No Building Demolition (RFP Item 3(b))

RAP and Environmental HASP Submittal	
Consultant	**$4,239.00**
Prepare WDNR Injection Permit Application	
Consultant	**$3,091.00**
In-Situ Anaerobic Bioremediation Enhancement in Groundwater	
Consultant	$ 12,421.00
Equipment	600.00
Subcontractors	44,965.00
Task Subtotal	**$57,986.00**
Unsaturated Soil Remediation- Chemical Oxidation by Injection	
Consultant	$28,182.00
Equipment	1,500.00
Subcontractors	92,080.00
Task Subtotal	**$121,762.00**
Unsaturated Soil Remediation- Chemical Oxidation by Soil Mixing	
Consultant	$4,707.00
Equipment	300.00
Subcontractors	47,892.00
Task Subtotal	**$52,899.00**
Post-Treatment Unsaturated Soil Sampling	
Consultant	$ 2,521.00
Equipment	450.00
Subcontractors	4,150.00
Task Subtotal	**$7,121.00**
Post-Remedial Groundwater Monitoring	
Consultant	$3,637.00
Equipment	910.00
Subcontractors	3,072.00
Task Subtotal	**$7,619.00**

Remedial Action and Groundwater Monitoring Summary Report		
Consultant		**$ 8,032.00**
TOTAL PROBABLE COST RELATED TO RFP ITEM 3(b)		**$262,749.00**

Remedial Work Required on the Adjacent SCJ Property (Item 4)

In-Situ Anaerobic Bioremediation Enhancement in Groundwater		
Consultant		$ 4,616.00
Equipment		200.00
Subcontractors		18,272.00
Task Subtotal	**$23,088.00**	
Unsaturated Soil Remediation- Excavation and Disposal		
Consultant		$1,865.00
Equipment		100.00
Subcontractors		8,520.00
Task Subtotal	**$10,485.00**	
TOTAL PROBABLE COST RELATED TO RFP ITEM 4		**$33,573.00**

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 A.

5.0 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.

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.

On July 27, 2011, Bonestroo announced that it had signed a letter of intent to join with Stantec, ranked in 2011 by Engineering News Record (ENR) as the 25th largest global design firm. In terms of environmental consulting and studies, Stantec is ranked by ENR as the 10th largest international firm. Stantec brings a significant number of additional environmental services to those currently offered by Bonestroo, and will bring significant additional resources for projects in Wisconsin, including approximately 70 additional environmental staff located in offices in Cottage Grove (Madison), Menasha, Rice Lake, and Stevens Point. Bonestroo's outstanding reputation as a leader in engineering, planning, and environmental science, combined with Stantec's global experience, breadth of knowledge, and resources will provide our clients with access to added expertise and resources in multiple disciplines.

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 – Norridge, 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 trough the excavation with limited follow up needed around the perimeters of the area to achieve the remedial goals.

Magic Touch Cleaners	Mr. Barry Kaliner	708-452-4600

Garber's Cleaners – Champaign, Illinois

Garber's Cleaners retained Bonestroo 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 combination of the injection of a chemical oxidant in the apparent source area and excavation of remaining highly contaminated soil. 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. A draft No Further Remediation letter was issued to the site by the Illinois EPA pending installation of an engineered barrier at the site.

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 2 years after the injection, overall CVOC concentrations have decreased by over 99 percent in groundwater adjacent to the EOS injection area and the WDNR closed the site.

Former Mobile Home Park	Ms. Margaret Reich-Miner	262-242-2194

6.0 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 C. 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 16 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. Andy Swaim** will supervise and document the field activities completed as part of the remedial action plan. Mr. Swaim has over 5 years experience conducting subsurface investigations and remedial action for a variety of contaminants.

Mr. Judd Olson will coordinate and supervise the remedial action. Mr. Olson has successfully directed remedial actions consisting of chemical injections, soil mixing and excavation, and in-situ bioremediation enhancement at numerous sites contaminated with CVOCs and has over 6 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 has 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 is 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.

7.0 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.

8.0 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.

9.0 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.

10.0 INSTITUTIONAL ISSUES

10.1 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.

10.2 INSURANCE

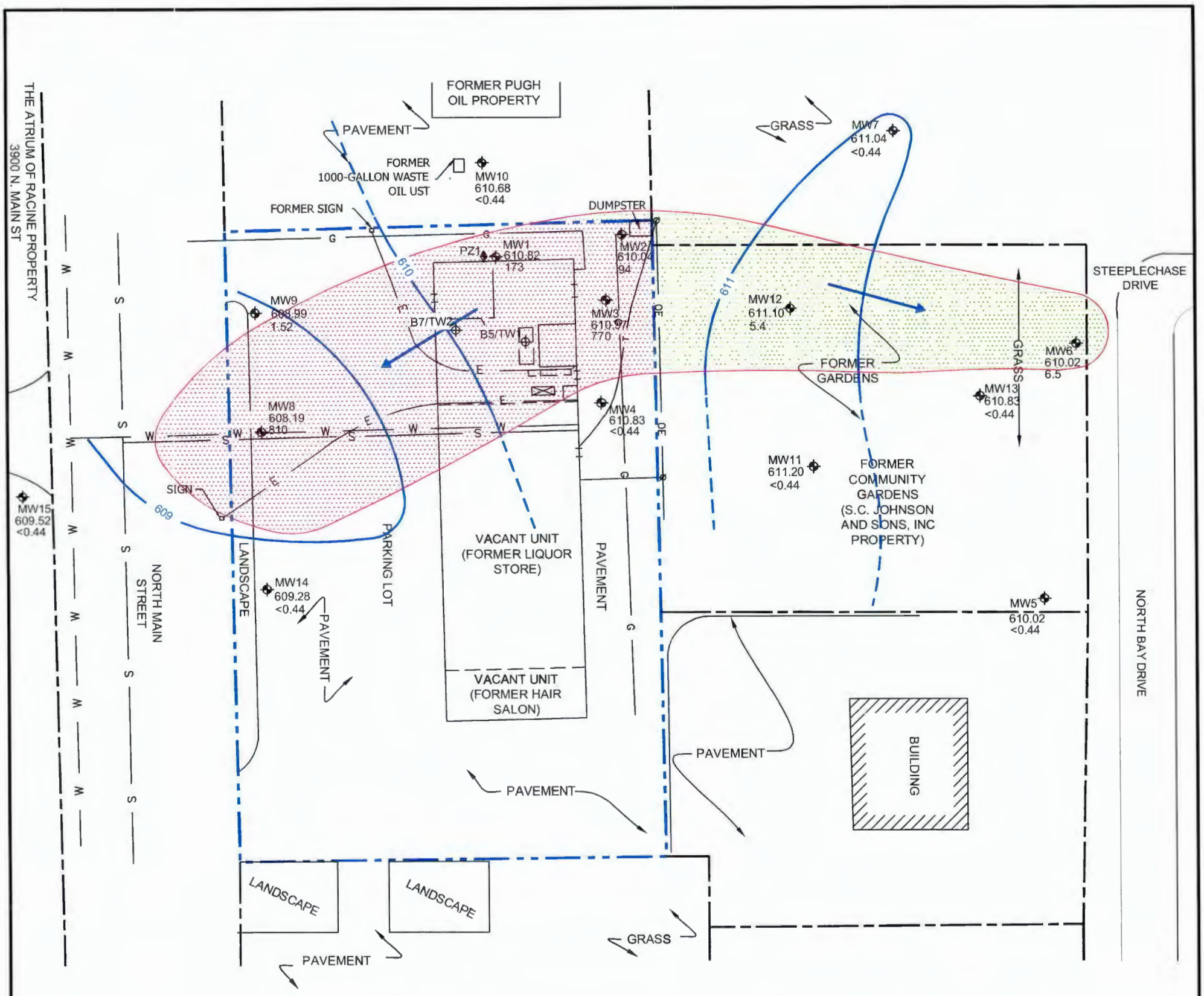
In conjunction with the necessary technical expertise, Bonestroo offers our clients a complete package of insurance, including statutory liability, comprehensive general liability, and automobile liability, E&O, and EPL policy. The EPL carried by Bonestroo is a companion policy to our regular E&O coverage 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.

10.3 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.

10.4 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
- OE — OVERHEAD ELECTRIC LINE
- X — FENCE
- G — UNDERGROUND GAS LINE
- W — WATERMAIN
- E — BURIED ELECTRIC LINE
- S — BURIED SANITARY SEWER
- T — BURIED TELEPHONE LINE
- ∅ UTILITY POLE
- FORMER DRY CLEANING MACHINE LOCATION
- EXISTING DRY CLEANING MACHINE

- MW1 610.82 173 — 2" MONITORING WELL LOCATION AND IDENTIFICATION WITH GROUNDWATER ELEVATION AND PCE CONCENTRATIONS IN µg/L
- PZ1 — PIEZOMETER LOCATION AND IDENTIFICATION
- TW2 — 1" TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION
- GROUNDWATER FLOW DIRECTION
- 608.5 — GROUNDWATER ELEVATION CONTOUR
- ESTIMATED ONSITE EXTENT OF GROUNDWATER WITH PCE CONCENTRATIONS EXCEEDING NR140 ES AND INJECTION AREA
- ESTIMATED OFFSITE EXTENT OF GROUNDWATER WITH PCE CONCENTRATIONS EXCEEDING NR140 ES AND INJECTION AREA

SCALE IN FEET
20 0 20 40

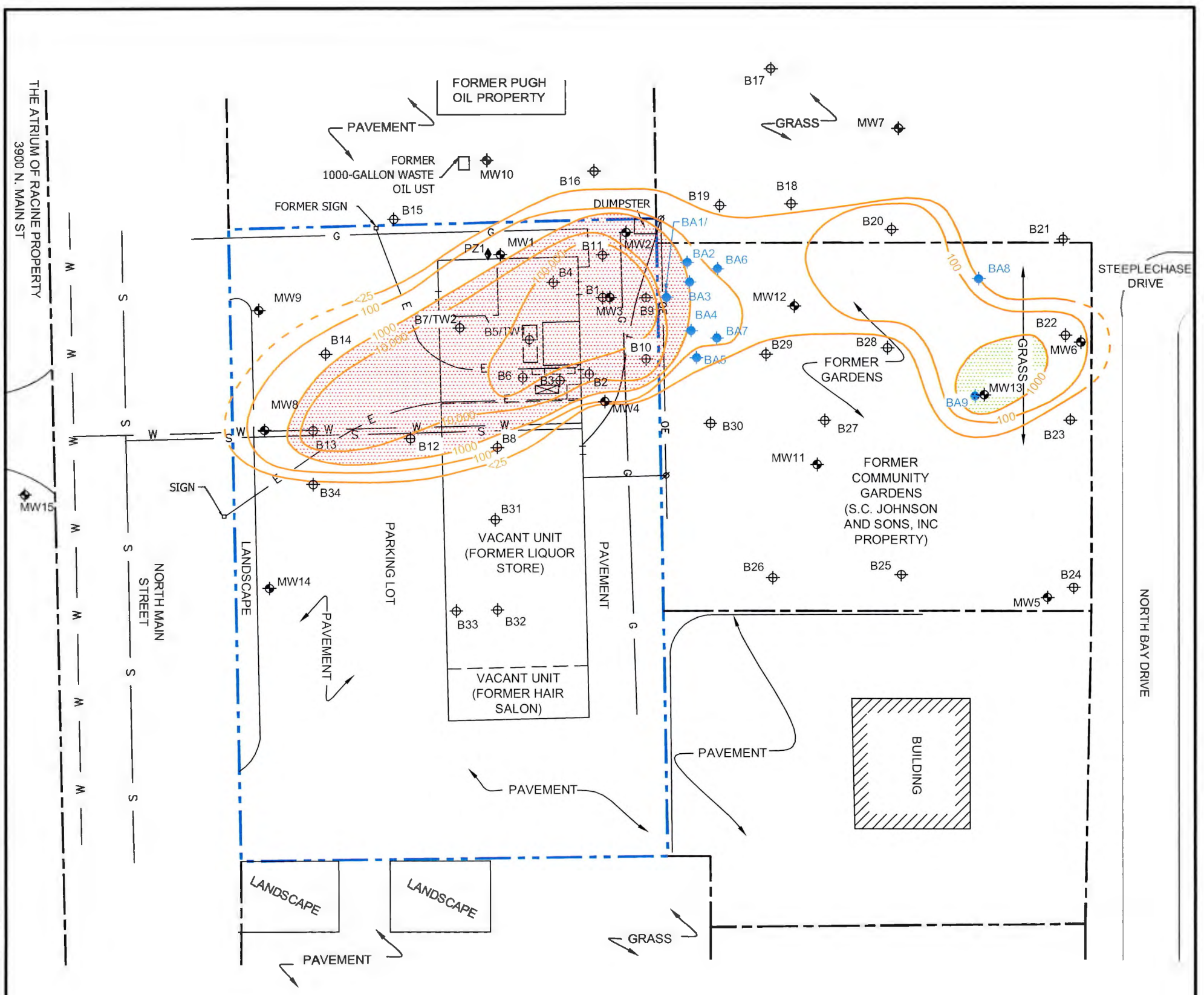
Bonestroo
12075 N CORPORATE PKWY, STE 200
MEQUON, WISCONSIN 53092
P: 262-241-4466 F: 262-241-4901

N:\359Z\359Z090010\Figures\M04238-11002_FIG 1_RACINE.dwg

GROUNDWATER REMEDIATION AREA

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

DATE:	DRAWN BY:	REVISED:	PROJECT NUMBER:	FIGURE
04/15/08	BMP	2011-08-17 AJS	M04238-11002-0	1



LEGEND

- SUBJECT PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARIES
- OE — OVERHEAD ELECTRIC LINE
- G — UNDERGROUND GAS LINE
- W — WATERMAIN
- E — BURIED ELECTRIC LINE
- S — BURIED SANITARY SEWER
- T — BURIED TELEPHONE LINE
- ∅ UTILITY POLE
- FORMER DRY CLEANING MACHINE LOCATION
- EXISTING DRY CLEANING MACHINE
- MW1 — 2" MONITORING WELL LOCATION AND IDENTIFICATION
- B34 — BOREHOLE LOCATION AND IDENTIFICATION
- BA5 — HAND AUGER NEAR SURFACE SAMPLE LOCATION
- PZ1 — PIEZOMETER LOCATION AND IDENTIFICATION
- TW2 — 1" TEMPORARY MONITORING WELL LOCATION
- 100 — UNSATURATED SOIL PCE ISOCONCENTRATION LINE IN MICROGRAMS PER KILOGRAM
- UNSATURATED SOIL REMEDIATION AREA BY IN-SITU SOIL TREATMENT AND MIXING
- UNSATURATED OFF-SITE SOIL REMEDIATION AREA BY EXCAVATION AND DISPOSAL

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
MW14	3-5	<24
MW15	2-4	<24
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

Sample Location	Sample Depth (feet)	Soil PCE Concentration (ug/kg)
B15	4-6	<25
B16	2-4	<25
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
B34	3-5	<24
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	3	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

SCALE IN FEET
20 0 20 40

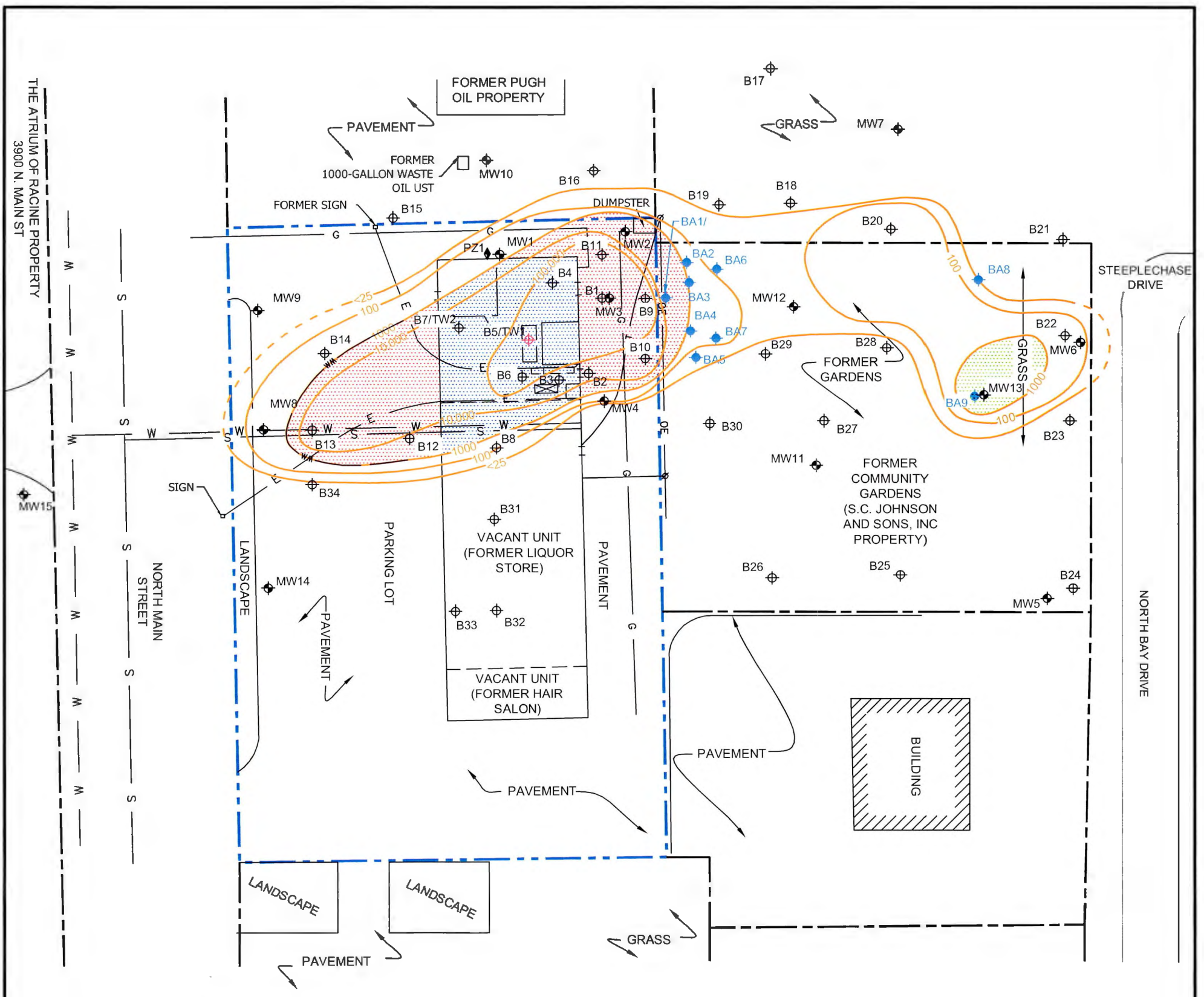
Bonestroo
12075 N CORPORATE PKWY, STE 200
MEQUON, WISCONSIN 53092
P: 262-241-4466 F: 262-241-4901

N:\3592\3592090010\Figures\M04238-11002_FIG 2_RACINE.dwg

SOIL REMEDIATION AREA - BUILDING DEMOLITION

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

DATE:	DRAWN BY:	REVISED:	PROJECT NUMBER:	FIGURE
04/15/08	BMP	2011-08-17 AJS	M04238-111002-0	2



LEGEND

- SUBJECT PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARIES
- OE — OVERHEAD ELECTRIC LINE
- G — UNDERGROUND GAS LINE
- W — WATERMAIN
- E — BURIED ELECTRIC LINE
- S — BURIED SANITARY SEWER
- T — BURIED TELEPHONE LINE
- UTILITY POLE
- FORMER DRY CLEANING MACHINE LOCATION
- EXISTING DRY CLEANING MACHINE
- MW1 — 2" MONITORING WELL LOCATION AND IDENTIFICATION
- B34 — BOREHOLE LOCATION AND IDENTIFICATION
- BA5 — HAND AUGER NEAR SURFACE SAMPLE LOCATION
- PZ1 — PIEZOMETER LOCATION AND IDENTIFICATION
- TW2 — 1" TEMPORARY MONITORING WELL LOCATION
- 100 — UNSATURATED SOIL PCE ISOCONCENTRATION LINE IN MICROGRAMS PER KILOGRAM
- UNSATURATED SOIL REMEDIATION AREA BY IN-SITU SOIL TREATMENT AND MIXING
- UNSATURATED OFF-SITE SOIL REMEDIATION AREA BY EXCAVATION AND DISPOSAL
- UNSATURATED SOIL REMEDIATION AREA BY IN-SITU INJECTION TREATMENT

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
MW14	3-5	<24
MW15	2-4	<24
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

Sample Location	Sample Depth (feet)	Soil PCE Concentration (ug/kg)
B15	4-6	<25
B16	2-4	<25
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
B34	3-5	<24
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	3	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

SCALE IN FEET
20 0 20 40

Bonestroo
12075 N CORPORATE PKWY, STE 200
MEQUON, WISCONSIN 53092
P: 262-241-4466 F: 262-241-4901

N:\3592\3592090010\Figures\M04238-11002_FIG-3_RACINE.dwg

SOIL REMEDIATION AREA

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

DATE: 04/15/08 | DRAWN BY: BMP | REVISED: 2011-08-17 AJS | PROJECT NUMBER: M04238-111002-0 | FIGURE 3

APPENDIX A – COST SUMMARY

PROBABLE COSTS
OFF-SITE REMEDIATION

Promotional Number M04238-11002-0

Prepared By Michael Butler

Project Name Express Cleaners, Racine, Wisconsin

Project Manager Chris Hatfield

LABOR

Employee & Title	Assoc Geologist	Sr Proj Mgr	Project Manager	Geologist	Drafting	Sr Admin	Admin	Corp Admin	Total Hours	Total Dollars
Billing Rate	$ 149.00	$ 128.00	$ 115.00	$ 85.00	$ 85.00	$ 87.00	$ 55.00	$ 56.00		
Phase/Task Name	Hours									
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (2 field days)	1.00	1.00	4.00	40.00	2.00	1.00	2.00	2.00	53.00	$ 4,616.00
Remediate Unsaturated Soil - Excavation and Disposal (1 field days)	1.00	1.00	2.00	12.00	1.00	1.00	2.00	1.00	21.00	$ 1,865.00
Total Hours by Employee	2.00	2.00	6.00	52.00	3.00	2.00	4.00	3.00	74.00	
Total Dollars by Employee	$298.00	$256.00	$690.00	$4,420.00	$255.00	$174.00	$220.00	$168.00		$ 6,481.00
									Total Consultant Cost	**$6,481.00**

EQUIPMENT (UNITS)

Equipment Item	55-Gallon Barrel	Groundwater Sampling Equipment	Laser Level	Soil Sampling Equipment	Carbon Dioxide Testing	Vehicle						Total Dollars
Billing Rate	$50/each	$200/day	$100/day	$125/day	$5/test	$100/day						
Phase/Task Name												
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (2 field days)						2.00						$ 200.00
Remediate Unsaturated Soil - Excavation and Disposal (1 field days)						1.00						$ 100.00
Total Units	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00		$300.00
										Total Equipment Cost		**$300.00**

SUBCONTRACTORS

Phase/Task Name	Demolition Contractor	Excavation Contractor	Drilling Contractor	Laboratory	Regenesis							Total Dollars
	Dollar Amount											
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (2 field days)			$2,950.00		$15,322.00							$18,272.00
Remediate Unsaturated Soil - Excavation and Disposal (1 field days)		$8,520.00										$8,520.00
Total Subcontractors	$0.00	$8,520.00	$2,950.00	$0.00	$15,322.00	$0.00	$0.00	$0.00	$0.00	$0.00	0	$26,792.00
											Total Subcontractor Amount	**$26,792.00**

	TOTALS
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (2 field day	$ 23,088.00
Remediate Unsaturated Soil - Excavation and Disposal (1 field days)	$ 10,485.00
Total Project	**$ 33,573.00**

Subcontractor	Bid Item	Estimated Units	Unit Cost	Total Cost
Regenesis	3DMe Injection Chemical	2666.4	$3.38	$9,012
Regenesis	Injection Trailer and Equipment	2	$2,275	$4,550
Regenesis	3DMe Sales Tax and Delivery	1	$1,760	$1,760
			Subtotal	$15,322
Drilling contractor	Mobilization	2	$200	$400
Drilling contractor	3DMe injection (per day)	2	$1,275	$2,550
			Subtotal	$2,950
Excavator	Removal 100 tons to Landfill	1	$6,300	$6,300
Excavator	Soil Backfill and Restoration (100 cy)	1	$2,220	$2,220
			Subtotal	$8,520

PROBABLE COSTS
ON-SITE REMEDIATION, ASSUMING NO BUILDING DEMOLITION

Promotional Number M04238-11002-0

Prepared By Michael Butler

Project Name Express Cleaners, Racine, Wisconsin

Project Manager Chris Hatfield

LABOR

Employee & Title	Assoc Geologist	Sr Proj Mgr	Project Manager	Geologist	Drafting	Sr Admin	Admin	Corp Admin	Total Hours	Total Dollars
Billing Rate	$ 149.00	$ 128.00	$ 115.00	$ 85.00	$ 85.00	$ 87.00	$ 55.00	$ 56.00		
Phase/Task Name	Hours									
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	$ 4,239.00
Prepare Injection Permit Application	1.50	1.00	8.00	16.00	1.00	0.50	5.00	1.00	34.00	$ 3,091.00
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (6 field days)	1.00	1.00	12.00	120.00	3.00	1.00	2.00	2.00	142.00	$ 12,421.00
Remediate Unsaturated Soil - RegenOx Injection (3 injection events, 15 total field days)	1.00	3.00	15.00	300.00	2.00	1.00	1.00	2.00	325.00	$ 28,182.00
Remediate Unsaturated Soil - Soil Mixing (3 field days)	1.00	3.00	6.00	36.00	2.00	1.00	1.00	2.00	52.00	$ 4,707.00
Unsaturated Soil Post-Treatment Soil Sampling	0.00	0.00	2.00	24.00	1.00	0.00	2.00	1.00	30.00	$ 2,521.00
Post-Remediation Groundwater Monitoring	1.00	0.00	5.00	24.00	6.00	1.00	4.00	1.00	42.00	$ 3,637.00
Remedial Action and Groundwater Monitoring Summary Report	4.00	4.00	20.00	35.00	8.00	1.00	14.00	2.00	88.00	$ 8,032.00
Total Hours by Employee	12.50	15.00	78.00	575.00	24.00	6.50	35.00	12.00	758.00	
Total Dollars by Employee	$1,862.50	$1,920.00	$8,970.00	$48,875.00	$2,040.00	$565.50	$1,925.00	$672.00		$ 66,830.00
									Total Consultant Cost	**$66,830.00**

EQUIPMENT (UNITS)

Equipment Item	55-Gallon Barrel	Groundwater Sampling Equipment	Laser Level	Soil Sampling Equipment	Carbon Dioxide Testing	Vehicle					Total Dollars
Billing Rate	$50/each	$200/day	$100/day	$125/day	$5/test	$100/day					
Phase/Task Name											
Remedial Action Plan and Health and Safety Plan Submittal											$ -
Prepare Injection Permit Application											$ -
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (6 field days)						6.00					$ 600.00
Remediate Unsaturated Soil - RegenOx Injection (3 injection events, 15 total field days)						15.00					$ 1,500.00
Remediate Unsaturated Soil - Soil Mixing (3 field days)						3.00					$ 300.00
Unsaturated Soil Post-Treatment Soil Sampling				2.00		2.00					$ 450.00
Post-Remediation Groundwater Monitoring	3.00	2.00			12.00	2.00					$ 910.00
Remedial Action and Groundwater Monitoring Summary Report											$ -
Total Units	3.00	2.00	0.00	2.00	12.00	28.00	0.00	0.00	0.00	0.00	$3,760.00
										Total Equipment Cost	**$3,760.00**

SUBCONTRACTORS

Phase/Task Name	Excavation Contractor	Drilling Contractor	Laboratory	Regenesis							Total Dollars
	Dollar Amount										
Remedial Action Plan and Health and Safety Plan Submittal											$0.00
Prepare Injection Permit Application											$0.00
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (6 field days)		$8,050.00		$36,915.00							$44,965.00
Remediate Unsaturated Soil - RegenOx Injection (3 injection events, 15 total field days)		$25,725.00		$66,355.00							$92,080.00
Remediate Unsaturated Soil - Soil Mixing (3 field days)		$7,920.00		$39,972.00							$47,892.00
Unsaturated Soil Post-Treatment Soil Sampling		$2,750.00	$1,400.00								$4,150.00
Post-Remediation Groundwater Monitoring			$3,072.00								$3,072.00
Remedial Action and Groundwater Monitoring Summary Report											$0.00
Total Subcontractors	$0.00	$44,445.00	$4,472.00	$143,242.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$192,159.00
										Total Subcontractor Amount	**$192,159.00**

	TOTALS	
Remedial Action Plan and Health and Safety Plan Submittal	$	4,239.00
Prepare Injection Permit Application	$	3,091.00
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (6 field da	$	57,986.00
Remediate Unsaturated Soil - RegenOx Injection (3 injection events, 15 to	$	121,762.00
Remediate Unsaturated Soil - Soil Mixing (3 field days)	$	52,899.00
Unsaturated Soil Post-Treatment Soil Sampling	$	7,121.00
Post-Remediation Groundwater Monitoring	$	7,619.00
Remedial Action and Groundwater Monitoring Summary Report	$	8,032.00
Total Project	**$**	**262,749.00**

Subcontractor	Bid Item	Estimated Units	Unit Cost	Total Cost
Regenesis	3DMe Injection Chemical	5328	$3.38	$18,009
Regenesis	Injection Trailer and Equipment	6	$2,565	$15,390
Regenesis	3DMe Sales Tax and Delivery	1	$3,516	$3,516
			Subtotal	$36,915
Drilling contracto	Mobilization	2	$200	$400
Drilling contracto	3DMe injection (per day)	6	$1,275	$7,650
			Subtotal	$8,050
Regenesis	RegenOx Injection Chemical	13926.4	$1.85	$25,764
Regenesis	Injection Trailer and Equipment	15	$2,454	$36,810
Regenesis	Chemical Delivery to Site	1	$3,781	$3,781
			Subtotal	$66,355
Drilling contracto	Mobilization	3	$200	$600
Drilling contracto	RegenOx injection inside building (per day)	15	$1,675	$25,125
			Subtotal	$25,725
Regenesis	RegenOx Soil Mixing Chemical	18841.6	$1.85	$34,857
Regenesis	RegenOx Sales Tax and Frreight	1	$5,115	$5,115
			Subtotal	$39,972
Excavator	Soil Mixing (3 Days, 690 cy)	1	$7,920	$7,920
Drilling contracto	Mobilization	1	$200	$200
Drilling contracto	Post treatment Soil Sampling (per day)	2	$1,275	$2,550
			Subtotal	$2,750
Laboratory	Post treatment Soil Sampling - VOC Analysis	20	$70	$1,400
Laboratory	VOC Analysis (water)	24	$67	$1,608
Laboratory	nitrate+nitrite (water)	12	$11	$132
Laboratory	sulfate (water)	12	$10	$120
Laboratory	ethane/ethene/methane (water)	12	$50	$600
Laboratory	TOC (water)	12	$51	$612
			Subtotal	$3,072

PROBABLE COSTS
ON-SITE REMEDIATION, ASSUMING COMPLETE BUILDING DEMOLITION

Promotional Number M04238-11002-0 **Prepared By** Michael Butler

Project Name Express Cleaners, Racine, Wisconsin

Project Manager Chris Hatfield

LABOR

Employee & Title	Assoc Geologist	Sr Proj Mgr	Project Manager	Geologist	Drafting	Sr Admin	Admin	Corp Admin	Total Hours	Total Dollars
Billing Rate	$ 149.00	$ 128.00	$ 115.00	$ 85.00	$ 85.00	$ 87.00	$ 55.00	$ 56.00		
Phase/Task Name	Hours									
Building Demolition Coordination	0.50	4.00					1.00	1.00	6.50	$ 697.50
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	$ 4,239.00
Prepare Injection Permit Application	1.50	1.00	8.00	16.00	1.00	0.50	5.00	1.00	34.00	$ 3,091.00
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (6 field days)	1.00	1.00	12.00	120.00	3.00	1.00	2.00	2.00	142.00	$ 12,421.00
Remediate Unsaturated Soil - Soil Mixing (5 field days)	1.00	3.00	10.00	50.00	2.00	1.00	1.00	2.00	70.00	$ 6,357.00
Unsaturated Soil Post-Treatment Soil Sampling			2.00	24.00	1.00		2.00	1.00	30.00	$ 2,521.00
Remediate Unsaturated Soil - Excavation and Disposal (3 field days)			8.00	36.00	1.00		2.00	1.00	48.00	$ 4,231.00
Post-Remediation Groundwater Monitoring	1.00		5.00	24.00	6.00	1.00	4.00	1.00	42.00	$ 3,637.00
Remedial Action and Groundwater Monitoring Summary Report	4.00	4.00	20.00	35.00	8.00	1.00	14.00	2.00	88.00	$ 8,032.00
Total Hours by Employee	12.00	16.00	75.00	325.00	23.00	5.50	37.00	12.00	505.50	
Total Dollars by Employee	$1,788.00	$2,048.00	$8,625.00	$27,625.00	$1,955.00	$478.50	$2,035.00	$672.00		$ 45,226.50
									Total Consultant Cost	**$45,226.50**

EQUIPMENT (UNITS)

Equipment Item	55-Gallon Barrel	Groundwater Sampling Equipment	Laser Level	Soil Sampling Equipment	Carbon Dioxide Testing	Vehicle						Total Dollars
Billing Rate	$50/each	$200/day	$100/day	$125/day	$5/test	$100/day						
Phase/Task Name												
Building Demolition Coordination												$ -
Remedial Action Plan and Health and Safety Plan Submittal												$ -
Prepare Injection Permit Application												$ -
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (6 field days)						6.00						$ 600.00
Remediate Unsaturated Soil - Soil Mixing (5 field days)						5.00						$ 500.00
Unsaturated Soil Post-Treatment Soil Sampling				2.00		2.00						$ 450.00
Remediate Unsaturated Soil - Excavation and Disposal (3 field days)						3.00						$ 300.00
Post-Remediation Groundwater Monitoring	3.00	2.00			12.00	2.00						$ 810.00
Remedial Action and Groundwater Monitoring Summary Report												$ -
Total Units	3.00	2.00	0.00	2.00	12.00	18.00	0.00	0.00	0.00	0.00		$2,660.00
										Total Equipment Cost		**$2,660.00**

SUBCONTRACTORS

Phase/Task Name	Demolition Contractor	Excavation Contractor	Drilling Contractor	Laboratory	Regenesis							Total Dollars
	Dollar Amount											
Building Demolition Coordination	$78,800.00											$78,800.00
Remedial Action Plan and Health and Safety Plan Submittal												$0.00
Prepare Injection Permit Application												$0.00
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (6 field days)			$8,050.00		$36,915.00							$44,965.00
Remediate Unsaturated Soil - Soil Mixing (5 field days)		$13,200.00			$61,622.00							$74,822.00
Unsaturated Soil Post-Treatment Soil Sampling			$2,750.00	$1,400.00								$4,150.00
Remediate Unsaturated Soil - Excavation and Disposal (3 field days)		$105,422.00										$105,422.00
Post-Remediation Groundwater Monitoring				$3,072.00								$3,072.00
Remedial Action and Groundwater Monitoring Summary Report												$0.00
Total Subcontractors	$78,800.00	$118,622.00	$10,800.00	$4,472.00	$98,537.00	$0.00	$0.00	$0.00	$0.00	$0.00	0	$311,231.00
											Total Subcontractor Amount	**$311,231.00**

	TOTALS	
Building Demolition Coordination	$	79,497.50
Remedial Action Plan and Health and Safety Plan Submittal	$	4,239.00
Prepare Injection Permit Application	$	3,091.00
In-Situ Anaerobic Bioremediation Enhancement in Groundwater (6 field da	$	57,986.00
Remediate Unsaturated Soil - Soil Mixing (5 field days)	$	81,679.00
Unsaturated Soil Post-Treatment Soil Sampling	$	7,121.00
Remediate Unsaturated Soil - Excavation and Disposal (3 field days)	$	109,953.00
Post-Remediation Groundwater Monitoring	$	7,519.00
Remedial Action and Groundwater Monitoring Summary Report	$	8,032.00
Total Project	**$**	**359,117.50**

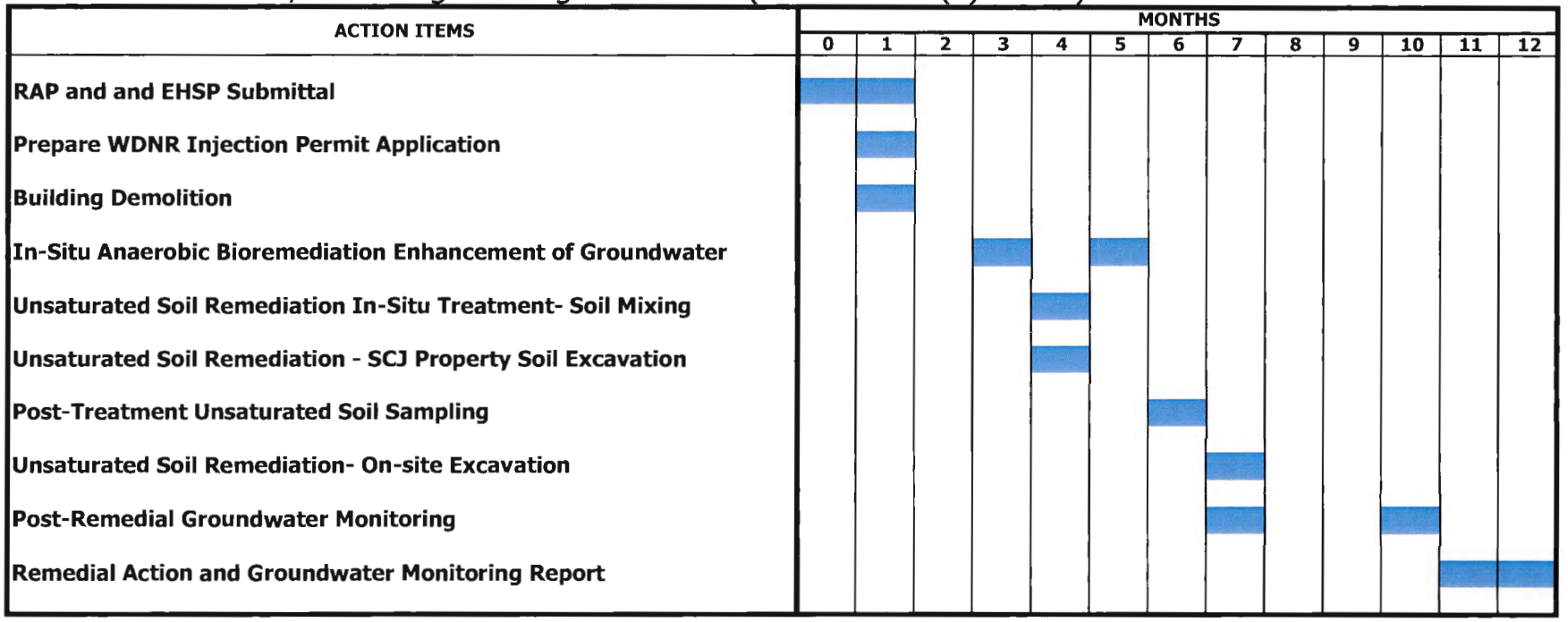
Subcontractor	Bid Item	Estimated Units	Unit Cost	Total Cost
Demolition Contractor				$78,800
Regenesis	3DMe Injection Chemical	5328	$3.38	$18,009
Regenesis	Injection Trailer and Equipment	6	$2,565	$15,390
Regenesis	3DMe Sales Tax and Delivery	1	$3,516	$3,516
			Subtotal	$36,915
Drilling contractor	Mobilization	2	$200	$400
Drilling contractor	3DMe injection (per day)	6	$1,275	$7,650
			Subtotal	$8,050
Regenesis	RegenOx Soil Mixing Chemical	32768.7	$1.85	$60,622
Regenesis	RegenOx Sales Tax and Delivery	1	$8,896	$1,000
			Subtotal	$61,622
Excavator	Soil Mixing Mobilization	1	$13,300	$13,300
Drilling contractor	Mobilization	1	$200	$200
Drilling contractor	Post treatment Soil Sampling (per day)	2	$1,275	$2,550
			Subtotal	$2,750
Laboratory	Post treatment Soil Sampling - VOC Analysis	20	$70	$1,400
Excavator	Removal of 950 CY to Landfill	1	$88,800	$88,800
Excavator	Soil Backfill (1400 cy)	1	$21,822	$21,822
			Subtotal	$110,622
Laboratory	VOC Analysis (water)	24	$67	$1,608
Laboratory	nitrate+nitrite (water)	12	$11	$132
Laboratory	sulfate (water)	12	$10	$120
Laboratory	ethane/ethene/methane (water)	12	$50	$600
Laboratory	TOC (water)	12	$51	$612
			Subtotal	$3,072

APPENDIX B – PROBABLE PROJECT SCHEDULE

Bonestroo

Express Cleaners Proposed Remedial Action Probable Schedule

Remedial Activities, assuming building demolition (RFP Items 3(a) and 4)

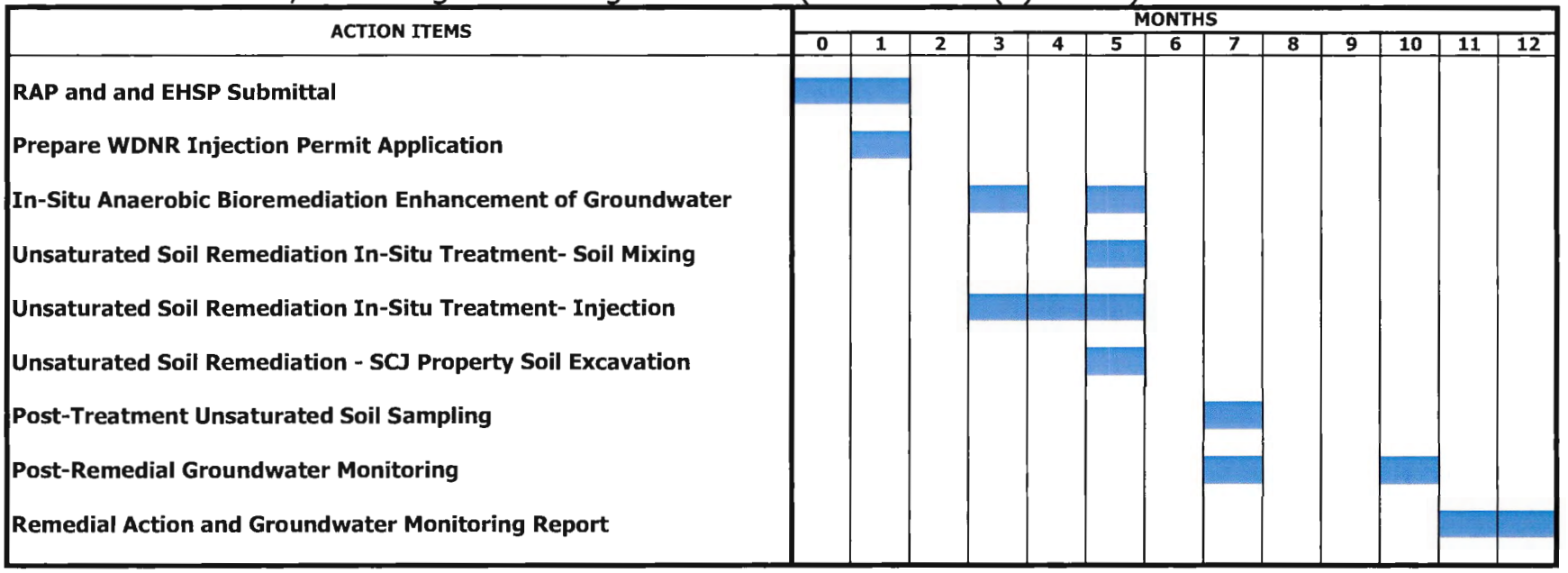


Note: assumes WDNR RAP and injection permit approval within 3 weeks of submittal

Bonestroo

Express Cleaners Proposed Remedial Action Probable Schedule

Remedial Activities, assuming no building demolition (RFP Items 3(b) and 4)



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

APPENDIX C – RESUMES OF KEY PROJECT PERSONNEL

Stuart J. Gross, PG

CLIENT SERVICE MANAGER

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 15 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 client service manager in the Private Market Sector. 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

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 senior geologist in the Private Market Sector, 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

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

Andrew J. Swaim

GEOLOGIST

PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

- Certified Site Assessor – Wisconsin
- Certified Asbestos Inspector – Wisconsin
- Health & Safety Training for Hazardous Waste Operations (40-hour OSHA)
- Petroleum Environmental Cleanup Fund Act (PECFA) Wisconsin

QUALIFICATIONS

As a geologist at Bonestroo, Mr. Swaim's responsibilities include conducting field operations along with post-field analysis and report writing. He also prepares geologic and hydrogeologic maps and cross sections, and evaluates distribution data. Mr. Swaim has experience in groundwater modeling using the GFLOW software program, having used this program to map existing groundwater conditions and predict changes to groundwater conditions based on proposed developments.

Mr. Swaim's diverse skills allow him to assist with a wide range of project types, including environmental site assessments, asbestos investigations, and soil and groundwater monitoring. He also supervises subcontractors and ensures accurate and efficient field work on large-scale remediation projects. Mr. Swaim has participated in numerous investigation and remediation projects for properties affected by petroleum and other contaminants.

AREAS OF EXPERTISE

- Environmental Site Assessments
- Geologic Mapping
- Soil and Aquifer Testing and Analysis
- Land Surveying
- Borehole Logging, Screening and Sampling
- Monitoring Well Installation, Development and Sampling
- Geologic, Hydrogeologic and Contaminant Data Evaluation
- Groundwater Exploration and Modeling
- Contaminant Investigation and Remediation
- Underground Storage Tank Closure Assessments and Remediation
- Non-Metallic Mine Reclamation
- Asbestos Inspections

EDUCATION

BS Geology and Geophysics, University of Wisconsin, Madison, 2004

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 a 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 Bonestroo, 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.

APPENDIX D – CERTIFICATES OF INSURANCE

Client#: 172 BONEINCI

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 05/03/2010

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.

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: BEAZLEY INSURANCE COMPANY INC	37540
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

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

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 LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
		GENERAL LIABILITY				EACH OCCURRENCE	$
		COMMERCIAL GENERAL LIABILITY				DAMAGE TO RENTED PREMISES (Ea occurrence)	$
		CLAIMS MADE OCCUR				MED EXP (Any one person)	$
						PERSONAL & ADV INJURY	$
						GENERAL AGGREGATE	$
		GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$
		POLICY PRO-JECT LOC					
		AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident)	$
		ANY AUTO					
		ALL OWNED AUTOS				BODILY INJURY (Per person)	$
		SCHEDULED AUTOS					
		HIRED AUTOS				BODILY INJURY (Per accident)	$
		NON-OWNED AUTOS					
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
		ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
		EXCESS / UMBRELLA LIABILITY				EACH OCCURRENCE	$
		OCCUR CLAIMS MADE				AGGREGATE	$
							$
		DEDUCTIBLE					$
		RETENTION $					$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				WC STATU-TORY LIMITS OTH-ER	
		ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N				E.L. EACH ACCIDENT	$
		If yes, describe under SPECIAL PROVISIONS below				E.L. DISEASE - EA EMPLOYEE	$
						E.L. DISEASE - POLICY LIMIT	$
A		OTHER ARCHITECTS & ENGR PROF LIAB (CLAIMS MADE)	V15SK3100301 INCL POLLUTION	04/29/2010	04/29/2011	EACH CLAIM: $5,000,000 ANNUAL AGG: $5,000,000	

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

CERTIFICATE HOLDER

SAMPLE COMPANY
SAMPLE ADDRESS
SAMPLE CITY/STATE/ZIP,

CANCELLATION 10 Days for Non-Payment

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

VLH

Client#: 172 BONEINCI

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 12/10/2010

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. 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).

PRODUCER MN-A/E COBB STRECKER DUNPHY & ZIMMERMANN 150 S FIFTH STREET STE 2800 MINNEAPOLIS, MN 55402	CONTACT NAME: PHONE (A/C, No, Ext): 612 349-2400 FAX (A/C, No): 612 349 2490 E-MAIL ADDRESS: PRODUCER CUSTOMER ID #:
INSURED BONESTROO INC 2335 W HWY 36 ST PAUL, MN 55113	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : CINCINNATI INSURANCE COMPANY INSURER B : CINCINNATI CASUALTY COMPANY INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT 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. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY			EPP0051117	01/01/2011	01/01/2012	EACH OCCURRENCE	$1,000,000
	X COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$500,000
	CLAIMS-MADE X OCCUR						MED EXP (Any one person)	$10,000
							PERSONAL & ADV INJURY	$1,000,000
							GENERAL AGGREGATE	$2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$2,000,000
	POLICY X PRO-JECT X LOC							$
A	AUTOMOBILE LIABILITY			CAA5870245	01/01/2011	01/01/2012	COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS						BODILY INJURY (Per accident)	$
	SCHEDULED AUTOS						PROPERTY DAMAGE (Per accident)	$
	X HIRED AUTOS							$
	X NON-OWNED AUTOS							$
A	X UMBRELLA LIAB X OCCUR			CAP5212568	01/01/2011	01/01/2012	EACH OCCURRENCE	$5,000,000
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$5,000,000
	DEDUCTIBLE							$
	X RETENTION $ 0							$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N			WC896071016	01/01/2011	01/01/2012	X WC STATU-TORY LIMITS OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)		N/A				E.L. EACH ACCIDENT	$500,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$500,000
							E.L. DISEASE - POLICY LIMIT	$500,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

FOR BIDDING PURPOSES ONLY

CERTIFICATE HOLDER

SAMPLE COMPANY
SAMPLE ADDRESS
SAMPLE CITY/STATE/ZIP,

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Professional Services Agreement

Bonestroo

THIS IS AN AGREEMENT, effective on August 18, 2011, between Ehrlich Family Limited Partnership ("Client") and Bonestroo, Inc. ("Consultant") for professional technical services, and includes the Terms and Conditions attached as Appendix A. This Agreement establishes a process by which Client may engage Consultant to provide services on an as-needed basis. Client and Consultant agree as follows.

1. Notices

Any notices required by this Agreement shall be given to the person below:

Consultant Representative:
Stuart J. Gross
Bonestroo, Inc.
12075 Corporate Parkway, Suite 200
Mequon, Wisconsin 53092
262-643-9159 (phone)
262-241-4901 (fax)
stu.gross@bonestroo.com

Client Representative:
Mr. William P. Scott, Esq.
Gonzalez, Saggio & Harlan, LLP
225 East Michigan Street, Fourth Floor
Milwaukee, Wisconsin 53202
(414) 755-8144 (phone)
(715) 227-8521 (fax)
bill.scott@gshllp.com

Each party shall promptly notify the other in writing of any changes to the above. All notices required by this Agreement shall be delivered in writing by email, first-class mail, fax or personal delivery, and shall be effective upon receipt.

2. Activation of Consultant's Services

Client may contact Consultant by phone, email, fax, or mail, requesting Consultant's assistance. Client shall provide Consultant with any information pertinent to Consultant's services for the "Project." Consultant will promptly respond with a "Proposal" in writing by email, fax, or mail, outlining:

- Consultant's understanding of the Project,
- The Basic Services to be provided,
- Supplemental Services which the Client may or may not authorize during the course of the Project, and
- Consultant's proposed compensation.

Consultant will not proceed with such services unless and until Client confirms its acceptance of Consultant's Proposal and so notifies Consultant in writing by email, fax or mail. This Agreement will be incorporated by reference into each Proposal accepted by Client.

3. Schedule

Both the Consultant and the Client will put forth reasonable efforts to complete their respective duties in a timely manner. Because the Consultant's performance must be rendered with due diligence and be governed by sound professional practices, the Consultant is not responsible for delays occasioned by unforeseen circumstances or factors beyond its control.

****

Please return one signed copy of this Agreement to Stu Gross as notice to proceed.

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement as of the day and year first above written.

CONSULTANT:
BONESTROO, INC.

By _____
Stuart J. Gross, Sector Leader

Date August 18, 2011

CLIENT:
EHRLICH FAMILY LIMITED PARTNERSHIP

By _____
(Signature)

_____
(Printed name and title)

Date _____

And by _____
(Signature)

_____
(Printed name and title)

Date _____

Appendix A
Terms and Conditions

Section 1. Consultant's Services

Consultant shall act as the Client's agent only as provided for within this Agreement.

Section 2. The Client's Responsibilities

The Client shall:

1) Provide full information as to its requirements for the Project.

2) Furnish to the Consultant, prior to any performance by the Consultant under this Agreement, a copy of any planning, design and construction standards as well as Client and/or site safety standards which the Client shall require the Consultant to follow in the conduct of its services for the Project.

3) Place at Consultant's disposal all available written data in the possession of or readily available to the Client and pertinent to the Project, including existing reports, plats, surveys, contour mapping, utility mapping, and record plans; wetlands, land-use, and zoning maps; borings and other data useful to the Consultant in the performance of its services.

4) Acquire all land, easements, and rights-of-way and provide for land surveys and the preparation of legal descriptions and exhibits, certificates or plats, as may be necessary for the Project.

5) Provide access to the Project site and make all provisions for the Consultant to enter upon public and private lands as required by the Consultant to perform its services, including written permission for such access when required by an owner.

6) Examine all studies, reports, sketches, Opinions of Probable Construction Costs, specifications, drawings, proposals and other documents presented by the Consultant and promptly render the Client's decisions pertaining to each of such documents.

7) Designate a single person to act as the Client's Representative with respect to the Consultant's services. Such person shall have complete authority to transmit instructions, receive information, and interpret and define the Client's policies and decisions with respect to services covered by this Agreement, subject to Client's governing body approval when required by law.

8) Give prompt written notice to the Consultant whenever the Client observes or otherwise becomes aware of any defect in the Project or any development that affects the scope or timing of the Consultant's services.

9) Furnish, or instruct the Consultant to provide at the Client's expense, necessary "Supplemental Services" as may be provided for in this Agreement, or other services as they may be required.

10) Furnish to the Consultant, as required by the Consultant for performance of its services, information or consultations not covered in the Consultant's Basic Services, such as core borings, probings and subsurface explorations; hydrographic surveys, laboratory tests and inspections of samples, materials and equipment; appropriate professional interpretations of all of the foregoing; property, boundary, easement, and right-of-way surveys and property descriptions; zoning and deed restrictions.

11) Furnish approvals and permits from all governmental authorities having jurisdiction over the Project and such approvals and consents from others as may be necessary for completion of the work.

12) Provide legal review of the contract documents and provide any required accounting and insurance counseling services for the Project.

13) Act promptly on all construction Change Orders and provide authorization before Change Orders are issued to the Contractor on a Project.

14) If the Client desires, furnish inspection or monitoring services to verify that Contractor is complying with all laws or regulations and to verify that Contractor is taking all necessary safety precautions to protect persons and property, as the Consultant in this Agreement does not undertake to perform these services.

15) Warrant that funds are or will be available for prompt payments to Consultant, as Consultant is not a co-venturer with Client and Consultant's payments are not contingent on Client's financing or government approvals.

16) If applicable to a Project, provide to Consultant a Title Commitment of the Project's real property.

17) If the Client does not own the property for which the Project is being performed, Client shall: (a) obtain all consents necessary for Consultant's performance of the Project; and (b) defend, indemnify and hold Consultant harmless from any claims or losses, including attorney's fees, asserted by the property owner for the work performed by Consultant under this Agreement.

18) Prior to the start of services, advise Consultant of any known or suspected hazardous materials or other environmental conditions which exist on or near the Project which in any way may be pertinent to Consultant's services.

19) Comply with applicable federal, state and local laws and ordinances, and lawful orders, rules and regulations of any constituted authority.

In performing its services, the Consultant may rely upon the accuracy and completeness of all Client-provided information.

Section 3. Compensation

3.1 Payment For Reimbursable Expenses

Unless otherwise provided, in addition to Consultant's fees, the Client will pay the Consultant for Reimbursable Expenses on the basis of the Consultant's cost plus 15%. Although not a complete list, examples of Reimbursable Expenses include: the costs of document reproduction; rental equipment; testing; mileage; travel and per-diem expenses of the Consultant for out-of-town trips required for the Project; long distance telephone calls and faxes as required to expedite the work; the costs for cellular phone calls/service for Consultant's field personnel on a Project; construction stakes; postage and delivery charges; any new taxes, fees or costs imposed on the Consultant's services (such as sales taxes) after the date of this Agreement; and out-of-pocket expenses incurred directly for the Project.

3.2 Objections to Invoices/No Deductions

It is important for the Consultant to be promptly informed of problems. If the Client objects to any portion of an invoice, the Client shall notify the Consultant in writing within twenty days of the invoice's receipt. The Client agrees to pay any undisputed portions of an invoice. No deductions shall be made from the Consultant's compensation on account of penalty, liquidated damages, or other sums withheld from payment to contractors, except as may be determined by mediation,

arbitration, litigation or other dispute resolution mechanism to which the Consultant is a party.

3.3 Progress Payments

The Client will make progress payments to the Consultant in proportion to services performed, as reasonably estimated by the Consultant. The Consultant will invoice the Client by email or first-class mail monthly during the progress of the work and payment is due upon receipt. Client may not reserve as retainage any portion of a payment due under this Agreement. Upon request, the Consultant will provide the Client with lien waivers for work performed by the Consultant or its subcontractors to the extent the Client has paid for such work.

3.4 Interest/Collection Costs

The Client agrees to pay the Consultant 1.5% per month interest on all invoices of the Consultant, with interest beginning to accrue 30 days after the date of the invoice. If the Client fails to pay Consultant all amounts owing pursuant to the terms of this Agreement, the Client agrees to pay all costs of collection, including reasonable attorney's fees, in addition to all other amounts due under this Agreement.

3.5 Representations Regarding Property

Client represents and warrants to Consultant that it represents or is the owner of the property described elsewhere in this Agreement, and that the legal description of such property is accurate and complete.

3.6 Estimates of Fees

Unless expressly stated otherwise, Consultant's fees are estimates based on the information available and are not a guaranteed maximum price.

3.7 Third-party Funds Held in Trust for Consultant

If a third party, such as a governmental entity, has paid or reimbursed Client for Consultant's services, then such funds belong to Consultant immediately upon Consultant's performance of the services therefor, and Client shall be deemed to be holding such funds in trust for Consultant.

3.8 PRELIEN NOTICE

AS REQUIRED BY THE WISCONSIN CONSTRUCTION LIEN LAW, BONESTROO, INC., HEREBY NOTIFIES OWNER THAT PERSONS OR COMPANIES FURNISHING LABOR OR MATERIALS FOR THE CONSTRUCTION ON OWNER'S LAND MAY HAVE LIEN RIGHTS ON OWNER'S LAND AND BUILDINGS IF NOT PAID. THOSE ENTITLED TO LIEN RIGHTS, IN ADDITION TO THE UNDERSIGNED CONSULTANT, ARE THOSE WHO CONTRACT DIRECTLY WITH THE OWNER OR THOSE WHO GIVE THE OWNER NOTICE WITHIN 60 DAYS AFTER THEY FIRST FURNISH LABOR OR MATERIALS FOR THE CONSTRUCTION.

ACCORDINGLY, OWNER PROBABLY WILL RECEIVE NOTICES FROM WHOSE WHO FURNISH LABOR OR MATERIALS FOR THE CONSTRUCTION, AND SHOULD GIVE A COPY OF EACH NOTICE RECEIVED TO THE MORTGAGE LENDER, IF ANY. BONESTROO, INC., AGREES TO COOPERATE WITH THE OWNER AND THE OWNER'S LENDER, IF ANY, TO SEE THAT ALL POTENTIAL LIEN CLAIMANTS ARE DULY PAID.

Section 4. General Considerations

4.1 Standard of Care

The Consultant shall exercise the same degree of care, skill and diligence in the performance of its services as is ordinarily exercised by members of the profession under like circumstances. Nothing in this Agreement, or otherwise prepared as a result of the Project, shall modify the foregoing standard of care, including any representations or promises which suggest that the Consultant will achieve any Leadership in Energy and Environmental Design (LEED) standards or certifications, or other energy efficiency or sustainability goals. The Consultant shall not be required to sign any documents that would result in it having to certify, guarantee or warrant the existence of conditions whose existence the Consultant cannot ascertain. If a Project under this Agreement includes sampling of any sort, the Client understands that conditions can vary between sampling points and with time, and that Consultant cannot make any representations that selected points are typical or representative. Because Consultant's interpretations are based on obtained data, changes in conclusions and interpretations may result when new data is obtained.

4.2 Delays

Both the Consultant and the Client will put forth reasonable efforts to complete their respective duties in a timely manner. Because the Consultant's performance must be governed by sound professional practices, the Consultant is not responsible for delays occasioned by factors beyond its control or that could not reasonably have been foreseen at the time of preparation of this Agreement.

4.3 Opinions of Costs and Schedules

Since the Consultant has no control over the cost of labor and material or over competitive bidding and market conditions, the Consultant's Opinion of Probable Construction Cost and of Project schedules can only be made on the basis of experience or qualifications as a professional Consultant. The Consultant does not guarantee that proposals, bids, actual Project costs or construction schedules will not vary from Consultant's opinions or estimates. If the Client desires greater assurance as to the anticipated Construction Cost of the Project, the Client shall employ, or instruct the Consultant to provide as a Supplemental Service, an independent cost estimator.

4.4 Insurance

4.4.1 The Consultant agrees to maintain a professional liability insurance policy for its negligent acts, errors or omissions with limits of at least $4,000,000 per claim and $4,000,000 annual aggregate, on a claims-made basis, as long as such insurance is reasonably available under standard policies at rates comparable to those currently in effect. The Consultant will not cancel the insurance until thirty days after providing the Client written notice.

4.4.2 The Consultant shall maintain:

1) Statutory workers compensation and employers' liability insurance coverage.

2) Commercial general liability insurance coverage with limits of not less than $1,000,000 per occurrence and $2,000,000 general aggregate.

3) Automobile liability insurance coverage with limits of not less than $1,000,000 combined single limit.

4.4.3 The Client shall require the contractor for any Project to name the Consultant as an additional insured on its general liability policy, on a primary and non-contributory basis.

4.5 Instruments of Service

4.5.1. Documents (including Electronic Data) prepared by the Consultant for a Project, such as reports, drawings, specifications, record drawings, and other deliverables ("Documents") are instruments of the Consultant's professional services, and not products. Client shall have a non-exclusive, irrevocable license in the Documents for the Client's informational purposes in its use and maintenance of the Project. The Client acknowledges that such Documents are not intended or represented to be suitable for use or

reuse by the Client or others on extensions of the Project, on any other project, or for any other use or purpose, without written verification or adaptation and certification of the same by a licensed Design Professional.

4.5.2. In the event of any use or adaptation by the Client after termination of a Project whereby the Documents are verified for reuse, revised, altered, or otherwise modified by anyone other than the Consultant, Client agrees to defend and indemnify the Consultant from any claims, damages, costs or expenses (including reasonable attorney's fees) arising out of any defect or deficiency in such reused or modified Documents, or in a Project constructed pursuant to them.

4.5.3. Consultant reserves the right to retain the Consultant Documents and any other portion of the items otherwise deliverable to the Client in the event the Client has outstanding delinquent payments due Consultant or is otherwise in breach of this Agreement.

4.6 Electronic Data

4.6.1 If included in Basic Services or Supplemental Services, the Consultant will furnish the Client with files in electronic media format of text, data, graphics, or other written documents ("Electronic Data") provided in hard copy form. Electronic Data is furnished only for convenience, not reliance by the Client. In the event of any conflict between a hard copy document and the Electronic Data, the hard copy document governs. The Electronic Data shall be prepared in the current software in use by the Consultant and is not warranted to be compatible with other systems or software.

4.6.2 Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the Client agrees that it will perform acceptance tests or procedures within 60 days after receipt of Electronic Data from the Consultant, after which the Client shall be deemed to have accepted the data thus transferred. Any transmittal errors detected within the 60-day acceptance period will be corrected by the Consultant. The Consultant makes no warranties, express or implied, regarding the fitness or suitability of the Electronic Data. The Client understands that the Electronic Data is perishable and subject to undetectable alteration and the Client is solely responsible for it.

4.7 Termination, Suspension or Abandonment

4.7.1 The Client or the Consultant may terminate or suspend this Agreement for substantial non-performance by the other party, including without limitation the failure to make payments in accordance with this Agreement. The party terminating or suspending this Agreement shall give seven days written notice to the other party. If a party seeks to terminate the Agreement for such non-performance, the other party shall have seven days to cure the non-performance before the termination becomes effective. If Consultant properly terminates or suspends this Agreement, Consultant may retain documents otherwise deliverable to the Client and will not be liable for any costs or damages, whether direct or indirect, resulting from exercising its rights under this paragraph.

4.7.2 If the Project or the Consultant's services are suspended or abandoned for more than 90 days, the Consultant may terminate this Agreement upon seven days written notice to the Client. The Consultant shall have no liability on account of a suspension or abandonment by the Client. If a suspended or abandoned Project is reinstated, an equitable adjustment to the Consultant's compensation may be necessary.

4.7.3 In the event of termination or suspension permitted by this Agreement or abandonment of the Project by the Client, the Client shall compensate the Consultant for services performed prior to termination, suspension or abandonment and for services directly attributable to the termination, suspension or abandonment itself, together with Reimbursable Expenses.

4.7.4 Either party may immediately terminate this Agreement by written notice to the other party if a receiver shall have been appointed over the whole or any substantial part of the assets of the other party, a petition or similar document is filed by the other party initiating any bankruptcy or reorganization proceeding, or such a petition is filed against the other party and such proceeding shall not have been dismissed or stayed within thirty (30) days after such filing.

4.8 Dispute Resolution

4.8.1 In an effort to resolve any conflicts that arise out of the services under this Agreement, all disputes between the Client and the Consultant arising out of or relating to this Agreement shall be submitted to nonbinding mediation prior to commencing arbitration or litigation. The Mediator's fee shall be shared equally and mediation shall proceed only at a place where arbitration or litigation is proper. Mediation shall not be a condition precedent to arbitration or litigation if a party refuses to make reasonable arrangements for a mediation within 20 days of demand by the other party. If a dispute relates to or is the subject of a lien arising out of the Consultant's services, the Consultant may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the matter by mediation or arbitration. This section survives termination of this Agreement, but no party may call for mediation after such time as the law would bar initiation of legal proceedings for a claim or dispute arising out of or relating to this Agreement.

4.8.2 Unless the Client and the Consultant mutually agree otherwise, all claims, disputes, and other matters in question arising out of or relating to this Agreement which are not resolved by mediation and where the amount in controversy is less than $1,000,000, shall be decided by binding arbitration in accordance with the then-most current Construction Industry Rules of the American Arbitration Association. The arbitrators will not have jurisdiction, power or authority to consider any claim or dispute: (a) where the amount in controversy is more than $1,000,000 (exclusive of interest and costs); (b) when the demand for arbitration is made after the date when a court action would be barred by any applicable statute or period of repose or limitations; or (c) when the claim or dispute is a claim for contribution or indemnity arising out of a claim by a third party who does not consent to joinder in arbitration.

4.8.3 In the event of litigation or arbitration arising from or related to the services provided under this Agreement, the prevailing party is entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorney's fees and other related expenses.

4.8.4 If the Consultant or the Client intends to assert a claim against the other as a result of a dispute with a third party, the claiming party shall notify the other party as soon as possible, and in any event prior to resolving the dispute with the third party.

4.8.5 So that any claims of the Client may be intelligently addressed by the Consultant, the Client agrees to make no claim for professional negligence against the Consultant unless the Client has first provided the Consultant a written certification signed by an independent professional licensed in the state in which the Project is located and currently practicing in the same discipline. The certification shall specify every act or omission of the Consultant that is a violation of the applicable standard of care and the basis for the certifier's opinion(s). This certificate shall be provided no fewer than 30 days prior to instituting arbitration or suit.

4.8.6 Causes of action between the Consultant and the Client relating to acts or failures to act shall be deemed to have accrued and the applicable statute of limitations shall commence to run not later than the date of substantial completion of a Project.

4.9 Hazardous Materials

The Consultant's scope of services for a Project does not include services related to hazardous materials unless expressly described in the Consultant's Proposal. If it becomes known that such materials may be present at or near a Project in type and kind that were not described in the Proposal or anticipated by the parties at the time of contracting, the Consultant may do any of the following: (a) suspend performance of its services, without liability, and assist the Client to retain appropriate consultants to adequately identify and abate such materials so that Consultant's services may resume; (b) assist the Client in redefining Consultant's scope of work to address and remediate such materials; (c) if necessary in Consultant's judgment, take extra and immediate measures to protect Consultant's employees and/or the public, and take other reasonable precautions to complete the Project, with Client agreeing to pay the reasonable costs of such efforts taken; and/or (d) arrange for proper disposal of such materials at Client's expense. Ownership of and legal responsibility and liability for hazardous or waste material shall at all times remain with Client. Waste material shall include all samples and materials obtained from the work site and Client will take possession of and be responsible for the proper disposal of all waste material. Nothing in this Agreement shall be construed to require the Consultant to: (a) assume the status of a generator, storer, transporter, treater, or disposal facility as those terms appear within the Resource Conservation and Recovery Act, 42 USC 6901 et seq, as amended, or within any state statute governing the generation, treatment, storage and disposal of waste; or (b) arrange for the transportation, treatment, or disposal of hazardous substances, as described in the Comprehensive Environmental Response, Compensation and Liability Act, 42 USC 9601, et. seq, as amended. The Client agrees to defend, indemnify and hold harmless the Consultant, its employees, subcontractors and agents from all claims, losses, damages liability and costs, including attorney's fees, relating to or arising out of hazardous or toxic materials at or near a Project.

4.10 Governing Law

This Agreement shall be governed by the laws of the state of Minnesota, and any litigation or other dispute resolution proceeding shall be venued in St. Paul, Minnesota.

4.11 Integration

This is an integrated Agreement and it supersedes all prior negotiations or agreements between the parties. It shall be modified only by a written document signed by the party sought to be bound. The provisions of this Agreement are severable, and if any provision is found to be unenforceable, the remaining provisions continue to be valid, and the unenforceable provision shall be reformed with a valid provision that comes as near as possible to expressing the intention of the unenforceable provision.

4.12 Subcontractors, Assignment and Waiver

Consultant may use subcontractors, including testing laboratories, as necessary to complete its services. Consultant will strive to select subcontractors which are generally accepted and recognized in their industry. The Client may select a subcontractor of Client's choice before performance of the services, subject to payment of any increased costs that result from such selection. Except for the foregoing, the Consultant and the Client shall not assign or delegate their respective obligations under this Agreement without the written consent of the other party, which consent shall not be unreasonably withheld. The waiver of any term or condition or breach thereof by either party shall not constitute a waiver of any other term or condition or breach thereof.

4.13 Consultant's Services

In performing professional technical services, the Consultant is not engaged in rendering legal, insurance, or accounting services or advice. The Client agrees that documents prepared by the Consultant, including reports, bidding materials, and form contracts will be reviewed by the appropriate representative of the Client, such as the Client's attorney, insurance counselor or other consultants, to the extent that Client deems necessary to protect its interests.

4.14 Government Agencies

The Consultant shall not be liable for damages resulting from the actions or inactions of government agencies, including without limitation permit processing, environmental impact reports, dedications, zoning matters, annexations or consolidations, use or conditional use permits, and building permits.

4.15 Monitoring Work

If required by the scope of services, the Consultant will make visits to the Project site at intervals appropriate to the various stages of construction as the Consultant deems necessary in order to observe the progress and overall quality of construction. The Consultant will not be required to make exhaustive or continuous observations on the Project site. Based on such visits, the Consultant will determine in general if the construction work is proceeding in accordance with the contract requirements, keep the Client informed of the progress of the construction work, and will endeavor to guard the Client against defective work. The Consultant will not supervise, direct, control, or have authority over or be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of the Contractor to comply with laws and regulations applicable to the work.

4.16 Americans with Disabilities Act

The Consultant shall use reasonable professional effort and judgment in interpreting and advising the Client as to the necessary requirements for the Project to comply with the Americans with Disabilities Act (ADA). The Consultant shall rely on the local building department for interpretations of the ADA at the time the service is rendered. The Consultant does not warrant or guarantee that the Project will fully comply with interpretations of ADA requirements by regulatory or judicial bodies.

4.17 Damage to Property

If the scope of Consultant's services for a Project as described in a Consultant Proposal includes borings or other work that may damage the worksite, Client understands: that some damage may occur to the Project property during the normal course of work, that Consultant has not included in its fee the cost of restoration of damage, and that Client will pay for such restoration of damage, except in those cases where it is demonstrated that Consultant has failed to exercise reasonable care to minimize damage. If Client is not the owner of the property, Client has advised such owner that some damage may occur during the normal course of work and the agreement between Client and such owner releases Consultant from damages caused to the property during the normal course of work.

4.18 Non-Solicitation or Hiring of Employees

During the term of this Agreement and for 180 days thereafter, neither party shall, directly or indirectly, solicit, hire as employees, or retain as independent contractors any employees of the other party who have been involved in the activities covered by this Agreement without prior written approval of the other party.

4.19 Survival of Terms

The provisions of this Agreement which by their nature are intended to survive termination or expiration of this Agreement shall survive expiration or termination of this Agreement.

Section 5. Liability

Having considered the potential liabilities that exist during the performance of the Consultant's services, the benefits of the Project,

the Consultant's fee for its services, and the promises contained in this Agreement, the Client and the Consultant agree that risks should be allocated in accordance with this section, to the fullest extent permitted by law.

5.1 Indemnification

The Consultant and the Client each agree to indemnify each other from liability for losses, damages or expenses (including reasonable costs and attorney's fees) to the extent they are caused by each party's respective negligent acts, errors or omissions relating to this Agreement. In the event the losses, damages or expenses are caused by the joint or concurrent negligence of the Consultant and the Client, they shall be borne by each party in proportion to its own negligence. In no event shall the indemnification obligation extend beyond the date when the institution of legal or equitable proceedings for professional negligence would be barred by any applicable law.

5.2 Agreed Remedies

The aggregate liability to the Client of Consultant, its employees, and anyone else for whom they may be legally liable, for any and all claims, losses or damages arising out of any Project or this Agreement for any cause shall not exceed twice the amount of fees paid by Client to the Consultant pursuant to this Agreement or the sum of $50,000, whichever is greater. Higher limits of liability may be negotiated for an additional fee. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

5.3 Consequential Damages

Neither the Client nor the Consultant shall be liable to the other for any consequential damages incurred due to the fault of the other or their agents. Consequential damages include, but are not limited to, loss of use and loss of profit.

5.4 Design without Construction-phase Services

If the Consultant's Basic Services under this Agreement include Project design but do not include Project observation, or review of the Contractor's performance, or any other construction phase services, then the Client assumes all responsibility for interpretation of the plans and specifications and for construction observation or review and waives any claims against the Consultant that may be in any way connected thereto.

****

Environmental Resources Management

700 W. Virginia Street
Suite 601
Milwaukee, WI 53204
414-289-9505
414-289-9552 (fax)

August 19, 2011

Natalia Minkel-Dumit
Gonzales Saggio & Harlan LLP
225 East Michigan Street
Milwaukee, WI 53202

And

Nancy Ryan
Wisconsin Department of Natural Resources
2300 N. Dr. Martin Luther King, Jr. Drive
Milwaukee, WI 53212-3128

RE: Remedial Action Bid Proposal Submittal
Express Cleaners, 3941 North Main Street, Racine, WI
WDNR FID#252010000; BRRTS #02-52-547631

Dear Ms. Minkel-Dumit and Ms. Ryan:

Environmental Resources Management (ERM) is pleased to provide the enclosed remedial action bid proposal for the Express Cleaners site located at 3941 North Main Street, Racine, Wisconsin. This bid has been prepared in response to a July 27, 2011 letter from Gonzalez Saggio & Harlen, LLP on behalf of the Ehrlich Family Limited Partnership to provide environmental remediation services in accordance with Wisconsin Administrative Code NR Chapter 169 and the Dry Cleaner Environmental Response Fund (DERF) program.

ERM believes that we are the most qualified firm to successfully provide remedial services because of our:

- Demonstrated technical expertise for the required scope of services;
- Experience working and negotiating with regulatory agencies to receive approval for cost-effective activities;
- Committed team members comprised of local personnel to perform the technical work at competitive rates; and
- Innovative approaches to complex issues including experience with leading edge investigation and remedial technologies.

If you have any questions or require additional information, please feel free to contact me at (414) 977-4700.

Sincerely,

John C. Roberts, P.G.
Senior Project Manager

Daniel W. Petersen
Principal-in-Charge

ERM

Remedial Action Bid Proposal

Express Cleaners/ Ehrlich Family Limited Partnership
3941 N. Main Street, Racine, WI
WDNR FID #252010000; BRRTS #02-52-547631

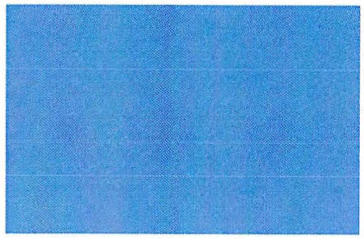
www.erm.com

Delivering sustainable solutions in a more competitive world

Table of Contents

Section 1
ERM Capabilities

ERM Capabilities



ERM has the experience, expertise, and capabilities to develop and implement comprehensive, sole-source, cost-effective solutions to difficult environmental remediation problems. Since 1990, we have saved our clients over $1.5 billion.

ERM's business focuses strongly on the cleanup of industrial sites of all types. We have performed the full scope of remedial services at over 1,100 sites under federal regulatory programs encompassing every USEPA Region, and over 3,000 project sites under state-led programs. ERM's breadth of experience includes:

- Over 3,500 site assessments encompassing a diverse range of geological settings and contaminants;
- Over 3,000 remediation engineering assignments, including some with extensive bench and pilot testing of new technologies;
- Remedial design for projects with a constructed value of over $1 billion, encompassing virtually every commercially available technology, as well as ERM's licensed, patented, and registered technologies; and
- Construction management for over $60 million in remedial action annually.

ERM is accustomed to working with complex, multi-faceted objectives and has the experience to proceed according to project-specific objectives and strategy. We do not follow a "one size fits all" concept.

ERM's Wisconsin Operations

ERM's Wisconsin operations were founded in 1991 and has offices in Milwaukee and Appleton. We have exceptional experience with the Wisconsin Department of Natural Resources (WDNR) and Region 5 of the US Environmental Protection Agency (USEPA) requirements.

Our local team has strong relationships with local corporate leaders, legal firms, and service suppliers/subcontractors; and extensive knowledge of the region (geologic/ hydrogeologic conditions, air, waters and lands issues). ERM's long-term presence in Wisconsin and our active role in developing innovative approaches to environmental issues have led to ERM's solid local reputation and credibility.

Our Wisconsin staff is highly experienced and multi-disciplined. Over half of the staff has greater than 15 years in environmental consulting for industrial clients.

Locally, the our staff specialize in chlorinated solvent site remediation and closure. The following statements characterize our local experience, examples of which (along with other relevant projects), are included in Appendix A.

- Our Milwaukee office staff completed the first WDNR accepted risk-based site closure in Wisconsin (chlorinated compound release in Green Bay, Wisconsin).
- Assisted private sector (commercial and industrial) clients to implement cost-effective investigation and remediation strategies for managing and closing chlorinated solvent sites in Wisconsin and other midwestern states.
- Wisconsin chlorinated solvent projects have ranged from simple risk based closures, large and small soil excavations, *in situ* oxidation and enhanced bioremediation, to large integrated media (soil, bedrock) sites with groundwater plumes thousands of feet long.
- Local highly skilled geologists, hydrogeologists and engineers that continually keep abreast of new and emerging technologies that focus on cost savings for our clients.

ERM Environmental Restoration Capabilities

Project Management/Monitoring Project Budgets

Effective communication, ability to listen, and sound leadership through experience are attributes of a great project manager. ERM trains their project managers in these skills to enhance their business acumen abilities. Our project managers think beyond client satisfaction, align individual staff with project objectives, and foster a culture of team work. ERM also has the accounting tools to track budgets on a weekly basis. Our project managers are trained to monitor these budgets and work with accountants for accounting integrity.

Risk Assessment and Cleanup Level Development

ERM's risk assessments emphasize site-specific analyses and avoid reliance on generic exposure scenarios or default exposure assumptions. Our approach provides realistic estimates of potential risk and prevents the derivation of overly conservative cleanup levels, while still ensuring the development of a defensible analysis and the protection of human health and the environment. Our focused, realistic analyses frequently result in significant reductions in project costs and risk-based closure for a wide variety of sites.

Risk-Based Remediation and Cost Control

Risk-based remediation:

- Is an effective means of addressing regulatory concerns through reducing the potential threat from historical releases, while controlling overall expenditures;
- Focuses on achieving a level of risk reduction, rather than specific cleanup levels in the affected media; and
- Recognizes that controlling exposures to affected media reduces risks as effectively as removing the contaminants from the media.

Beyond direct risk control measures, use of innovative *in situ* technologies can also reduce both overall costs and the potential for worker or off-site resident exposure.

Feasibility Study/ Remedial Alternatives Evaluation

Based on site investigation data and analysis, ERM develops feasibility studies to select the most appropriate remediation alternative and then designs the selected remedy. ERM's approach to remedial investigation and feasibility studies of remedial alternatives ensures the consideration and application of appropriate and innovative technologies (such as recycling, bioremediation, and in-situ technologies etc.). Consistent with the objectives to balance cost, risk, and residual liability, we emphasize permanent solutions where appropriate technology exists, and recommend containment when no acceptable remedial technology is available or where cost dictates such an approach.

Remedial Design

ERM has experience with nearly all types of soil and groundwater contaminants. We have designed and built, or provided construction management, for virtually every type of conventional soil and groundwater remediation systems for treating soil and groundwater contamination in Wisconsin. We have designed both traditional and innovative methods or processes for source control, on-site and off-site treatment, and in-situ or ex situ treatment. Long-term remedial goals are always kept in focus to provide appropriate systems that will yield the best results in the shortest time and at the lowest overall project costs. Innovative technologies and approaches are continuously evaluated/developed and gauged against existing methodologies resulting in utilization of the most effective and efficient cleanup methods possible.

Remedial System Construction

ERM has the in-house capability to construct or modify remediation systems. ERM's projects have ranged from small-scale pilot studies utilizing mobile treatment equipment to the full-scale design, construction, and operation of multi-million dollar soil and water treatment systems. ERM implements these projects using our OSHA-certified field engineering and construction crews, supported by ERM's management and technical resources.

ERM offers several basic approaches to remediation system construction projects that recognize the unique issues and challenges. ERM provides clients with high-quality engineering, planning, and construction services while meeting budgets and deadlines.

Project Team / Key Personnel

ERM and our subcontractors proposed for this remedial approach have unique attributes that bring added value to the Ehrlich Family Limited Partnership (Ehrlich Family); Passionate Customer Commitment, Operational

Excellence, and Business Acumen. The combination of these factors allows us to deliver proactive risk identification, reduction and retirement of risks, cost-effectiveness, regulatory compliance, and all other services and outcomes that meet your needs.

Passionate Customer Commitment

Regardless of project scope, size, or site, our goal is to establish and maintain a standard of performance excellence that provides you with the services you need, when you need them, and where you need them. This focus means understanding and aligning our resources with your goals and objectives. Our businesses and services are built around the belief that real economic benefits - such as reduced costs and increased productivity - are gained through outstanding performance. We continually demonstrate these traits through work already performed with our existing base of local clients and repeat customers. This is evidenced by our repeat customer base.

Operational Excellence

Ehrlich Family will receive an ERM culture that demands operational excellence and continual improvement. Our operational excellence process creates alignment and performance in the Ehrlich Family-ERM partnership while simplifying operations through:

- Sharing of resources, technology, best practices, and management tools
- Reducing the "learning curve" on new project phases.
- Allowing continuous elimination of non-value-added activities and maintaining a "lean" organization.
- Creating an agile organization that responds efficiently and promptly.
- Providing high-quality project execution.

ERM Team

Carl Stay, who is located in ERM Milwaukee, WI office, will serve as Program Manager and Primary Point of Contact.

Mr. Stay has been a program/project manager on numerous chlorinated solvent remediation projects. He is proficient at program management in regards to product consistency, client satisfaction and involvement, financial budgeting, and regulatory liaison. Mr. Stay will bring this type of passion, experience, and expertise to the contract.

Mr. Stay will be supported by ERM's staff in the Milwaukee, WI office. ERM has the Wisconsin licensed/certified engineering and geology staff to complete any potential tasks to get the Express cleaners site remediated and closed. We have exceptional experience geologic/hydrogeologic conditions of southeastern Wisconsin and WNDR regulatory requirements. ERM's long-term presence in Wisconsin and our active role in developing innovative approaches to site closures for chlorinated solvent sites have led to an impeccable reputation and credibility with the WDNR.

Brian Kappen, who is aslo located in ERM's Milwaukee, WI office, will serve as Project Manager. Mr. Kappen has 9 years of experience as a hydrogeologist in the environmental consulting and remediation industry. Mr. Kappen is very experienced with Wisconsin Administrative Code requirements, project finance awareness, and hands on implementation of innovative investigative and remedial technologies. His experience includes working with multiple contaminants and appropriate remedial technologies. Mr. Kappen brings a high degree of experience and knowledge that will drive the project to a success.

Tanya Gregg, Staff Geologist, also based in ERM's Milwaukee, WI office, has over four years of experience in contaminated site investigation and remediation experience in Wisconsin, Michigan, Minnesota, Illinois, and Iowa. Her experience includes investigation techniques of soils, bedrock, surface/storm waters, and processing residues. Ms. Gregg has performed remedial design investigations in support of selecting and implementing a variety of remedial technologies to address chlorinated solvent contamination in soil and groundwater. She is also experienced with executing in-situ technologies such as chemical oxidation and emulsified oil supplementation.

Commodity services will be contracted for drilling, geoprobing, laboratory, concrete cutting, removal/replacement, and remedial chemical oxidation injection services. ERM will contract these commodity service providers, oversee their activities, and responsible for their performance.

REDOX Tech, LLC (REDOX) is the selected contractor to assist ERM with site remedial activities. REDOX is an environmental contractor specializing in the application of

treatment chemistries that render organic and inorganic contaminants nonhazardous in a safe and cost effective manner. They bring the technical capabilities and experience to effectively and efficiently address the site contaminants.

Section 2
Project Understanding

Project Understanding

Project Understanding

ERM understands that the Ehrlich Family Limited Partnership (Ehrlich Family) owns the commercial building at 3921-3941 North Main Street, Racine, Wisconsin. Dry cleaning businesses previously occupied the northern unit of the building (3941) beginning in 1971. ERM understands that the entire building is currently vacant.

Evaluations of the property's environmental quality/condition have been conducted since 2006. Phase I and II Environmental Site Assessments (ESAs) were completed by Gabriel Environmental Services in March and April, 2006. Their results indentified tetrachloroethene (PCE) concentrations exceeding regulatory standards in subsurface soil samples. Subsequent site investigations conducted in accordance with Wisconsin Administrative Code NR 700 series were completed by Northern Environmental in June 2007, August 2007 (SC Johnson investigation), May 2008, January 2009, June 2009, and April 2011. Based on the results, remedial actions for the site were determined to be warranted.

The Ehrlich Family is seeking financial reimbursement through the State's Dry Cleaner Environmental Fund (DERF) program. To comply with program requirements, the Ehrlich Family has requested environmental restoration bids for future remediation at the Site.

The following is ERM's understanding of the site relative to existing environmental conditions. This understanding has been developed based on the Request for Remedial Action Bid Proposal dated July 27, 2011, and Site investigation files provided to ERM from Gonzalez Saggio & Harlan, LLP.

Site Conceptual Model

Based upon our understanding of site environmental conditions taken from previous investigations, the Site is underlain by shallow fill and organic loam deposits overlying an eolian silty sand with thickness ranging between 5 feet on the east and 9 feet on the west. The fill and loam deposits are underlain by a silty clay unit of unknown thickness that slopes gently downward to the west.

The water table, as measured in Site monitoring wells, appears to slope away from a local north-south trending groundwater divide that is situated just east of the building. The eastern gradient is approximately 0.003 and the western gradient is approximately 0.03. The dominant groundwater flow direction is to the west, evidenced by the footprint of the contaminant plume. Slug test data indicates that the sand has a hydraulic conductivity of 2.1E-04 cm/sec, and assuming an aquifer porosity of 25%, the average linear groundwater velocity is estimated to be approximately 26 feet per year to the west.

Typical wastes generated at dry cleaner facilities include spent solvents, filters and sludge. At many sites, these wastes were commonly discharged in dry wells or sewers, stored in leaky containers or discarded in dumpsters. Although no history of Site-specific product and waste handling practices are available, the Site conceptual model assumes that historic handling of dry cleaning solvents resulted in their release to the underlying soils and the downward migration into groundwater.

VOCs detected in Site soils and groundwater are primarily associated with tetrachloroethene (PCE) and its degradation products trichloroethene (TCE) and dichloroethene (DCE). The greatest concentrations of PCE are located beneath the eastern portion of the dry cleaners and beneath the asphalt area east of the building. VOCs continue to migrate through advective and diffusive transport processes to other locations at the Site, including unsaturated soils, and result in the contaminant footprint depicted in published Site maps and cross-sections. With the most recent investigation results, the extent of soil and groundwater impacted by VOCs is considered to be defined.

Cleanup Objectives

ERM assumes that soil cleanup objectives will include an evaluation to non-industrial standards for the protection of

human health. Groundwater cleanup objectives will reference the Wisconsin Administrative Code (WAC) Chapter NR 140 Groundwater Enforcement Standards and Preventive Action Limits. Active remediation (i.e.: soil mixing with Anaerobic biochemical additives and zero-valent iron), along with phytoremediation is anticipated to greatly reduce the contaminant concentrations. However, natural attenuation will be employed to reduce concentrations to achieve the remedial objectives.

Remediation

ERM's recommended remedial option for soil and groundwater has been selected in accordance with WAC Chapter NR 722. However, the potential for near-term property re-development is unknown and was not factored into the evaluation. The preferred remedial option, enhanced reductive dechlorination (ERD) via soil mixing, includes building demolition and is therefore higher cost than the alternate remedial option, ERD via direct push injection without building demolition. If site development plans call for the demolition of the existing building, it would be appropriate to subtract the demolition costs from the remedial cost. Additionally, the soil mixing approach allows the addition of a greater quantity of ERD amendment than with direct push injection. The additional amendment reduces the potential need for follow-up injections to maintain reducing conditions and provides for a greater weight percent of zero valent iron in the ERD mixture. Thus although the preferred soil mixing remedial option has a higher cost than injection without building demolition, it has a higher probability of successfully attaining the remedial objective without multiple, large scale re-applications.

Section 3
Project Approach

Project Approach

Project Approach

ERM has reviewed the provided information and understands the project's remedial objectives. The RFP specifies two remedial alternatives for the site property:

a) Demolish All or Part of the Building Before Commencing Remediation; and

b) Perform the Remedial Work Without Demolition.

Additionally, the RFP specifies performing a 100 ton soil removal, disposal, and surface restoration on the neighboring property near boring BA9. Soil excavation is not part of ERM preferred remedial option for the remaing portions of the site, but is included in the bid cost as required.

ERM has selected a preferred remedial option that involves soil mixing with enhanced reductive dechlorination amendments (including zero valent iron) for saturated and unsaturated materials with a PCE concentration of 1 mg/kg. This would require demolishing the strip mall building to facilitate direct access to the impacted materials. In order to provide an acceptable bid response, ERM is also providing an alternate remedial approach for the site property that can be performed while retaining the building. The following paragraphs present the preferred remedial alternative. The alternate remedial approach that retains the building is described at the end of this section of the proposal.

The overall closure strategy involves contaminant mass reduction in the high concentration portion of the plume via enhanced reductive dechlorination (ERD) followed by monitored natural attenuation to document that the plume is stable or decreasing in concentration. In simple terms, we recommend adding relatively innocuous materials to help the naturally occurring microbes to further degrade the contaminants of concern. We have developed an approach to:

- Document the specifications of the preferred remedial design;
- Implement an active remedial approach to address the contaminant mass in soil, groundwater, and vapor, on and off the property to protect human health and the environment;
- Confirm the success of the active remediation system through groundwater monitoring;
- Augment existing tree-lines with phyto-remediation based contaminant barriers (tree plantings) to mitigate potential off-property migration of residual contamination in excess of vapor screening risk levels; and
- Document remedial activities and follow-up monitoring to request a case closure within a reasonable timeframe.

The scope of work was developed in accordance with NR 169 and 700 series, WAC.

Task 1 -Remedial Option Design Report

ERM proposes to prepare and submit to the WDNR a design report for the preferred remedial option. For purposes of this proposal, ERM conducted a preliminary assessment of current remedial options that may be applicable to this Site. After consideration of the different approaches, ERM proposes to implement soil mixing using a combination of stabilized lactate (a biological activity enhancement material), augmented with zero valent iron (ZVI) as a chemical reductant. This approach has a proven track record and has been used in numerous remedial actions in the dry cleaning industry. Further, ERM proposes to mitigate the potential for vapors greater than the screening risk levels from leaving the contaminated site or property boundaries through installation of tree, phyto-remediation barriers at select locations. The phytoremediation augmentation of the selected remedial approach enhances the overall efficacy and sustainability of the project. The roots of the trees should interact with the subsurface

materials to cause degradation of any contaminants migrating away from the source area.

The site's hydrogeology and the location of nearby utility lines and surface water bodies result in a need to assess the potential risks of for the implementation of *in situ* remedies to prevent impacts to offsite properties or utilities from the remedy. ERM employs a risk review process for all *in situ* remedies to identify potential hazards and risks, and specifies approaches to address each prominent hazards and risks. The risk review will be conducted as part of the remedial options evaluation so any new site data will be considered. The final remedial approach and technology will be adjusted (if necessary) to account for the risk review findings.

ERM assumes that all purge water generated by sampling activities will be able to be discharged to the City of Racine public sewer system. Additionally, soil wastes generated during site investigation activities are assumed to be non-hazardous for disposal purposes.

Task 2 – Preferred Remedial Action Implementation (Soil Mixing)

ERM proposes to implement the *in situ* remediation (i.e., ERD) via soil mixing technology to incorporate the proposed soil amendments. In this case, ERM experts have selected the REDOX Tech, LLC (REDOX Tech) Anaerobic Biochem Plus (ABC+) as the preferred amendment. This mixture will be added to the area defined by the unsaturated soil PCE concentrations greater than 1 milligram per kilogram (mg/kg). ABC+ is a combination of zero valent iron (ZVI), soluble lactic acid, and a phosphatic buffer to maintain the pH in a range best suited for anaerobic microbial growth. Although the current perched aquifer chemistry is not necessarily reducing (required for optimal degradation), given its vertical dimensions relative to the soil mixing program, the ABC+ amendment is expected to overwhelm the conditions and maintain a localized reducing environment.

The soil mixing approach will require demolition of all or part of the existing strip mall building. While the treatment will not affect the entire footprint of the existing building, the northern 100 feet (5,000 square feet) of the building would likely need to be demolished. This will provide equipment access and reduce the potential for structural impacts to the remaining portion of the building during the mixing. All utilities will be disconnected and removed from the soil mixing area as part of the demolition; however, the cost of relocating utilities to the remaining portion of the building is not included in this proposal.

The current investigation data indicate that although visually the unconsolidated deposits are a silty sand, the horizontal hydraulic conductivity of the perched zone is at the low end of the range for sand (10^{-4} to 10^{-6} centimeters per second). Also, a high proportion of the contaminant mass likely resides as localized adsorbed material within pore spaces, via surface tension. The soil mixing process provides a mechanism for penetrating into the soil matrix to ensure that the amendments are well distributed within the bedded silty sand interval.

The ERD via soil mixing was compared to injection of both ERD (ABC+) and potassium permanganate via direct push drilling equipment. The two most important factors in this comparison which influence the final cost are the total oxidant demand (TOD) and the hydraulic conductivity of the formation. These factors govern how much oxidant is needed and how long it will take to effectively distribute the appropriate quantity of either an oxidant or ERD amendment throughout the treatment interval via the direct push injection approach. The site TOD is currently un-determined; however, the site soil boring logs indicate that some of the shallow materials are fill and include topsoil and asphalt pieces, potential sources of oxidant demand. Additionally, the distribution of contaminants varies across the perched zone thickness, and the diffused/adsorbed portion of the mass is likely retained within intervals of lower hydraulic conductivity. This occurrence would potentially adversely affect a direct injection approach.

In order to confirm the results of the technology comparison (ERD mixing vs. injection of ERD) ERM recommends performing a pilot injectivity demonstration prior to full-scale remedial implementation. Injectivity testing should be performed in the same manner as the actual remedial

injection; using direct push equipment and a mixture of guar and potable water to simulate the viscosity of the potential injection fluids.

ERM also recommends that gene analyses be performed using several samples from both the unsaturated saturated intervals within the most contaminated and downgradient portion of the plume to determine the existing bacterial assemblage at the site. This analysis will be used to further assess the proposed amendments potential effectiveness prior to implementation.

Alternate Approach (Direct Push Injection of ABC+; No Building Demolition)

As previously stated, The RFP requested that approaches with and without building demolition be included in the bid response. This alternate approach has been prepared to fulfill that requirement. Based on the currently known horizontal hydraulic conductivity values for the site, it is likely that more than one round of injections will be needed to treat the area. The estimated cost for the alternate approach includes a provision for performing targeted follow-up injections.

ABC+ would be injected through a series of approximately 250 direct push injection points in a manner that will cover the targeted area of concern. Geoprobe injection treatment will start at the bottom of each boring location and proceed with occasional lifts of the rod to ensure complete treatment coverage through the saturated and unsaturated contaminated zones. The proper amount of ABC+ will be administered according to the subsurface and known contamination characteristics at each injection location. The total volume, pressure, and rate of treatment chemistry injection will be monitored by ERM and amended according to field conditions in order to ensure maximum injection effectiveness. Immediately after the completion of each injection point, the borehole will be backfilled and hydrated using granular bentonite to prevent subsequent injected ABC+ short circuiting.

The ABC+ solution will be prepared using specialized equipment. The solution will be mixed and temporarily staged in dedicated containment tanks prior to injection. Multiple tanks will be mixed and used during the injection, which enables work to proceed steadily and efficiently. The treatment chemistry will be pumped into the formation using air-driven, chemically resistant pumps. The rate, pressure, and volume will be monitored using chemically resistant pressure gages and inline electronic flow meters.

During the injection process, ERM will adhere to a strict health, safety and risk-review protocol to help prevent inadvertent, uncontrolled leaks or spills. Also, the ERD process results in generation of methane which can potentially migrate into enclosed spaces. ERM assumes that the existing building space will be unoccupied and ventilated during and after the ABC+ injection.

Task 3 – Remedial Action Implementation (Off-site Vapor Mitigation via Phytoremediation)

ERM proposes to utilize a phytoremediation approach to mitigate the migration of contaminants across the contaminated site and other property boundaries. Engineered vegetation growth has been utilized in both soil and water quality improvement for many years. Aquatic plants are used for removal of both organic and inorganic contaminants for surface water treatments. Additionally, many fast-growing plants have the proven capability to remove vast quantities from the water table through the process of evapotranspiration. Phytoremediation has been used across the world to address contamination plumes.

ERM has implemented phytoremediation projects within the northern tier of states and Canada. Appendix A provides several examples of such projects. For this project, ERM is planning on installing fast growing trees such as poplar or willow, such that their roots are positioned within the water table. This results in accelerated growth and creation of a root system barrier.

Because the preferred remedial option requires demolition of the existing building above the contaminated area, a provision to mitigate the potential for vapors within the former dry cleaner is not relevant and not included herein. In the event that the building is retained and a direct push injection approach is employed, the cost for installing a sub-

slab depressurization system is included as a separate option.

Task 4 –Post-Active Remediation Groundwater Monitoring and Semi-Annual Reporting

The WDNR is in the process of updating the NR700 series regulations. The updated regulations are due to go into effect during fall 2011 and will include several modifications to the monitoring, reporting, and site closure requirements. One of the new requirements is performing eight quarters of groundwater monitoring to prove that a plume has achieved a stable or decreasing condition. While there are provisions in the new regulation to request a variance (fewer rounds) it is our opinion that due to the scope of the planned remedial activities, such a variance will not be granted for this site. Therefore, our bid includes the requisite eight quarterly rounds of ground water sampling.

All of the existing monitoring wells within and immediately adjacent to the soil mixing area will need to be abandoned. ERM proposes to install three new monitoring wells within the treatment area and one new monitoring well immediately downgradient (west). Our proposed, post-remediation monitoring well network is presented on Figure 1.

ERM will resume groundwater monitoring during the first full calendar quarter after the soil mixing is completed. Quarterly groundwater sampling will continue for two years. This is one advantage of the ERD remedial technology over permanganate injection. Typically it is inadvisable to resume groundwater sampling of VOC until observed permanganate concentrations in monitoring wells have dropped to less than 100 mg/L.

For each round of sampling, 13 monitoring wells will be sampled and analyzed for volatile organic compounds (VOCs) per WDNR specified analytical methods. ERM will collect a sample duplicate and a field blank for quality assurance purposes during each monitoring round. Wells will be sampled via all appropriate methods. ERM assumes that all purge water generated by sampling activities will be able to be discharged to the City of Racine public sewer system, as is the case with the City of Milwaukee.

Post remediation groundwater monitoring reports will be submitted to the WDNR semi-annually. ERM will prepare for parallel submission to WDNR a report providing the results of the remedial action and a report of the first two quarters of groundwater monitoring. These reports will follow WDNR guidelines for content.

Task 6 – Case Closure Request Report

ERM will prepare a case closure request report per WDNR guidelines. This closure report will outline the case for closure of the site which ERM assumes will be the appropriate course of action at the end of the two year groundwater monitoring period based on anticipated results of the proposed remedial action. It is anticipated that closure of the site will be contingent upon inclusion in the WDNR's GIS Registry of sites with residual impacts to soil and/or groundwater.

Project Scheduling

ERM understands that the Ehrlich Family wishes to select a contractor as soon as possible and expects a remedial action plan within a mutually satisfactory timeframe. ERM also understands that timely approvals of submitted documents to the WDNR are expected and will not inhibit implementation of the remedy. ERM estimates that the active remedial activities can be implemented within six months of consultant selection and authorization, dependent upon accessibility, weather, or other unforeseen time constraints.

ERM anticipates the project scheduling as depicted at the end of this section.

Access and Permits

ERM expects that all reasonable efforts to thoroughly access buildings and lands will be accommodated by the Ehrlich Family and others. ERM further expects that entry access, permits, local ordinances and approvals, where necessary, will be approved on a timely basis and will not inhibit ERM's ability to meet the Ehrlich Family's expected timeline.

Wisconsin Voluntary Party Liability Exemption (VPLE) Program

Enrollment of the Site in the VPLE program would not impact case closure, regardless of the type of remedial action implemented. There are no special closure criteria or considerations for sites in the VPLE program. Enrollment in the VPLE program would provide Ehrlich with an exemption from future liability only after the standard case closure process was completed. The liability exemption applies, for example, if subsurface impacts are discovered in the future to be more extensive than originally thought, or if environmental standards are modified.

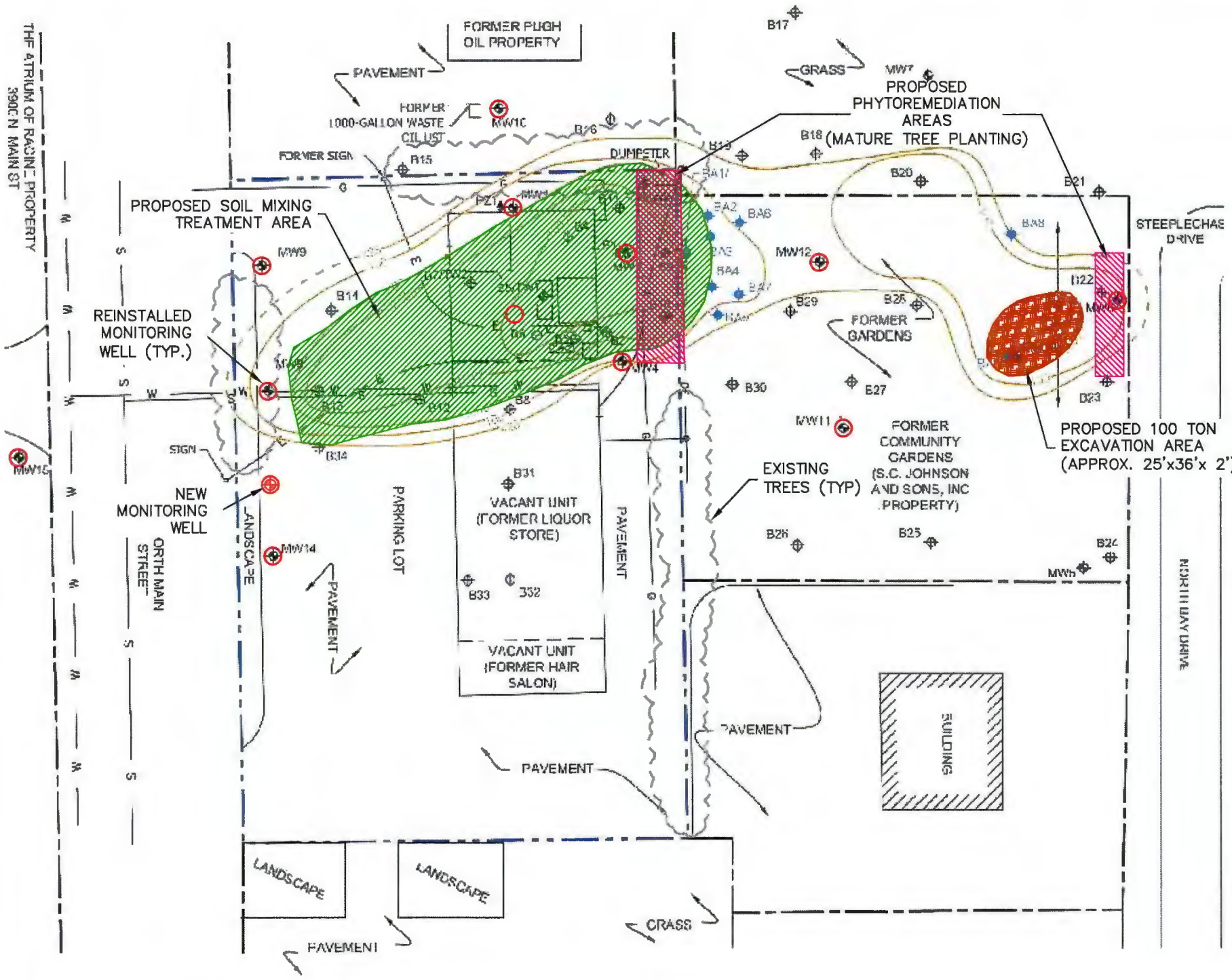
Additional costs for enrollment in the program include a $250 application fee, a $1,000 advance deposit to WDNR for document review, and a $100 per hour WDNR labor charge if that deposit is exhausted during the document review. ERM would charge approximately $300 to complete and submit the enrollment application.

Sustainability

The WDNR's Remediation and Redevelopment Program recently embarked on a new initiative called Wisconsin's Initiative for Sustainable Cleanups (WISC). The emphasis of the WDNR initiative is to apply sustainable technologies in site remediation to save energy, reduce greenhouse gases and minimize waste through reuse and recycling. The goal of the WISC program is to optimize remedies that are protective of public health, safety and the environment to make them economically sound and more sustainable to meet long-term needs and protect valuable state resources. The initiative is also committed to employing sustainable technologies which will help Wisconsin contribute solutions to global climate change concerns. The WDNR has developed guidance documents for consultants to use when designing and implementing sustainable remedial actions. This guidance will be followed during the design and implementation of the site remedial approach.

ERM is a global leader in identifying and implementing sustainable business solutions for our clients. As such, we are actively engaged in the emerging practice of incorporating sustainability concepts into the design and implementation of new and existing remedial actions. ERM personnel are at the forefront of sustainable remediation through their participation in workgroups with members from industry, regulatory agencies, and consultants that are evaluating sustainable approaches to remediation. An example of one of the sustainable features included in our conceptual remedial plan for the Site is the use of phytoremediation to control off-site migration of contaminated groundwater and vapor. This approach will complement the existing landscape and on-going phytoremediation currently afforded by the trees already along the margins of the site.

SITE MAP



LEGEND

- SUBJECT PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARIES
- OE — OVERHEAD ELECTRIC LINE
- G — UNDERGROUND GAS LINE
- W — WATERMAIN
- E — BURIED ELECTRIC LINE
- S — BURIED SANITARY SEWER
- T — BURIED TELEPHONE LINE
- UTILITY POLE
- FORMER DRY CLEANING MACHINE LOCATION
- EXISTING DRY CLEANING MACHINE
- MW1 — 2" MONITORING WELL LOCATION AND IDENTIFICATION
- B34 — BOREHOLE LOCATION AND IDENTIFICATION
- BA5 — HAND AUGER NEAR SURFACE SAMPLE LOCATION AND IDENTIFICATION
- PZ1 — PIEZOMETER LOCATION AND IDENTIFICATION
- TW2 — 1" TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION
- 100 — UNSATURATED SOIL PCE ISOCONCENTRATION LINE IN MICROGRAMS PER KILOGRAM (DASHED WHERE INFERRED)
- MONITORING WELL NETWORK WELL

Sample Location	Sample Depth (feet)	Soil PCE Concentration (ug/kg)	Sample Location	Sample Depth (feet)	Soil PCE Concentration (ug/kg)
PZ1	1-3	370	B15	4-6	<25
MW1	3.5-5.5	430	B16	2-4	<25
MW2	1-3	1740	B17	2-4	<25
MW3	1-3	5400	B18	2-4	<25
MW4	1-3	<25	B19	2-4	<25
MW6	2-4	46	B20	2-4	104
MW8	1-3	330	B21	2-4	<25
MW12	1-3	<25	B22	2-4	470
MW14	3-5	<25	B23	2-4	<25
MW15	2-4	<25	B24	2-4	<25
B1	4	21,000	B25	2-4	<25
B2	2	9900	B26	2-4	<25
B3	12	460	B27	2-4	<25
B4	4	71,000	B28	2-4	<25
B4	2-4	270,000	B29	2-4	<25
B4	4-6	390	B30	2-4	<25
B4	14-16	270	B31	2-4	<25
B5	2-4	66,000	B32	2-4	<25
B5	10-12	300	B33	2-4	<25
B6	2-4	36,000	B34	3-5	<24
B6	12-14	171	BA1	2	130
B7	2-4	10,200	BA2	0.5	950
B7	6-8	77,000	BA2	2	700
B8	2-4	67	BA3	0.5	1200
B9	8-9	92,000	BA3	2	1500
B9	8-10	770,000	BA4	0.5	590
B10	2-4	14,000	BA4	2	100
B11	8-10	25	BA5	4	43
B11	2-4	63,000	BA6	0.5	56
B11	6-8	590,000	BA6	2	74
B12	2-4	1,600	BA7	0.5	84
B13	2-4	110	BA7	2	380
B13	6-8	68,000	BA8	1.5	<25
B14	2-4	130	BA9	0.5	53
B15	2-4	<25	BA9	2	1200

ADAPTED FROM BONESTROO, FIGURE 1, PN 003592-09001-0

CADD Review FGB	**EXPRESS CLEANERS, INCORPORATED** 3941 NORTH MAIN STREET RACINE, WISCONSIN	CHK'D BY: JR-MIL
DRAWN BY: RMK		PROPOSAL
Date Drawn/Rev'd 08/16/2011	Environmental Resources Management	1

R:\Cadd\Proposals\MILWAUKEE\PRO-F1.dwg, Layout1, 8/18/2011 8:15:14 AM, RMK - HOLLAND

ANTICIPATED PROJECT SCHEDULE

No.	Task	Month*																																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
	Project Authorization																																			
1	Final Remedial Option Design Report																																			
2	Remedial Action Implementation** (Soil Mixing)																																			
3	Remedial Action Implementation (Off-Site Vapor Mitigation via Phytoremediation)																																			
4	First Year of Groundwater Monitoring • 1st Quarterly Event • 2nd Quarterly Event Semi-Annual Monitoring Report and Remedial Action Completion Report • 3rd Quarterly Event • 4th Quarterly Event																																			
4	First Annual Monitoring Report																																			
4	Second Year of Groundwater Monitoring • 1st Quarterly Event • 2nd Quarterly Event Semi-Annual Monitoring Report • 3rd Quarterly Event • 4th Quarterly Event Second Annual Monitoring Report																																			
5	Closure Report																																			

* The schedule allows for 60 day review by WDNR after each submittal.

** The remedial action implementation will begin after the building is demolished and is contingent upon subcontractor equipment availability.

Section 4
Specific Information in Accordance with WAC NR 169

Specific Information in Accordance with WAC NR 169

The following information is provided to specifically comply with the DERF, Remedial Action Bid Checklist (form RR-756, July 2006).

NR 169.23 (2)(d) - Sealed Bids
ERM has included a sealed bid with this submittal. Table 1 provides a cost breakdown relative to each specific project tasks, as defined in the previous section of this proposal, and total project costs. A copy of ERM's Contract Terms and Conditions are provided in Appendix B.

NR 169.23(3)(b) - Statement of Consultant's Ability
ERM has reviewed all provided information and has developed an approach to meet all site objectives. We have the expertise, experience, and capabilities to design a suitable remedial actions response. ERM staff will provide accurate technical reviews, plans, and designs; effectively oversee construction and operation of the remedial system; and monitor and document all site activties in an ethical, timely and professional manner. All work will be completed or overseen by Wisconsin-certified professionals

NR 169.23(6)(a) - Technical and Economic Feasibility Evaluation of Remedial Alternatives
ERM completed a technical and economic feasibility evaluation of remedial alternatives for the Site in accordance with WAC NR 722. Various technologies were compared based on the following criteria:

- Ability of the option to meet the remedial objectives (effectiveness);
- Implementability of the remedial alternative;
- Fiscal commitment of the remedial alternative; and
- Time requirement to achieve remedial objectives.

Appendix C contains a table that documents a list of remedial alternatives that are evaluated with respect to the criteria included in NR722 WAC. The comments column of the spreadsheet presents our evaluation of how each technology compares against the criteria relative to the specific conditions at the Express Cleaners site.

Based on these comparisons, ERM has selected in-situ Enhanced Reductive Dechlorination (ERD) using REDOX Tech, LLC's ABC+ amendment via in-situ mixing to address soil and groundwater contamination; a series of tree line planting, phytoremediation barriers to address the potential for contaminant vapors along the property boundaries; and subsequent groundwater monitoring to evaluate the contaminant plume response to the ERD and subsequent monitored natural attenuation (MNA) potential.

NR 169.23 (6)(b) - Remedy for Closure
ERM has selected in situ remediation (i.e., ERD) via soil mixing technology to incorporate the proposed soil amendments. In this case, ERM experts have selected the REDOX Tech, LLC (REDOX Tech) Anaerobic Biochem Plus (ABC+) as the preferred amendment to address soil and groundwater contaminants to achieve site closure in accordance with WAC NR 726. This technology has been proven successful in significantly reducing chlorinated solvent concentrations in similar settings. Success is dependent upon maintaining reducing conditions within the treatment zone such that the appropriate bacteria and/or ZVI can degrade the contaminants. Soil mixing will allow the ABC+ to be evenly distributed throughout the treatment zone to reduce the potential for spotty distribution of the amendments. The ABC+ will be applied in the following manner:

- Demolition of the northern 100 feet of the strip mall building and removing utilities, monitoring wells, and parking lot surfaces from the treatment area.

- Application of the ABC+ into subsurface soils and groundwater using mechanized soil mixing equipment within the previously determined 1,000 ug/kg saturated and unsaturated soil PCE concentration footprint (approximately 120 feet by 60 feet by 8 – 10 feet deep).

- Excavation, transport, and disposal of approximately 100 tons of potentially PCE impacted soil from the adjacent property (formerly a community garden plot). The area will be filled with clean fill, re-graded and seeded with an appropriate grass mixture.

All of the existing monitoring wells within and immediately adjacent to the soil mixing area will need to be abandoned. ERM proposes to install three new monitoring wells within the treatment area and one new monitoring well immediately downgradient (west).

ERM will resume groundwater monitoring during the first full calendar quarter after the soil mixing is completed. Quarterly groundwater sampling will continue for two years.

Because the preferred remedial option requires demolition of the existing building above the contaminated area, a provision to mitigate the potential for vapors within the former dry cleaner is not relevant.

ERM proposes to utilize a phytoremediation approach to mitigate the migration of contaminants across the contaminated site and other property boundaries. Many fast-growing plants have the proven capability to remove vast quantities from the water table through the process of evapotranspiration. Phytoremediation has been used across the world to address contamination plumes. For this project, ERM is planning on installing fast growing trees such as poplar or willow.

Installation of trees will occur in two areas; along the eastern boundary of the site, and along the eastern boundary of the former community garden property. The trees will be installed such that their root systems are within the groundwater table. These phytoremediation areas are intended create active root system barriers to migration of contaminants which could result in exceedences of the vapor screening risk levels across the contaminated site and other property boundaries.

The proposed approach provides a comprehensive plan to address the highest concentrations at the site. The ERD approach focuses on direct application of biological amendments to enhance natural reductive dechlorination processes, and ZVI that can immediately destroy contaminants of concern (COCs) upon contact and substantially reduce residual concentrations of COCs. Mitigation of off-site groundwater migration and resulting vapors is addressed through the use of the phytoremediation barriers and natural attenuation. Further detailed discussions of the proposed approach are provided in the prior section (Task 4 and 5).

NR 169.23(6)(c) - Itemized List of Consultant and Contract Services

The following is a description and list of consultant and contract services for this proposed scope of work.

ERM – Environmental Resources Management- the environmental consultant leading the project. ERM will manage all aspects and contractors of the project including;

- Design of remedial approach and document submittal;

- Oversee remedial approach construction and implementation;

- Conduct post-remedial groundwater monitoring collection and documentation to monitor remediation progress; and

- Closure report documentation.

Demolition Subcontractor – Assuming that the site utilities have been isolated and capped/relocated, the demolition subcontractor will remove piping and wiring from the

planned soil mixing area. Subsequent (assuming that all asbestos containing materials have been abated from the premises) the building, floor slab and foundation footings will be demolished and the materials disposed of at an appropriately licensed landfill as construction and demolition materials.

Remediation Subcontractor – The remediation subcontractor will be contracted by ERM to provide material and services associated with the ERD activities. The subcontractor will perform the soil mixing of ABC+ throughout the entire treatment zone footprint.

Drilling Services – A drilling service provider will be contracted by ERM to construct the replacement and new groundwater monitoring wells. The drilling contractor will also performing an injectivity test to obtain data in the event that localized follow-up application of ABC+ is needed.

Laboratory Services – A laboratory service provider will be contracted by ERM to provide analytical services throughout the project. The laboratory will be a State of Wisconsin certified laboratory.

Utility Locator – A private utility locator will be contracted by ERM to provide subsurface utility locations. This will ensure that any subsurface work will not adversely encounter any of the subsurface utilities.

Disposal Services – A disposal service provider will be contracted by ERM to provide appropriate soil, concrete, and if necessary, groundwater transportation and disposal services.

Tree Planting Services – A tree nursery will be contracted to supply and plant the trees for the phytoremediation barriers.

NR 169.23(6)(d) - Remedial Action Pilot Test Estimate
A gene trac test for the presence of CVOC dechlorinating bacteria will be performed prior to full-scale remedial implementation. Samples collected using Microbial Insights, Inc. baited Bio-Trap® samplers from within the contaminant zone will be submitted their laboratory for bacterial testing. This information will be used to determine whether additional bacterial culture amendment will be needed to be added to the ERD formulation. The estimated cost for the Bio-Trap® testing is $1,900.

As mentioned in the previous section, the drilling subcontractor will conduct a post-blending injectivity test within the treatment area to obtain data in the event that localized follow-up application of ABC+ is needed. The test will be performed during the monitoring well replacement activity and cost of the injectivity testing is estimated at $500.

NR 169.23(6)(e) - Total Cost Estimate
The RFP specifies two remedial alternatives for the site property:

a) Demolish All or Part of the Building Before Commencing Remediation; and

b) Perform the Remedial Work Without Demolition.

The RFP specifies performing a 100 ton soil removal, disposal, and surface restoration on the neighboring property near boring BA9. Additionally, costs to perform an emulsified oil supplement injection on the neighboring property were also requested. Our sealed bid includes three tables. Table 1 is for our preferred remedial approach; demolish all or part of the building before commencing remediation. Table 2 is for the second choice, alternate approach; perform the remedial work without demolition. Table 3 presents the costs for the items requested by the RFP for the neighboring property (i.e., 100-ton soil removal and EOS injection).

The cost tables provided by ERM include a detailed list for the total cost of consultant and contractor services. The total cost includes subtotals for each component of the remedial action plan.

NR 169.23(6)(f) - Hours and Cost per Units
ERM has provided an estimated price per hour for every service and a total estimated cost for all services broken down in Table 4 contained within the sealed bid.

This price includes the estimated hours of service provided. ERM understands that the Ehrlich Family expects the remedial action plan to be implemented within a mutually satisfactory timeframe.

NR 169.23(9)(a) - Consultant Certification Statement
ERM's remedial approach/action for the contaminated soil and groundwater will be in accordance with WAC NR 700 series. Upon WDNR request, ERM will provide documents and records of contract services. ERM did not prepare the proposal in collusion with any other consultant bidding on this project.

NR 169.23 (9)(b)(1) - Certification of Insurance
A copy of ERM's Certificate of Insurance is provided in Appendix D. We comply with all of the requirements as set forth in the regulation except for the maximum deductible requirement of $25,000/claim. ERM's deductible is $250,000/claim. Included in Appendix D is a statement from a company Principal stating that ERM has the financial responsibility for specific requirement of $25,000/claim.

Environmental Resources Management, Inc.
Bid Proposal Response for Remedial Action
Express Cleaners/ Ehrlich Family Limited Partnership
3941 N. Main Street, Racine, WI

Table 1
Cost Estimate for Demolition and Remediation

Task	Activity/Description	Total Estimated Costs	DERF Reimbursable Costs	DERF Non-Reimbursable Costs
1.	**Remedial Action Work Plan**			
	ERM Labor	$13,020	$12,430	$590
	WDNR Fees	$750	$750	$0
	Miscellaneous Supplies	$10	$10	$0
	Total Task 1	**$13,780**	**$13,190**	**$590**
2.	**Soil Mixing Implementation**			
	ERM Labor	$21,410	$12,670	$8,740
	Remediation Subcontractor	$135,970	$125,900	$10,070
	Drilling Subcontractor	$7,020	$6,500	$520
	Demolition Subcontractor	$45,900	$0	$45,900
	Laboratory	$760	$700	$60
	Travel	$1,940	$0	$1,940
	Field Supplies	$1,620	$1,500	$120
	Miscellaneous Supplies	$320	$300	$20
	Total Task 2	**$214,940**	**$147,570**	**$67,370**
3.	**Phytoremediation Implementation**			
	ERM Labor	$5,710	$5,450	$260
	Subcontractor	$5,400	$5,000	$400
	Travel	$220	$0	$220
	Field Supplies	$0	$0	$0
	Miscellaneous Supplies	$50	$50	$0
	Total Task 3	**$11,380**	**$10,500**	**$880**
4.	**Post-Remediation Groundwater Monitoring and Reporting**			
	ERM Labor	$32,650	$31,160	$1,490
	Waste Subcontractor	$430	$410	$20
	Travel	$1,070	$0	$1,070
	Laboratory	$7,780	$7,200	$580
	Field Supplies	$5,620	$5,200	$420
	Miscellaneous Supplies	$760	$700	$60
	Total Task 4	**$48,310**	**$44,670**	**$3,640**
5.	**Site Closure Report**			
	ERM Labor	$7,560	$7,210	$350
	WDNR Fees	$750	$750	$0
	Miscellaneous Supplies	$30	$30	$0
	Total Task 5	**$8,340**	**$7,990**	**$350**
	Grand Total	**$296,750**	**$223,920**	**$72,830**

Environmental Resources Management, Inc.
Bid Proposal Response for Remedial Action
Express Cleaners/ Ehrlich Family Limited Partnership
3941 N. Main Street, Racine, WI

Table 2
Cost Estimate for Remediation without Demolition

Task	Activity/Description	Total Estimated Costs	DERF Reimbursable Costs	DERF Non-Reimbursable Costs
1.	**Remedial Action Work Plan**			
	ERM Labor	$15,930	$15,200	$730
	WDNR Fees	$750	$750	$0
	Miscellaneous Supplies	$10	$10	$0
	Total Task 1	**$16,690**	**$15,960**	**$730**
2.	**ABC+ Injection Implementation**			
	ERM Labor	$41,950	$40,050	$1,900
	Remediation Subcontractor	$118,100	$109,350	$8,750
	Sub-Slab Depressurization System Installation and Testing	$6,000	$5,480	$520
	Laboratory	$760	$700	$60
	Travel	$2,900	$0	$2,900
	Field Supplies	$4,540	$4,200	$340
	Miscellaneous Supplies	$590	$150	$440
	Total Task 2	**$174,840**	**$159,930**	**$14,910**
3.	**Phytoremediation Implementation**			
	ERM Labor	$5,710	$5,450	$260
	Subcontractor	$5,400	$5,000	$400
	Travel	$220	$0	$220
	Field Supplies	$0	$0	$0
	Miscellaneous Supplies	$50	$50	$0
	Total Task 3	**$11,380**	**$10,500**	**$880**
4.	**Post-Remediation Groundwater Monitoring and Reporting**			
	ERM Labor	$32,650	$31,160	$1,490
	Waste Subcontractor	$430	$410	$20
	Travel	$1,070	$0	$1,070
	Laboratory	$7,780	$7,200	$580
	Field Supplies	$5,620	$5,200	$420
	Miscellaneous Supplies	$760	$100	$660
	Total Task 4	**$48,310**	**$44,070**	**$4,240**
5.	**Site Closure Report**			
	ERM Labor	$7,560	$7,210	$350
	WDNR Fees	$750	$750	$0
	Miscellaneous Supplies	$30	$30	$0
	Total Task 5	**$8,340**	**$7,990**	**$350**
	Grand Total	**$259,560**	**$238,450**	**$21,110**

Environmental Resources Management, Inc.
Bid Proposal Response for Remedial Action
Express Cleaners/ Ehrlich Family Limited Partnership
3941 N. Main Street, Racine, WI

Table 3
Cost Estimate for Remediation of SCJ Property

Task	Activity/Description	Total Estimated Costs	DERF Reimbursable Costs	DERF Non-Reimbursable Costs
1.	**ABC+ Injection**			
	ERM Labor	$1,920	$1,920	$0
	Remediation Subcontractor	$4,320	$4,000	$320
	Travel	$240	$0	$240
	Field Supplies	$220	$200	$20
	Miscellaneous Supplies	$50	$50	$0
	Total Task 1	**$6,750**	**$6,170**	**$580**
2.	**Soil Excavation and Backfill**			
	ERM Labor	$1,480	$1,480	$0
	Excavation and Disposal Subcontractor	$13,150	$12,180	$970
	Laboratory	$810	$750	$60
	Travel	$120	$0	$120
	Field Supplies	$220	$200	$20
	Miscellaneous Supplies	$50	$50	$0
	Total Task 2	**$15,830**	**$14,660**	**$1,170**
	Grand Total	**$22,580**	**$20,830**	**$1,750**

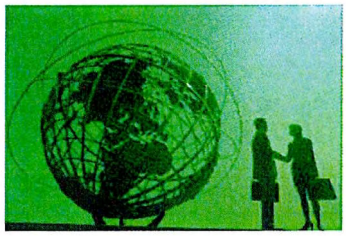
Environmental Resources Management, Inc.
Bid Proposal Response for Remedial Action
Express Cleaners/ Ehrlich Family Limited Partnership
3941 N. Main Street, Racine, WI

Table 4
Labor Breakdown

		Building Demolition and Remediation	Remediation without Demolition	SCJ Property Remediation
Position	**Rate**	**Hours**	**Hours**	**Hours**
Partner	$210	14	14	2
Program Manager	$115	140	152	4
Project Manager	$85	404	502	8
Engineer	$95	11	11	1
Geologist	$75	292	475	20
CAD Operator	$65	44	44	0
Administrative Assistant	$65	18	18	0
Total		923	1216	35

Appendix A
Personnel Profiles and Selected Examples of Relevant Experience

Daniel W. Petersen, Ph.D, P.G.



Dan Petersen has more than 20 years of experience addressing the environmental needs of industrial, commercial, and legal clients. His primary fields of expertise include: brownfield development; site investigation and remediation under CERCLA, RCRA, and voluntary cleanup programs; due diligence for mergers, acquisitions, and divestitures including large portfolios; developing compliance assessment and compliance management programs for large industrial and commercial clients; and overseeing permitting programs for industrial and commercial clients.

Dan has extensive experience in the characterization and remediation of environmentally challenged properties including active industrial facilities, former landfills, and abandoned manufacturing facilities. His activities have included site characterization, vapor surveys, large scale excavations, demolition, *in situ* stabilization and destruction, engineered barriers, contaminated site construction, and multi-tiered risk evaluation. He has also directed multi-million dollar redevelopment projects.

Dan has in-depth knowledge and experience in the negotiation and closure of Brownfield sites under the Illinois Environmental Protection Agency (IEPA) Site Remediation Program for property redevelopment. Key tasks included preparation of brownfield grant applications; site/source investigations; remedial action design; calculation of corrective action objectives; preparation of remedial objective reports under Tiers 1, 2, and 3; negotiation of corrective action objectives; evaluation of vapor intrusion issues under proposed IEPA regulations; and supervision of these aforementioned activities.

His transactional expertise includes the assessment of small and large commercial and industrial portfolios as part of due-diligence activities. Dan has directed transaction projects for more than 300 sites and deals worth over a billion dollars. These sites have included petroleum, chemical manufacturing, packaging, health care, heavy manufacturing, and explosives. He has also developed comprehensive liability models using Monte Carlo analyses to evaluate likely and reasonable worst case scenarios for individual sites and portfolios.

Dan is also experienced at assembling teams to assist clients with national and global environmental and safety compliance auditing and compliance improvement programs

Registrations

- Licensed Professional Geologist, State of Illinois
- Registered Professional Geologist, State of Wisconsin

Fields of Competence

- Site investigation and remediation industrial/ commercial facilities, airports, railroad facilities, and landfills
- Hazardous waste characterization, treatment, and disposal
- Negotiation of closure strategies for abandoned and active industrial facilities
- Facility decommissioning, demolition and contaminated site construction
- Evaluation of environmental liabilities using Monte Carlo analysis
- Development of HSE auditing programs

Credentials

- Ph.D., Sedimentology, Geochemistry, and Quantitative Paleobiology, University of Cincinnati, 1994
- M.S., Geology, University of Cincinnati, 1987
- B.S., Geology, University of Illinois, Urbana-Champaign, 1984

Key Projects

Closure of TCE DNAPL site in central Illinois. Developed strategies for source control and natural attenuation to address soil and groundwater impacts. Prepared risk evaluation and negotiated remedial objectives and closure strategies with the IEPA. Worked with city to negotiate groundwater use ordinance. Designed simplified extraction system resulting in removal of over 500 gallons of TCE. NFR received from IEPA.

Closure of a former municipal incinerator landfill in a northern suburb of Chicago. Activities included assistance with the preparation of a brownfield grant application; preparation of reports for the brownfield grant; conducting soil and groundwater investigations; preparing remedial action plans; removal of TCLP lead impacted fill, conducting negotiations with the IEPA for closure of the site; and reviewing contracting issues with prospective purchasers. Closure was contigent on use of future parking lots and new buildings for engineered barriers, which required agreements with IEPA to issue NFR after completion of construction. The new retail space now generates several million dollars per year in tax revenues.

Directed the environmental due-diligence for the acquisition of landscape equipment and supply company with more than 300 locations. Utilized selective onsite inspections and environmental database reviews to assess environmental liabilities in an extremely limited time period. Was able to complete the work with limited site interaction.

Directed due-diligence for the merger of a heavy manufacturing division of a Fortune 500 company. Activities included onsite assessment, data base reviews, data room reviews, internet research of historic locations, and liability assessment. Was able to complete the extremely confidential work with limited site access.

Designed and directed Monte Carlo simulations for the assessment of environmental liabilities of transaction portfolios and individual facilities as part of due-diligence and financial reserve assessment. The Monte Carlo simulations included the probabilistic evaluation of potential environmental impacts, remediation scenarios, regulatory intervention, property redevelopment, and litigation. The results included the improved assessment of future liabilities of a superfund site, the negotiation of multi-million dollar reduction in the purchase price of a manufacturing target, and the successful closure of several portfolios with environmental liabilities.

Implemented compliance auditing program for global Fortune 500 manufacturing operation. Activities included assessment of environmental, health and safety, and local regulatory concerns across the EU, North America, and southeast Asia. The program identified and prioritized concerns, which were put into a database for tracking. ERM then worked with the client to address the concerns.

Directed U.S. compliance auditing program for one of the world's largest food suppliers. Responsibilities included identifying regulatory experts, addressing client concerns, and assuring quality control through assuring staff commitments, verifying scheduling and working with ERM's global network to assure that the projects were staffed appropriately.

Closure of former steel wire mill. Designed and implemented a site investigation, risk evaluation, and remedial action at a former steel wire manufacturing facility in Chicago, Illinois. Through the use of engineered barriers, institutional controls and source removal, the site was closed in less than 18 months. As a result, the property was sold and is active once again. Because of stormwater requirements, implementation of

the engineered barrier was cost prohibitive. Therefore, a permeability engineered barrier was developed that allowed water infiltration, but prevented exposure to the impacted soils. As a result, no stormwater detention was deemed necessary. This IEPA-approved design resulted in cost savings of up to $500,000. Comprehensive NFR received from IEPA for the property.

Brownfield redevelopment project of a former aircraft parts manufacturer and petroleum blending operation. Managed acquisition investigations of distressed properties; prepared engineering estimates for building demolition, soil remediation, stormwater management infrastructure, and building pad preparations; oversaw aforementioned activities; and prepared information packages for TIF application and reimbursement packages. The extensive investigations lead to the redevelopment of the property without obtaining an NFR from the IEPA. Developed and managed a contaminated site construction strategy allowing contaminated media to be left in place resulting in multi-million dollar savings.

Brownfield redevelopment project for a former retail property. Managed acquisition investigations of distressed properties; prepared engineering estimates for building demolition, soil remediation, stormwater management infrastructure, and building pad preparations; oversaw aforementioned activities; and prepared information packages for TIF application and reimbursement packages. Negotiated with the IEPA to permit the removal and replacement of TCLP lead impacted fill material with permits required. Used *in situ* soil stabilization techniques to reduce soil management costs for excess soils, worked with contractors to design and build a slab on pile foundation structure in characteristically hazardous soils, and negotiated with IEPA and CDOE to address cleanup issues, while taking LEEDs credit for remediation and not working under and IEPA program. This permitted development of the project using TIF funds in a case where full remediation would not have been economically feasible. Managed facility construction in contaminated portions of site to permit development of the facility while leaving impacts in place with significant cost savings.

Abandoned wood treating facility. Designed and implemented site investigations, risk evaluations, and corrective action activities at a large, abandoned wood treating facility in northeastern Illinois. Current plans call for the use of buildings and asphalt parking lots as engineered barriers and selective source removal to address free-product. Worked with a municipality and railroad to negotiate construction of a railroad right of way through property. The site characterization has been completed and pilot testing initiated for removal of free product.

Brownfield redevelopment project for a vacant property that was formerly used for manufacturing of appliances and water heaters. As a result of development, impacted fill materials were historically placed on the property. The building was later demolished with the building slab left in place. Remediation costs were reduced using site-specific remediation objectives, recycling/reuse of concrete on the property, division of the property into industrial-commercial and residential parcels, and extensive statistical analysis. The existing building concrete slab was demolished, crushed, and utilized for engineered backfill on site. Over 10,000 tons of impacted soils were excavated and transported to a licensed facility for disposal. As the remediation progressed, additional samples were collected to help identify soils above ROs to reduce excavation volumes/costs. ERM-RCM worked with IEPA to develop a statistical data evaluation program to assess residual impacts. As a result of the detailed work, a comprehensive NFR was quickly issued for the property which permitted the development of a public school.

Implemented petroleum dating techniques, risk evaluations, and cost evaluations to determine LUST cost allocations for former nationwide petroleum marketer.

Co-authored work plans for the investigation of a light nonaqueous phase liquid investigation and coordinated

and supervised soil and groundwater field activities at a CERCLA site in northeastern Illinois.

Conducted environmental investigations related to a fuel dump and a propylene glycol release for a major U.S. airline at O'Hare International Airport. Efforts included evaluating radar traces, collecting samples, conducting risk evaluations, and preparing reports.

Designed and implemented site investigations and risk evaluations for railroad facilities including various petroleum related investigations and remediation, vapor intrusion evaluations, and lead evaluations.

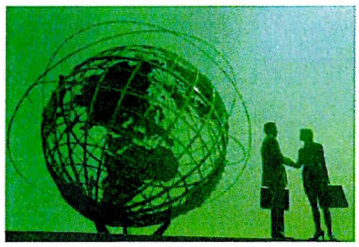
Directed Phase I and Phase II Environmental Assessments for the feasibility evaluation for constructing a new hangar at Midway Airport, Chicago, Illinois.

Co-authored work, remedial investigation (RI), and/or remedial design plans and required investigative reports for CERCLA, RCRA, site remediation program, and LUST sites in Illinois, Indiana, New York Michigan, and Nebraska.

Closure of environmental issues associated with an auto parts manufacturer. Designed and implemented and soil and groundwater investigation at a former industrial facility with methylene chloride soil and groundwater contamination. Based on a risk evaluation, a remedial action strategy was negotiated, which resulted in receipt of a "No Further Remediation" letter within one year of submittal of the initial investigation reports to the IEPA. The expedited closure schedule permitted transfer of the property.

Closed brownfield site in northeastern Illinois under a 60-day time constraint. Activities included preparation of a Remedial Objectives Report, elimination of exposure routes, and negotiation of closure with the IEPA.

Carl B. Stay, P.E., P.G.



Carl Stay is a Senior Project Engineer with over 20 years experience as an engineer and hydrogeologist in the environmental consulting and remediation industry. Mr. Stay has diverse experience in the petroleum, metals, chemical, and manufacturing industries. He has experience with geologic mapping; field investigations; and aerial photograph interpretation and is proficient with ground water and chemical fate and transport modeling applications. Experienced with treatability studies; risk-based corrective action (RBCA) evaluations; and technical advising for investigation and remediation projects at Superfund, Resource Conservation and Recovery Act (RCRA), emergency action, voluntary cleanup, leaking underground storage tank (UST) sites. Proficient at preparing spill prevention control and countermeasures plans (SPCC), and Phase I environmental site assessments (ESAs).

Directed field operations involving investigation of nature and extent of contamination due to petroleum and chlorinated solvent releases in Wisconsin, Michigan, and Illinois. Provided technical support for evaluating contaminant trends for natural attenuation and risk-based options.

Conducted ground water fate and transport modeling of UST, RCRA and Superfund sites in Illinois, Indiana, Michigan, and Wisconsin. Successfully modeled complex geologic and hydrogeologic regimes and simulated the effects of the installation of remedial design alternatives including vapor extraction, liquid recovery and reinjection of remediated ground water. Experienced in the use of analytical element and finite-difference modeling of ground water regimes.

Performed borehole geophysical logging and flowpath evaluation in fractured bedrock aquifer settings.

Registration

- Registered Professional Engineer, State of Wisconsin
- Registered Professional Geologist, State of Wisconsin

Fields of Competence

- Hydrogeological investigations
- Ground water monitoring
- Regional and local-scale ground water modeling
- Ground water flowpath evaluation
- Hydrogeochemical studies
- Aquifer tests
- Water-supply evaluations
- Wellhead delineation
- Borehole geophysical logging
- Ground water-surface water interactions
- Contaminant transport pathways analysis
- Storm water run-off investigations
- Bench-scale testing and treatability studies
- Risk-based corrective action evaluations
- Remediation design and implementation
- Water treatment system operation and maintenance
- Low cost and sustainable remedial technologies

Credentials

- M.B.A., University of Phoenix, 2010.
- M.S., Civil (Environmental) Engineering, Brigham Young University, 1988
- B.S., Geology, Brigham Young University, 1986

Professional Affiliations

- National Ground Water Association

Key Projects

Project manager for contaminated sites in Illinois and Wisconsin bringing site status closer to completion of investigative and remedial actions. Familiar with the Illinois EPA's Tiered Approach to Corrective Action Objectives (TACO) and Wisconsin's risk-based approach to investigation and remediation under the Wisconsin Administrative Code (WAC) Chapter NR 700 series of regulations.

Designed and conducted multiple-well, high-cpacity aquifer tests in support of an environmental impact statement for precious metal mine siting in Michigan.

Designed and constructed a sodium permanganate injection system into three 200-foot long horizontal wells including determining well yields and injection rates, monitoring well network and safe delivery of chemical oxidant into the subsurface.

Designed and implemented pilot study for injecting emulsified oil substrate (EOS) at a site impacted with chlorinated volatile organic compounds (VOCs).

Successfully designed and implemented a remediation system in Wisconsin that included a combination of source removal excavation and installation of infiltration gallery for injection of sodium persulfate.

Designed and installed remediation system for basement sump discharge water containing polychlorinated biphenyls in Wisconsin. Previously, sump discharge to a local wetland led to investigating nature and extent of PCB contamination in wetland sediments.

Successfully closed RCRA-regulated facility in Illinois using a natural attenuation approach, deed restrictions, and land use control restrictions.

Provided litigation support for evaluation of sources of bacterial contamination in a high capacity industrial water-supply well in Wisconsin.

Conducted borehole geophysical logging, geochemical and flowpath analysis in a fractured bedrock aquifer leading to recommendations and implementation of deep water-supply well reconfiguration thereby improving the quality of the well water.

Project manager for preparing stormwater pollution prevention plans (SPPP), and Spill Prevention Control and Countermeasures (SPCC) plans in Illinois, Maine, Michigan, and Wisconsin.

Conducted and evaluated Phase I ESAs and phase II site investigations to identify or address recognized environmental conditions at numerous properties throughout the Midwest.

Evaluated water-supply well field for well-head protection area in Muskegon, Michigan. Consideration of nearby Superfund site to determine potential for affecting well field due to migrating contaminant plume.

Provided computer modeling fate and transport of contaminants at superfund sites in Michigan, Indiana, and Illinois. Modeling included consideration of three-dimensional aspects of site geology, pumping and reinjection of water, interaction of nearby surface water bodies, and separate-phase oil migration.

Provided pilot-scale design, construction, and operation of a free-phase hydrocarbon recovery system for a large oil refinery in Indiana. Data reduction of field measurements, and computer modeling of ground water flow for the determination of full-scale remedial design parameters.

Investigated bulk fuel storage facilities in Germantown, Janesville, and Delavan, Wisconsin leading to characterizing the distribution and migration of petroleum-related VOCs in the subsurface under complex geologic and geometric relationships. Solved ground water flow problems associated with previously misunderstood conceptual models of the flow regimes.

Solved complex subsurface geologic structures within a former filled-in bedrock quarry in Janesville, WI. Played key role in solving complex ground water flow patterns and constructing a conceptual model, which was subsequently used by the Wisconsin Department of Natural Resources (WDNR) as a model site for implementing natural attenuation of petroleum-VOCs.

Technical advisor for evaluating capture efficiency of remediation systems at superfund and RCRA sites in Michigan, Indiana, Pennsylvania and Wisconsin.

Performed site investigation studies and evaluations at petroleum and chlorinated solvent spill sites in Illinois

and Wisconsin leading to the successful closure of these sites and no-further-action letters from governmental agencies.

Successfully closed chemical and putrescent landfill in Morris, Illinois, designed and implemented 30-year schedule of post closure care.

Prepared operations and maintenance manual for existing ground water pump and treat system in Milwaukee, WI and made several recommendations to property owner for optimizing the system.

Performed siting, design and preparation of bid specifications for high-capacity water supply well in northern Nevada. Field investigations for siting spring collector systems in Washington to enhance existing community water supply. Evaluated existing coastal water-supply wells to determine maximum capacity to avoid drawing deeper saline ground water into system.

Prepared and implemented three-dimensional ground water flow models for petroleum, RCRA and Superfund sites in Michigan City and Gary Indiana; Muskegon, Howell and Detroit, Michigan; Waterloo, Iowa; and Lamont, Illinois. Successful implementation and recommendations based on model results helped to evaluate site conceptual models leading to successful implementation of remedial action.

Brian J. Kappen, P.G.

Mr. Kappen has more than eight years of experience in environmental consulting with a focus on site investigations and remediation. This work has included proposal scoping, project management, geologic and hydrogeologic data collection, data analysis and management, and report preparation.

Mr. Kappen has been involved with several Phase I environmental site assessments and served as staff geologist for several Phase II site investigations, numerous long-term investigation and remediation efforts, a multi-million dollar Superfund project, and RCRA facility investigation and remediation projects. Mr. Kappen was also the field team leader for a two-year environmental baseline study. Duties have included research, fieldwork, subcontractor oversight, and data interpretation. Academic experience includes the use of stable isotopes and major ion chemistry in water studies, specifically groundwater – surface water interaction.

Mr. Kappen's field experience includes soil, ground water, surface water, sediment, and wipe sampling; oversight of auger, hammer, sonic, and wire-line core drilling and Geoprobe and Cone Penetrometer borings; in-situ permeability testing and small-scale aquifer testing.

Fields of Competence

- Groundwater investigation and remediation
- Contaminant fate and transport
- Aquifer Testing
- Phase I/II Environmental Site Assessments

Credentials

- M.S., Geology, Colorado State University, 2004
- B.S., Geology, University of Wyoming, 1999
- Professional Geologist, State of Wisconsin Credential #1260-013.

Professional Affiliations Wisconsin Groundwater Association

Certification and Training

- Current OSHA HAZWOPER 40-Hour Certification
- Current First Aid and CPR Training

Publications

- Kappen et al., "The Effects of Organic Soils on Attenuation and Treatment of a Trichloroethene Plume in Glacial Sediments," Battelle Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey California, May 2008.

Key Projects

Hill Air Force Base - Ogden, Utah
Part of a team that investigated the extent of several large-scale chlorinated solvent groundwater plumes and associated soil contamination on base and in surrounding communities. Directed auger and hammer drilling as well as Geoprobe and Cone Penetrometer Testing (CPT). Sampled and measured a network of over 200 monitoring wells. Collected and analyzed data from numerous in-situ permeability (slug) tests. Staffed four aquifer tests including three 72-hour tests and analyzed test data. Dealt routinely with residents on access and sensitive contamination issues.

Johnson Controls - Watertown, Wisconsin
Ongoing investigation and remediation of soil and multi-aquifer groundwater contamination. Directed Geoprobe and sonic borings and well installation to determine the extent of VOC and PCB impacts. Collected soil, groundwater, surface water, and wipe samples. Directed the installation of horizontal soil vapor extraction (SVE) wells and oxidant injection wells beneath the facility. Performed air monitoring/ sampling to determine the amount of contaminants removed via the SVE system. Some work was performed inside the operating factory around sensitive manufacturing equipment and products.

Hydrite Chemical – Waterloo, Iowa
Ongoing investigation of ground water contamination on private and public land with EPA oversight. Directed Geoprobe and sonic borings, discrete interval groundwater sampling, and monitoring well installation. Collected ground water elevation measurements and ground water samples. Involved with preparation of the countermeasures study report.

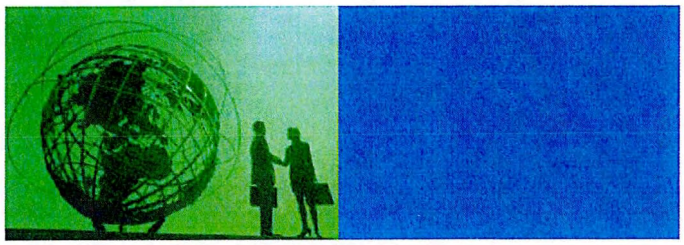
Aquila Resources – Stephenson, Michigan
Field team leader for the geology/ hydrogeology component of an environmental baseline study for a potential precious metals mine. Directed the installation of 37 ground water monitoring wells in unconsolidated and bedrock aquifers using auger and wire-line core drilling techniques. Installed several wetland piezometers using hand-auger methods. Established surface water monitoring points and deployed data loggers. Collected ground water and surface water samples on a quarterly basis. Designed, staffed, and analyzed data collected during 48-hour aquifer tests. Wrote drafts of the sampling and analysis plan and quality assurance project plan.

Gates Corporation – Rockford, Illinois
Investigation and remediation of cutting oil LNAPL in a sandy aquifer. Conducted remediation system performance monitoring including LNAPL thickness measurements and calculations. Performed optimization of a vacuum-enhanced fluid extraction system and demonstrated system operation and monitoring techniques to site personnel. Achieved site closure through the state LUST program.

Short-Term Projects
Staff geologist for more than 20 Phase II site assessments and several site investigation and remediation tasks at sites in Illinois, Iowa, Massachusetts, Minnesota, New Mexico, and Wisconsin. Clients include the food, electronic, retail, power, and manufacturing industries.

Tanya Gregg

Geologist, Midwest



Tanya Gregg is a Geologist within ERM based in Milwaukee, WI

Ms. Tanya Gregg has contaminated site investigation and remediation experience in Wisconsin, Michigan, Minnesota, Illinois, and Iowa. Her expertise includes in-field investigation techniques of soils, surface/storm waters, hard surfaces, processing residues, and waste streams, geologic mapping, dust wipe sampling, in-situ chemical soil and groundwater investigations, groundwater sampling, soil sampling, and wastewater treatment. Experienced in performing post abandonment investigations of leaking underground storage tanks (USTs); record well construction details, including conducting aquifer tests, chemical injections (Permanganate and Emulsified Oil Substrate) and assisting with pumping tests of aquifers. Tanya also has operated magnetometer, global positioning systems, electron resistivity, gravity, electrical conductivity, and ground penetrating radar.

Tanya also has been involved with over 20 Phase I and Phase II environmental site assessments for manufacturing and production facilities and warehouses.

Ms Tanya Gregg has 2 years of experience in contractor Health and Safety practices. This experience includes heath and safety supervision of persulfate injections, metals dust cleanup, drilling, concrete coring, and soil excavation. Tanya also has written health and safety manuals for site investigations, remedial actions plans, and subsurface drilling applications.

Tanya also has experience in air sampling and reporting, Form R reporting, Tier II reporting, Hazardous waste, and other compliance applications.

Professional Affiliations & Registrations

- American Geophysics Union
- Geological Society of America

Fields of Competence

- Remediation Investigations
- Phase I & Phase II Investigations
- Health and Safety
- Hard Surface Sampling (Pb, Cd, Cr, Ni, Zn)

Education

- M.S. Geosciences, University of Wisconsin-Milwaukee, USA, December 2008.
- B.S. Geography-Geology Emphasis, University of Wisconsin-Whitewater, USA, May 2005
- Geographic Information Systems (GIS) Certificate, University of Wisconsin-Whitewater, US May 2005
- 40 hr HAZWOPER training
- 8 hr HAZWOPER refresher
- 10 hr Construction Safety Awareness Training
- American Red Cross First Aid Certificate
- American Red Cross CPR Certificate
- Air Respirator Fit Test

Languages

- English, native speaker

Key Industry Sectors

- Manufacturing (chemical, metal working, automotive, electronic)
- Warehousing and Distribution (chemical)

Honours & Awards

- ERM Gold Star Award; July 2008, February 2009
- Geological Society of America Research Grant, 2007
- Sigma Xi Research Grant, 2007

Key Projects

Provided Health and Safety supervision of contractors on cadmium dust clean up. This supervision involved air quality monitoring, dust sampling, respirator usage, and contractor health and safety compliance. Taken part in most projects involving groundwater issues with this client in recent months. Tanya has been involved in a chemical injection, groundwater sampling, soil sampling, compliance reporting and air quality monitoring for this Master Lock facility. Tanya has health and safety experience involving hazardous metals (dust-Pb, Cr, Cd), subsurface utility clearance, drilling operations, soil excavation, fall protection equipment, and air monitoring. Additionally Tanya has provided health and environmental safety oversight for excavation activities. Activates associated with this project included: air monitoring, soil samplings, and soil investigation activities.

On-site leader for utility location and surveying including managing several subcontractors of the former Rockwell Automation site. Prepared the health and safety manual for air monitoring and remedial actions at the facility. Health and safety officer (HSO) at the site during recent drilling activities. Tasks performed for this project included: soil investigation, soil sampling, air monitoring, subsurface clearance, soil boring logging, Illinois Tier 2 risk assessment, contaminant mapping, and reporting.

Project manager for an annual wastewater discharge monitoring. Completed compliance reporting for the ink processing facility and sampling.

Tanya has participated in permanganate chemical injections into the groundwater at a Johnson Controls, Inc. site in Wisconsin. As part of this injection intensive health and safety procedures were followed for evacuation protocol, chemical neutralization, decontamination, and cleanup activities. Tanya also conducted pump and extraction tests were completed to help develop the work plan. Chemicals of concern at the site included: VOCs and PCBs.

Tanya has been the on-site leader an investigation of soil thickness beneath a metal contaminated pond within a wetland area at a former chemical manufacturing site in Illinois. Health and Safety procedures were followed for ice safety.

Tanya has coordinated site investigation and remediation projects in Wisconsin, Minnesota, and Iowa. Activities associated with these projects included: groundwater sampling, soil sampling, wipe sampling, creating groundwater contour and contaminant maps, tabulating data, and reporting.

Staff geologist for several Phase II investigations at sites in Minnesota, Wisconsin and Illinois. Clients include food, electronic, retail, and general manufacturing industries. Performed soil boring logging, soil sampling, groundwater sampling, and lead wipe sampling and development of the health and safety plan and walk through at the facility

Remedial Design and Oversight

Confidential Client, Michigan

Situation

Historic dry cleaning operations at the Michigan site resulted in releases of dry cleaning solvents to the ground in an adjacent alley. Releases were believed to have occurred from a dumpster in which spent dry cleaning filters were placed. Contamination resulted in listing of the site on the Michigan Department of Environmental Quality's "Part 201" list of contaminated sites. Perchloroethylene (PCE) was the primary contaminant of concern at the site.

ERM's Approach

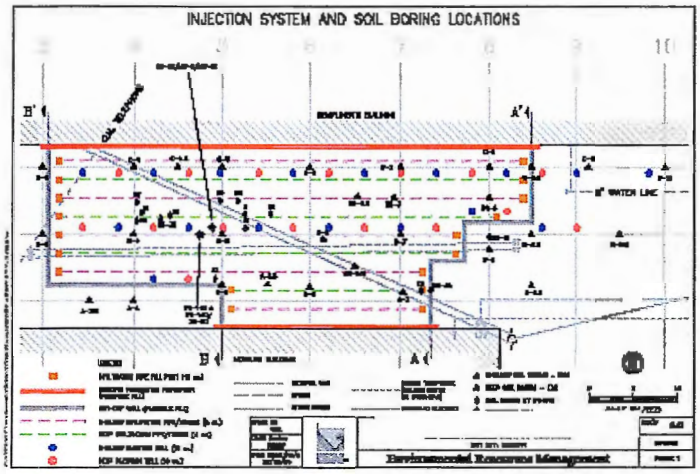
In-situ chemical oxidation (ISCO) was selected as the preferred cleanup option for the client's site. ERM designed and implemented the ISCO plan for the site. Preliminary tasks included compiling and evaluating geologic and hydrogeologic data, contaminant distribution data, and potential migration pathways. A pilot feasibility study was performed to evaluate the most effective oxidant and the required dosing. Sodium persulfate was selected as the optimum chemical oxidant. Catalysts were added to the oxidant solution to boost the oxidation rate and effectiveness. A buffered form of sodium persulfate was used to reduce the potential for oxidant effects on adjacent building foundations.

ERM prepared all design/bidding documents, and managed remedial construction of this $0.3 million dollar remediation project. ERM negotiated cost-effective alternatives into the design. The final remedy consisted of the following:

- Prepared a remediation and performance monitoring plan for Michigan Department of Environmental Quality review/approval.
- Performed a utility survey to identify and evaluate the integrity of underground utilities in the remediation area. Incompatible/damaged utilities were repaired or relocated outside the remediation area as needed.
- Managed construction of the subsurface oxidant delivery system. The oxidant delivery system consisted of a network of approximately 35 injection wells and 7 horizontal infiltration trenches.
- Performed a targeted excavation of certain "hot spots." Approximately 200 tons of soil was managed at a hazardous waste landfill.
- Injected approximately 10,000 pounds of sodium persulfate into the remediation area.
- Performed follow-up soil and groundwater monitoring to evaluate the effectiveness of remedial activities.

Results

Injection of the oxidant solution into the tight/clayey subsurface soils was accomplished as planned. ERM successfully treated the majority of soils in-situ to below the remedial objectives. Follow-up activities include limited excavation and installation of a vapor mitigation system beneath the site building.



Confidential Client

Manufacturing Facility
Watertown, Wisconsin

Situation

Contamination due to a historic release of trichloroethene ("TCE") was detected in the unsaturated soil and ground water on the property, including areas underlying the manufacturing facility. This client retained ERM to evaluate site investigation activities and the effectiveness of an operating ground water extraction system completed by two previous consulting firms. Subsequently, ERM was retained to continue the site investigation and perform remedial actions as necessary.

Concentrations of TCE and its degradation products (cis-1,2-dichloroethene; trans-1,2-dichloroethene; and vinyl chloride) were detectedin the glacially deposited unconsolidated (sand, silt, and clay) and bedrock (Ordivician dolomaite) units. The concentration of the degradation products in relation to TCE indicated that substantial degradtion had already occurred, particularly in ground water adjacent to a drainage area with organic soils. Furthermore, ground water conditions appeared favorable for continuing degradation.

Sincethe primary source area and much of the impacted soil and groundwater was located below the floor slab of the existing building, ERM was tasked with designing and executing a remediation program that would minimize the impact to on-going operations for both the client and the building tenants.

ERM's Approach

In accordance with Wisconsin Administrative Code Chapter 700 requirements and state guidance documents, ERM prepared a Remedial Action Options Evaluation ("RAOE") and Remedial Action Design Report ("RADR"). The RADR detailed the design, operation and monitoring of a soil vapor extraction ("SVE") system to remediate soils and specified natural attenuation as the remedial approach for the impacted ground water. Within four days of submittal, WDNR approved the RADR with no comments.

Installation and construction if the SVE system was accomplished within the active facility during normal working hours. ERM included innovative construction methods to minimize facility inconvenience and prevent interruption to manufacturing processes. The SVE system operated for two years. Closure sampling in the area of treatment demonstrated that the SVE system had met its clean up objectives.

A soil and ground water sampling program within previously un-tested operating manufacturing areas revealed additional source areas, including the former locations of a degreasing operation and several chemical storage areas. Given the previous success of SVE at the site, ERM designed an extension of the system that utilized the existing equipment and controls. ERM managed the installation of five 300-foot long horizontal SVE wells beneath the building floor using directional drilling technology. This approach once again minimized inconvenience to facility operations.

The Wisconsin Department of Natural Resources (WDNR) conditionally accepted natural attenuation of ground water as the remedial option for TCE and its degradtion products in ground water, if the additional hot spot concentrations were addressed via active remediation. Also, the client desired to reduce the timeframe for long-term monitoring. ERM completed a second RAOE for ground water remediation to accelerate contaminant degradation. Groundwater monitoring revealed distinct differences in ground water conditions across the site. The differences necessitated implementation of two separate remedial technologies. In-situ chemical oxidation ("ISCO") was selected to treat one plume and enhanced bioremediation was selected for treatment of the second plume. ERM and this client selected this approach considering cost-effectiveness, safety, and the highest probability of success.

Results

The expanded SVE system was operated for approximately 18 months and subsequent soil sampling showed that the site specific remedial soil objectives were met.

The ISCO and enhanced bioremediation treatments were completed and the groundwater contaminant plumes are in the long-term monitoring phase.

Health Care Center Remediation Project Northern Illinois

Background

Historic metal manufacturing operations at an Illinois site resulted in releases of volatile organic compounds (VOCs) to the soil and subsequent groundwater. Dense nonaqueous phase liquid (DNAPL) consisting of trichloroethylene (TCE) was also present in the groundwater. Figures 1 and 2 illustrate the migration of the groundwater plume off-site to adjacent properties.

Figure 1 – Extent of the Groundwater Plume

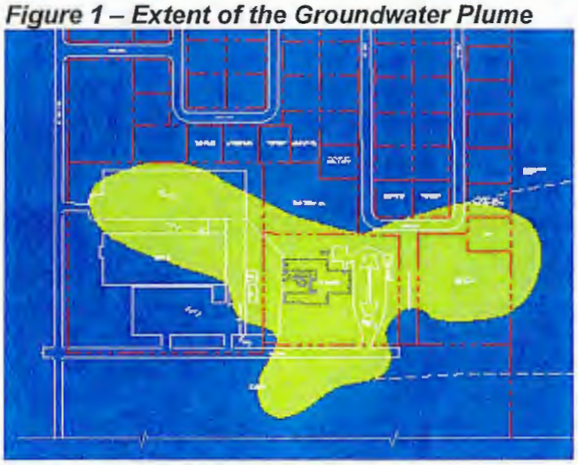
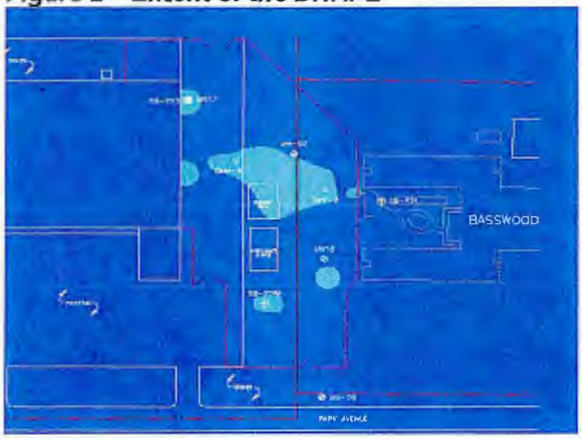


Figure 2 – Extent of the DNAPL



Role

ERM managed remedial construction of this $6.5 million dollar remediation project, and prepared all design/bidding documents. In addition, ERM negotiated with regulators to include cost-effective alternatives into the project design. The final remedy consisted of the following 5-Phases:

Phase 1 – Conducted air monitoring at the Health Care Center and crawl spaces at the residential homes. The samples did not exceed health standards. As a precaution, vapor barriers were added to the building crawl spaces over the plume.

Phase 2 – DNAPL wells were installed with pumps to extract the product. Over a 12-month operating period, 500-gallons of product were extracted.

Phase 3 - In-situ chemical oxidation (ISCO) was selected as the preferred cleanup option for the client's site. ERM designed and implemented the ISCO plan for the site. Preliminary tasks included compiling and evaluating geologic and hydrogeologic data, contaminant distribution data, and potential migration pathways. A pilot feasibility study was performed to evaluate the most effective oxidant and the required dosing. To capture ISCO off-gasses and prevent excess chemical from migrating off-site, a groundwater and vapor extraction system was constructed. Hydrogen peroxide was selected as the optimum chemical oxidant. Catalysts were added to the oxidant solution to boost the oxidation rate and effectiveness. Over a 16-month operating period, 2,500-gallons of product were destroyed.

Phase 4 - The metal manufacturing operations purchased the former Heath Care Center subsequent to closure and relocated residents and employees. With the purchase, the vacant single-story 15,140-square-foot

Photo 1 – Health Care Center – Pre-Demo

Photo 2 – Health Care – Center Post-Demo

building (see Photo 1) located on the 3-acres property was demolished.

ERM contracted and provided oversight of the demolition activities ($131,000), which included; asbestos abatement, in place utility abandonment, building demolition and backfilling with grass seeding. No below grade structures were constructed on the site, therefore, the crawl space floor and concrete block wall were demolished in place. No above or at grade structures (e.g., drive way), except previously existing trees and shrubs remained after demolition (see Photo 2).

Phase 5 – Post remediation sampling was performed for a duration of 18-months and a closure report was issued to the Illinois Environmental Protection Agency (IEPA). A No Further Remediation (NFR) determination under 35 Illinois Administrative Code (IAC) § 742.1015 (c) was obtained from the IEPA for the property. In addition, the following institutional controls were obtained.

- **City Ordinance** - Use of groundwater as a potable water supply is prohibited. All residences affected by plume are on public water supply.

- **County Ordinance for the affected area** - Use of groundwater as a potable water supply is prohibited. All residences affected by plume are on public water supply. The county committed to preventing well installation in the affected area.

Benefits

The product removal and injection of the oxidant solution was accomplished as planned. ERM successfully treated the majority of soils in-situ to below the remedial objectives. The potential exposure risks to residents and property owners were limited/prevented via engineered and institutional controls.

Confidential Client

In Situ Chemical Oxidation of PCE-Contaminated Soil and Groundwater

Toronto, Canada

Background

Plumes of perchloroethylene (PCE) contamination in groundwater were identified at two separate locations, underneath the basement floor of the commercial property within the perched groundwater where solvent handling unit was placed in past and outside the dry cleaners to the rear of the building in the perched groundwater where waste solvent was reportedly disposed in the past. The plume underneath the basement floor was originated from the solvent handling unit located in the basement of the dry cleaners with an estimated plume area of 800-m^2.

ERM's Approach

Pre-Remediation Studies

ERM prepared conceptual models to evaluate the behavior of contaminants beneath the basement floor and outside the dry cleaners at the Site and evaluated various applicable treatment technologies.
Based on the evaluation, *in situ* chemical oxidation (ISCO) was identified as the best-suited technology for site-specific situations. ERM then conducted a treatability study to evaluate the total oxidant demand of the soil and the required dilution for effective remediation of soil and groundwater.

Soil and Groundwater Remediation

Trenches were excavated in the basement floor of the dry cleaners and outside the dry cleaners at the rear of the building. The trenches were developed into an infiltration galleries with washed gravels. The i*n situ* chemical oxidation systems were then installed into the infiltration galleries and the chemical injection was implemented at the dilution derived from the treatability studies.

Results

Periodic groundwater monitoring indicates decline in PCE concentrations and propagation of the reaction zones in the groundwater.

Confidential Client

Manufacturing Facility
Milwaukee, Wisconsin

Situation

The manufacturing facility is located in a heavily industrial area with a history of environmental issues. Soil and groundwater impacts at the site were discovered during a Phase II investigation in the vicinity of a former outdoor staging area for waste paint, spent solvents, cutting oils and lubricants. Arsenic above the typical range of regional soil concentrations was found in a localized area and volatile organic compounds were detected in groundwater in concentrations that exceeded state standards.

ERM's Approach

Approximately 18.5 tons of arsenic-impacted soil was excavated and transported to a local landfill for disposal. Given the shallow depth and limited volume of impacted soil, excavation and disposal was the determined to be the most advantagous remedial action.

ERM implemented a groundwater monitoring program to determine groundwater flow directions and contaminant concentrations trends. Four monitoring wells were installed in the vicinity of the former staging area. The data showed that VOC (1,1,1-TCA and TCE) groundwater impacts at the site were confined to a perched zone, and that contamination appeared to be migrating to the site from other sources.

In response to an initial case closure request, the Wisconsin Department of Natural Resources (WNDR) requested an additional monitoring well be installed in the downgradient direction and two more sampling rounds be conducted. The additional well was installed and VOCs were detected in a sample collected from the well. However, the specific constituents detected in the downgradient sample indicated a separate source. Additionally, the abrupt stratigraphic and groundwater elevation changes between the original wells and the new downgradient well indicated that the new well was screened outside of the perched zone.

ERM then conducted agency file reviews and discovered that releases were documented at several surrounding properties. ERM gained access to monitoring wells on adjacent public and private lands, surveyed all wells relative to a common datum, and established that groundwater flowed from sites with documented releases toward our client's property.

Results

The WDNR granted case closure with an off-site liability exemption for VOC impacts detected in the downgradient well. The file reviews conducted to assess releases on surrounding sites saved ERM's client costs associated with additional groundwater investigation; an investigation of impacts for which our client was not responsible.

Confidential Client

Adhesive Manufacturing Facility
Green Bay, Wisconsin

Situation

ERM was retained during a property transaction to investigate and remediate shallow soil and ground water volatile organic compound contamination adjacent to and underneath the facility building which had resulted from small-quantity "housekeeping" type spills and leaks of solvent materials. The data collected during the site investigation was used to calculate site-specific soil cleanup objectives for direct contact risk and the protection of ground water, to conduct contaminant fate and transport modeling to predict the concentrations of constituents at the downgradient property boundary, and to evaluate the technical and economic feasibility of several remedial options.

ERM's Approach

The results of the remedial action options evaluation indicated that natural attenuation would be a feasible and appropriate remedial action for the site. However, without the treatment or removal of the soil "hot spot", institutional controls to prevent exposure to soils exceeding the direct contact cleanup objectives would be necessary.

Results

The "hot spot" soils were excavated and disposed of as nonhazardous waste, and the soils exceeding the direct contact cleanup objectives were removed successfully.

Modeling demonstrated that residual soil contamination would not result in the exceedance of ground water standards at the property boundary.

Ground water monitoring confirmed that the contaminant plume was limited in extent, had stabilized, and did not extend past the property boundary.

The Wisconsin Department of Natural Resources granted the site closure request without the application of institutional controls.

Confidential Client
Site Remediation and Property Redevelopment

Janesville, Wisconsin

Situation

This manufacturer formerly owned and operated an electronics factory adjacent to the Rock River. ERM was involved remediating soil and ground water contamination that resulted from an accidental spill in 1979 spent chlorinated solvents from one of their degreasing operations. In 1993, they voluntarily elected to investigate and remediate the affected soil and ground water under the direction of the Wisconsin Department of Natural Resources (WDNR). During the remediation efforts, the client decided to shut down the facility and sell the property. ERM assisted the client with the environmental aspects of the decommissioning and sale of the facility.

ERM's Approach

ERM served as the client's technical representative and ensured that: (1) the site investigation and remedial action satisfied the State and Federal requirements, (2) their environmental liability, cost, and safety interests were protected throughout these activities, (3) the interaction between the potential purchaser (City of Janesville) and the WDNR resulted in a reasonable conclusion. ERM involvement included:

a) Performing a site investigation that resulted in defining the nature and extent of the soil and ground water contamination as well as the hydrogeologic characteristics of the site.

b) Developing site-specific risk-based soil clean-up objectives that are protective of human health and the environment, but less stringent than the State's generic standards.

c) Designing a tiered approach to the site remediation that limits active remediation to the unsaturated soil and ground water hot spots and utilizes natural attenuation to address the less contaminated portion of the plume.

d) Evaluating the technical and economic feasibility of several remedial options suitable for the site contamination and assisting the client in selecting the most efficient and cost effective option: a combination of ground water air sparging, and soil vapor extraction, and natural attenuation.

e) Designed and implempted the selected remedial action which utilized horizontal vapor extraction wells that extended beneath the facility. Construction of the remediation system involved preparing the bid documents and evaluating the bids for the remediation equipment and construction activities.

f) Operating, maintaining, monitoring and adjusting the remedial system during operation.

g) Confirming completion of the remediation and obtaining site closure from the WDNR.

h) Directing proper characterization and disposal of remediation wastes.

i) Assisting the client with other building decommissioning activities (industrial waste management, asbestos management, security).

j) Utilized a good relationship with the WDNR to help ease the requirements of the City of Janesville during drafting of the property sale agreement.

ERM's innovative design for this system included installing: (1) several +200-foot long horizontal soil vapor extraction wells situated at a depth of 3.5 feet beneath the existing manufacturing building, and (2) a 37-foot deep vertical ground water sparging well.

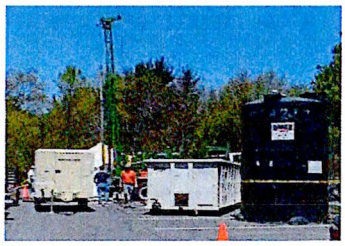
Results

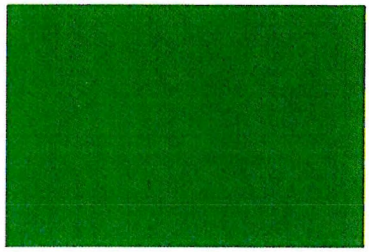
ERM's professional and technical assistance helped this client develop a good working relationship with the WDNR, resulting in significant flexibility with regard to the project schedule, groundwater clean-up and the administrative requirements for hazardous soils management. Additionally, ERM's technical expertise and innovative design allowed the client to: (1) select from a range of suitable remedial options with differing cash flow requirements, (2) use the results of a full-scale pilot test to reduce the number of soil vapor extraction wells in the final system design by 50 percent, (3) minimize disruption of the facility's continued operation, (4) explore business opportunities that resulted in remediation cost savings, and (5) complete the shutdown, decommissioning, and eventual sale of the property.

The property is now owned by the City of Janesville and is adjacent to a recreational trail.

Confidential Client

Former Manufacturing Facility
Milwaukee, Wisconsin





Situation

This client retained ERM to evaluate the site investigation and remedial action options evaluation (RAOE) completed for a site that formerly was used for the manufacture and assembly of steam radiators and temperature controls. Another consulting firm's previous investigative work at the facility had revealed the presence of volatile organic compounds (VOCs) and petroleum constituents in the soil, and VOCs in the ground water underlying the site. However, the vertical impact of the ground water contamination had not been fully delineated, and a costly remediation option (i.e., >$2,000,000) had been recommended to address the contamination at the site.

ERM's Approach

ERM completed the site investigation work at the facility by defining the vertical extent of the ground water contamination, installing three replacement monitoring wells to eliminate contaminant carrydown in the existing wells, and conducting ground water sampling.

ERM used the newly developed and existing site data to prepare a revised RAOE that included a detailed assessment of risk posed by the soil and ground water contamination using accepted Wisconsin Department of Natural Resources (WDNR) methodologies. This assessment revealed that the existing contamination did not represent a risk to the current tenants or to the adjoining properties, and therefore, the soil and ground water contamination was potentially suitable for natural attenuation. However, to shorten the remediation time frame, ERM recommended that the excavation and off-site disposal of several soil "hot spots" be combined with the natural attenuation of ground water and residual soil contamination.

Results

The revised RAOE, including the assessment of risk, was approved by the WDNR without comment. The "hot spot" soil removal was successfully completed and ERM initiated a groundwater monitored natural attenuation monitoring program.

ERM's alternative remedial action was based on a detailed risk analysis and a monitored natural attenuationremedy resulted in significant cost savings to the client while maintaining compliance with applicable WDNR regulations.

Confidential Client

Former Manufacturing Facility
St. Francis, Wisconsin

Situation

Contamination due to a release of chlorinated solvents was detected in the unsaturated soil and ground water underlying this former manufacturing facility. The source area was believed to have been associated with a former above ground storage container used to hold virgin trichloroethylene (TCE), a degreasing solvent. A Phase I environmental assessment, performed by another consultant, recommended soil borings to determine whether the container had leaked, thereby potentially impacting the local soil and shallow ground water. A Phase II investigation was conducted resulting in several soil borings and the installation of ground water monitoring wells. Subsequent to this Phase II investigation, the client retained ERM to evaluate site remediation alternatives regarding the impact to soil and ground water.

ERM's Approach

In accordance with Wisconsin Administrative Code ("WAC") Chapter 700 requirements and state guidance documents, ERM prepared a Remedial Action Options Evaluation (the "RAOE") to address on-site contamination.

During the RAOE, ERM evaluated site conditions and proposed to the client additional investigations to determine the lateral extent of the contamination. Based upon this investigation, ERM concluded that a separate source for chlorinated solvent contamination was located near the up-gradient boundary of the site, that this was the primary source of contamination on the Client's property. Therefore, ERM recommended that the Client not proceed with remediation until the upgradient source was properly addressed by the adjacent property owners.

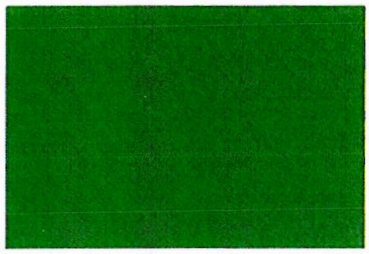
ERM conducted a natural attenuation assessment to estimate biodegradation rates and demonstrate that contaminants were naturally degrading at a rate that would diminish the contamination within a reasonable amount of time. Eight quarters of ground water samples were collected and analyzed for TCE and its degradation products, and biodegradation parameters. ERM conducted hydraulic conductivity testing of the unconsolidated units. Using this information, ERM was able to demonstrate that ground water within the facility's property boundary was decreasing and that concentrations of TCE and its degradation products will eventually meet Enforcement Standards on site.

Results

Biannual ground water monitoring was conducted for two years. WDNR accepted this sampling frequency, and agreed with ERM's approach that an off-site source was the primary contributor to soil and ground water contamination at the site. Currently, natural attenuation is the remedial option for TCE and its degradation products in soil and ground water, as the WDNR adopts a "no-action" approach to both on-site and off-site contaminant sources. The project is now in the long term monitoring phase of the ground water remediation.

Alliant Precision Fuze Co., L.L.C.

Manufacturing Facility
Janesville, Wisconsin



Situation

ERM was commissioned to investigate and remediate soil and ground water contamination caused by an accidental spill of spent chlorinated solvent from one of the client's degreasing operations. The project was undertaken as a voluntary action under the jurisdiction of the Wisconsin Department of Natural Resources (WDNR).

ERM's Approach

ERM performed a site investigation that included soil and groundwater sampling to define the nature and extent of the contamination. The collected data was used to develop site-specific, risk-based soil cleanup objectives that were protective of human health and the environment, and to evaluate the technical and economic feasibility of several remedial options.

The original remediation involved installation of a groundwater pump and treatment system as an interim response. However, ERM's remedial options evaluation showed that an alternate approach could reduce the project costs by approximately $180,000 and shorten the cleanup time by approximately 7 years. A combination of soil excavation, groundwater air sparging, soil vapor extraction, and natural attenuation were implemented at the site beginning in 1997 to address the contamination. Pilot tests were conducted prior to implementation to optimize system design. Because much of the contamination was situated in the shallow soils below the manufacturing building, ERM used an innovative horizontal well design for the soil vapor extraction system. ERM used quarterly groundwater and vapor sampling results to adjust the operation of the remediation system to sustain optimum performance.

Results

ERM's professional and technical assistance helped the client develop a strong working relationship with the WDNR, which resulted in significant flexibility with regard to the project schedule, common-sense approaches for contaminant cleanup, the handling of hazardous soils generated during the remedial activities, and site closure options. The site investigation report, remedial action options evaluation report, and remedial design report were all approved by the WDNR in a timely manner and without comments.

Contaminant levels in the soil and ground water have been reduced by approximately 98%, and the remediation system was shut down in June 2000 with approval from the WDNR. ERM requested and was granted closure of the site based on the site data showing that natural attenuation will remediate any residual contamination within a reasonable time period.

The actual project costs were approximately 20% lower than the original estimate, and the project was completed in accordance with the original schedule.

Minnesota Air National Guard

Environmental Restoration Program, Site 3
In Situ Bioremediation Using Edible Emulsified Oil
Duluth, Minnesota

Background

Site 3, Defense Property Disposal Office Storage Area "C", is approximately five acres of paved storage areas, woodland, grassy area and roadways. Site 3 was used from 1965 to 1980 to store petroleum, oils and lubricants, solvents, and various chemicals. TCE, 1,1-DCA, 1,1-DCE, PCE, and VC are the primary COCs at the Site, originating in the former drum storage area. Site geology consists of fill and interbedded fine sand and silt (glacial till). The depth to groundwater ranges from approximately one to 10 ft bgs. Saturated thickness (water table to top of bedrock) is about 10 ft. The client's former consultant conducted remedial investigation activities after which ERM began the feasibility assessment of both chemical and biological reduction as potential remediation technologies for groundwater at the base.

ERM's Approach

Based on the limited existing geochemical data, the site appeared well-suited for anaerobic reductive dechlorination, due to the presence of naturally reducing conditions. ERM conducted a series of laboratory microcosm studies using emulsified edible oil (EEO) to evaluate potential degradation efficiency. Results of the microcosm studies showed that the introduction of a carbon and electron source resulted in the degradation of 400 ug/L TCE and 200 ug/L 1,1,1-TCA within 26 weeks suggesting that enhanced in situ bioremediation (EISB) under reducing conditions could be implemented successfully.

Using microcosm and detailed hydrogeochemical characterization data for the treatment area, ERM designed a pilot test consisting of a single injection of 5.1% EEO mixed with water from a nearby fire hydrant. The amendment solution would be injected into 13 direct-push injection points. The injection points were spaced 10 feet apart in an oblong grid. The injection rate and distribution was supplemented through used of a WaveFront pressure pulse rig. A control point with temporary groundwater sampling points located at 5, 10 and 15 feet from the initial injection location were installed to assess the concentration and distribution of the amendment solution under regular direct injection conditions and under augmented pressure pulse conditions.

ERM conducted the EISB pilot-scale test to collect site-specific information regarding remediation parameters for scale-up to eventual full-scale application of EISB. Specifically, the following remedial parameters were evaluated:

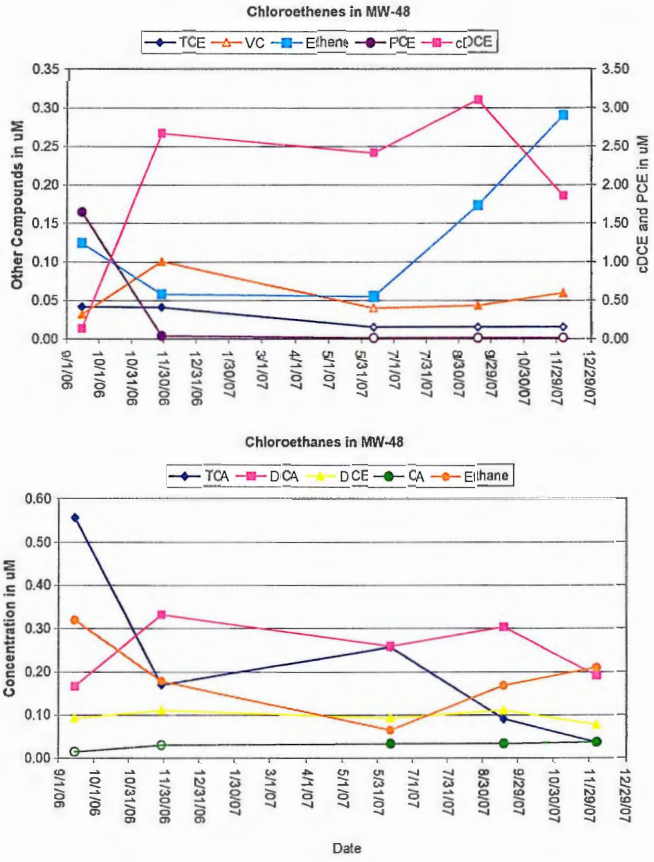
- Degradation of the Site COCs;
- Effectiveness of the amendment delivery method; and
- Radius of influence of the pilot-scale injection program.

ERM initiated pilot test field activities at ERP Site 3 in September 2006, and monitoring was conducted through December 2007.

Pilot test monitoring was comprised of a Site 3 baseline groundwater sampling round followed by periodic groundwater sampling conducted at MW-44, MW-45 and MW-48. The baseline sampling round included monitoring locations both up and down gradient of the pilot test area. The first round of post-injection monitoring was performed 10 weeks later, followed by four (quarterly) groundwater sampling events conducted over the next 12 months.

Results

The pilot test results showed that the injection of EEO was successful in creating reducing conditions and enhancing the biodegradation of chloroethanes and chlorethenes within the pilot test area. The reduction of sulfate and the increase in dissolved iron shows that anaerobic and reducing conditions were reached within the pilot test area. From the groundwater data, it is evident that where EEO was not present, biodegradation did not occur.



The following conclusions were drawn from the pilot test monitoring data:

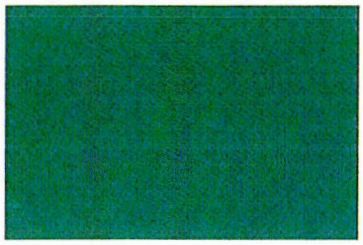
- Over the 16-month pilot test degradation of TCE to below the 5 ug/L standard; continued degradation of daughter products is expected due to the longevity of the EEO within the pilot test area;
- The production of ethene during the pilot test confirms that bioaugmentation is not necessary in Site 3 groundwater.
- Finally, the results of the EEO distribution testing showed that the use of pressure pulse technology did not detectably increase the radius of influence of the injections.

Results and Benefits

- Full-scale implementation of EISB is recommended at ERP Site 3. Use of the pressure-pulse technology for future injections is not necessary; however, a manifold of amendment delivery lines with use of an amendment metering pump should be used to reduce the injection period.
- A manifold injection system will allow several points to be completed at once, reducing the time needed to cover the entire plume area.
- The TOC data show that sufficient organic carbon concentrations remained in Site 3 groundwater after 16 months and that the 5.1% EEO dosage will likely be sufficient for the full-scale effort.

Burdick Automotive

Excavation and *In Situ* Treatment to Remediate Gasoline-Impacted Soil for Regulatory Closure
Onondaga County, New York



Background

Environmental Resources Management (ERM) was contracted to conduct soil remediation activities at a former Burdick Automotive facility located near Syracuse, New York. The property, used by Burdick for more than 20 years for retail automotive sales, is a former gasoline service station. When Burdick sought to sell the property, a site investigation conducted by the buyer documented the presence of gasoline-impacted soil. Burdick then retained ERM to conduct an investigation and to implement a soil remediation program to address gasoline-impacted soil in two identified source areas both above and below the groundwater table. The primary goals of the soil remediation program were to remediate the two source areas and to improve groundwater quality.

Role

The remediation program developed and implemented by ERM comprises soil excavation in combination with *in situ* chemical oxidation (ISCO) and enhanced biodegradation to treat residual petroleum compounds. Remediation activities were performed according to the Remedial Action Work Plan (RAWP) developed for the site by ERM and approved by the New York State Department of Environmental Conservation (NYSDEC).

Excavation and disposal - Excavated soils and material were field-screened for evidence of contamination. A total of 550 tons of gasoline-affected soil in the unsaturated zone was excavated, transported, and disposed of off site as non-hazardous solid waste at a NYSDEC-permitted disposal facility.

ISCO Treatment and Enhanced Bioremediation - Affected soil in the saturated zone in both excavation areas was remediated in place. Because dissolved oxygen (DO) readings measured prior to site remediation activities indicated that aerobic biodegradation of gasoline residuals was either not occurring or was occurring at a very slow rate, ERM implemented an *in situ* chemical oxidation program using calcium peroxide to enhance aerobic biodegradation of residual petroleum compounds in soil.

Approximately 250 tons of affected soil below the groundwater table were remediated in place using soil mixing techniques to effectively deliver calcium peroxide into a two-foot thickness of soil below the floors of the excavated areas.

Confirmatory Soil Sampling and Groundwater Monitoring – A confirmation soil sampling program and a post-remediation groundwater sampling program were implemented to document concentrations of volatile organic compounds associated with gasoline.

Benefits

ERM successfully implemented a soil excavation and *in situ* treatment program for the site. ERM estimates that more than 450 gallons of adsorbed gasoline were recovered from the site through soil excavation. DO readings after mixing and applying calcium peroxide into the bottom of the excavated areas have increased and VOC concentrations in groundwater have rapidly decreased, suggesting that aerobic biodegradation of gasoline residuals is progressing.

Post-remediation analytical data indicate that the primary goals of the soil remediation program have been achieved: The source areas have been remediated to the extent practicable and have achieved applicable standards, criteria, and guidance established for the site in the RAWP. *The NYSDEC has determined that additional remediation is unwarranted, and the site has attained regulatory closure.*

REDOX TECH, LLC

"Providing Innovative In Situ Soil and Groundwater Treatment"

A CASE STUDY FOR THE VADOSE ZONE APPLICATION OF PERMANGANATE TO TREAT SOIL CONTAMINATED WITH TCE

In April 2009, Redox Tech was contracted by ERM, Inc. to use its in situ soil blending technique to apply potassium permanganate into the vadose zone at a site in Yorkville, IL. The objective of this work was to reduce concentrations of TCE in soil within the source area to below the soil saturation limit of 1,300 m/kg. Historic sampling showed concentrations above 10,000 mg/kg, suggesting free phase was present. Prior applications of oxidants using conventional backhoes and excavators were able to reduce concentrations but were unsuccessful at reaching the cleanup objectives. In fact, spikes in concentrations illustrated that thorough mixing could not be achieved.

Approximately 75 cubic yards of silty clay soil encompassing an area of 500 square feet and extending from 4-8 feet below ground surface was treated with potassium permanganate. Potassium permanganate is a strong oxidant which has been proven to treat TCE. To estimate the amount of permanganate required, Redox Tech used a conservative contaminant mass of 7,000 mg/kg (the highest concentrations detected in the previous sampling round) and a permanganate to TCE ratio of 2.4 to 1. This resulted in an estimated loading rate of 2,335 pounds of potassium permanganate. To account for any natural oxidant demand (NOM) of the soils, including other contaminants, an additional permanganate load of 1g/kg (i.e. 335 pounds) was applied.

To address the target zone, the upper four feet of soil was removed from the treatment area using an excavator and stockpiled onto an adjacent treatment area. The potassium permanganate was delivered to the site in a dry crystal powder and spread across the treatment zone. Water was used to solubilize the potassium permanganate while being mixed with the in situ soil blender. Blending continued until a consistent mixture was obtained. Upon completion of the treatment area, the upper four feet of soil was replaced into the excavated area.

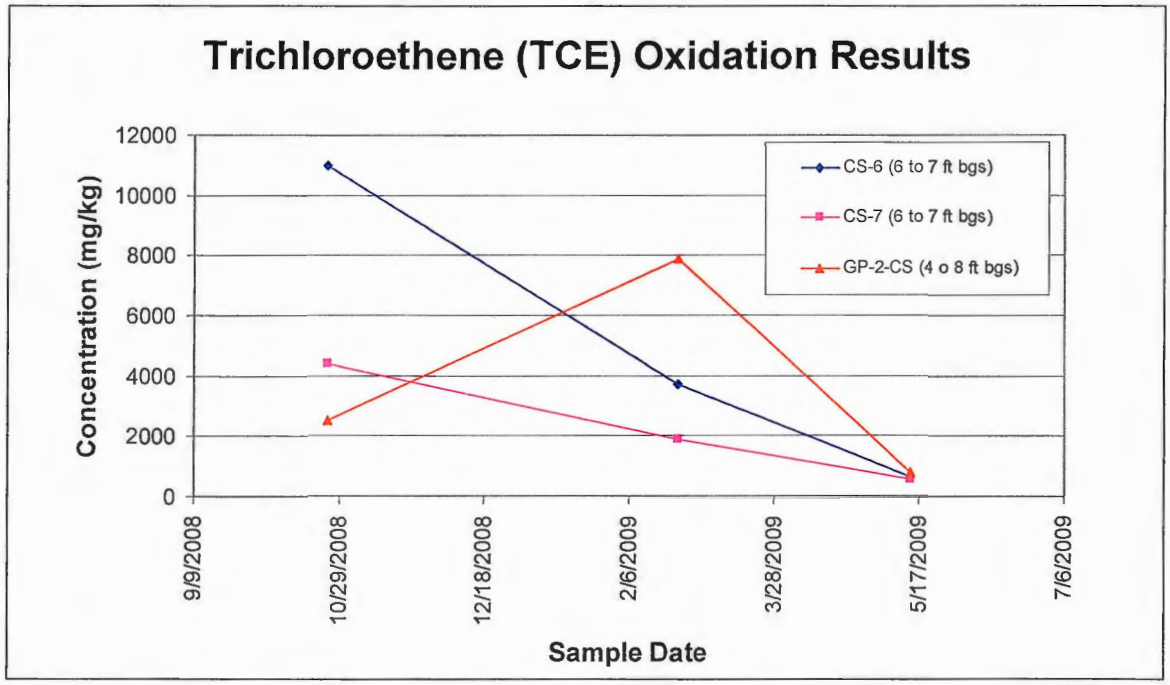
The in situ blender is mounted on a large excavator with a modified diesel engine and hydraulic power system. The mixer is capable of mixing dry soil as well as sludge material to depths of 18 feet below ground surface. Utilizing hydraulic pressure of 5,000 psi, a 28-inch diameter mixing drum with specifically designed teeth is rotated at speeds up to 100 rpm with a torque of 300 lbs per foot. This rugged durability allows the mixing drum to penetrate all soil types, even with the presence of backfill materials such as bricks, boulders and rebar.

Since chemical oxidation requires direct contact with the target contaminants, the effectiveness of the remediation strategy is often limited by the ability to distribute the chemical amendments throughout the soil medium. The blending process breaks soil loose, allowing for the rotary teeth to blend the reagent(s) and the soil into a relatively homogeneous mixture.

2800 CENTRE CIRCLE DRIVE, DOWNERS GROVE, IL 60515 TEL 630.705.0390 FAX 630.705.0409
WWW.REDOX-TECH.COM E-MAIL: MARKESIC@REDOX-TECH.COM

Soil samples were collected in May 2009, approximately six weeks after the blending work was completed. **Figure 1** presents graphical representation of the results from the soil samples CS-6, CS-7 and GP-2-CS. Results indicated that the soil remediation objective was achieved.

Figure 1. Soil Sampling Results



CONTACT INFORMATION: Steve Markesic;
markesic@redox-tech.com
Phone: 630-705-0390

REDOX TECH, LLC

"Providing Innovative In Situ Soil and Groundwater Treatment"

Case Study for Soil Blending with ABC^{+}
Treatment of Chlorinated Alkenes

Redox Tech utilized in situ soil blending to treat high-density, low permeability soil and groundwater that were impacted with chlorinated alkenes. Redox Tech blended Anaerobic BioChem (ABC®) plus zero valent iron formula for the reductive approach. ABC+ is a mixture of Anaerobic BioChem (ABC®) and zero valent iron (ZVI). ABC® is a patented mixture of lactates, fatty acids, and a phosphate buffer. ABC® contains soluble lactic acid as well as slow- and long-term releasing components. The phosphate buffer provides phosphates, which are a micronutrient for bioremediation. In addition, the buffer helps to maintain the pH in a range that is best suited for microbial growth.

Treatment of chlorinated volatile organic compounds by Zero Valent Iron (ZVI) has been proven and widely accepted as an effective in situ remediation technology of chlorinated solvents such as TCE. The addition of zero valent iron to the ABC® mixture provides a number of advantages for enhanced reductive dechlorination (EDR). The ZVI will provide an immediate reduction. The ABC® will provide short-term and long-term nutrients to anaerobic growth, which also assists to create a reducing environment. In addition, the corrosion of iron metal yields ferrous iron and hydrogen, both of which are possible reducing agents. The hydrogen gas produced is also an excellent energy source for a wide variety of anaerobic bacteria.

Delivery of ABC+ was completed with our proprietary in situ blending process. Redox Tech blended over 10,000 tons of soil in 8 working days with our proprietary blending process. Approximately 33,000 pounds of ABC+ was added to the saturated soil and groundwater. The treatment area (source reduction area) was approximately 20,000 square feet (attached figure), and the treatment interval was approximately 2 feet to 10 feet below land surface. The lower treatment depth was the top of bedrock. Approximately the top 2 feet of soil was stockpiled from the treatment area and returned after blending.

Prior to treatment, one soil sample was collected in each of the source reduction areas. The post treatment samples where collected after the blending was completed in essentially the same location. The table below provides the treatment results 6 months after the blending was completed (the first sampling period). The goal of the treatment was to reduce total VOCs by a factor of 10 so that an MNA approach could be implemented for the entire plume. The goal was exceeded as reductions of over 100 times were achieved at both wells.

	Source 1		Source 2	
Analyte	Pre	Post	Pre	Post
PCE	138000	5420	12,000	0
TCE	10500	3090	944	1.93
1,2 DCE	14923	15651	825.02	610
VC	134	940	9.50	168

200 QUADE DRIVE CARY NORTH CAROLINA 27513 Ph. 919.678.0140 F. 919.678.0150
WWW.REDOX-TECH.COM E-MAIL: HASELOW@REDOX-TECH.COM

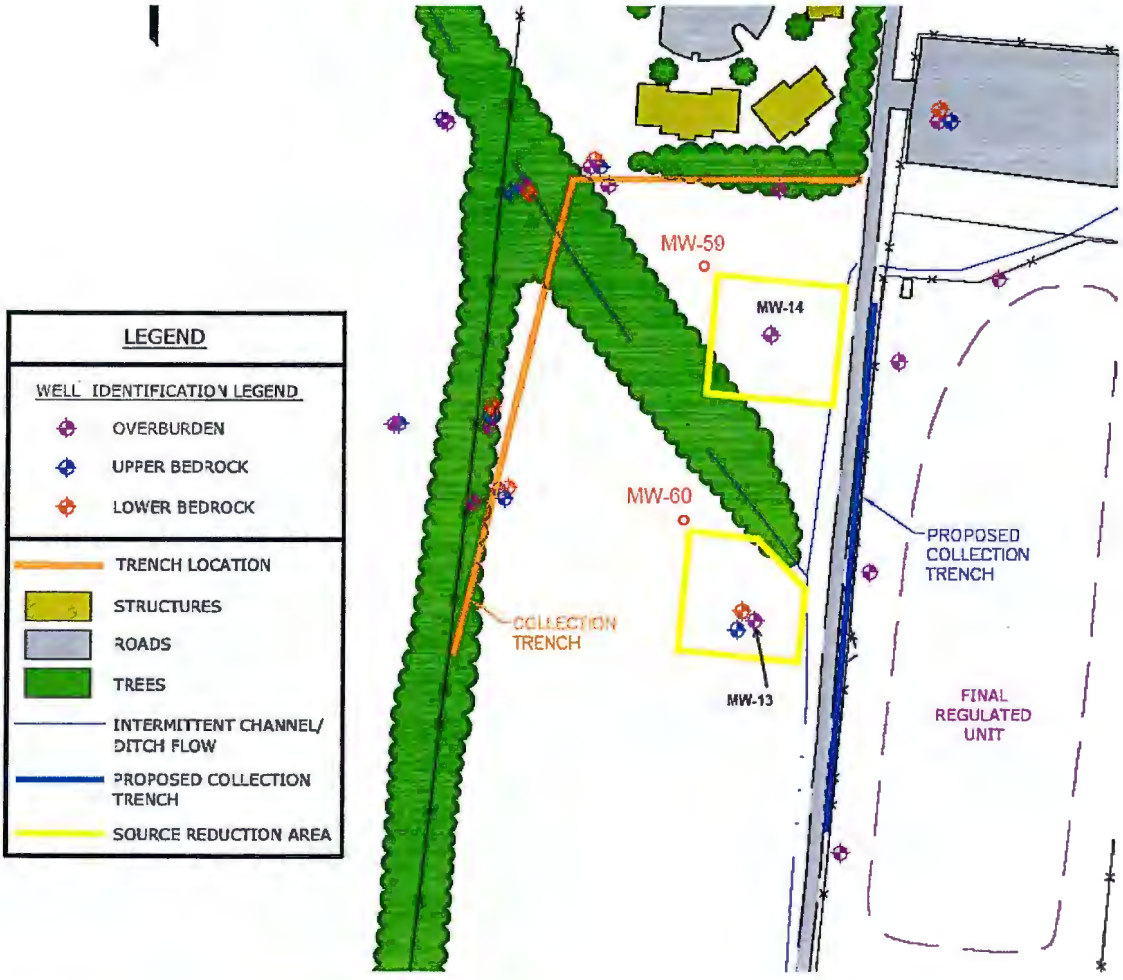


Figure 1. Blending Areas for Chlorinated Solvents

The Home Depot
Milwaukee, WI

Assessment and Development of Properties
For Retail Development

Situation

ERM was retained to assist The Home Depot with the acquisition and development of the former Caterpillar Factory parcel located on the south side of Milwaukee, WI. The 20 - acre site had been developed during the 1980's and included a Pick'n Save grocery, food court, office space, and a Builder's Square Retail Store.

ERM's Approach

ERM performed Phase I and Phase II Environmental Site Assessments (ESAs) of the property, including the two stores which were still operating. The Phase I ESA identified the presence of potential asbestos containing materials, unabandoned underground petroleum storage tanks (USTs), and areas of potential soil impacts from hazardous chemicals, metals and foundry sand fill.

A Phase II Assessment and asbestos survey was performed on the properties following the Phase I findings. After the completion of the Phase II ESA, and asbestos surveys, The Home Depot decided to move forward with the purchase and site development. ERM worked with local and state regulatory agencies to prepare the properties for the development.

Scope of Work

ERM contracted with The Home Depot to complete the following work at the site

- ✓ Review site plans to identify potential areas of impact due to past manufacturing operations,
- ✓ Soil and ground water sampling to evaluate potential site impact areas related to former site operations,
- ✓ Sewer inspection and dye testing,
- ✓ Preparation of bid packages for removal and closure of petroleum UST's,
- ✓ Preparation of bid packages for removal and asbestos containing materials,
- ✓ Conduct soil removal for benzene impacted soils associated with a former paint line,
- ✓ Perform an assessment of background arsenic concentrations,
- ✓ Obtain a deed restriction from the WDNR to allow soils with benzene and metals concentrations exceeding WDNR standards to remain in place, and
- ✓ Receive a No Further Action Letter from WDNR.

Site re-development activities and operation of the Pick'n Save were proceeding during the completion of the work scope. ERM coordinated their activities with the retail operator and worked during off-hours in order to not interfere with customers. Following the successful and safe site cleanup and the approval of the deed restriction to leave the benzene and arsenic impacted soils in place during the future site construction activities, the Home Depot was constructed.

Results

The project resulted in the successful and safe demolition of the site structures and subsequent site development to support the Home Depot retail store and relocation of the Pick'n Save. During the project ERM contracted and managed site cleanup activities in a timely manner to prepare the site for construction activities.

Confidential Client
Racine, Wisconsin

Decontamination & Dismantlement

Situation

A confidential client engaged ERM to perform a turn-key decontamination and dismantlement (D&D) of a portion of a large chemical processing facility in southeastern Wisconsin. The client has operated their portion of the facility to manufacture surfactants and intermediate resin products for other chemical processors that formulate commercial and retail end products. The equipment owner built a new plant in Michigan and ERM will rig out, and transfer selected components to expand the facility. The supporting process equipment will be removed as scrap and structures will be retained for future use by the property owner. Due to the owner's requirement to vacate the property by the time the lease expires, the work is being conducted under an expedited schedule.

ERM's Approach

Understand Project Objectives. ERM worked closely with the client for more than 16 months to define and refine the project scope based on business, operational, and information technology requirements.

Preparation and Planning. ERM worked with the client during negotiations with the equipment owner regarding which components would be dismantled and transported to MI and which would demolished or retained. ERM prepared the D&D Design Project Manual, subcontractor request for bid documents, implemented competitive bidding and subcontractor selection processes, and was engaged to turn-key the D&D Project with the selected subcontractor. ERM will provide project management, on-site construction management, and health and safety oversight for this six month project.

Meet Project Schedule. ERM used its experience with similar projects as a basis for project planning and execution in order to facilitate meeting the aggressive scheduling goals ahead of the start of the D&D activities.

Experience and Expertise. ERM has extensive experience in D&D projects, and drew upon a national network of highly qualified subcontractors to bid-out the work in a cost-effective and timely manner.

Local Management. The project team included the use of ERM consultants and ERM construction management professionals from the Milwaukee, WI; Exton, PA; Indianapolis, IN; and Rolling Meadows, IL offices.

Results

ERM completed the preparation and planning portion of this $1.8 Million (USD) D&D project and initiated the field phase in January 2010. The final scope of work for the field portion of the project includes:

- Completing the kickoff meeting with ERM, ERM subcontractors, facility representatives (actively working onsite), and client representatives;
- Decontamination of equipment and structures not flushed out by the client or property owner;
- Segregation of process equipment utilities and process lines from house utilities and support systems;
- Dismantling numerous tanks, reactor vessels, select process piping, pumps, slakers, and agitators for shipment to the new facility or recycling as scrap;
- Critical lifts of large tanks and equipment for shipment to the new facility;
- Preservation of building infrastructure systems such as steam, fire suppression, water, and electrical that are necessary for continued facility operation after the processes are removed;
- Decontamination of the buildings to remove resins and other adhered materials; and
- Providing access for additional activities that will be completed after the dismantlement, including assessment and remediation of potential soil and groundwater impacts resulting from client operations.

ERM is providing general contracting, professional consultation, and safety supervision during the D&D work. The work was successfully completed on schedule and on budget.

Confidential Client

Phytoremediation to Control Off-Site Contaminant Migration

St. Thomas, Ontario, Canada

Background

ERM installed a phytoremediation barrier along the boundaries of this property to prevent off-site migration of volatile organic compounds at this site in Ontario, Canada. ERM's approach for this site was to install phyto-remedial barriers, using hybrid poplars, along the property boundaries for perimeter control, primarily due to the very low maintenance costs associated with that technology. Phyto-reduction of contaminant concentrations occurs in several ways. These include hydraulic control, phytodegradation, phytoextraction, phytostabilization; phytovolatilization; rhizodegradation; and rhizofiltration.

Engineered vegetation growth has been utilized in both soil and water quality improvement for many years. Beginning with surface water treatments, aquatic plants are used for removal of both organic and inorganic contaminants. Additionally, many fast-growing plants have the capability to remove vast quantities from the water table through the process of evapotranspiration.

Phytoremedial barrier one year after installation

Most of the phytoremediation sites across North America use the fast-growing hybrid poplar trees. The populus species include poplar, cottonwood, and aspen. The hybrids are specifically engineered for fast growth and resiliency to low-level contaminants.

ERM's Role

Implementation of phytoremediation at the site included:

- Using a decision-tree approach to determine the applicability of phytoremediation to a site
- Defining physical depth to groundwater table and extent of contaminant plume
- Desired outcome of phytoremediation efforts
- Designating areas for long-term planting
- Planting the trees
- Maintaining the trees.

In June, 2005, ERM installed a phyto-remedial barrier along the northeast corner of the property, which consisted of approximately 100 hybrid poplars planted to a depth of approximately 2 to 2.5-metres below grade. Phyto-remedial barriers were then installed along the remaining portions of the north and west property boundaries in March, 2006.

Benefits and Results

By December 2006, the hybrid poplar, phyto-remedial barrier had experienced significant growth, and the survival rate of the trees was excellent. Current (2011) groundwater monitoring has confirmed several orders of magnitude in contaminant reductions occur across the phytoremediation barrier.

Greiner's Lagoon Superfund Site

Phytoremediation Remedial Design andRemoval Action
Ballville Township, Sandusky County, Ohio

Background

The Greiner's Lagoon Superfund site (the Site), located in Sandusky County, Ohio, originally was developed in 1954 and contained four lagoons that were used to store waste oil from nearby industry. During the course of Site operations by various owners, a number of community complaints and legal actions were undertaken because of odors and releases from the lagoons. In about 1980 the site was shut down and from 1981 to 1988, USEPA implemented emergency actions to stabilize the Site. These actions included lagoon dike reinforcement, surface oil removal, liquids treatment and discharge, sludge solidification, lagoon backfilling, and placement of a soil cover over the filled lagoons.

ERMcompleted the design and field implementation of an innovative phytoremediation remedial design and removal action at the Site. The project was conducted under the authority of an Administrative Order of Consent (AOC) signed by USEPA and Lubrizol Corporation.

ERM's Role

Phytoremediation Remedy - As part of the AOC, ERM developed detail plans and specifications to implement a Phytoremediation Cap for the Site. Phytoremediation consists of using plants and trees to control groundwater flow and break down residual organic compounds into less toxic materials.

Regulatory Negotiation - ERM successfully negotiated the phytoremediation remedy with USEPA Region V as part of an Engineering Evaluation/Cost Analysis (EE/CA) conducted on behalf of Lubrizol. The remedy was approved by EPA for the Site.

Field Implementation - Site work was initiated by ERM in July 2005 and consisted of stormwater runoff control and regrading of the former disposal areas. Regrading was accomplished by mixing off-site soils into stabilized materials and relocating the mixed soil material to form a continuous profile along the northern portion of the Site. Topsoil was then placed and a fescue grass mixture was sown to stabilize the soil. Stormwater drainage from the entire site is collected in a perimeter drainage swale and discharged into an existing drainage culvert at one corner of the Site. Poplar and willow trees planted along Site boundaries provide a phytoremediation barrier to eliminate leachate breakouts, limit groundwater travel, and provide evapotranspiration of site groundwater.

Site Management - ERM has managed the site for our client since installation. Site management activities include periodic field reviews and, as necessary, planting additional trees and grass, applying fertilizer and cutting the grass.

Long-Term Operation and Maintenance (O&M) - The AOC requires monitoring of both on-site and off-site groundwater and repairing surface features to minimize surface and groundwater impacts. The long-term O&M program implemented by ERM includes annual sampling and analysis of existing and new groundwater monitoring wells.

Benefits

The phytoremediation remedy was demonstrated to be protective of the site and has controlled petroleum odors. *The remedy resulted in a cost savings well in excess of $1M over competing remedies.*

International Petroleum Company of Delaware

Voluntary Remediation Using Phytoremediation
Wilmington, Delaware

Background

The International Petroleum Company (IPC) site is a 6.6-acre property along the Christina River in Wilmington, Delaware. The site has been used for petroleum-storage activities since the early 1900s. For the past 15 years, the site has been used for the recycling of used oil. The facility receives used oil and oily wastewaters, and the reclaimed oil is subsequently sold as a fuel for industrial kilns.

Subsequent to an ownership transaction in 2002, the site was entered into the Delaware Voluntary Cleanup Program (VCP). ERM conducted an extensive remedial investigation (RI) of soil, groundwater, and soil along the Christina River waterfront. The RI included a comprehensive risk assessment that evaluated both human health impacts, as well as ecological impacts to the wetlands along the river.

ERM's Role

To address issues identified in the RI, several remedial actions were undertaken, including impacted soil removal along the berm abutting the wetlands, installation of oil-water separators, and improvements in the secondary containments around the aboveground storage tanks (ASTs) on the property, several of which have a capacity of several hundred thousand gallons. Free-product was identified in several shallow wells on site, and the product is periodically removed from several extraction wells and recycled via the on-site product recycling process at IPC.

before

after

The remedy also included phytoremediation through the placement of approximately 70 hybrid poplars and willows at 5-foot centers along the berm abutting the wetlands along the Christina River. ERM also planted several hundred native wetland grasses and shrubs in the wetlands to improve the vegetative cover within the wetland area.

Benefits

The poplars, willows, and wetland plants are established, and the waterfront currently has a robust vegetative cover. The fast-growing poplars and willows are facilitating the interception of shallow petroleum-impacted groundwater as it migrates toward the river.

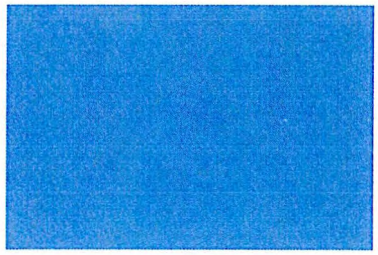
The Final Plan for the site was approved by the Delaware Department of Natural Resources and Environmental Control (DNREC) in 2005. The Plan required a deed restriction, continued free-product extraction, and monitoring of the phytoremediation and wetlands restoration effort.

Additional activities at the site included monitoring and risk evaluation of methyl tertiary-butyl ether (MTBE) that was identified in shallow groundwater at concentrations above the DNREC default standard. ERM continues to support the responsible party in the conduct of these O&M activities pursuant to the Final Plan.

Confidential Auto Parts Manufacturer

Sub-Slab Vapor Withdrawal System to Remediate VOC-Impacted Air

Ohio



Background

ERM was contracted by a confidential auto parts manufacturer to conduct environmental investigations related to the presence of chlorinated compounds at their manufacturing facility in Cleveland, Ohio, where degreasing operations had resulted in chlorinated VOC impact to site soils. Results of a risk assessment conducted as part of site investigation activities determined that inhalation of vapors in indoor air could pose a potentially unacceptable risk to future workers in some of the interior areas of the building.

ERM's Role

Conduct Indoor Air Sampling Program - ERM collected indoor air samples in several areas of the main plant building. Sampling was conducted using Summa canisters with flow control devices to sample over a 24-hour period; two rounds of sampling were conducted four months apart. Air-sampling results showed that concentrations of two VOC compounds, TCE and Vinyl Chloride, were above target risk-based levels calculated in the risk assessment. Based on these results, and after consultation with Ohio EPA Voluntary Action Program (VAP) staff, the client elected to install a sub-slab ventilation system in two areas of the plant where acceptable indoor air concentrations were observed.

Design, Install, and Operate a Sub-Slab Ventilation System - The purpose of the ventilation system was to lower the indoor air concentration of compounds of concern to below calculated risk-based levels. The system comprised three main perforated 4-inch diameter slotted polyvinyl chloride (PVC) pipes extending approximately 30 feet in the Former Hard Chrome area. Two vertical slotted pipes were installed in the Training Room area. The pipes are connected together and are jointed to a central pipe that runs vertically to the roof. An industrial exhaust fan is mounted on the roof. The ventilation system collects vapors from beneath the floor slab to prevent the vapors from migrating to indoor air inside of the affected areas.

Benefits and Results

The sub-slab vapor withdrawal system was installed and operated by ERM for a period of one month, after which the indoor air sampling was repeated. *Air Sampling results showed that VOCs were reduced to acceptable levels in indoor air.* The system was put into continuous operation as part of the O&M Plan for the site.

Confidential Manufacturer

Sub-Slab Vapor Removal Systems

Van Wert, Ohio

Background

ERM was contracted by a confidential manufacturer to conduct environmental investigations at a manufacturing facility in Van Wert, Ohio. Results of soil sampling activities indicated the presence of chlorinated in soils and groundwater underneath the facility and surrounding area. The primary compound detected was TCE, which was used as a degreasing agent in former manufacturing operations.

ERM conducted a Risk Assessment that identified the risk for potential inhalation of vapors from subsurface soils that might volatilize to indoor air at the facility. Calculations showed that potential risks in the portion of the main building underlain by VO- impacted soils were above health-based standards for commercial/industrial workers This result provided the basis for ERM's risk-driven remediation program to address subsurface VOCs at the facility.

Role

In response to the risk assessment results, ERM designed and installed a remediation system to remove VOC soil gases from beneath the floor in a portion of the main plant and exhaust these gases to the atmosphere. The installed system comprised eight vertical collection points along the east wall of the press area in the main plant building. connected to a main collection point suspended below the roof that discharged through an explosion proof upflow exhaust fan. The collection points were sealed at grade level to reduce air infiltration from within the structure to the extraction points in order to maximize the air removed from below the floor slab. Valves and sample ports were provided to allow for adjustment of the airflow from each collection point.

Subsequent soil sampling indicated that soils containing elevated levels of TCE and other chlorinated VOCs were located underneath the floor of two ancillary buildings located north of the main plant building. Soil vapor samples were obtained from underneath the floor slab, and these samples exceeded USEPA screening levels for workers published in the 2002 USEPA Vapor Intrusion guidance manual. ERM installed a second vapor withdrawal system to remove the vapors from underneath these buildings as well.

The sub-slab soil vapor extraction system consists of seven collection laterals composed of perforated HDPE pipe. The collection laterals were installed from outside the buildings under the existing floor slab by the use of horizontal boring techniques. The headers converge into an 8" HDPE pipe and are directed into an explosion-proof exhaust blower placed on a concrete pad at the northeast end of the west building. The blower is designed to create negative air pressure under the slab in order to intercept air contaminants before emanating through into the buildings. The exhaust is directed through an 8" HDPE pipe stack, which rises along the top of the west building roof and five feet vertically above the roof's peak.

Benefits and Results

ERM conducted monitoring operations of both ventilation systems by installing pressure monitoring probes through the floor slabs. Results of monitoring activities document that the systems are maintaining a negative pressure underneath the floor slabs in their target operations area, which eliminates the potential worker exposure issue from volatilization of VOCs from soils into the indoor air of the facility.

Appendix B
ERM Terms and Conditions

1. Definitions. In these General Terms and Conditions (the "Terms"), the following definitions apply:
   1.1 "Claims" means any and all liabilities, claims, suits, losses, damages, fines, penalties and costs, including reasonable attorney's fees;
   1.2 "Client" means the party entering into the Contract with ERM, directly or through a representative;
   1.3 "Contract" means the Proposal and the Terms, as either may be modified or supplemented in writing in accordance with Sections 17.4 and 18;
   1.4 "ERM" means the ERM company providing Services;
   1.5 "Party" means ERM or Client, as indicated by the context;
   1.6 "Proposal" means the document(s) issued by ERM, that reference or are accompanied by these Terms, in which ERM describes and offers to perform Services for Client;
   1.7 "Services" means the work performed or to be performed by ERM pursuant to the Proposal, and includes all ERM work product; and
   1.8 "Site" means any site upon which or in relation to which Services may be performed.
2. Proposal. The Proposal is firm for 30 days from its date. Unless expressly stated otherwise in the Proposal, the fees, costs and schedules in the Proposal constitute ERM's estimated probable cost and time for Services. The estimated probable cost is not a guaranteed maximum or not-to-exceed price. ERM shall inform Client if it determines at any time that a material change to the nature, time or extent of Services is required or advisable. No material change will be made without Client's consent except pursuant to Section 3.
3. Force Majeure; Emergencies. ERM's price and schedule are subject to equitable adjustments for delays caused by Client's failure to provide any required approval or suitable Site access or by occurrences or circumstances beyond ERM's reasonable control, such as fires, floods, earthquakes, strikes, riots, war, terrorism, threat of terrorism, acts of God, acts or regulations of a governmental agency, emergency, security measure or other circumstances, including, without limitation, unusual weather conditions ("Force Majeure"). If ERM determines in its sole discretion, based on circumstances surrounding the Services, that the health or safety of its personnel or its subcontractors' personnel is or may be at risk in performing Services, such circumstances will constitute a Force Majeure, and ERM will have the right to take any measure it deems necessary to protect personnel at Client's expense. If it is impracticable for ERM to obtain authorization from Client in an emergency affecting the health or safety of persons, the environment, or property, ERM may, at its discretion, act to prevent threatened damage, injury or loss at Client's expense.
4. Labor Rates.
   4.1 For Services charged on a time-and-material or cost-reimbursable basis, labor, costs and expenses will be billed to Client as indicated in the Proposal or in schedules attached to the Terms. ERM labor rates apply to (i) full-time, part-time, temporary and seconded employees of ERM and its affiliates, (ii) temporary employees whose direct compensation is paid by a temporary staffing agency and (iii) staff consultants.
   4.2 Labor rates stated in the Proposal or in attached schedules are subject to periodic adjustment by ERM. If labor rates are not stated in the Proposal, ERM's standard labor rates at the time of Services apply.
   4.3 If Services covered by the Proposal are subject to taxes or fees (except income taxes), such costs will be charged to and reimbursed by Client. A handling and administrative charge will be added to all third-party expenses.
5. Invoices and Payment. Within 5 business days of Client's delivery to ERM of a signed acceptance of the Proposal, Client will pay the amount stated in the Proposal as ERM's initial retainer for fees and expenses. Except as otherwise specified in the Proposal, Client will pay each invoice within 30 days of its date. All fees quoted are exclusive of goods and services, value added or similar taxes and any other taxes that are specific to the transactions or payments arising from the Services, which will be charged separately. Vendor and subcontractor costs will be invoiced at those parties' standard or negotiated rates, plus mark-ups as provided in the Proposal. Client will reimburse reasonable, documented expenses incurred by ERM in performance of the Services. Certain vendors and subcontractors offer ERM trade or volume discounts, rebates or other special pricing arrangements that may not be passed through to Client or reflected in invoices. Client must make all payments in United States currency by direct transfer to the ERM bank account identified in the invoice. Client is not entitled for any reason to make any deduction or withhold any sum by way of set-off from the amounts payable to ERM. Interest will be charged on unpaid balances beginning 30 days from the invoice date at the lesser of 1.5% per month or the maximum rate permissible under law. ERM will apply payments first to any accrued interest, then to unpaid balances. Upon 2 business days' notice, ERM may suspend Services without liability until all past due amounts, including accrued interest, have been paid in full. If ERM takes legal action to enforce payment and prevails, Client shall reimburse ERM for all collection and legal costs. Client shall pay ERM for Services rendered regardless of whether Services are intended in whole or in part to benefit a third party.
6. Termination. The Contract may be terminated for cause and ERM's performance of the Services stopped by written notice from either Party (i) upon breach by the other Party of a material obligation under the Contract, (ii) if the other Party goes into bankruptcy, is liquidated or is otherwise unable to pay its debts as they become due or (iii) if the other Party resolves to appoint or has appointed for it an administrator, receiver or other similar officer for any part of the Party's business, property or assets. Any termination for cause will be effective only if the terminated Party is given (a) at least 10 calendar days' written notice of termination, (b) opportunity for consultation with the terminating Party before the termination date if breach is claimed, and (c) reasonable opportunity to cure the breach to the extent it can be cured. The foregoing notwithstanding, if Client fails to pay any invoice within 2 business days of its due date, ERM may terminate the Contract and stop performance of the Services immediately upon dispatch of notice to Client. Client may terminate the Contract for its convenience upon 2 business days' written notice to ERM, in which event Client shall pay all fees and expenses for Services accrued to the termination date and ERM's reasonable costs resulting from termination, including, without limitation, demobilization costs, as detailed in a final invoice. This section does not limit ERM's rights to seek recovery for Claims resulting from a breach by Client.
7. Insurance.
   7.1 ERM shall maintain policies of insurance for the following types of coverage, each with a limit of liability of US$1,000,000 (except for Workers' Compensation or equivalent coverage): Workers' Compensation or equivalent coverage as required under applicable statute; Employer's Liability; Comprehensive General Liability; Comprehensive Automobile Liability; Professional Errors and Omissions and Contractor's Pollution Liability.
   7.2 Upon written agreement of the Parties, ERM may procure and maintain additional insurance coverage or increased policy limits at Client's expense.
8. Indemnification.
   8.1 ERM shall indemnify Client, its affiliates and their respective directors, officers and employees (individually, a "Client Indemnitee" and collectively, "Client Indemnitees") from and against Claims arising out of the Contract, to the extent Claims are caused by the negligence or willful misconduct of ERM. The foregoing does not include Client's attorney's fees based on breach of Section 9.1.
   8.2 Client shall indemnify ERM, its affiliates and their respective directors, officers, employees and contractors (individually, an "ERM Indemnitee" and collectively, "ERM Indemnitees") from and against Claims arising out of the Contract, to the extent Claims are caused by the negligence or willful misconduct of Client.
   8.3 No ERM Indemnitee will be liable to a Client Indemnitee or any third party for the creation, existence or release of any type of hazardous or toxic waste, material, chemical, compound or substance, or any other type of environmental hazard, contamination or pollution, whether latent or patent, or the violation of any law or regulation relating thereto, existing at a Site prior to commencement of the Services ("Pre-Existing Condition"), and Client shall indemnify and defend ERM Indemnitees from Claims sustained in connection with a Pre-Existing Condition except to the extent the Pre-Existing Condition is exacerbated by the negligence or willful misconduct of an ERM Indemnitee.
9. Standard of Care; Limitation of Liability.
   9.1 ERM shall exercise the degree of care and skill ordinarily exercised under similar circumstances at the same time by experienced professionals performing substantially similar services at the same or similar locality as the Site. ERM MAKES NO REPRESENTATIONS, WARRANTIES OR CONDITIONS OTHER THAN THOSE EXPRESSLY SET FORTH HEREIN. ANY IMPLIED WARRANTIES ARE DISCLAIMED.
   9.2 If Services include (i) estimating the cost or potential cost of remediation, (ii) estimating the cost of compliance, or (iii) assessing the type, concentration, nature or quantity of any substance, waste or condition at, on or in a Site or structure, , ERM will prepare such estimate or assessment based upon the information provided by Client or a third party, ERM's experience and, in some instances, the application of a method for estimating or assessing conditions based on representative or random sampling or inspection. Due to the nature of such Services, including, without limitation, the potential for the estimate or assessment to be based on incomplete or inaccurate information or anomalous samples, ERM does not warrant or guarantee the accuracy of any such estimate or assessment.
   9.3 IN NO EVENT WILL A CLIENT INDEMNITEE BE LIABLE TO AN ERM INDEMNITEE OR AN ERM INDEMNITEE BE LIABLE TO A CLIENT INDEMNITEE, OR ANYONE CLAIMING BY, THROUGH OR UNDER A CLIENT INDEMNITEE OR ERM INDEMNITEE, INCLUDING, WITHOUT LIMITATION, INSURERS, FOR ANY LOST, DELAYED OR DIMINISHED PROFITS, REVENUES, BUSINESS OPPORTUNITIES OR PRODUCTION OR FOR ANY INCIDENTAL, SPECIAL, INDIRECT, PUNITIVE, EXEMPLARY, FINANCIAL, CONSEQUENTIAL OR ECONOMIC LOSSES OR DAMAGES OF ANY KIND OR NATURE WHATSOEVER, HOWEVER CAUSED.
   9.4 IN NO EVENT WILL AN ERM INDEMNITEE BE LIABLE TO A CLIENT INDEMNITEE OR ANYONE CLAIMING BY, THROUGH OR UNDER IT, INCLUDING WITHOUT LIMITATION, INSURERS, FOR ANY AMOUNT IN EXCESS OF US$250,000 IN THE AGGREGATE. ERM WILL HAVE NO LIABILITY IF CLIENT FAILS TO INITIATE LEGAL PROCEEDINGS WITHIN 12 MONTHS OF PERFORMANCE OF THE SERVICES. CLIENT RELEASES ERM INDEMNITEES FROM ANY DAMAGES SUSTAINED BY CLIENT IN EXCESS OF THE AMOUNT STATED IN THIS SECTION 9.4, AND FROM ANY CLAIM THAT IS THE SUBJECT

OF PROCEEDINGS NOT INITIATED WITHIN THE TIME FRAME STATED IN THIS SECTION 9.4.

9.5 The provisions of this Section 9 will (i) apply to the fullest extent allowed by law whether liability is claimed or found to be based in contract (including breach of warranty or contract), tort (including negligence or negligent misrepresentation), equity, strict liability or otherwise, and (ii) survive the completion of Services and the expiration, cancellation or termination of the Contract. The provisions of Sections 9.3 and 9.4 will be enforceable as a separate agreement if necessary.

9.6 Client acknowledges and agrees that the price for Services set forth in the Proposal, subject to adjustment pursuant to the Contract, has been negotiated in consideration of the Parties' agreement to limit certain of ERM's liabilities. Accordingly, Client acknowledges and agrees that the provisions of this Section 9 satisfy any requirement of reasonableness under any law applicable to the Contract and to any Claims relating to, or arising in connection with, the Contract.

10. Containment and Disposal. If any hazardous or toxic waste, material, chemical, compound or substance or any waste regulated by local, state or federal law, including, without limitation, any sampling materials such as drill cuttings and fluids or asbestos (the "Waste") are encountered by ERM or result from ERM's performance, ERM will appropriately containerize the Waste and either (i) leave the containerized Waste on Site for proper disposal by Client or (ii) using a manifest signed by Client as generator, assist with transportation of Waste to a location selected by Client for disposal. Client acknowledges that at no time does ERM assume authority over the transportation or disposal of, or title to, or the risk of loss associated with, the Waste. Client agrees to indemnify and defend ERM Indemnitees from any and all Claims (including, without limitation, any liability derived from any state or federal "Superfund" law) in any way related to ERM's assistance with the storage, transportation or disposal of the Waste, except to the extent such Claims result from ERM's gross negligence or willful misconduct.

11. Client Responsibilities.

11.1 Client must provide all reasonable assistance required by ERM in connection with Services, including, without limitation, any assistance specified in the Proposal. In particular, Client will provide ERM with the following, as applicable:

Reasonable ingress to and egress from the Site for ERM and its subcontractors and their respective personnel, equipment and vehicles.

Clean, secure and unobstructed space at the Site for ERM's and its subcontractors' equipment and vehicles.

Specifications (including, without limitation, facility schematics, Site schematics, engineering drawings and plot plans) detailing the construction of underground and aboveground facilities located at the Site that pertain to ERM's scope of work or are necessary to enable ERM to perform the Services.

Approval of each specific location for boring, drilling, excavation or other intrusive work and identification of concealed or underground utilities, structures, obstructions, obstacles or sensitive conditions before ERM commences work at the location. If Client does not identify the location of the concealed and underground items or approve each location of intrusive work, Client shall indemnify and defend ERM against any harm or injury arising out of or related to contact with such hazards.

Client's selection of any hazardous waste transporter and disposal facility and Client's arrangements for execution of the waste generator portion of any bill of lading, waste manifest, waste profile and related documents.

All information related to the Services or subject matter thereof in Client's possession, custody or control reasonably required by ERM.

11.2 ERM has the right to rely, without independent investigation or inquiry, on the accuracy and completeness of all information provided by, on behalf of, or at the request of Client or any governmental agency to ERM or any ERM subcontractor. Client agrees to review all Proposals, designs, schematics, drawings, specifications, reports and other deliverables prepared by ERM for the accuracy and completeness of factual information provided by or on behalf of Client for inclusion and to provide ERM with any further information within Client's possession that may affect the accuracy or completeness of Services.

11.3 Full payment for Services is a condition precedent to Client's rights in ERM work product. If Services involve electronic data files that are maintained by or for Client, Client is responsible for maintaining backup copies of such files.

11.4 Unless otherwise expressly agreed in writing by the parties, Client is responsible for Site security.

11.5 As to any dispute involving Client or the subject matter of the Services in which ERM is either not a named party or not at fault, Client shall pay ERM for any reasonable attorneys fees, legal expenses and other costs incurred and the time of ERM's personnel spent in responding, defending or participating, including but not limited to all such costs and time of ERM or its personnel when called or subpoenaed for depositions, examinations, appearances or document production.

11.6 Client will not target and then hire any ERM professional based on their performance of Services for Client. Without limiting any damages or other remedies, immediately upon any breach of the foregoing, Client will pay ERM an amount equal to 50% of the ERM professional's ending annual salary with ERM.

12. Use of Name. Client authorizes ERM to use Client's name and a general description of the Services and subject matter thereof as a reference for prospective clients and projects.

13. No Third Party Reliance. Except as provided in Section 17.1, the Contract does not, and is not intended to, grant to any person other than ERM and Client any benefit, right or remedy hereunder. Unless otherwise expressly agreed by ERM in writing, Client will not provide ERM's work product to any third party, and no third party will have the right to rely on the Services or ERM's work product. Services are performed solely for the purposes stated in the Proposal. Client's modification of Services, or use of Services for any other purpose, is at Client's sole risk. If a court determines, notwithstanding this Section 13, that a third party has the right to rely on Services, to the fullest extent allowable under applicable law, such reliance is subject to the limitations included in the Contract. Client agrees to indemnify, hold harmless and defend ERM Indemnitees against Claims resulting from a Client Indemnitee directly or indirectly providing ERM work product to a third party absent ERM's prior express written consent.

14. Severability. Each provision of these Terms is distinct and severable from the others. If one or more provisions is or becomes invalid, unlawful or unenforceable in whole or in part, the validity, lawfulness and enforceability of the remaining provisions (and of the same provision to the extent enforceable) will not be impaired, and the Parties agree to substitute a provision as similar to the offending provision as possible without its being invalid, unlawful or unenforceable.

15. Governing Law; Forum. The Contract is governed by the substantive laws of the jurisdiction in which ERM is formed (the "Jurisdiction"). The Jurisdiction's courts have exclusive jurisdiction and venue over all disputes arising out of the Contract, and the Jurisdiction is deemed to be the place of performance for all obligations under the Contract. The Parties waive any objection to the Jurisdiction's courts on grounds of inconvenient forum or otherwise.

16. Interpretation. Words in the singular include the plural and vice versa. Section captions are for convenience only and do not affect the meaning or construction of the Terms. A reference to a specific item as included within a general category does not exclude items of a similar nature, unless expressly stated otherwise. If any provision of the Terms is inconsistent with the Proposal, the Terms prevail.

17. Miscellaneous.

17.1 Other Parties. If Client engages ERM to provide Services on behalf of or for the benefit of another party (a "Client Party"), Client represents and warrants to ERM, as a material inducement to enter the Contract, that it has the authority to bind the Client Party to the Contract and that Client's signature on, or acceptance of, the Proposal does bind the Client Party. The limitation of liability in Section 9.4 applies jointly, not severally, to Client Indemnitees, any Client Party and any third party as provided in Section 13. If ERM in its sole discretion agrees in writing to Client's request that ERM seek payment from the Client Party, Client will nevertheless retain primary responsibility for payment for Services.

17.2 Law Firms. If Client engages a law firm, or if a law firm or other representative signs the Proposal or other documents or otherwise instructs ERM to take or refrain from taking any action, ERM is entitled to assume that the law firm or other representative has authority to so instruct ERM. If the law firm or other representative may or will rely on Services, its rights will be limited to those granted to Client in the Contract.

17.3 Entire Agreement. Upon Client's acceptance of the Proposal, the Contract constitutes the entire understanding between the Parties and the full and final expression of such understanding, and supercedes all prior and contemporaneous agreements, representations or conditions, express or implied, oral or written.

17.4 Waiver; Amendment. A provision of the Contract may be waived, deleted or modified only by a document signed by the Parties stating their intent to modify the Contract.

17.5 Survival. Sections 5, 8, 9, 10, 11, 13, 14, 15, 16 and 17 and all provisions of the Contract that by their nature would usually be construed to survive an expiration or termination shall survive the expiration or termination of the Contract.

17.6 Printed Forms. Client may use its forms and agreements to administer any agreement between ERM and Client, but such use is for convenience only, and any provision therein that conflicts with the Contract is void.

17.7 Notices. Notices hereunder will be given to the persons identified in the Proposal by any of the following: personal delivery; registered or certified mail, return receipt requested and postage prepaid; internationally recognized overnight courier, all fees prepaid; facsimile; or email.

17.8 Relationship of Parties. The Contract does not give either Party the authority to act as an agent or partner of the other Party, or to bind or commit the other Party to any obligations. Nothing contained in the Contract shall be construed as creating a partnership, joint venture, agency, trust or other association of any kind.

18. Additional Terms. Additional provisions governing ERM's performance of Services, if attached to these Terms by ERM, are made part of the Contract.

Appendix C
Technical and Feasibility Evaluation Of Remedial Alternatives

Table 1- EXPRESS DRY CLEANERS, RACINE, WISCONSIN- SUMMARY OF POTENTIAL TREATMENT TECHNOLOGIES SATURATED ZONE (Above Till)

Remedial Option	Option Description	Application	Effectiveness (Ability to meet RO)	Implementability	Cost	Treatment Duration	Limitations	Advantages	Accepted by WDNR	Further Evaluate Technology	Comments
Treatment Alternatives											
Enhanced In situ Bioremediation	Enhanced in situ Bioremediation	In place treatment utilizing indigenous bacteria in aerobic or anaerobic degradation of the site contaminants. in situ treatment achieved by injecting nutrients (and/or carbon amendment if anaerobic) and/or oxygen (if aerobic) to enhance the degradation.	Highly effective in the treatment of dissolved phase CVOCs provided that the appropriate bacterial strains are available, the geochemistry is favorable and nutrients can be delivered effectively.	Technology could be implemented using readily available soil blending, drilling and injection equipment. Bacterial testing has not been completed at the Site. However, the presence of daughter products (TCE & DCE) indicate that degradation processes may be taking place. Confirmatory testing is required to demonstrate anaerobic conditions and that sufficient bacteria is present for metabolisis of CVOCs. Also, neutral to oxidizing conditions in un-impacted areas of the perched zone aquifer provide an environment for oxidation of vinyl chloride.	The cost would require a mandatory field and laboratory evaluation of the presence of appropriate bacterial strains. Site evaluation would cost approximately $3,000 to implement and evaluate. The remedial cost would be driven by the large aerial extent of product related contamination. The highest percentage of cost is related to the drilling and injection process for delivery of nutrients. Cost range is $20 to $60 per cubic yard.	Duration of treatment is dependent on the presence and distribution of the needed strain of indigenous bacteria and the permeability of the soil. Possible to achieve ROs within 3 to 5 years, allowing for possible re-treatment of some areas to achieve RO.	The unknown permeability of the subsurface soils may locally inhibit the delivery of nutrients. Anaerobic degradation can generate methane as a byproduct; a consideration for the use of this technology includes providing a ventilation system in areas that are capped or covered.	The advantage of this approach is (1) the use of naturally occurring bacteria (if present) to degrade the subsurface contaminants and (2) the ability to enhance the growth of bacteria by injection of a nutrient or carbon source that have a longer residence time in the subsurface than chemical oxidants.	YES	YES	Locally high concentrations will likely require several follow-up injections to prevent stalling of the biologic reductive dechlorination processes.
Enhanced In situ Bioremediation with Zero Valent Iron	Enhanced in situ Bioremediation	In place treatment utilizing indigenous bacteria in aerobic or anaerobic degradation of the site contaminants. *In situ* treatment achieved by injecting nutrients (and/or carbon amendment if anaerobic) and/or oxygen (if aerobic) to enhance the degradation. The addition of zero valent iron (ZVI) enables direct reduction of chlorinated volatile organic compounds (VOC) via abiotic reactions.	Highly effective in the treatment of dissolved phase CVOCs provided that the appropriate bacterial strains are available, the geochemistry is favorable and nutrients can be delivered effectively. The addition of ZVI provides greater efficacy in treating high concentrations of CVOC than biologic amendments alone.	Technology could be implemented using readily available soil blending, drilling and injection equipment. Bacterial testing has not been completed at the Site. However, the presence of daughter products (TCE & DCE) indicate that degradation processes may be already taking place. Confirmatory testing is required to demonstrate anaerobic conditions and that sufficient bacteria is present for metabolisis of CVOCs. Also, neutral to oxidizing conditions in un-impacted areas of the perched zone aquifer provide an environment for oxidation of vinyl chloride.	The cost would require a mandatory field and laboratory evaluation of the presence of appropriate bacterial strains. Site evaluation would cost approximately $3,000 to implement and evaluate. The remedial cost would be driven by the large aerial extent of product related contamination. The highest percentage of cost is related to the drilling and injection process for delivery of nutrients. Cost range is $20 to $60 per cubic yard.	Duration of treatment is dependent on the presence and distribution of the needed strain of indigenous bacteria and the permeability of the soil. Possible to achieve ROs within 3 to 5 years, allowing for possible re-treatment of some areas to achieve RO. Treatment time if soil mixing is employed is shorter because "access" to contaminants within the soil pores is enhanced during mixing.	The unknown permeability of the subsurface soils may locally inhibit the delivery of nutrients. Anaerobic degradation can generate methane as a byproduct; a consideration for the use of this technology includes providing a ventilation system in areas that are capped or covered. Soil mixing will necessitate removal of barriers and allow methane venting.	The advantage of this approach is: (1) the use of naturally occurring bacteria (if present) to degrade the subsurface contaminants and (2) the ability to enhance the growth of bacteria by injection of a nutrient or carbon source that have a longer residence time in the subsurface than chemical oxidants. Soil mixing reduces the potential effects of "tight" soils and enable achieving ROs in less time than injection. Also, higher proportions of ZVI can be readily added during soil mixing, further enhancing mass reduction in high CVOC concentration areas.	YES	YES	The addition of ZVI affords treatment of higher concentrations of PCE. Initial treatment of PCE that comes in contact with ZVI occurs soon after injection/mixing while anaerobic biological processes "ramp up". ERD via REDOX Tech's ABC+ ammendment emplaced via in situ soil mixing is ERMs preferred remedial technology for the Express Cleaners project.
Monitored Natural Attenuation	Monitored Natural Attenuation	Ground water monitoring to evaluate the decrease of CVOCs through the process of natural attenuation, taking advantage of the natural effects of the environment on contaminants.	Effective in meeting remedial objectives in a reasonable amount of time.	Can be easily implemented through the existing monitoring well network and the long-term evaluation of chemical trends.	Cost is relatively low to implement but long-term monitoring may be costly if MNA does not provide sufficient evidence that CVOC concentrations are stable or decreasing over a reasonable amount of time.	Duration for MNA can extend over decades, depending upon conditions at the site.	MNA is limited to the natural ability for the subsurface environment to decrease concentrations over time.	The advantage of this technology is the use of naturally occuring environmental conditions (organic carbon, bacteria, etc.).	YES	YES (may be used after active remediation has occurred)	Current decreasing groundwater PCE concentration trends indicate that natural attenuation is occurring at the site and is an appropriate long-term remedial alternative at this site once source reduction is performed.
***In situ* Stripping**	Air Sparge and Vapor Extraction (VE)	*In situ* treatment of the adsorbed and dissolved contaminants by injecting air into subsurface saturated soils with the movement of air providing a means to strip contaminant to a vapor phase that could be captured by the VE system.	Effective in the treatment of CVOCs in saturated soil and groundwater provided that the soil permeability is sufficiently high and the treatment zone is sufficiently thick to yield an effective radius of influence.	The technology is implementable with readily available equipment and techniques. The sparge points can be installed as vertical points or horizontal wells.	The cost of the sparge system will be primarily driven by capital equipment, injection well installation, and subsurface piping installation costs. Cost range is $50 to $100 per cubic yard.	Duration of treatment is dependent on the permeability of the soil. Likely to achieve ROs within 1 to 2 years, allowing for 1 to 2 restarts.	Low permeability soils limit the horizontal and vertical movement of the injected air, which can translate to installation of additional injection points. Also, preferential pathways can develop that result in incomplete treatment. Thin nature of saturated zone at Site may preclude the use of this technology.	This technology is flexible, allowing adjustment of air flow rates and treatment areas to focus on distinct zones based on site data.	YES	NO	This technology requires a vapor recovery system be maintained. Also, the thin perched aquifer would result in small radius of influence for each air injection point and the associated vapor extraction system. This will result in higher installation and O&M cost.
RF Heating	Radio-Frequency Heating	Radio frequency heating (RFH) uses electromagnetic energy in the radio frequency band to heat media. Like microwave heating, RFH generates heat at the molecular level from within the soil/bedrock volume, rather than via less efficient conduction or convection processes. RFH is particularly efficient at heating low permeability geologic media, such as clay, silt, till or bedrock. Vapor recovery may be required using this approach.	Effective in treatment of CVOCs (including dense nonaqueous phase liquids) in both the shallow vadose and saturated zones.	RF generator must be operated in accordance with OSHA and FCC requirements.	The cost of operating the full scale system ranges from $90.00 per cubic yard to $200.00 per cubic yard or more for high temperature systems working in a soil vapor extraction system. More cost effective when used in areas having large soil contaminant volumes.	Duration of treatment is dependent upon the intensity of the heating and depth to which it can be applied. Likely to achieve Ross within 1 year in vadose zone soils.	Cost limitations include lease costs for the RFH units and the number of probes/antennae required. Also may require the use of vapor extraction to contain volatilized constituents.	Can be deployed underneath buildings and among other obstacles and utilities. According to vendors, the technology requires no safety barriers	YES	NO	High cost.
***In Situ* Chemical Oxidation (ISCO)**	Ozone	in situ treatment of the soils and groundwater with the injection of ozone below the water table and within the soil matrix. Vapor recovery would be a component of this treatment approach.	Highly effective in the treatment of CVOCs regardless of whether the contaminant is adsorbed or dissolved provided that the soil permeability is sufficiently high and the treatment zone is sufficiently thick to yield an effective radius of influence.	The technology is implementable with readily available equipment and techniques. The technology would require a pilot test to assess the oxidant demand as well as vapor permeability of the site soils. The sparge system could be installed using either horizontal or vertical injection wells.	The cost of this technology is primarily driven by capital equipment, injection well installation, subsurface piping installation, results of the oxidant demand study (which determines the mass of ozone needed), and the operation and maintenance of the system. Cost range is $75 to $150 per cubic yard.	Duration of treatment is dependent on the permeability of the soil. Possible to achieve ROs within 1 to 2 years, allowing for 1 to 2 rounds of maintenance injections.	Permeability and thickness of the saturated soils will limit the horizontal and vertical movement of the injected ozone, which can translate to installation of additional injection points and or ability to capture the injected ozone.	Simultaneous treatment of adsorbed and dissolved phase contaminants, destructive technology, and provides flexibility (as with sparge) to change treatment area based on site conditions.	YES	NO	High cost. As with air sparge, the treatment zone is too thin and would require closely spaced injection and recovery points.

Table 1- EXPRESS DRY CLEANERS, RACINE, WISCONSIN- SUMMARY OF POTENTIAL TREATMENT TECHNOLOGIES SATURATED ZONE (Above Till)

Remedial Option	Option Description	Application	Effectiveness (Ability to meet RO)	Implementability	Cost	Treatment Duration	Limitations	Advantages	Accepted by WDNR	Further Evaluate Technology	Comments
***In Situ* Chemical Oxidation (ISCO)**	Sodium Permanganate	*In situ* treatment of the adsorbed and dissolved contaminants with the injection of sodium permanganate both above and below the water table.	Highly effective in the treatment of site contaminants in the vadose zone and saturated area.	The technology is implementable with readily available equipment and techniques. Permanent injection wells could be installed either vertically or horizontally. Injection can also be implemented using direct-push technologies. Bench-scale testing of soil oxidant demand and field pilot study may be required to implement full-scale.	The cost of this technology is driven by the aerial extent and vertical thickness of the treatment area (s) on site (which translates to number of injection wells and pounds of oxidant to be delivered). Cost range is $50 to $75 per cubic yard.	Duration of treatment is dependent on the permeability of the soil. Possible to achieve ROs within 1 to 2 years, allowing for 1 to 2 rounds of maintenance injections.	Low permeability of the soils can inhibit delivery of the oxidant, and in the case of permanganate the soil oxidant demand will drive the mass of oxidant needed to treat the contaminants on site. Bench-scale testing of soil oxidant demand and field pilot study may be required to implement full-scale.	Destructive technology that can provide rapid, measurable, treatment.	YES	YES	Given the high PCE concentrations that are likely shielded within the soil matrix, multiple rounds of injection will likely be required. Precipitation of MnO2 in high PCE concentration areas may plug off soil pores. Also, the fill materials reportedly contain organics such as asphalt that make the oxidant demand uncertain.
***In Situ* Chemical Oxidation (ISCO)**	Sodium Persulfate	*In situ* treatment of the adsorbed and dissolved contaminants with the injection of sodium persulfate both above and below the water table. Requires an additive to "activate" the persulfate radical.	Highly effective in the treatment of site contaminants in the vadose zone and saturated area.	The technology is implementable with readily available equipment and techniques. The injection wells could be installed either vertically or horizontally. Injection can also be implemented using direct-push technologies. Bench-scale testing of soil oxidant demand and field pilot study may be required to implement full-scale.	The cost of this technology is driven by the aerial extent and vertical thickness of the treatment area (s) on site (which translates to number of injection wells and pounds of oxidant to be delivered). Cost range is $100 to $150 per cubic yard.	Duration of treatment is dependent on the permeability of the soil. Possible to achieve ROs within 1 to 2 year, allowing for 1 to 2 rounds of maintenance injections.	Low permeability soils can inhibit delivery of the oxidant, and the use of persulfate may require an activator such as caustic soda to achieve the RO. Bench-scale testing of soil oxidant demand and field pilot study may be required to implement full-scale. Target zone pH buffering may adversely affect the activation process.	Destructive technology that can provide rapid, measurable, treatment.	YES	NO	Higher cost than permanganate based ISCO. Some matrix materials can cause issues during the activation step. Potential for carbonate minerals in the sand at this site may interfere during activation. the oxidant demand of the fill is uncertain.
***In Situ* Chemical Oxidation (ISCO)**	Fenton's Reagent(Hydrogen Peroxide)	*In situ* treatment of the adsorbed and dissolved contaminants with the injection of Fenton's chemistry below the water table. Requires an additive to "activate" the peroxide.	Highly effective in the treatment of site contaminants in the vadose zone and saturated area.	The technology is implementable with readily available equipment and techniques. The injection wells could be installed either vertically or horizontally. Injection can also be implemented using direct-push technologies. Bench-scale testing of soil oxidant demand and field pilot study may be required to implement full-scale.	The cost of this technology is driven by the aerial extent and vertical thickness of the treatment area(s) on site (which translates to number of injection wells and pounds of oxidant to be delivered). Cost range is $100 to $150 per cubic yard.	Duration of treatment is dependent on the permeability of the soil. Possible to achieve ROs within 1 to 2 year, allowing for 1 to 2 rounds of maintenance injections.	Rapid decomposing of peroxide in some soil matrixes to due stability limitations. Careful monitoring of the process is needed to control boiling of the groundwater and rapid release rather than destruction of contaminants via steam stripping.	Destructive technology that can provide rapid, measurable, treatment.	NO	NO	
***In Situ* Chemical Reductive (ISCR) Technologies**	ISCR	*In situ* treatment of the adsorbed and dissolved phase contaminants with the injection of amendments to enhance the natural attenuation of the contaminants. This technology typically requires the presence of a naturally occurring material (Iron) within the treatment interval that can be readily activated via the addition of a reductant.	Effective in the treatment of the site contaminants in the oxygen-deficient saturated zone.	The technology is implementable with readily available equipment and techniques. The injection wells could be installed either vertically or horizontally. Bench scale testing would be required to identify if the site currently exhibits a reducing environment that can be augmented or enhanced.	The cost of this technology is driven by the aerial extent and vertical thickness of the treatment area(s) on site (which translates to number of injection wells and pounds of amendment to be delivered). Cost range is $45 to $100 per cubic yard.	Duration of treatment is dependent on the permeability of the soil. Likely to achieve ROs within 2 to 3 years, allowing for 1 to 2 rounds of maintenance injections.	Low permeability soils can inhibit delivery of the amendment, and the technology requires the presence of a reducing environment for effective implementation. Potential extend time to obtain the required regulatory review of work plans. May not be feasible due to shallow nature of contaminants on site.	Destructive technology with a long residence time.	Unknown	NO	Relatively new technology. Often requires native matrix material to contain mineral or other compounds that are readily reduced via the addition of reducing reagents.
Extraction	Pump and Treat Groundwater Gradient Control	Extraction of groundwater from single or multiple recovery wells to provide both removal of mass and gradient control of the contaminant plume.	Effective in containing the contaminant plume. Limited mass removal effectiveness, due to the expected low groundwater extraction rates.	Technology could be implemented using readily available groundwater extraction and treatment equipment.	The cost of this technology is driven by capital equipment, recovery well installation, subsurface piping installation, and operation and maintenance. O&M cost is highly dependant on the extent and duration of operation. O&M costs may be $20K/yr. Duration 20+ years.	Excess of 20 years, allowing for on-going operation of groundwater extraction system to achieve RO.	Low permeability soils will reduce the effective radius of influence of the extraction system, and the inorganics on site may cause fouling issues with an associated ex-situ treatment such as air stripping.	Low capital cost with a long history of regulatory acceptance.	YES	NO	High cost, long term O&M.
Extraction	ART in Well	Extraction of groundwater from single or multiple recovery wells with in-well treatment by stripping, venting, and recirculation.	Limited effectiveness, due to the expected low groundwater extraction rates as well as the high dissolved phase contaminant concentrations.	Technology could be implemented using readily available drilling and treatment equipment.	The cost of this technology is driven by capital equipment, recovery well installation, subsurface piping installation, and operation and maintenance. Cost range is unknown for horizontal wells.	Excess of 10 years, allowing for on-going operation of groundwater extraction system to achieve RO.	Low permeability soils will reduce the effective radius of influence of the ART system, and the inorganics on site may cause fouling issues with the in-well stripper and SVE components of the system.	Easily expandable and small footprint for equipment.	Unknown	NO	Perched aquifer at the site is too thin for this technology.
Natural Attenuation											

1. Remedial Objective (RO): Removal of CVOCs in the areas of highest contaminant concentrations in the saturated zone (adsorbed and dissolved phase) to the extent practicable.

Appendix D
Certificate of Insurance Documentation

Environmental Resources Management

700 W. Virginia Street
Suite 601
Milwaukee, WI 53204
414-289-9505
414-289-9552 (fax)

ERM

August 17, 2011

Natalia Minkel-Dumit
Gonzales Saggio & Harlan LLP
225 East Michigan Street
Milwaukee, WI 53202

And

Nancy Ryan
Wisconsin Department of Natural Resources
2300 N. Dr. Martin Luther King, Jr. Drive
Milwaukee, WI 53212-3128

RE: Statement of Financial Responsibility for Insurance Deductible
Remedial Action Bid Proposal Submittal
Express Cleaners, 3941 North Main Street, Racine, WI
WDNR FID#252010000; BRRTS #02-52-547631

Dear Ms. Minkel-Dumit and Ms. Ryan:

This letter is being provided as documentation that Environmental Resources Management, Inc. (ERM) is financially capable of meeting our $250,000 insurance deductible obligation. If a valid claim is made against ERM's insurance for issues associated with future remedial actions by ERM at the above referenced Express Cleaners project, owned by the Ehrlich Family Limited Partnership (Ehrlich Family), ERM will be capable of meeting the insurance deductible obligation.

If you have any questions or require additional information, please feel free to contact me at (414) 289-9505.

Sincerely,

Rita Harvey
Treasurer & CFO

NATURAL RESOURCE TECHNOLOGY
ENVIRONMENTAL CONSULTANTS

23713 W. PAUL ROAD, SUITE D
PEWAUKEE, WI 53072
(P) 262.523.9000
(F) 262.523.9001

Ms. Nancy Ryan
Wisconsin Department of Natural Resources
2300 N. Dr. martin Luther King, Jr. Drive
Milwaukee, WI 53212

August 19, 2011
(P071120)

Re: Remedial Action Bid Proposal
Express Cleaners Site, 3941 N. Main Street, Racine, WI
WDNR FID#252010000; BRRTS #02-52-547 63

Natural Resource Technology, Inc. (NRT) is pleased to present this remedial action bid proposal for the above referenced Dry Cleaner Environmental Response Fund (DERF) Program site (the Site) to the Ehrlich Family Limited Partnership (EFLP). This bid was prepared in accordance with the requirements of Wisconsin Administrative Code Chapter NR 169.

SITE BACKGROUND

The Property consists of a small, one-story, strip mall located at 3921 – 3941 North Main Street, Racine, Wisconsin 53402-3611 (the Property). The northern unit (3941 N, Main Street) has been occupied by several dry cleaning businesses since 1971. The Site has been impacted by releases of dry cleaning solvents that have migrated off the Property to the adjacent S.C. Johnson (SCJ) property to the east. The Property and the SCJ property are collectively referred to herein as the "Site."

Concentrations of PCE, TCE, cis-l, 2 DCE and vinyl chloride all exceed the enforcement standards across the Site. In addition, impacted soils are present directly beneath the paved surfaces and building slab on the Property, and extend to the water table, which occurs at approximately 2 to 6 feet below ground surface (bgs). PCE has also been detected in soil vapor beneath the building foundation above the Environmental Protection Agency Target Shallow Gas Concentration standards. An off-site monitoring well west of Main Street did not contain dry cleaning related contaminants above laboratory analytical detection limits in 2011.

Site and Contaminant Characteristics

The site geology generally consists of a shallow perched groundwater system within silty sand material over more cohesive and less permeable silty clay (Oak Creek Till). The soil isoconcentration maps presented by Northern are a generalized depiction of contaminant distribution. The area of soil impacts largely coincides with the horizontal extent of the groundwater plume. The groundwater is limited vertically by the underlying Oak Creek till, which occurs as dense, blocky, silty clay. The depth of soil contamination generally diminishes with distance from the building.

Northern's site investigation and sampling protocols included selecting soil samples from the intervals exhibiting the highest vapor level readings and at the base of the boreholes so that analytical data was collected from soils located within the unsaturated soil, the smear zone, and well below the water table. The extensive horizontal extent of soil contamination appears to be a direct result of below-slab releases and surficial spills over the surface of the Site and adjacent properties. Soil and groundwater impacts are greatest beneath the existing dry cleaner floor slab, extending to at least 16 feet below the floor slab. Significant levels of soil contamination were also noted at depth over 20 feet west of the building near the sanitary sewer lateral, suggesting migration within and along the sanitary sewer, with a possible sewer lateral breach in the vicinity of B-13.

PCE soil concentrations range from non-detect to 770 ppm. Soil chlorinated volatile organic compounds (CVOCs) concentration levels beneath the building and generally to the east of the structure exceed the Land Disposal Restrictions (LDRs), and are anticipated to be characteristically hazardous. NRT anticipates that the Department of Natural Resources can provide a "contained out" determination for the waste such that the soil,

upon excavation, can be treated to a level which either allows for disposal of the soil as special waste or treatment to near or below the residual contaminant level (RCL) such that the material can be reused on site. The soil criteria protective of groundwater quality for the CVOCs detected during the site investigation are as follows:

Cis-1,2-DCE	60 µg/kg
Trans-1,2-DCE	110 µg/kg
PCE	13 µg/kg
TCE	13 µg/kg

Northern calculated a volume of 2,500 cubic yards of unsaturated soil with contaminant concentrations exceeding the RCL. Upon further review of Northern's data and figures, we determined that the unsaturated soil volume of the Property is 2,500 cubic yards and the volume of unsaturated impacted soil on the SCJ property is 725 cubic yards.

Groundwater within the silty sand layer perched above the sility clay is amenable to removal of PCE by a variety of in-situ technologies. The underlying silty clay soil may continue to represent a long term source of groundwater impacts but can be effectively addressed by the in-situ method proposed.

REMEDIAL ALTERNATIVES

Remedial alternatives for the site have been evaluated based on technical and economic feasibility to achieve the following objectives:

- Cause a reduction in soil contamination such that engineering controls and continuing obligations are minimized;
- Reduce groundwater contaminant levels to concentrations below the enforcement standard by removing and treating unsaturated soils combined with reductive dechlorination of groundwater;
- Mitigate potential ongoing source of vapor migration to protect the health of future occupants of this property and neighboring buildings;
- Minimize or eliminate the need to dispose of soils or groundwater as hazardous waste;
- Achieve a more permanent solution to site closure with minimal engineering controls;
- Decrease the potential for long-term and third party liabilities for all responsible parties involved and increase the overall property value.

Based on the analysis of the soil remediation alternatives, NRT recommends on-site, ex-situ treatment of unsaturated soils combined with reductive dechlorination of groundwater by electron donor carbon amendment. This alternative provides a competitive cost range and high performance confidence when compared to the other alternatives. A site map illustrating the proposed treatment area is included in Appendix A.

Because the contaminants are largely bound to fine-grained soil particles and the contaminant mass is greatest beneath the building, NRT believes it is reasonable to demolish the building to access the source area by excavation of impacted soil; ex-situ treatment of soil to a performance standard that will eliminate the soil to groundwater migration pathway, and backfilling the resultant excavation with treated soil. NRT believes that remediation of impacted soils in this source area should remove enough contaminant mass to stabilize the groundwater plume. A summary of the remedial strategy we envision is as follows:

- Demolition of the building with excavation of unsaturated soils beneath the dry cleaner floor slab;
- Excavation of unsaturated soils throughout the site to an average depth of 4 feet bgs;
- On-site treatment of excavated unsaturated soils using a permanganate slurry and reuse of the material as structural fill to the extent practical;
- Groundwater treatment by injection of edible oil (EO); and
- Groundwater monitoring for a period of up to eight quarters to demonstrate the effectiveness of the remediation.

REMEDIAL ACTION PLAN

Bench and Pilot Testing

Pre-remedial assessment for optimizing the approach and implementation for treatment of the unsaturated zone using potassium permanganate and the saturated zone using edible oil will be required to optimize the overall design and cost effectiveness. Key objectives for bench and pilot scale testing include the following:

- Evaluate appropriate oxidant slurry concentrations that will effectively meet the performance objectives in both low and high concentration areas.
- Minimize the amount water that will be required disperse the oxidant through the soil matrix.
- Balance the amount of slurry water to oxidant ration with regard to existing soil water contents.
- Confirm estimated timeframes that will be required to adequately oxidize chlorinated impacts in soil. This consideration will be important for confirming baseline estimates for completing the unsaturated zone treatment.
- Confirm mixing effectiveness with different soil types (i.e., fill vs. silty sand vs. clay).
- Assess the microbial conditions and amenability for effecting anaerobic conditions using edible oil.
- Confirm estimated injection amounts and spacing for injection

The following sections discuss the proposed testing for the unsaturated and saturated zones:

Unsaturated Zone

One of the most critical considerations for the amount of permanganate that will be required, and correspondingly the overall cost, will be the soil's natural oxidant demand (NOD). To assess the NOD a composite sample will be collected from several locations and submitted for laboratory analysis. Laboratory analysis will be conducted using ASTM D7262-07 Test Method A. The results will be used to confirm the estimated NOD used for this proposal and quantity of potassium permanganate

Pilot testing will consist of selecting bulk soil samples from a test pit on the east side of the dry cleaning building, where high contaminant concentrations have been detected in the unsaturated soils. The pilot test will be performed to simulate the ex-situ treatment proposed and will consist of addition and mixing of solution variable solution and slurry concentrations with CVOC analysis of samples at one, three, and five day intervals. The results will be logged to determine the most-effective application.

Saturated Zone

Two bench scale tests are proposed:

- Anaerobic assessment for dehalococcoides: This test will provide a count of the microbial population and will be used to estimate whether the population is strong enough to support anaerobic stimulation and the right type of microbes are present to facilitate complete degradation through vinyl chloride.

- Phospholipid Fatty Acids (PLFA): This test identifies the types of microbe species that are present but not a count. These results will be useful for evaluating the relative distribution of anaerobic and aerobic microbes and will assist with determining whether or not the overall biomass is sufficient to support bioremediation.

One pilot scale test is proposed using a specialized assessment tool called a biotrap™. This tool will be placed in several wells and contains activated carbon that provides a large surface area for microbial growth. The bio-trap is placed in a monitoring well and microbial growth can be stimulated by applying edible oil. The trap will be used to assess anaerobic processes on a small scale for a relatively low cost prior to committing to a full scale operation

Design Report/Permitting

A design report will be prepared and submitted in accordance with the requirements of NR 722. Key elements of the design report will include design plans for excavating unsaturated soil, ex-situ treatment details based on the pilot testing results, EO injection details, and a detailed groundwater monitoring plan. The plans will include plans for erosion control; storm water pollution prevention; site security and fencing; locations for treating, staging and stockpiling excavated materials; equipment transportation routes, and site restoration.

Remediation activities will require pre-approval by the WDNR and may include: obtaining an air quality permit, a solid waste processing permit, possibly a temporary zoning permit, and the local permits which would be necessary to demolish the building. Zoning and local permits would primarily govern noise emissions. Primary emission issues include volatile organic compound (VOC) emissions. Treated soils would be tested intermittently to assure the effectiveness of the process according to NR 718.

With regards to permitting for the EO injection, under the requirements of NR 140.28 (5), *Criteria for Granting a Temporary Exemption Where Infiltration or Injection is Utilized for a Remedial Action* a temporary exemption

is required for injection of "remedial materials". As part of this exemption, a Wisconsin Pollutant Discharge Elimination System (WPDES) discharge permit also is required. Finally, WDNR approval will be necessary to meet the regulatory requirements under NR 812.05: *Disposal of Pollutants: Injection Prohibition.* Under NR 812.05 (2), the use of a well or borehole for injection is prohibited unless it is for remediation of contaminated soil or groundwater. Details regarding the EO injection process and the amounts and quantities of EO to be used will be provided in the design report.

Building Demolition Strategy

In evaluating remedial alternatives, NRT considered demolition of only a portion of the dry cleaning unit and floor slab, but removal of the granular fill beneath the slab would present difficulties in stabilizing the foundation due to the potential to undermine the footings and damage the building. It is possible to demolish only the dry cleaning unit and foundation; however, the building was likely constructed on a continuous strip footing or grade beam, and damage to the remaining structure could only be prevented by installation of shoring and/or construction of a frost footing to support the north wall of the liquor store unit. Therefore, we recommend demolition of the entire dry cleaning unit and remaining structure to access impacted soils. Complete demolition of the dry cleaning unit and its foundation will allow for more expedient and thorough removal of the unsaturated soils, and would not require costs of reconstructing the slab or installing a vapor mitigation system. The floor slab and foundations of the remaining units will be left in place to provide a stable work area throughout the remedial construction process. A cost estimate for building demolition is included to assist in evaluating these options. The demolition cost estimate includes capping all utilities that enter the main utility lines.

All concrete beneath the dry cleaning unit could be decontaminated through pressurized steam washing as we assume that the concrete slab is contaminated with solvent, but the waste generated and the effort required to accomplish this work suggests that direct landfilling of the slab and foundation would be more cost-effective.

Soil Excavation and Ex-Situ Soil Treatment

Unsaturated fill soils consisting of silty sand and gravel fill exist beneath the building to a depth of approximately 4 feet below the slab. Saturated silty sand natural soils exist to approximately 8 feet below the slab, and are underlain by very dense, blocky silty clay till soil. Upon our review of remedial actions that we have completed for sites with similar geology, we noted that the dense silty clay soil, as described by Northern, would be difficult to excavate and is providing an effective barrier to vertical migration of contaminants. However, our bid includes contingency plans for removing free product that may be encountered. We will also explore the value of removing saturated source material at that time.

Ex-situ chemical oxidation is recommended within the silty sand soil where PCE concentrations are high and are likely the primary mechanism for previously observed increasing concentrations in groundwater In this process, hydrogen peroxide is combined with naturally occurring and supplemental iron salts to produce a modified Fenton's Reagent which oxidizes the organic compounds at near neutral pH conditions without generating rapid exothermic reactions typically associated with conventional hydrogen peroxide applications. Source materials would be excavated and transported to on-site treatment cells (six 20-cubic yard roll-off boxes) Treatment would consist of mixing impacted soils in the treatment cell with potassium permanganate solution or slurry. After the treatment is verified by sampling, material will be transported to a constructed containment area located on-site. The containment area will be sloped towards the excavation such that free water will drain from staged soil into the excavation. Staged soil will be covered at the end of each work day to protect the material from precipitation such that the material is suitable for reuse as structural fill. If warranted by the underlying excavation subgrade conditions, a layer of open-graded stone (no larger than WDOT Gradation No. 1) will be installed at the bottom of the excavation. This is particularly important in the

area of the dry cleaning unit slab and immediately surrounding area as it is likely that any future site redevelopment will follow the same or similar footprint of the strip mall.

Implementation

The following sequence of activities is anticipated for implementing soil and groundwater remediation at the site:

- Obtain WDNR approval of the anticipated remediation plan;
- Conduct pilot testing and report these results to WDNR;
- Conduct an asbestos inspection of the building, as well as analysis of lead-based paint to determine recycling potential;
- Proceed with design and bidding for excavation work and on-site treatment;
- Obtain other permits/approvals for implementing the plan (including asbestos abatement and building demolition), discharge of treated water, and air emissions; and
- Excavate and begin soil treatment after issuance of the above referenced approvals.

Source Area Excavation Plan

- Existing monitoring wells located within the planned excavation area will be abandoned in accordance with NR 141 prior to excavation.
- An underground utility clearance will be requested to locate any utilities that could be impacted.
- Work will be staged and sequenced to minimize impact to neighboring businesses and residents to the extent possible;
- The existing asphalt pavement will be initially stripped and transported for recycling or possibly for disposal if the material appears to be impacted by solvent.
- Excess treated material will be loaded directly into transport vehicles for off-site disposal at either Republic's Kestrel Hawk or Waste Management's Metro facility, depending on available pricing with approved analytical testing and waste profiling.
- Appropriate engineering controls such as a water spray, covering of stockpiles, if any, and use of a vapor suppressant will be implemented to minimize migration of fugitive dust and odors.
- Appropriate erosion and storm water controls will be implemented to prevent off-site run-off of impacted surface water or sediment.

- Source area materials will be excavated to a depth of 4 feet throughout the site with the potential for deeper excavation within the unsaturated zone to be evaluated.

- Excavation is proposed for the 2,500 cubic yards of unsaturated source material on the Property.

- The soil in areas previously identified will be excavated using a staged approach and excavation will begin in the area of highest contamination (beneath the dry cleaning building slab and east of the building).

- A containment wall will be constructed parallel to the east boundary of the Property to prevent further contaminant migration onto the SCJ property, and the containment wall will consist of a bentonite and flowable fill slurry that can be excavated in the future if necessary.

- Edible oil injection/surface application to the exposed water table will be conducted at each excavation site, weather permitting.

- One treatment verification sample will be collected every100 tons of treated material.

- Each section excavated will be backfilled with treated soil as soon laboratory results verify that the performance standard (RCL) has been achieved. If weather conditions indicate an immediate need to stabilize the excavation, imported granular backfill will be used.

- The sampling plan will include both excavation base and sidewall sampling every 25 linear feet. Sampling will include analysis for CVOCs as the primary constituents of concern.

Excavation progress will be monitored using visual indicators of contamination possibly coupled with a field mobile laboratory for CVOC analyses to reduce laboratory costs and obtain real time data to guide the excavation and segregation for treatment. To confirm field results, confirmation sampling for laboratory analysis of VOCs will also be performed on representative samples of the material being excavated and the soils remaining in place.

Treated Soil Sampling and Soil Replacement

One treatment verification sample will be collected every 100 cubic yards of treated material. When confirmation is received that soil treatment has removed CVOCs to a concentration close the calculated site-specific RCL, the treated soil will be replaced in the excavation as compacted fill. Following soil replacement, the site restoration activities will be completed.

Contingency Plan for Groundwater Management

Based on the significant seasonal fluctuations in water table levels at the site, NRT intends to perform the soil excavation during a period of seasonally low groundwater elevation levels; between late October and early December. Therefore, a smaller volume of infiltration and/or precipitation is anticipated during this timeframe. While the remedial alternative proposed does not include pumping and treating groundwater, excess groundwater and/or precipitation must be anticipated. The excess water that will require removal will be pumped from the excavation into an aboveground aeration tanks for temporary storage until treatment or final

disposal. Excess water can be treated ex-situ in the tank using a combination of aeration, bag-filtering and carbon polishing, all dependent on the amount of excess water retained on the site. Treated water will then be picked up by a licensed hauler and disposed at a licensed water treatment facility or permitted for discharge to the local sanitary sewer. For the purposes of this proposal, it is assumed that treated water will be discharged to the sanitary sewer as approved by the City of Racine

Excess Soil Management

NRT projects that a surplus of approximately 20 percent of the in-bank soil volume will be generated during the ex-situ treatment and backfilling. Excess soil would arise from the addition of moisture to the mix, a possible need to stabilize the treated soil moisture content through the addition of calcium carbonate, and the probable need to import gravel backfill to stabilize the subgrade in certain areas of the excavation. Accordingly, we have budgeted for disposal of approximately 970 tons of surplus soil as special waste that would be generated from the Site (both properties combined). .

In-Situ Groundwater Treatment Plan

EO injection is proposed at approximately 245 locations as indicated in the conceptual plan provided in Appendix A. Based on our current understanding of the site conditions, it is anticipated that one injection event will be sufficient for degrading the contaminants to target levels. Project response time for the anaerobic conditions to be established could be in the range of 6 to 9 months following injection. Additional injection points may be established in higher concentration areas. Microbial activity will be assessed initially using indicator parameters (e.g., DO and methane) following the first month after injection. Proposed post-remedial groundwater monitoring for assessing reduction in contaminant concentrations is discussed below. The proposed edible oil will consist of refined soybean oil. Both products are approximately the same in cost. NRT is currently working with two vendors who can provide the oil in either emulsified or non-emulsified blends. Final decision on the product selection will be confirmed following completion of the bench scale study.

Proposed Groundwater Monitoring Plan

Following soil excavation, treatment and replacement, quarterly groundwater monitoring and sampling will be performed quarterly sampling during the first post-remediation year. Additionally, the wells and piezometers will be sampled for remediation via natural attenuation (RNA) parameters. As this groundwater data is collected, concentration trends will be assessed to evaluate if a stable or receding plume exists and the other parameters will be evaluated for evidence of natural attenuation. Replacement monitoring wells and piezometers will be installed after soil excavation activities in accordance with NR 141, and will be sampled concurrent with the first post-remediation groundwater sampling event. At this time replacement of five monitoring wells and installation of two piezometers are anticipated.

All quarterly groundwater samples will be analyzed for CVOCs, chloromethane, and methane to measure performance of the EO injection and to determine the need for additional EO injections.

If assessment of contaminant trends indicates an expanding contaminant plume, or no evidence of natural attenuation is observed, NRT will evaluate the need for additional EO injection.

Required Remedial Work on Adjacent Property

The request for proposal (RFP) indicates that each proposal must include an itemized cost estimate to perform remedial work on the S.C. Johnson and Son ("SCJ") property located adjacent to the Site. We understand that SCJ accepted a remedial action plan for this area that included application of EO from the

surface along with excavation of approximately 100 tons of soil from the area of MW-13. EO technology is not applicable to unsaturated soil remediation at this time.

NRT recommends that 725 cubic yards of unsaturated soil be excavated from the SCJ property in the area shown on the conceptual plan provided in Appendix A and treated within the on-site treatment cells. All unsaturated media will be treated to the calculated site-specific RCL and replaced within the excavation. For the saturated zone, a total of approximately 89 injection points have been identified as shown in the conceptual plan provided in Appendix A. After the injection is completed, the area will be covered with a minimum of six inches of topsoil, and seeded with a high quality, native seed mix.

CASE STUDIES OF SUCCESSFUL TREATMENTS

Potassium permanganate has been successfully used in a variety of applications in Wisconsin and the Midwest. Most recently, NRT successfully assisted a client with obtaining a Voluntary Party Liability Exemption (VPLE) for a site in Ixonia, Wisconsin where potassium permanganate was a major component for achieving soil and groundwater target cleanup levels. Application included direct injection of potassium permanganate solution in groundwater and direct mixing of dry permanganate to create a permeable treatment wall. Final approval for the VPLE was achieved after conducting follow-up focused source removal of several small areas that had not been previously identified. Subsurface conditions present at the Ixonia Site are similar to those at the current Site under consideration consisting of a mixture of silty sand, fill overlying dense clay.

EO has been successfully used at a number of Sites for the remediation of chlorinated impacts in groundwater. It's low cost and ease of application make it particularly attractive. NRT is current working on a large project in Kentucky where we have been responsible for performing both bench and pilot scale studies for chlorinated impacts in shallow groundwater. One of our proposed vendors (Carus Corporation) has supported edible oil applications at a variety of sites in the Midwest including Illinois and Ohio. Our proposed subcontractor (North Shore Environmental Construction) has direct experience in Wisconsin using direct injection under similar types of soil conditions that are present at the current site under consideration.

COST ESTIMATE

A detailed cost estimate is provided in Appendix B. A summary of the detailed cost estimate is as follows: Final costs will be confirmed following completion of bench and pilot-scale studies.

Task/Activity	Estimated Cost
Project Management and Progress Reporting	$12,000
Design Report, Permitting Hazardous Waste Variance and Pre-Construction Preparation	$20,500
Bench and Pilot Scale Testing For Edible Oil and Potassium Permanganate	$27,500
Base Bid - Building Demolition, Unsaturated Zone Treatment Using Potassium Permanganate, Saturated Zone Using Edible Oil (Erlich Property)	$718,700
Base Bid - Unsaturated Zone Treatment Using Potassium Permanganate, Saturated Zone Using Edible Oil (SC Johnson Property)	$216,700
Monitoring Well Installation and Post Remediation Monitoring	$30,900
Post Remediation Documentation Report and Closure Package	$20,100
Total Estimated Costs	**$1,046,400.00**

Additional estimated itemized costs are provided below. Please note that certain costs are variable due to fluctuations in fuel costs, contaminant concentration levels, and waste volumes and are subject to verification with subcontractors.

Line Item	Unit	Estimated Cost
Building Demolition as Proposed	Lump Sum	$35,000
Excavation	Cubic Yard	$5.00
Backfill – On Site Soil	Cubic Yard	$9.00
Backfill – Imported Soil or Topsoil	Ton	$25
Trucking (Republic or Waste Management)	Tons	$7.30 - $8.75
Special Waste Disposal	Tons	$46 (includes contractor mark up plus tax)
Hazardous Waste Transportation – Soil (assumes disposal at EQ)	Per Load	$1,500
Hazardous Waste Disposal – Liquid	Drum	$500
Machine and Operator	Day	$2,250
Foam Suppressant Equipment and Application	Week	$5.000
NR 718 Soil Storage Cell	Cell	$5,000
Roll-off Box – 20 cubic yards	Day	$20
Contaminated water aeration tank	Day	$600
CVOC Analysis – Soil or Water; Standard/Expedited Turnaround Time	Sample	$95/$143
CVOC Analysis – Ambient Air; Expedited Turnaround Time	Sample	$200
Travel	Miles	State Rate

Proposed Work Schedule

NRT can begin the design phase of the project upon execution of a mutually agreeable contract. We propose that the pilot test be conducted shortly thereafter. As indicated, we feel it would be best to conduct the work in late fall, but the work can be delayed to occur during any period of moderate temperatures.

Activity/Task	Approximate Schedule
Bench and Pilot Testing	Weeks 1 through 3 - September 2011
Design Report/Permitting	Weeks 3 through 6 - September/October 2011
Building Demolition (Includes inspection and pre-demolition asbestos abatement)	Weeks 1 through 6 – September/October 2011
Soil Excavation/Treatment/Restoration	Weeks 6 through 16 – October-December 2011
Injection	One week – Spring 2012
Groundwater Monitoring	24 Months (8 quarters) – Spring 2012 – 2014
Remedial Documentation Report	Four weeks – Spring 2014
Closure Request	Four Weeks – Spring 2014

VPLE Program

We understand that there may be a desire to enroll the site in the Wisconsin Voluntary Party Liability Exemption ("VPLE") Program. VPLE enrollment should include a Phase I Environmental Site Assessment conducted in accordance with All Appropriate Inquiries and may require additional Phase II work assessment beyond that which has been accomplished by the dry cleaner investigation. Such assessment would likely include assessment of past agricultural use of the property, evaluation of fill soils that have been brought to the site for its redevelopment, and assessment of the current impact of the adjacent LUST site. Because some residual levels of post-remedial groundwater contamination may be expected, a pollution liability policy must also be purchased. Based on our experience in obtaining a VPLE certification for a similar site contaminated with CVOCs, potential additional costs are as follows:

Additional Investigation $10,000 to$15,000
Additional WDNR correspondence, meetings, interactions $6,000 to $10,000
Additional project management $10,000
Additional for VPLE request and adjoining property notifications $3,000 to $6,000

NRT PROJECT PERSONNEL

NRT project personnel that will be assigned to this project include the following:

Mr. Roy Wittenberg, PE, will be NRT's project manager for the remedial action. Roy has over twenty-five years of experience performing project engineering and management, technical supervision, design engineering and analysis, budget management, and geotechnical engineering. Roy is currently managing EO injection remediation of CVOCs for an industrial site in Kentucky.

Mr. Andrew Millspaugh, EIT, will be the project engineer overseeing the implementation and documentation of the remedial action. Andrew's work experience includes solid and hazardous waste management, geotechnical applications in solid waste recycling, soil mechanics, hydrogeology, groundwater and contaminant transport.

Ms. Sarah Ganswindt, Senior Engineering Technician, will provide field technical and construction support services on the project and will be responsible for soil and groundwater sample collection, data management, and quality assurance/quality control. Ms. Ganswindt is also a Wisconsin certified asbestos inspector and supervisor and has managed similar and larger abatement projects, and she has over 13 years of construction oversight experience.

Mr. Jacob Walzak and Ms. Katherine Juno will assist in preparation of the remedial documentation report and the closure request. Mr. Walzak will also be responsible for overseeing the installation of all monitoring wells.

Project staff resumes are included in Appendix C.

CONSTRUCTION PERSONNEL

North Shore Environmental Construction (NSEC) will provide all construction elements on the project. NRT personnel have worked with NSEC on similar projects throughout southeastern Wisconsin, and we rely on their expertise, professionalism, and experience in accomplishing the soil remediation.

Kitson Environemntal Services will provide all monitoring well abandonment, installations, and injection points. Kitson has provided services to NRT and our clients for the past 10 years.

NATURAL RESOURCE TECHNOLOGY
ENVIRONMENTAL CONSULTANTS

CONSULTANT CERTIFICATION

In accordance with NR 169.23(3)(b), NRT attests to the following:

- NRT has been fully informed of the project scope, and we have the expertise to analyze alternatives and design the most suitable response action.
- NRT can provide necessary staff and facilities for all phases of planning, design, construction, and operation.
- NRT project staff included qualified technical reviewers to advise the owner and work toward remedial goals.
- NRT will perform all services in an ethical, professional, timely manner.

In accordance with NR 169.23(9)(a), NRT certifies the following:

- All consultant and contract services will comply with NR 700 – 728, Wisconsin Administrative Code.
- Upon request, NRT will make available to the department for inspection and copying all documents and records related to the contract services.
- NRT did not prepare bid in collusion with any other consultant submitting a bid on the site.

CERTIFICATE OF INSURANCE

In accordance with NR 169.23(9)(b)(1), NRT has provided our certificate of insurance. We further attest that our insurance policy meets all of the requirements specified in NR 169.23(9)(b)(1). A copy of our certificate of insurance is included in Appendix D.

Thank you for you for your consideration of the remedial bid presented. Natural Resource Technology, Inc. looks forward to accomplishing a successful site remediation. Please do not hesitate to contact the undersigned should you have any questions regarding this bid.

Sincerely,

NATURAL RESOURCE TECHNOLOGY, INC.

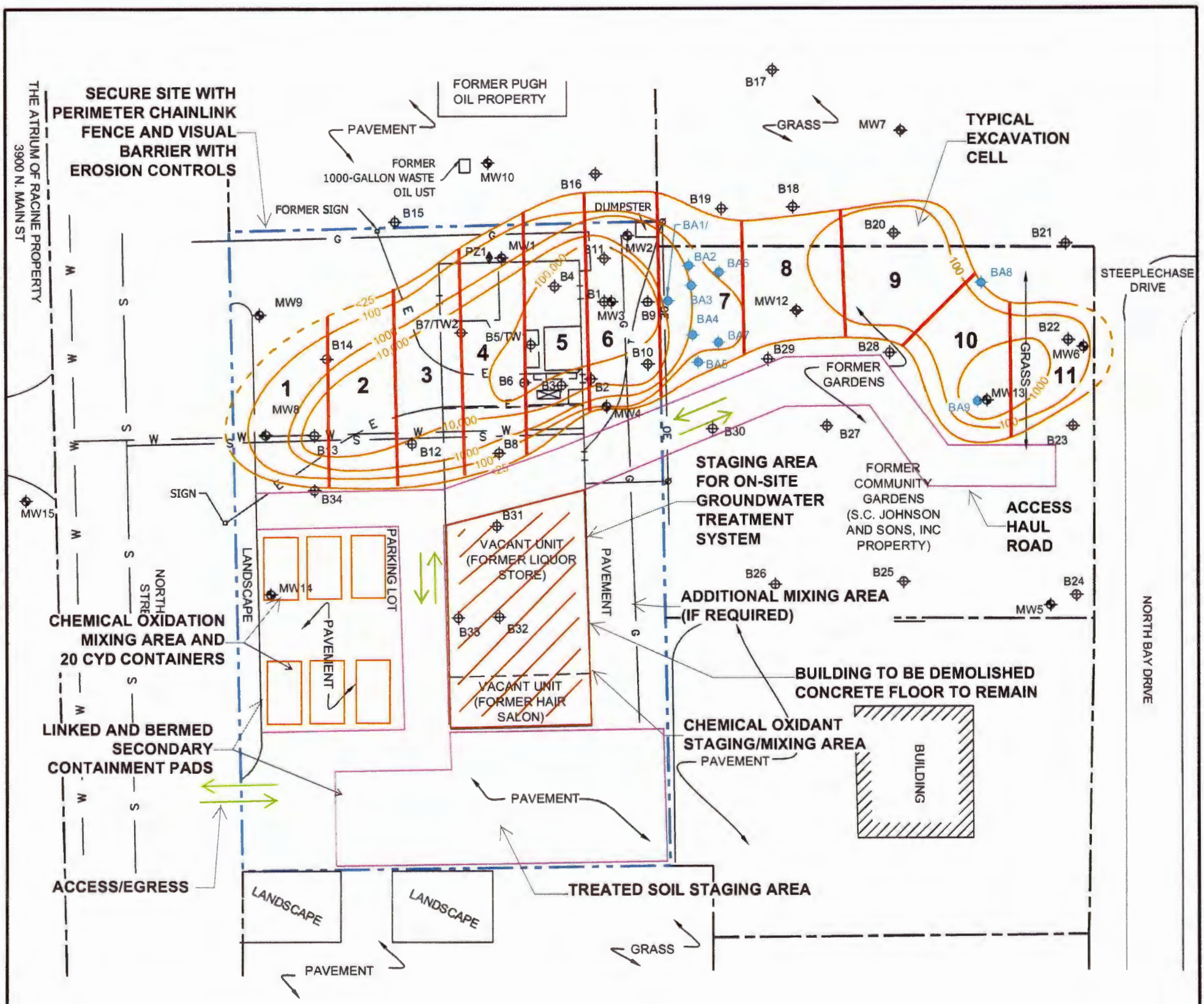
Katherine M. Juno, PG
Managing Geologist

Roy E. Wittenberg, PE
Principal Engineer

Copy (w/att): Mr. William P. Scott
Gonzalez Saggio & Harlan LLP

Attachments:

Appendix A: Site Map Depicting Proposed Treatment Area and Injection
Appendix B: Detailed Cost Estimate
Appendix C: Project Staff Resumes
Appendix D: Certificate of Insurance



LEGEND

- SUBJECT PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARIES
- OE — OVERHEAD ELECTRIC LINE
- G — UNDERGROUND GAS LINE
- W — WATERMAIN
- E — BURIED ELECTRIC LINE
- S — BURIED SANITARY SEWER
- T — BURIED TELEPHONE LINE
- ⌀ — UTILITY POLE
- FORMER DRY CLEANING MACHINE LOCATION
- EXISTING DRY CLEANING MACHINE
- MW1 — 2" MONITORING WELL LOCATION AND IDENTIFICATION
- B34 — BOREHOLE LOCATION AND IDENTIFICATION
- BA5 — HAND AUGER NEAR SURFACE SAMPLE LOCATION AND IDENTIFCATION
- PZ1 — PIEZOMETER LOCATION AND IDENTIFICATION
- TW2 — 1" TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION
- 100 — UNSATURATED SOIL PCE ISOCONCENTRATION LINE IN MICROGRAMS PER KILOGRAM (DASHED WHERE INFERRED)

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
MW14	3-5	<24
MW15	2-4	<24
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

Sample Location	Sample Depth (feet)	Soil PCE Concentration (ug/kg)
B15	4-6	<25
B16	2-4	<25
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
B34	3-5	<24
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	3	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

SCALE IN FEET

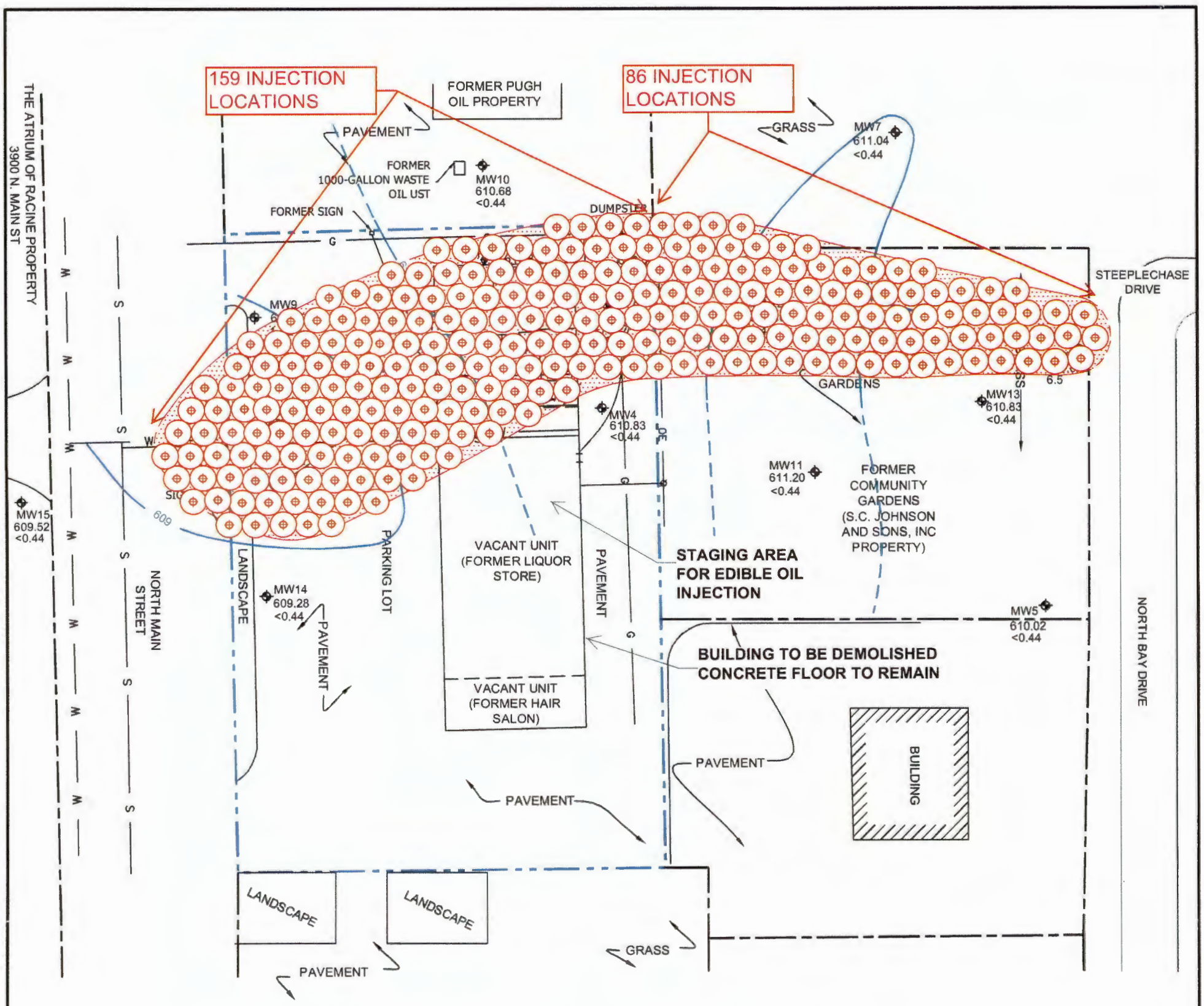
20 0 20 40

NATURAL RESOURCE TECHNOLOGY

CONCEPTUAL PLAN FOR UNSATURATED SOIL EN-SITU TREATMENT STAGING AND MIXING

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

DATE:	DRAWN BY:	REVISED:	PROJECT NUMBER:	FIGURE
04/15/08	BMP	2011-04-21 AJS	003592-09001-0	1



LEGEND

- SUBJECT PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARIES
- OE — OVERHEAD ELECTRIC LINE
- X — FENCE
- G — UNDERGROUND GAS LINE
- W — WATERMAIN
- E — BURIED ELECTRIC LINE
- S — BURIED SANITARY SEWER
- T — BURIED TELEPHONE LINE
- ⌀ UTILITY POLE
- FORMER DRY CLEANING MACHINE LOCATION
- EXISTING DRY CLEANING MACHINE

- EDIBLE OIL INJECTION POINT (ESTIMATED 10FT SPACING)
- MW1 / 610.82 / 173 — 2" MONITORING WELL LOCATION AND IDENTIFICATION WITH GROUNDWATER ELEVATION AND PCE CONCENTRATIONS IN µg/L
- PZ1 — PIEZOMETER LOCATION AND IDENTIFICATION
- TW2 — 1" TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION
- GROUNDWATER FLOW DIRECTION
- 608.5 — GROUNDWATER ELEVATION CONTOUR
- ESTIMATED EXTENT OF GROUNDWATER WITH PCE CONCENTRATIONS EXCEEDING NR140 ES (DASHED WHERE INFERRED)

SCALE IN FEET
20 0 20 40

NATURAL RESOURCE TECHNOLOGY

CONCEPTUAL PLAN FOR EDIBLE OIL GROUNDWATER INJECTION

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

DATE:	DRAWN BY:	REVISED:	PROJECT NUMBER:	FIGURE
04/15/08	BMP	2011-04-21 AJS	003592-09001-0	2

SUMMARY OF ESTIMATED COSTS

CLIENT: Ehrlich Family Limited Partnership (EFLP)
PROJECT DESCRIPTION: Dry Cleaner Environmental Response Program (DERF) Site, Former Express Cleaners, Inc., Racine, Wisconsin
PROJECT/PROPOSAL: P071120
NRT PROJECT MANAGER: Roy Wittenberg, NRT

Natural Resource Technology

Task Description :			Task 1 Project Management and Progress Reporting	Task 2 Design Report, Permitting Hazardous Waste Variance and Pre-Construction Preparation	Task 3 Bench and Pilot Scale Testing For Edible Oil and Potassium Permanganate	Task 4.1 Base Bid - Building Demolition, Unsaturated Zone Treatment Using Potassium Permanganate, Saturated Zone Using Edible Oil (Erlich Property)	Task 5 Base Bid - Unsaturated Zone Treatment Using Potassium Permanganate, Saturated Zone Using Edible Oil (SC Johnson Property)	Task 7 Monitoring Well Installation and Post Remediation Monitoring	Task 8 Post Remediation Documentation Report and Closure Package	TOTAL
PERSONNEL	*Rate*									
Principal Engineer		Hours	60	24	6	40	10	0	10	150
R.Wittenberg	$145	Costs	8700	3480	870	5800	1450	0	1450	$21,750
Managing Geologist		Hours	10	10	0	0	0	2	20	42
K.Juno	$135	Costs	1350	1350	0	0	0	270	2700	$5,670
Engineer I		Hours	0	120	60	420	183	0	60	843
A.Millspaugh	$80	Costs	0	9600	4800	33600	14640	0	4800	$67,440
Hydrogeologist I		Hours	0	0	0	0	0	30	40	70
J. Walczyk	$80	Costs	0	0	0	0	0	2400	3200	$5,600
Senior Technician		Hours	0	0	12	270	110	120	20	532
S.Ganswindt	$75	Costs	0	0	900	20250	8250	9000	1500	$39,900
Data Manager		Hours	0	0	2	16	8	8	8	42
J.Barbeau	$95	Costs	0	0	190	1520	760	760	760	$3,990
CAD Technician/Designer		Hours	0	12	0	0	0	0	8	20
R.Hopkins	$80	Costs	0	960	0	0	0	0	640	$1,600
GIS Specialist		Hours	0	16	0	0	0	0	25	41
T.Cushman	$80	Costs	0	1280	0	0	0	0	2000	$3,280
Accounting/Administration		Hours	20	12	2	4	4	16	12	70
Admin Support	$60	Costs	1200	720	120	240	240	960	720	$4,200
SUBTOTAL LABOR		Hours	90	194	82	750	315	176	203	1,810
		Costs	11,250	17,390	6,880	61,410	25,340	13,390	17,770	$153,430
Administrative	6.0%		675	1,043	413	3,685	1,520	803	1,066	$9,206
SUBTOTAL LABOR WITH ADMINISTRATIVE			$11,925	$18,433	$7,293	$65,095	$26,860	$14,193	$18,836	$162,636
EXPENSES										
WDNR Review Fee			0	1250	0	0	0	0	1250	$2,500
Field Expenses			0	50	200	400	200	150	0	$1,000
Field Equipment (PID, H&S, etc.)			0	0	500	0	0	900	0	$1,400
Vehicles/Mileage			100	200	300	1200	600	900	0	$3,300
SUBTOTAL EXPENSES			$100	$1,500	$1,000	$1,600	$800	$1,950	$1,250	$8,200
REBILLABLES										
Lodging			0	0	0	0	0	0	0	$0
Meals			0	0	0	0	0	0	0	$0
Travel (Air, Train, Bus, Cab)			0	0	0	0	0	0	0	$0
Rental Vehicles			0	0	0	0	0	0	0	$0
	5.0%	Fee	0	0	0	0	0	0	0	$0
		Sub Total	0	0	0	0	0	0	0	$0
Per Diem: Meals & Expenses (overnight=$35/day)		No Fee	0	0	0	0	0	0	0	$0
Per Diem: Meals & Expenses (day trips=$15/day)		No Fee	0	0	0	0	0	0	0	$0
		Sub Total	0	0	0	0	0	0	0	$0
Misc. Proj. Materials/Supplies			0	0	0	0	0	0	0	$0
	10.0%	Fee	0	0	0	0	0	0	0	$0
		Sub Total	0	0	0	0	0	0	0	$0
SUBTOTAL REBILLABLES			$0	$0	$0	$0	$0	$0	$0	$0
SUBCONTRACT SERVICES AND MATERIALS										
Laboratory Analytical Services	Number of Samples	Cost per Sample								
Analytical Soil (VOC, 8260) (Bench and Pilot Scale Oxidation)	4	95	0	0	380	0	0	0	0	$380
Analytical Groundwater (VOCs 8021 Bench Scale Testing)	4	95	0	0	380	0	0	0	0	$380
Analytical Groundwater (RNA Parameters Pre and Post Remediation)	32	75	0	0	0	0	0	2400	0	$2,400
Analytical Groundwater (Meth/Eth/Eth)	16	75	0	0	0	0	0	1200	0	$1,200
Analytical Soil (VOC, 8260; Unsaturated Zone Oxidation Confirmation)	40	143	0	0	0	4290	1430	0	0	$5,720
Analytical Groundwater (VOC 8021) Pre and Post Remediation Monitoring - includes blanks)	78	95	0	0	0	0	0	7410	0	$7,410
Waste Profile Analysis for Off-Site Soil and Debris Disposal	1	1250	0	0	0	1250	0	0	0	$1,250
			0	0	0	0	0	0	0	$0
Bench and Pilot Scale Testing			0	0	0	0	0	0	0	$0
Pre-Remediation Design Soil and Groundwater Sampling (Lump Sum)			0	0	800	0	0	0	0	$800
Natural Chemical Oxidation Demand for Chemical Oxidation (Lump Sum)			0	0	400	0	0	0	0	$400
Laboratory Microbial Assessment for Edible Oil (Lump Sum)			0	0	1750	0	0	0	0	$1,750
Pilot Scale Assessment of Microbial Conditions for Edible Oil (Lump Sum)			0	0	3500	0	0	0	0	$3,500
Pilot Scale Testing - Chemical Oxidation (Lump Sum)			0	0	10000	0	0	0	0	$10,000
Site Preparation and Mobilization/Demobilization										
Mobilization/Demobilization			0	0	0	22000	0	0	0	$22,000
Well Abandonment (six well locations)			0	0	1000	0	0	0	0	$1,000
Building Demolition			0	0	0	35000	0	0	0	$35,000
Site Facilities (e.g., Fencing, Staging Areas, erosion controls, secondary containment, haul road, tracking pad			0	0	0	15000	4000	0	0	$19,000
Underground Utility Abandonment and Installation of Cutoff Collar at Property Line.			0	0	0	5000	0	0	0	$5,000
Base Bid - Unsaturated Zone Treatment Using Potassium Permanganate - Erhlich Family Property										
Subcontractor ($118 per cubic yard, total of 2500 cubic yards)			0	0	0	295000	0	0	0	$295,000
Potassium Permagenate			0	0	0	151000	0	0	0	$151,000
Base Bid - Unsaturated Zone Treatment Using Potassium Permanganate - SC Johnson Property			0	0	0	0	0	0	0	$0
Subcontractor ($118 per cubic yard, total of 730 cubic yards)			0	0	0	0	86140	0	0	$86,140
Potassium Permagenate			0	0	0	0	47000	0	0	$47,000
Base Bid - Saturated Zone Treatment Using Edible Oil - Erhlich Family Property										
Subcontractor (Single Geoprobe Injection on 10 foot Spacing - 159 locations)			0	0	0	10600	0	0	0	$10,600
Edible Oil			0	0	0	7800	0	0	0	$7,800
Base Bid - Saturated Zone Treatment Using Edible Oil - SC Johnson Property										
Subcontractor (Geoprobe Injection on 10 foot Spacing)			0	0	0	0	6000	0	0	$6,000
Edible Oil			0	0	0	0	4200	0	0	$4,200
Base Bid - Site Restoration Erhlich Family and SC Johnson Property										
Subcontractor (Lump Sum)			0	0	0	0	7500	0	0	$7,500
Base Bid - Post Remediation Monitoring Erhlich Family and SC Johnson Property										
New Monitoring Wells (total of six)			0	0	0	0	0	4500	0	$4,500
Off-Site Deposal										
Soil (Assumed 20 % of treated unsaturated soil as Special Waste - 969 tons @ $54.75/ton, inc. trucking)			0	0	0	41063	11990	0	0	$53,053
Water (Assumed 10,000 gallons)			0	0	0	5000	5000	0	0	$10,000
Misc. Services										
Surveying			0	500	0	0	0	1500	0	$2,000
Compaction Testing			0	0	0	4000	0	0	0	$4,000
Subtotal			0	500	17450	592713	171830	13410	0	$795,903
Administrative Fee	10.0%		0	50	1745	59271	17183	1341	0	$79,590
SUBCONSULTANT SERVICES										
Subconsultant #1			0	0	0	0	0	0	0	$0
Subconsultant #2			0	0	0	0	0	0	0	$0
Subtotal			0	0	0	0	0	0	0	$0
Administrative Fee	10.0%		0	0	0	0	0	0	0	$0
SUBTOTAL SUB. SERVICES & MATERIALS			$0	$550	$19,195	$651,984	$189,013	$14,751	$0	$875,493
TOTAL ESTIMATED COSTS			$12,025	$20,483	$27,488	$718,679	$216,673	$30,894	$20,086	$1,046,329

Roy E. Wittenberg, PE

Principal Engineer

Areas of Expertise

- Environmental and civil engineering for site restoration and redevelopment
- Construction management for civil and environmental related projects
- Regulatory negotiation and permitting
- Feasibility studies
- Remedial design and implementation to address soil and groundwater impacts
- Geotechnical testing and design
- Bench and pilot scale treatability studies

Education

- M.S., Civil Engineering, University of Colorado, 1990
- B.S., Civil Engineering, University of Colorado, 1985
- B.S., Sociology, University of Illinois, 1977

Professional Registrations

- Professional Engineer, #E32332 - WI
- Professional Engineer, #062-050371 - IL
- Professional Engineer, #045489 - MI
- Professional Engineer, #27747 – CO
- Professional Engineer #67656 - FL

Summary of Qualifications

Twenty-five years of experience performing project engineering and management, technical supervision, design engineering and analysis, construction oversight, budget management, and client and regulatory interface. Project management and construction experience includes a number of site remedial restoration projects along major waterways. Environmental experience includes assessment of environmental impacts, conducting remedial alternatives evaluations, and development of risk-based cleanup objectives. Technical experience includes environmental engineering for soil/sediment and groundwater treatment, bench- and pilot-scale testing for in-situ and ex-situ soil and groundwater technologies, civil applications for excavation and site restoration and geotechnical testing and evaluation.

Representative Project Experience

Project Manager for the remedial design and construction at an MGP site located in Sanford Florida. Project elements include permanent diversion of a tributary (Cloud Branch Creek) to nearby Lake Monroe, in situ stabilization/solidification (ISS) of up 130,000 cubic yards of petroleum hydrocarbon (coal tar related) impacted soil, flow diversion, removal of two feet of sediment along a portion of the creek, bank stabilization and waterway restoration. Project responsibilities include preparation of various design submittals for USEPA Region IV and project/construction management. Remedial construction is on-going and will continue through the fall of 2010.

Senior Engineer for the design of an engineered cofferdam river diversion system, sediment removal and river restoration along approximately 900 feet of the Ashuelot River in Keene, New Hampshire to address petroleum hydrocarbon (coal tar related) impacts due to historic industrial processes. Key design elements include phased installation of sheet pile cofferdams to bifurcate flow, removal of sediment in cells in the "dry" proceeding from upstream to downstream and river bottom and bank reconstruction. Construction is scheduled for 2010.

Project Manager for the Remedial Investigation/Feasibility Study (RI/FS) and remedial design and construction for approximately 4,000 cubic yards of PCB-impacted sediment located in the Lincoln Park/Blatz Pavilion embayment located on the Milwaukee River in Milwaukee, Wisconsin. Key remedial elements included segregation and removal of less than and greater than 50 ppm impacted sediment, installation of temporary river diversions, dewatering and aboveground treatment and restoration for future fish habitat and recreational use.

Senior Engineer/Project Manager for remedial construction at a former industrial site along the Menomonee River in Milwaukee, Wisconsin. Key project elements included thermal treatment and/or off-site disposal of approximately 57,000 tons and ISS of 25,000 cubic yards of coal tar-impacted soil. Related project aspects included installation of a temporary sealed sheet piling system to divert river flow and reconstruction of approximately 700 feet of riverbank. Access to the area targeted for ISS required demolition and reconstruction of the major property access ramp leading from an interstate overpass adjacent the site.

Professional Affiliation

- American Society of Civil Engineers (ASCE)
- Federation of Environmental Technologists (FET)

Professional History

- Natural Resource Technology, Inc.
  (1998 to Present), Principal Engineer
- Dames & Moore (1996-1998), Senior Engineer
- Environmental Science & Engineering (1993-1996), Senior Project Engineer
- IT Corporation (1988 to 1993), Project Engineer
- Aguirre Engineers, Inc. (1986 to 1988), Staff Engineer

Publications - Presentations

Mr. Wittenberg has authored or coauthored a number of publications and presentations on the subjects of remediation, material management, innovative remedial approaches and site restoration for former industrial sites along major waterways.

Representative Project Experience (continued)

Senior Engineer for the design, planning and removal of coal tar and impacted sediment from along a portion of the Fox River in Appleton, Wisconsin. Key design elements included extensive permitting and coordination with the city, the Wisconsin Department of Natural Resources, and the U.S. Corps of Engineer to temporarily dam off a portion of the river so the impacted materials could be accessed by conventional excavation equipment. Site-specific logistics included implementing a fish rescue program, channeling residual river flow around impacted zones and conducting a general cleanup of non-impacted debris from the bottom of the canal in the vicinity of the impacted zone. Additional activities included in-situ stabilization/ solidification of approximately 700 feet of impacted canal bottom next to the river bank and riverbank restoration.

Senior Engineer for the planning and implementation of full-scale land and river based in-situ stabilization/stabilization (ISS) at a former industrial site along the Fox River in Appleton. Project planning and design included oversight support of bench and pilot scale testing of mix designs using both Portland cement and ground blast furnace slag to address a range of contaminants including elevated concentrations of inorganic arsenic that was characteristically hazardous. Full-scale operations included ISS of approximately 34,000 cubic yards of impacted soil/debris and reconstruction/restoration of approximately 680 feet of riverbank. Field operations were conducted using a variety of techniques that included in-situ soil auger mixing and specialized backhoe mixing and injection.

Senior Engineer/Project Manager for the design and construction management of a multi-layer geosynthetic cap and sealed sheet pile wall for a future neighborhood park at a former MGP site located along the Sheboygan River in eastern Wisconsin. Design plans were tailored to integrate with city redevelopment design objectives. Riverfront plans included construction of condominium complexes and a river walk, park and recreation area over the geosynthetic cap. The design accommodated planting and foundation depths, stability of future park structures and architectural aesthetics for river bank restoration which required extensive coordination with the city through completion of park construction.

Senior Engineer for the design and construction of a new sea wall, earthen cover and groundwater control system for a future neighborhood park at a former MGP site along the Upper Fox River in Wisconsin. A key element of the design for this project included considering several redevelopment scenarios that would minimize future economic and environmental liabilities while maximizing redevelopment return.

Andrew M. Millspaugh, EIT

Environmental Engineer

Areas of Expertise

- Environmental Engineering
- Geoenvironmental Applications
- Sediment Investigation and Remediation.

Professional History

- Natural Resource Technology, Inc. (January 2010 to Present), Environmental Engineer
- Sterling Environmental Engineering, P.C. (Summer 2008), Environmental Engineering Technician

Education

- M.S., Civil / Environmental Engineering, University of Wisconsin-Madison, 2009
- B.S., Environmental Engineering, University of Delaware, 2008

Additional Training

- 40-Hour OSHA Hazardous Waste Operations
- OSHA Confined Space Entry
- American Red Cross CPR and First Aid Certification
- Wisconsin DNR Boat Safety Training Certification

Professional Registrations

- State of Wisconsin, EIT

Summary of Qualifications

Over one year of experience in site investigations, construction oversight, field sampling methods, and project quality assurance. Project experience has focused on sediment investigation and remediation.

Technical coursework in the fields of civil and environmental engineering with the following focus areas: solid waste management, hazardous waste management, waste geotechnics, soil mechanics, unsaturated soil mechanics, engineering properties of soil, properties of geosynthetics for engineering applications, seepage and slope stability, hydrogeology, groundwater and contaminant transport, fluid mechanics, water resources, watershed management, water and wastewater quality, air pollution control, structural steel and concrete design, and engineering statistics.

Masters thesis title: *Large Scale Vadose Zone Expansion Tests on Chromium Ore Processing Residue (COPR).* Investigation of the in situ expansion mechanisms of COPR, a byproduct of industrial chromium processing historically used as structural fill.

Project Experience

Chicago River Ambient Sediment Characterization:

- Collected sediment samples from the North Branch of the Chicago River using push-core sampling methods.
- Sampling required navigation and collection of location coordinates using differential GPS field equipment.

Ottawa River Remediation Project:

- Provided construction quality assurance for dredging contractor.
- Managed in situ real-time turbidity monitoring equipment to evaluate compliance with particle resuspension specifications.
- Collected and processed post-dredge sediment cores for laboratory analysis of primary contaminants of concern.
- Statistically analyzed sediment laboratory results to verify compliance with final surface area weighted concentrations.

Ameren Ash Impoundment Closure:

- Performed global and veneer slope stability analyses on proposed closure design.

Municipal Solid Waste Landfill Monitoring:

- Performed post-closure monitoring well sampling and explosive gas surveys at several municipal landfills in New York State.
- Provided construction oversight for the placement of alternative grading material prior to geomembrane installation during a municipal landfill closure.

Jacob J. Walczak

Hydrogeologist

Areas of Expertise

Education

- BS, Geosciences/Geophysics, University of Wisconsin - Milwaukee, 2006
- MS, Geosciences, University of Wisconsin - Milwaukee, 2011

Professional History

- Natural Resource Technology, Inc.

Other Training

- 40-Hour OSHA Health & Safety Training for Hazardous Waste Operations (29 CFR 1910.120)
- Wisconsin Department of Natural Resources Boating Safety Training

Most Recent Publications/Presentations

- Mr. Walczak has submitted three abstracts for various conferences, and has presented at both regional and national conferences during his graduate education.
- Mr. Walczak is the primary author in the article entitled "Influence of tetracycline resistance on the transport of manure-derived *Escherichia coli* in saturated porous media" in the scientific journal *Water Research*.

Summary of Qualifications

Three years of extensive research and laboratory experience in the environmental sciences. Experience in environmental consulting as a hydrogeologist for groundwater monitoring of sites contaminated with petroleum products, coal gasification byproducts, coal combustion byproducts, and metals. Modeling experience includes applications using analytical and numerical groundwater flow and transport models developed by the U.S. Environmental Protection Agency (USEPA), U.S. Army Corps of Engineers Waterways Experiment Station, and others. Experience using Geographical Information Systems applied to the hydrologic cycle.

Consulting activities include: flow modeling, report preparation, sample collection of groundwater, quality assurance/quality control for river dredging activities, and project oversight.

Representative Project Experience

Site Investigations

Environmental technician for remedial investigations of former manufactured gas plant (MGP) sites in Wisconsin to evaluate the extent of MGP wastes and byproducts impacting groundwater. Field activities including groundwater monitoring.

Turbidity monitoring and quality assurance/quality control for river sediment sampling at a river impacted by industrial waste in Ohio.

Sediment sampling oversight at a river impacted by industrial waste in Wisconsin.

Modeling

Groundwater modeling experience including applications using analytical and numerical groundwater flow and transport models and aqueous chemistry models developed by the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers Waterways Experiment Station.

Hydrogeologist for groundwater modeling of a coal combustion product landfill along a river in Illinois to predict contaminant transport and calculate required source area concentrations to meet groundwater quality standards of metals.

Research Experience

Examined the occurrence of antimicrobial resistant bacteria in dairy manure and explored their transport behavior in the soil-groundwater system through laboratory experiments. Isolated and enumerated *Escherichia coli* and *Enterococcus* from dairy manure and water samples using selective growth media recommended by USEPA. Tested the antimicrobial susceptibility of the bacterial isolates using the agar dilution method designed by the Clinical and Laboratory Standards Institute. Evaluated the mobility of manure-derived antimicrobial resistant bacteria in the soil-groundwater system through laboratory transport experiments.

Sarah A. Ganswindt

Environmental Technician

Areas of Expertise

- Construction, demolition and redevelopment activities
- Soil and groundwater investigation and remediation involving a wide variety of contaminant types
- Property transfers and site investigations

Education

- Associates Degree in Applied Science, Environmental and Pollution Control Technician, Milwaukee Area Technical College (MATC) - Mequon, Wisconsin, 1994.

Professional Registrations

- Troxler Nuclear Testing Equipment Training #069912
- Underground Storage Tank Site Assessor #247301
- Asbestos Inspector #103433
- Asbestos Supervisor #103433
- State of Wisconsin Lead Inspector and Lead Sampling Technician DHFS #103433
- Radiation Safety and Monitoring Technology Certification:
- Niton Spectrum Analyzer #A2040159260
- Wisconsin PECFA Consultant Registration #247301

Summary of Qualifications

Over sixteen years of experience in various aspects of environmental and pollution control in addition to water and wastewater analysis. Experience includes analytical testing in a laboratory setting as well as field testing of soil, concrete and aggregates. Field experiences on former manufactured gas plant (MGP) sites and ash landfills include construction management, oversight and field documentation activities. Construction experience includes project organization, design document preparation/review, on-site construction coordination, on-site quality assurance/quality control (QA/QC), and oversight of demolition and redevelopment of several Wisconsin sites.

Representative Project Experience

Property Redevelopment/Brownfields

Field Coordinator for two Brownfield sites encompassing 24 properties. Performed historical research and Phase I and Phase II assessments. Duties included contractor coordination, construction oversight, and preparation of technical specifications for demolition. Services also included lead and asbestos inspections prior to the demolition of on-site structures, engineering oversight, soil management, photographic documentation, compilation and interpretation of field data.

Field Technician during the installation of new underground electrical lines, water, sanitary, and storm sewer mains in West Bend, WI. Responsible for waste characterization, disposal of impacted site soils, management of low-hazard contaminated soils, and documenting on-site work through field reports and meetings with city officials.

Environmental Assessments and Site Investigations

Provided data base collection, background review, site reconnaissance, and reports for Phase I and II Environmental Site Assessments (ESAs) for industrial sites and commercial property transfers for Wisconsin, Iowa and Illinois based firms.

Lead and Asbestos Inspection and Sampling

Conducted lead-based paint and asbestos inspections for multiple sites including a 45-acre Wisconsin Department of Natural Resources and Environmental Protection Agency Superfund site located in Milwaukee WI., a historic building located in downtown Milwaukee, a proposed health care facility located in West Allis, WI and a 66-acre site developed with a residential home and farm structures

Professional Affiliations

- Federation of Environmental Technologists (FET)
- National Ground Water Association (NGWA)
- Wisconsin Ground Water Association (WGWA)
- MATC Environmental Advisory Board Member 2006-2008

Professional History

- Natural Resource Technology, Inc.
- (1998 to Present), Environmental Technician
- TN & Associates, Inc., Milwaukee, Wisconsin (1997 to 1998), Environmental Technician and Assistant Surveyor
- Woodward-Clyde Consultants, Milwaukee, Wisconsin (1996 to 1997), Geotechnical and Environmental Technician
- Midwest Analytical Services, Milwaukee, Wisconsin (1996), Laboratory Technician and Field Service Manager
- Woodward-Clyde Consultants, Milwaukee, Wisconsin (1995 to 1996), Geotechnical and Environmental Technician
- Suburban Labs, Waukesha, Wisconsin (1995), Field Service Manager and Field Service Technician

Additional Training

- 40-Hour OSHA Health & Safety Training for Hazardous Waste Operations
- American Red Cross Certified Professional Responder
- 8-Hour Annual OSHA HAZWOPER Refresher Training
- Confined Space Training
- ASTM Transaction and Phase I Training
- Substation Entrant Training

Volunteer Work

- Milwaukee Inter City Girls Camp
- Milwaukee Rescue Mission

Representative Project Experience (continued)

Construction Services and Surveying

Current construction services include contractor coordination and construction oversight during demolition activities for several sites located in Wisconsin.

Provided technical support for field engineering services at a former ash landfill including field observation and documentation of work, construction quality assurance (CQA), and collection of sample media as necessary.

Provided CQA and documentation services for modifications for two ash landfills and an early ash disposal area for a power plant located in Oak Creek, WI. Site activities also included CQA services and documentation during the construction of a pond and installation of a geosynthetic cap.

Field Technician for remedial action activities at a gas plant site. Responsibilities included assessing extent of coal tar impacts for thermal treatment, construction oversight and management of impacted soils, groundwater, and surface water, and field documentation of site work, sheet pile installation, and grading activities. Also responsible for annual groundwater sampling at multiple MGP sites throughout the State of Wisconsin.

Monitor and document ambient air quality concurrent with remedial actions conducted for a former manufactured gas plant located in Menominee, Michigan. Responsibilities included calibration of field equipment, implementation of an air monitoring program for polynuclear aromatic hydrocarbons, volatile organic compounds and total suspended particulates, field data acquisition and monitoring and/or recording metrological conditions during remedial measures.

Responsible for coordinating field activities, documenting the installation of a dual-phase extraction system and groundwater treatment system, and preparing as-built drawings. Surveying experience includes topographic mapping for the State of WI., in addition to several state and local highway projects.

Geotechnical

Duties included laboratory and field testing of soil and aggregates, grain size analysis and hydrometers for U.S. Army installations, landfills, streets, and highways. Field work also included nuclear density soil testing, and sampling and testing of concrete for several large facilities, including a municipal wastewater treatment plant.

Landfills

Responsible for performing semi-annual groundwater sampling at landfills performing and coordinating field activities and documenting liner material, general construction, revegetation, and construction of a gas distribution system.

Katherine M. Juno

Senior Geologist

Areas of Expertise

- Site assessment, property acquisition and divesture, and environmental risk management
- Geotechnical and environmental planning and redevelopment
- Construction management, including preparation and review of budgets, bid packages, project plans and specifications, and construction monitoring
- Soil and groundwater investigation and remediation involving a wide variety of contaminant types
- Regulatory agency liaison support and policy negotiation
- Litigation technical support and expert testimony

Education

- B.S., Geology, UW - Eau Claire, 1982; UW – Milwaukee graduate course work

Professional Registrations

- Professional Geologist #11 - WI
- Professional Geologist # 196-000927 - IL

Other Training

- 40-Hour OSHA HAZWOPER Training for Hazardous Waste Operations (29 CFR 1910.120) and updated 8-Hour Refresher Courses
- Industrial Wastewater Operator Training for Metal Finishing -
- Building Materials Reuse Association Building Deconstruction Professional
- WasteCap Resource Solutions Accredited Professional

Summary of Qualifications

Twenty-four years of professional consulting throughout the Midwest United States and Texas, focused in brownfield redevelopment, real estate acquisition and divestiture, soil and groundwater remediation, and management of site investigations of properties impacted by chlorinated solvents, heavy metals, PCBs and petroleum, including preparation and review of budgets, bid packages, project plans and specifications, reports, and work plans. Litigation support experience including preparation of expert witness reports, research of past industrial practices, interviews of plant employees, and presentations to the Wisconsin Department of Justice. Prepared applications for and procured grants and reimbursements through various Wisconsin programs (SAG, BEBR, PECFA). Obtained exemptions to NR 504.07(8) to allow commercial and industrial development/construction on abandoned landfills and historic fill sites throughout southeastern Wisconsin.

Representative Project Experience

Industrial Property Acquisition and Divestiture

Sole consultant to venture capital firm acquiring heavy industries throughout the United States. Project role includes initial Phase I and Phase II environmental site assessments, compliance auditing, peer review of sellers' environmental reports, negotiations with sellers and purchasers in resolving pre- and post-purchase environmental disputes, and ongoing technical support to managing partners in maintaining compliance and achieving environmental closure.

Regularly provide input to buyers and sellers in preparing purchase agreements that reflect continuing obligations with respect to applicable regulatory controls.

Advise clients interested in obtaining brownfield properties by completing expedient reviews of regulatory files, preparing technical documents explaining concerns, and recommending additional due diligence needs and probable costs.

Brownfields and Site Development

Project manager for redevelopment of a mid-size city's downtown redevelopment zone. Procured $600,000 in environmental assistance and redevelopment grants and managed demolition, site remediation, vapor migration investigations, geotechnical investigations, and site redevelopment. Contaminants of concern included chlorinated hydrocarbons, petroleum, and historic fill. Provided input to redevelopment authority in negotiations with sellers and wrote pertinent sections of developers' agreements. Currently providing on-going management of site redevelopment of four properties.

Project manager for site closure and redevelopment of a former Manufactured Gas Plant located in a TIF district within Milwaukee's Menomonee Valley. Worked with responsible party to obtain site closure for the 20-acre, multi-owner site and currently leading developer in obtaining an exemption to NR 504.07(8) and maintaining existing engineering controls that meet LEED scoring criteria.

Professional Affiliations

- Wisconsin Green Building Alliance
- Federation of Environmental Technologists
- National Ground Water Assoc.
- Wisconsin Ground Water Assoc.
- 30th Street Industrial Corridor Corporation

Professional History

- Natural Resource Technology, Inc. (1993 to Present), Senior Geologist
- Giles Engineering Associates, Inc. (1986 to 1993), Project Geologist

Certifications

- PECFA Consultant Registration # 652365

Publications/Presentations

Juno, K.M., "Effects of Select Permeants on Clay Soil Hydraulic Conductivity," University of Wisconsin - Milwaukee, December, 1989

Community

- YWCA of Greater Milwaukee - Workforce Development
- 30th Street Industrial Corridor Corporation Workforce Development Committee

Representative Project Experience (continued)

Construction Management

Developed plans and technical specifications to assist municipalities, utilities, and real estate developers in redevelopment of acquired properties. Projects included site investigation of various contaminants, preparation of grading plans, soil management, pre-demolition assessments (asbestos, lead, and other hazardous building components), construction oversight, contracting, and expediting.

Site Investigation and Remediation

Completed a remedial investigation of a 22-acre industrial facility with a 14-acre groundwater contaminant plume with residual free product. Previous investigation efforts by others over a 15-year period had failed to determine historical sources of site contaminants. Through a comprehensive assessment of historical source areas, additional research of historical processes, and hydrocarbon fingerprinting, formulated a closure plan for the site within 8 months. Consulted with out-of-state responsible party in site closure protocols provided by Wisconsin's NR 700 rule.

Coordinated and supervised over 200 remedial actions throughout Wisconsin, Illinois, Indiana, Kentucky, Michigan and Ohio. Responsibilities included preparing bid packages, scheduling, and performing closure assessment and documentation. Provided clients with accurate information regarding regulatory agency notification responsibility, tank registration, and environmental remediation fund assistance and cost estimates. Obtained over 98% reimbursement for Wisconsin PECFA claims submitted in the past 20 years.

Technical Support to Legal Counsel and Expert Testimony

Regularly prepare liability clarification to legal counsel and clients based on applicable regulations and procured environmental liability clarifications to expedite business transactions.

Provided support to litigation attorneys in segregation of a continuous 12-acre groundwater contamination plume that appeared to be emanating from the client's upgradient industry onto the downgradient insolvent facility. Designed and completed a detailed soil and groundwater sampling plan that identified areas of surface releases on the vacant property, substantially reducing the client's remedial liability.

Beneficial Use of Industrial and Demolition Wastes

Have maintained over 90% recycling on most demolition projects managed. Also completed a beneficial use application and implementation plan for over 190,000 cubic yards of spent foundry sand for use as structural fill in development of a 20-acre industrial park.

NATURES-01 WALI

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 1/6/2011

PRODUCER	(262) 542-8822
Associated Financial Group P.O. Box 1630 Waukesha, WI 53187-1630	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	INSURERS AFFORDING COVERAGE	NAIC #
Natural Resource Technology 23713 W. Paul Road Pewaukee, WI 53072-	INSURER A: American Safety Indemnity Company	
	INSURER B: General Casualty	
	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 LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
A		GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR [X] Professional Liab Incl [X] Pollutions Liab Incl GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [ ] PRO-JECT [ ] LOC	ENV010017-10-06	1/1/2011	1/1/2012	EACH OCCURRENCE	$ 10,000,000
						DAMAGE TO RENTED PREMISES (Ea occurence)	$ 50,000
						MED EXP (Any one person)	$ 5,000
						PERSONAL & ADV INJURY	$ 10,000,000
						GENERAL AGGREGATE	$ 10,000,000
						PRODUCTS - COMP/OP AGG	$ 10,000,000
B		AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [ ] HIRED AUTOS [ ] NON-OWNED AUTOS	CBA0636657	1/1/2011	1/1/2012	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
						BODILY INJURY (Per person)	$
						BODILY INJURY (Per accident)	$
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY [ ] ANY AUTO				AUTO ONLY - EA ACCIDENT	$
						OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
A		EXCESS / UMBRELLA LIABILITY [X] OCCUR [ ] CLAIMS MADE [ ] DEDUCTIBLE [X] RETENTION $ 10,000	ENU010019-10-06	1/1/2011	1/1/2012	EACH OCCURRENCE	$ 9,000,000
						AGGREGATE	$ 9,000,000
							$
							$
							$
B		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N [ ] (Mandatory in NH) If yes, describe under SPECIAL PROVISIONS below	CWC0636657	1/1/2011	1/1/2012	[X] WC STATUTORY LIMITS [ ] OTHER	
						E.L. EACH ACCIDENT	$ 1,000,000
						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
						E.L. DISEASE - POLICY LIMIT	$ 1,000,000
		OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

CERTIFICATE HOLDER	CANCELLATION
AC Reorganization Trust c/o Foley & Lardner Co. 777 E. Wisconsin Avenue Milwaukee, WI 53202-	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

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

This Certificate of Insurance 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.

Geosyntec consultants

W67N222 Evergreen Boulevard
Suite 113
Cedarburg, WI 53012

PH 262-377-9828
FAX 262-377-9848

www.geosyntec.com

Letter of Transmittal

[ ] U.S. Mail [ ] Overnight Mail [X] Delivered

To: Mr. William P. Scott
Gonzalez Saggio Harlan
225 East Michigan Street
Fourth Floor
Milwaukee, WI 53202

Date: August 19, 2011

Project Name: Express Cleaners Site

Geosyntec Proj. No.: NCP2011-8036

[ ] Letter [X] Proposal

[ ] Reports [ ] Computer Disks/CDs

[ ] Work Plan [ ] Other _____

Number of Copies	Date	Description
1	8/19/2011	Remedial Action Services Proposal

[ ] Draft for Review [ ] As Requested

[ ] For your use [X] Per Request for Proposal

[ ] For Distribution [ ] Other _____

Comments:
Thank you for the opportunity to provide this proposal. Please contact us with any questions.

cc: Ms. Nancy Ryan (1 copy, delivered)
Wisconsin Department of Natural Resources
23000 N. Dr. Martin Luther King, Jr. Drive
Milwaukee, WI 53212

From: Jim Bannantine

Prepared for

Ehrlich Family Limited Partnership
c/o Gonzalez, Saggio & Harlan LLP
225 East Michigan Street
Milwaukee, Wisconsin 53202

REMEDIAL ACTION SERVICES PROPOSAL

EXPRESS CLEANERS SITE

3941 N. Main Street
Racine, Wisconsin
WDNR BRRTS #02-52-547631
WDNR FID# 252010000

Prepared by

Geosyntec consultants

W67 N222 Evergreen Blvd., Suite 113
Cedarburg, Wisconsin 53012

19 August 2011

REMEDIAL ACTION SERVICES PROPOSAL

EXPRESS CLEANERS SITE
3941 N. Main Street
Racine, Wisconsin
WDNR BRRTS #02-52-547631
WDNR FID #252010000

Prepared for

Ehrlich Family Limited Partnership
c/o Gonzalez, Saggio & Harlan LLP
225 East Michigan Street
Milwaukee, Wisconsin 53202

Prepared by

Geosyntec Consultants
W67 N222 Evergreen Blvd., Suite 113
Cedarburg, Wisconsin 53012
Project Number CHE8094GS

19 August 2011

James E. Bannantine, P.G.
Senior Hydrogeologist

Gregory L. Johnson, CHMM, P.G., P.H., P.E.
Senior Engineer

CONTENTS

FIGURES

TABLES

APPENDICES

INTRODUCTION

Geosyntec Consultants is pleased to provide this proposal to the Ehrlich Family Limited Partnership (EFLP) for remediation services at the Express Cleaners site, located at 3941 North Main Street in Racine, Wisconsin (the site). This proposal was prepared pursuant to the 27 July 2011 Request for Proposal (RFP) provided by Gonzalez Saggio & Harlan, LLP (GSH), on behalf of the Ehrlich Family Limited Partnership, and the 15 August 2011 email provided by GSH clarifying the scope of work on the S.C. Johnson property adjacent to the east side of the site. This proposal was prepared in accordance with the Dry Cleaner Environmental Response Program (DERP) pursuant to Chapter NR 169 of the Wisconsin Administrative Code (WAC).

This proposal documents pertinent background information; an evaluation of remedial action options in general accordance with NR 722; the proposed remedial action approach and associated scope of work; the estimated cost and schedule; and the project team and qualifications. The proposed remedial action approach incorporates the adjacent S.C. Johnson property taking into consideration the remedial approach documented in the 15 August 2011 email, which S.C. Johnson has reportedly agreed to. It is understood that all or a portion of the site building could be demolished to support the proposed remedial action approach.

The proposed remedial action approach balances active remediation and engineering/ administrative controls, focusing on remediating areas with the greatest contaminant mass and mitigating exposure pathways for residual contamination. The proposed remediation approach consists of the following elements:

- Demolition or partial demolition of the site building.
- Treatment of soil impacted with contaminant concentrations exceeding "contained out" concentrations.
- Excavation of soil in the unsaturated zone remedial action target area and disposal as not-hazardous special waste.
- Enhanced groundwater bioremediation using an emulsified oil substrate and bacteria.
- Natural attenuation of residual groundwater impacts, demonstrated through a post-remedial action groundwater monitoring program.

- Likely inclusion of the site on the Wisconsin Department of Natural Resources (WDNR) Geographic Information System (GIS) registry of closed remediation sites.

Geosyntec's project team has extensive experience in each element of the proposed remediation approach for the site. The project team also has demonstrated success in projects reimbursed by various funding programs in Wisconsin, including DERP.

BACKGROUND INFORMATION

Site Description

The site is located at 3941 North Main Street in the City of Racine, Wisconsin. A single-story building occupies the site. There are three tenant spaces within the building: 1) Express Cleaners, an active drycleaner in the northern space (3941 North Main Street); 2) a former liquor store (currently vacant) in the center space (3931 North Main Street); and 3) a nail and tanning salon in the southern space (3921 North Main Street). Dry cleaning activities have reportedly been conducted at the site for at least 20 years, and Express Cleaners has operated in the northern building space since approximately 2005. The building is on a concrete slab, and the surrounding areas of the site are generally covered with asphalt.

The site is bordered by a former gasoline filling station/automobile repair business to the north, a commercial property owned by S.C. Johnson and Sons, Inc. used to grow vegetable gardens to the east, commercial businesses to the south, and North Main Street and an apartment complex to the west.

Site Investigation Summary

A summary of previous site investigation activities is based on excerpts of the following documents provided by GSH:

- *Site Investigation – Dry Cleaner Solvent Release*, Northern Environmental, 14 May 2008
- *Additional Investigation Activities*, Bonestroo/Northern Environmental, 9 June 2009

A Phase I Environmental Site Assessment (ESA) was conducted in March 2006. Based on the Phase I ESA results, a Phase II ESA consisting of drilling three soil borings located within and adjacent to the east side of the dry cleaner was conducted. Soil samples were submitted for laboratory analysis of volatile organic compounds (VOCs) was conducted. Soil impacts, primarily including tetrachloroethene (PCE) and to a lesser degree, trichloroethene (TCE) and cis-1,2-dichloroethene (cDCE), were encountered. The Phase II ESA results were subsequently reported to the Wisconsin Department of Natural Resources (WDNR).

From March 2007 through May 2009, investigation activities were conducted on the site, adjacent S.C. Johnson property and two adjacent properties to the north and northeast. The investigation included approximately 57 soil borings, 13 monitoring

wells, one piezometer and three subslab soil vapor probes. Pertinent site investigation results are summarized as follows:

- PCE, TCE and cDCE were detected on the site and S.C. Johnson property at concentrations exceeding residual contaminant levels (RCLs) calculated in accordance with WDNR guidance *Determining Residual Contaminant Levels Using the EPA Screening Level Web Site.*

- PCE and/or TCE were detected in shallow soil vapor beneath the building at concentrations exceeding the Environmental Protection Agency (EPA) target soil vapor concentrations.

- PCE, TCE, cDCE and vinyl chloride were detected generally on the site and S.C. Johnson property at concentrations exceeding NR 140 enforcement standards (ESs). VOCs were not detected at concentrations exceeding NR 140 ESs at the piezometer, located adjacent to the north side of the site building.

- The near surface site geology is characterized by up to 3 feet of sandy fill material overlying unsaturated and saturated silty sand to a depth up to approximately 6 to 9 feet below ground surface (bgs). The fill and silty sand overly a low permeability silty clay till unit which extends to a depth of at least 20 feet bgs.

- The average unsaturated zone thickness is approximately 4.3 feet in the area of soil impacts.

- The average saturated zone thickness above the silty clay till unit (upper saturated zone) is approximately 2.8 feet in the area of soil and groundwater impacts. The monitoring wells are typically screened across both the silty sand and the silty clay units.

- The groundwater flow direction in the upper saturated zone is to the west-southwest and east-southeast (radially away from the building).

- Slug testing of PZ1 indicated a hydraulic conductivity of the silty clay till unit of $1.4x10^{-6}$ cm/sec.

Traditional Cleanup Process versus VPLE Process

In accordance with the RFP, Geosyntec is pleased to comment on how enrollment of the site in the Wisconsin Voluntary Party Liability Exemption Program (VPLE) would impact obtaining site closure under this proposal. The most significant uncertainty with

using the VPLE process would be the current unknown history of the entire property and subsequent likehood that additional contaminant sources and impacts are present. The VPLE process requires that a Phase I and II Environmental Site Assessment be completed for the entire property and the subsequent investigation and remedial action of all environmental conditions identified on the property. In addition, the voluntary party must obtain environmental insurance (per s. 292.15(2)(ae), Stats.), if residual contamination exceeds NR 140 ESs and natural attenuation is utilized for the polishing step of any groundwater remedial action. Further WDNR review and approval of the Phase I and Phase II reports and all documentation required under NR 700.

The WDNR charges fees to participate in the VPLE program, including a $250 application fee and an hourly fee for oversight and review of the project. If groundwater impact remains at the site at the time that closeout is accepted, the owner will have to pay an environmental insurance fee. According to DNR Publication 661 *Insurance for Voluntary Party Liability Exemption (VPLE) Sites Using Natural Attenuation Information and Fee Schedule* (June 2010) the fee for a commercial property measuring less than 5 acres would be $10,670 if the certificate of completion is obtained before 7 May 2013. These costs are not required to participate in the DERP program and would be considered extra costs.

REMEDIAL ACTION OPTIONS EVALUATION

Conceptual Site Model

The site background information and available site investigation data were used to develop a conceptual site model. The conceptual site model is a qualitative representation of contaminant sources, contaminant transport mechanisms, exposure routes and exposure pathways. An exposure pathway is considered complete if there is a source, a chemical release from a source, an exposure point where contact can occur, and an exposure route.

Contaminant Sources

Based on the available documentation, the primary source of contamination at the site likely consists of PCE dry cleaning solvent and the storage of waste PCE and filters during dry cleaning operations in the northern unit of the property building. Dry cleaning businesses have operated on the property for more than 20 years. Secondary sources of contamination include unsaturated soil impacts and groundwater impacts in the upper saturated zone.

Contaminant Transport Mechanisms and Exposure Route Analysis

Based on physical site characteristics, identified sources, and the nature and occurrence of impacts, the following is a summary of potential contaminant migration and exposure pathways applicable to the site:

Migration Pathway	Exposure Pathway
Volatilization of VOCs from soil and shallow groundwater, vertical and lateral migration of VOC vapors.	Potential inhalation exposure route.
Leaching of soil impacts to groundwater and the subsequent vertical and/or lateral migration of impacts in groundwater.	Groundwater exposure routes are not considered applicable at the site.
Direct contact with unsaturated soil.	Potential ingestion or fugitive dust inhalation exposure routes (i.e., by construction workers).
Subsurface utility corridor migration.	Utility corridor migration likely not applicable based on site geology.

Remedial Action Objectives

The following remedial action objectives were developed based on the site investigation results and the conceptual site model:

- Remediate unsaturated soil with concentrations greater than applicable groundwater protection, soil vapor pathway (inhalation) and direct contact (ingestion) RCLs. Based on the previous site documentation and a screening of RCLs in accordance with WDNR guidance *Determining Residual Contaminant Levels Using the EPA Screening Level Web Site,* a PCE groundwater protection RCL of 41 micrograms per kilogram (ug/kg) was used for the development of the remedial action target area. This RCL was developed using WDNR default parameters; however, was based on the NR 140 ES rather than the NR 140 preventive action limit (PAL). The groundwater protection RCL is the most conservative of the exposure pathways and therefore, potential inhalation and ingestion exposure pathways would be mitigated using the groundwater protection RCL as the primary cleanup criteria.

- Remediate upper saturated zone (between groundwater table and top of clay till) to achieve NR 140 ESs.

Groundwater Quality Standard [micrograms per liter (µg/l)]	PCE	TCE	cDCE	VC
NR 140 Enforcement Standard	5	5	70	0.2

Remedial Action Target Areas and Volumes

The site investigation data were transferred into a GIS database to assist in the development of the unsaturated zone and upper saturated zone remedial action target areas. The remedial action target areas were developed based on PCE, the primary contaminant of concern. The approximate extent of PCE concentrations in the unsaturated zone exceeding the most conservative RCL (groundwater protection; 41 µg/kg) is depicted on Figure 1. The approximate extent of PCE concentrations in groundwater (upper saturated zone) exceeding the NR 140 RCL is depicted on Figure 2. PCE was detected at concentrations exceeding the NR 140 ES in all locations where other contaminants were generally detected at concentrations exceeding NR 140 ESs.

PCE concentrations within the unsaturated zone remedial action target area exceed WDNR established "contained out" concentrations, which are used to evaluate which soil potentially requires management as a hazardous waste. WDNR guidance titled *Guidance for Hazardous Waste Remediation* states that if a contaminated environmental media (e.g., soil) contains listed hazardous waste at concentrations that do not exceed health-based standards, that media does not require management as a listed hazardous waste. The WDNR's *RR News from Wisconsin DNR* dated 14 November 2005 indicates that the following concentrations should be used when making "contained-out" determinations:

- PCE - 33,000 ug/kg
- TCE - 14,000 ug/kg
- Vinyl chloride - 870 ug/kg

The approximate extent of PCE concentrations exceeding the "contained out" concentration in the unsaturated zone remedial action target area is depicted on Figure 1.

Estimated remedial action target area areas and volumes are summarized below:

	On-Site		Off-Site	
	Area (sf)	Volume (cy)	Area (sf)	Volume (cy)
Unsaturated Soil Impacts > RCLs	9,550	1,600	900	165
Unsaturated Soil Impacts > Contained-Out Concentrations	2,050	170	0	0
Target Saturated Zone Impacts > NR 140 ESs	11,000	--	7,800	--

Identification of Potentially Feasible Remedial Action Options

In developing a site remedial strategy, several remedial action options were evaluated in accordance with NR 722.07(2). These options represent techniques that appear to be potentially feasible for use at the site, based on the types of constituents present, media impacted and site characteristics, and applicable environmental laws and standards. Based on the investigation results, the following site criteria may influence the feasibility of a given remedial action option:

- Impacted media at the site includes soil and groundwater and (potentially) indoor air.

- Constituents of concern include chlorinated VOCs, predominantly PCE and its degradation daughter products. The presence of PCE biodegradation daughter products indicates that natural attenuation via biological transformation is occurring at the site.

- The highest concentrations of constituents in vadose zone soil and groundwater are located beneath the building, extending east to an area just outside the building.

- The building is currently occupied by a cleaning tenant in the northern space; the majority of the remaining portions of the building are vacant. The EFLP has indicated that they are willing to raze the building to facilitate access to the impacted soil and groundwater.

Based on these site criteria, the following potential remedial action options were considered:

Soil (Unsaturated Zone) Remedial Action Options

1. Engineering and Institutional Controls.
2. Impacted soil excavation and off-site disposal.
3. Chemical oxidation.

Groundwater Remedial Action Options

1. Monitored Natural Attenuation (without enhancement).
2. Enhanced Bioremediation.
3. Engineering and Institutional Controls.
4. Chemical Oxidation.

Evaluation of Remedial Action Options

The identified remedial action options evaluated based on the criteria established in NR 722.07(4): technical feasibility and economic feasibility. A brief discussion of each remedial action option, and the associated evaluation with respect to technical feasibility and economic feasibility, is summarized below.

Soil (Unsaturated Zone) Remediation Options

Option 1 - Engineering and Institutional Controls

Chemicals in the environment pose a risk only if there is an exposure route between the chemical and a receptor. Engineering and institutional controls can provide a barrier to contaminant exposure and limit infiltration to groundwater. For this site, engineering controls would include the existing building and pavement, and institutional controls would include recording of the site on the WDNR's GIS registry. These elements would prevent exposure in the short term, and provide notification to future owners about subsurface conditions.

Technical Feasibility: The use of engineered barriers and institutional controls are common elements of many site remedies. Institutional controls allow closure of sites with soil and groundwater contaminant concentrations exceeding the state generic clean-up levels, provided controls are adopted to prevent exposure. These options provide short-term control of exposure while longer-term processes such as natural attenuation reduce constituent concentrations to below the regulatory limits.

Since this remedial action option would consist of utilizing the existing site features to serve as barriers to direct contact, it could be easily implemented. However, the depth to groundwater at the site is shallow and PCE has migrated off-site in groundwater to the east. Engineered barriers would reduce the potential for direct contact, but would probably provide little protection against continued groundwater impact. Therefore, the existing site conditions do not appear to be capable of preventing exposure to the impacted media at the site.

To obtain closure under NR 726, source control activities are likely necessary. Although site closure can be obtained if soil and groundwater standards are exceeded, NR 726 stipulates that the standards must eventually be met within a reasonable period of time. Given the shallow groundwater table and the high concentrations of PCE in vadose zone soil and groundwater at the site, this option does not appear to be viable as a stand-alone remedy.

Economic Feasibility: The use of the existing site features as direct contact barriers would be economically attractive. A barrier maintenance plan would require periodic inspection and repairs to the elements of the barrier; however, these repairs would not likely carry a significant cost. The registering of this site on the WDNR GIS registry, and notification to property owners within the groundwater plume would be required under this remedial action option.

Results of Evaluation: This option does not appear to be feasible as a stand-alone remedy, but would be likely be feasible and economical for managing residual concentrations following an active remedial action.

Option 2 – Impacted Soil Excavation and Off-Site Disposal

For this option, impacted soils would be excavated and transported off-site for disposal to reduce the overall contaminant mass at the site, and reduce the potential for continuing impact to groundwater.

Technical Feasibility: The area with greatest PCE mass is located beneath the building. The Erlich Family Limited Trust has expressed a willingness to have the existing site building demolished to provide better access to the impacted soil and groundwater. If the building were removed from the site, excavation would be a technically feasible alternative. The vadose zone soils are shallow (generally less than 6 feet below bgs), making them readily accessible with standard excavation equipment.

Soil located in the vicinity of the building would require management as a hazardous waste since PCE concentrations exceeded WDNR "contained out" concentrations.

Economic Feasibility: The cost associated for the transport and disposal of soil as a hazardous waste likely renders this option not economically feasible. Transportation and disposal costs for soil managed as a hazardous waste would likely be on the order of $300,000 to $400,000.

An alternative to transport and disposal of these soils as a hazardous waste would be to treat the soils on site to concentrations below the health based limits/"contained out" concentrations. If the soil VOC concentrations are below the health based risk limits and do not exhibit any other characteristics of a hazardous waste (e.g. leachability), then the soils could be disposed as a special waste, resulting in significant reduction in transportation and disposal costs.

Results of Evaluation: Excavation of impacted soils is a technically feasible option provided the building is razed. The costs for transportation and disposal of the soil as a hazardous waste would have to be compared to the cost of treating the soils on site and then transporting and disposing of them as a special waste to determine the most cost-effective strategy.

Option 3 – Chemical Oxidation

Chemical oxidation involves the application of a chemical reagent that reacts with chlorinated VOCs to produce innocuous products. Typical chemical oxidants used to treat chlorinated VOCs include potassium permanganate and sodium permanganate. Potassium permanganate is sold in bulk as solid crystals, and sodium permanganate typically sold as a 40% solution. Both are effective in remediation of PCE.

Because potassium permanganate is sold as a solid, it is subject to certain reporting requirements under the Department of Homeland Security, requiring additional management as compared to sodium permanganate. Since potassium permanganate is sold as a solid, it must be mixed with water to create the solution for injection. Potassium permanganate is not very soluble in water (a 3 to 4% solution is about the highest concentration achievable), and requires a source of water and mixing equipment to create the solution. The additional costs associated with rental equipment, obtaining large quantities of water, and labor to mix potassium permanganate make this a less desirable option than sodium permanganate. Thus, sodium permanganate will be evaluated for the chemical oxidation option.

Technical Feasibility: An advantage of chemical oxidation is that it is a rapid remediation technique compared to many other remediation options. However, the oxidant must achieve contact with the contaminant in order to react. Thus, for this option to be effective the delivery system must allow for maximum contact between oxidant and contaminant. Chemical oxidants are non-selective and will react with any

reduced species encountered in the subsurface, including clays and peat material. The presence of daughter products of PCE, including TCE, cis-1,2-dichloroethene and vinyl chloride, indicates that reducing conditions exist in the subsurface. Thus, a significant portion of the chemical oxidant could be "wasted" on non-productive oxidation reactions, preventing full treatment with the desired contaminant species. It would be technically feasible to remediate the site soils using chemical oxidation, but the cost to achieve the target concentrations would be prohibitive.

Economic Feasibility: To provide a reasonable cost estimate for this proposal, Geosyntec assumes that the area to be treated encompasses the 100,000 ug/kg isocontour line from Figure 1 of the 9 June 2009 *Additional Investigation Activities* letter. Further assumptions include 10 to 12 grams per kilogram of natural oxidant demand (communication with Carus Chemical) and that a 3% solution would provide an adequate strength solution for remediation. Using these assumptions, the cost for soil remediation using sodium permanganate is estimated to be $400,000 to $600,000.

Results of Evaluation: The logistics and cost required to apply the desired quantity of solution make this option technically difficult and economically infeasible. However, this option would be effective at quickly reducing the overall concentrations.

Groundwater Remediation Options

Option 1 – Monitored Natural Attenuation (without Enhancement)

Monitored Natural Attenuation (MNA) relies on natural processes such as biodegradation, adsorption, dispersion and dilution to reduce the toxicity, mobility and mass of constituents. NR 169 requires the evaluation of natural attenuation as part of the remedy development process for projects completed under the DERP.

Groundwater samples would be routinely collected from the monitoring well network to evaluate long-term contaminant concentration trends. In addition to VOCs, groundwater samples would be analyzed for natural attenuation indicator parameters such as dissolved gases, dissolved oxygen, and oxidation-reduction potential to provide information on biological conditions in the aquifer.

Technical Feasibility: MNA is a long-term technique for addressing groundwater contaminant plumes. The groundwater samples at the site contain PCE, TCE and generally lower concentrations of cDCE and almost no vinyl chloride. The existing groundwater monitoring data suggests that biodegradation is occurring but is not currently proceeding to completion. The plume has migrated off-site and impacted the property east of the site, and has potentially migrated west of the property border as well.

Economic Feasibility: Costs for monitored natural attenuation generally consist of installation of additional monitoring wells and piezometers to establish a monitoring network suitable for long-term monitoring, and the collection and analysis of groundwater samples over time. MNA is generally considered to be a cost-effective remedy when technically applicable; however, costs can become significant if an extended monitoring period is needed. Estimated annual costs for MNA range from $20,000 to $35,000 per year, and will depend upon the number of points to be sampled, the frequency of sample collection, and the required analytical parameters.

Results of Evaluation: Given the elevated VOC concentrations in the soil and groundwater at the site and the off-site plume migration, MNA would not be applicable as a stand-alone groundwater remedy for this site. MNA would likely be feasible for managing residual concentrations following the implementation of an active remedial action.

Option 2 – Enhanced Bioremediation

For this remedial action option, a solution of carbon and nutrients would be injected into the subsurface beneath the site. The injections would enhance the natural conditions to stimulate chlorinated VOC bioremediation. NR 169 refers to this process as enhanced natural attenuation, and must be included in the remedy development process for projects completed under the DERP.

Technical Feasibility: The investigation data indicates that there is limited natural biodegradation occurring in the groundwater plume. Daughter products of PCE are observed at MW-3, suggesting that conditions are suitable for anaerobic biodegradation at this location. However, there is no production of vinyl chloride at MW-3. None of the other groundwater monitoring well samples contain significant concentrations of daughter products relative to PCE. The data at MW-3 suggests the biodegradation is occurring at the site, but is limited from proceeding to completion by some unknown factor.

Economic Feasibility: Enhanced bioremediation can be cost-effective, especially for recalcitrant compounds such as chlorinated VOCs. However, there is insufficient data from the site investigation to estimate the costs for implementation of this remedy. Biodegradation appears to be proceeding in the area of MW-3, although not to completion, and little evidence of biodegradation is observed elsewhere at the site. The reason for the low biodegradation rate cannot be determined from the data provided from the investigation activities. Typically, the reasons for slow biodegradation include a lack of sufficient carbon, inadequate geochemical conditions to support the desired microbial growth, or the absence of the microbial consortium capable of degrading chlorinated VOCs.

A pilot study would be required to investigate the reasons behind the slow biodegradation rate prior to designing a procedure to enhance the biodegradation. The most common cause for a low biodegradation rate is lack of sufficient organic carbon to serve as a biological substrate. Costs for enhanced biodegradation through application of a soluble organic carbon source will be included in this proposal, but the actual proposed groundwater remediation strategy could vary depending upon the results of a pilot study.

Results of Evaluation: This option is potentially feasible, but would require a pilot study to determine the potential technical and economic implementability. The investigation data suggests that there is currently little biodegradation occurring in groundwater, therefore, the addition of a carbon source and microbial consortium would likely be required to implement this technology.

Option 3 – Engineering and Institutional Controls

This option was described above for soil remediation; implementation would generally be consistent for groundwater.

Technical Feasibility: Since this remedial action option would consist of utilizing the existing site features to serve as barriers to direct contact, it could be easily implemented. The existing site conditions do not appear to be capable of preventing infiltration and contaminant migration, because PCE in groundwater has migrated beyond the site property boundary.

Economic Feasibility: The use of the existing site features to limit groundwater infiltration and contaminant migration would be economically attractive. A cap maintenance plan would require periodic inspection and repairs to the elements of the cover; however, these repairs would not likely carry a significant cost. The registering of this site on the soil and groundwater WDNR GIS registries and notification to property owners within the groundwater plume would be required under this remedial action option.

Results of Evaluation: As for soil, this option does not appear to be feasible as a stand-alone remedy, but may become feasible for managing residual concentrations following the implementation of an active remedial action.

Option 4 – Chemical Oxidation

Chemical oxidation was described previously as a potential soil remediation option. Chemical oxidation is utilized more frequently as a groundwater remedy than for soils, because water acts as a better medium for facilitating contact between the oxidants and the contaminants. As noted previously sodium permanganate would be selected as the

preferred oxidant for this project to eliminate Department of Homeland Security reporting, and to reduce costs associated with mixing potassium permanganate on site.

Technical Feasibility: This option is technically feasible for the site. The target area for groundwater treatment would encompass the area near the existing and former dry cleaning machines inside the building, and the area east of the building near monitoring well MW-8. Since groundwater at the site contains high DO and positive ORP, the geochemical conditions would support chemical oxidation, and may reduce the amount of "wasting" or oxidant required to complete natural oxidation-reduction reactions. This option has the further advantage of not generating vinyl chloride or methane as byproducts, thereby eliminating the need for a vapor recovery system, as would likely be required with enhanced biodegradation.

Economic Feasibility: Sodium permanganate is sold at approximate $2 to $3 per pound in its liquid form. The goal for this remedy would be to reduce the overall contaminant mass such that MNA followed by the use of engineering and institutional controls could be implemented. This option is economically feasible for the site. A single application of approximately 4,000 to 5,000 gallons of three percent solution would cost $50,000 to $75,000 to implement, but the actual costs and feasibility would be evaluated based on the results of a pilot study. It should be noted that multiple injection events may be required to achieve the desired remediation objectives.

Results of Evaluation: This option is technically and economically feasible for the site.

PROPOSED REMEDIAL ACTION APPROACH

Based on the remediation options evaluation above, the following remedial approach was developed for the site, assuming the northern portion of the existing building will be razed:

- Conduct pre-remediation supplemental investigation and bench-scale/pilot scale remedial action studies.
- Treat soil with PCE concentrations exceeding the "contained out" concentration.
- Excavate soil in the unsaturated zone remedial action target area and dispose as not-hazardous special waste.
- Implement enhanced groundwater bioremediation inclusive of the following components:
  - ✓ Add an emulsified oil substrate (EOS) directly to the base of the open soil excavation. The proposed EOS is Newman Zone® Oil.
  - ✓ Install a network of perforated PVC piping at the base of the excavation.
  - ✓ Backfill the excavation with clay to limit communication with surface oxygen.
  - ✓ Inject CVOC-degrading bacteria to the piping network following excavation backfilling. The proposed bacteria is KB-1™ Dechlorinator (KB-1™). KB-1™ is a consortium of bacteria that includes species of *Dehalococcoides* that mediate each step of the biological reduction of PCE to ethene. KB-1™ is a non-pathogenic bacteria that cannot survive in an aerobic environment or in the absence of chlorinated ethenes.
- Conduct enhanced bioremediation performance and natural attenuation groundwater monitoring, including the installation of additional (replacement) groundwater monitoring wells.
- Implementation of institutional controls at the time of project closure to manage the residual soil and groundwater impacts (if necessary), including inclustion of the site on the WDNR GIS registry of closed remediation sites.

PROPOSED SCOPE OF WORK

The proposed scope of work for the proposed remedial action approach is as follows:

Task 1 - Initial Project Meeting and Coordination

- Participate in a project kickoff meeting
- Provide routine project email updates

Task 2 - Pre-Remedial Action Activities

- Conduct approximately 5 soil borings within the building to further define the extent of soil concentrations exceeding "contained-out" concentrations.
- Submit one sample collected from each soil boring for analysis of VOCs. Select soil samples will also be submitted for analysis of TCLP VOCs to support waste profiling and enhanced bioremediation planning.
- Conduct a soil treatment bench-scale study using soil samples collected from the above referenced soil borings. The purpose of the bench-scale study is to determine the NOD of the soil at various concentrations of oxidant.
- Prepare a submittal to the WDNR requesting a NR 140 exemption and WPDES permit for the application of EOS and bacteria.
- Conduct an enhanced bioremediation pilot study to evaluate the proposed groundwater treatment. The goal of the pilot study test would be to obtain data to demonstrate that application of emulsified soybean oil would stimulate enhanced bioremediation, and provide an indication of the time frame to achieve satisfactory mass reduction. The pilot study will include the excavation of a test pit adjacent to MW-8, and the application of approximately 10 gallons of Newman Zone® Oil to the test pit, the injection of KB-1™ to MW-8 and the post-application monitoring of MW-8. MW-8 will be sampled for VOCs, methane, ethane, ethene, and total organic carbon prior to the addition of the amendments, and at two month intervals for a period of 6 months (total of four sample collection events) after amendment addition. In addition, field parameters including dissolved oxygen and oxidation-reduction potential will be measured during the sample collection.
- Abandon MW-1, MW-3, MW-8, and PZ-1, located within the proposed excavation area, in accordance with NR 141.

Task 3 - Pre- Soil Removal Treatment

- Conduct in-situ mixing of oxidant (permanganate) within the area of soil concentrations exceeding "contained out" concentrations (to be conducted following building demolition and concrete slab removal). Mixing will be conducted using a backhoe. The preliminary proposed treatment area is depicted on Figure 1. One treatment event is assumed. For proposal purposes, it is assumed that the sodium permanganate (40%) solution would be diluted 4:1 to create a 10 % solution. The actual quantities and dilution may be modified based on the results of the bench-scale study.

- Collect approximately 3 soil samples of the treated area and submit for analysis of VOCs. At least one sample will also be analyzed for TCLP VOCs.

Task 4 – Unsaturated Soil Excavation and Disposal

- Assist with the profiling of soil at a client-approved waste disposal facility. For the purposes of this proposal, disposal at Kestrel Hawk landfill in Racine, Wisconsin is assumed.

- Excavate soil in the soil remedial action target area and transport off-site for disposal.

- Collect confirmation soil samples from the completed excavation and submit for analysis of VOCs.

Task 5 – Enhanced Bioremediation of Groundwater

- Add Newman Zone® Oil to the base of the completed excavation and mechanically mix with the saturated zone. Assuming a 30% total porosity, the volume of oil needed is based on a volume of water to be treated of approximately 70,000 gallons.

- Install a series of piping into the base of the completed excavation. The piping will serve as a conduit for injection of KB-1® bacteria solution, and provide infrastructure to facilitate addition of more emulsified oil solution as a contingency. The piping will consist of four 2-inch diameter, 5-foot length slotted horizontal pipes connected to a section of vertical pipe that would extend to the final ground surface. The horizontal pipes would be oriented north, south, east and west from the central vertical pipe. A series of ten pipe installations are anticipated.

- Backfill the excavation with clay to limit infiltration of oxygen from ambient air. Surficial backfill on the site and S.C. Johnson property will consist of

gravel and a verified-clean topsoil fill, respectively. After placement of the fill, the S.C. Johnson Property will be seeded with a high-quality native grass seed mix.

- Install an assumed four groundwater monitoring wells to support enhanced bioremediation and natural attenuation groundwater monitoring.

- Conduct one year of quarterly groundwater monitoring and 2 years of semi-annual groundwater monitoring. Collected groundwater samples will be submitted for analysis of VOCs, methane, ethane, ethene, and TOC. Field parameters, including dissolved oxygen (DO), oxidation-reduction potential (ORP) and pH will also be measured during sample collection.

- After the first groundwater monitoring event, assuming the appropriate geochemical environment is created (negative ORP, and DO of less than 1 mg/l), KB-1® bacteria solution will be injected through the piping system. The KB-1® solution will be injected under pressure using nitrogen gas to prevent contact with oxygen in the air. A total 2 liters of KB-1® solution added to each of the ten above ground access pipes is assumed.

- Abandon the groundwater monitoring wells upon receipt of WDNR conditional case closure.

Task 6 – WDNR Reporting and Closure

- Prepare a Remedial Action Documentation Report for submittal to the WDNR in accordance with NR 724.

- Prepare quarterly progress reports for submittal to the WDNR in accordance with NR 724.

- Prepare semi-annual groundwater reporting using the WDNR Operations, Maintenance and Optimization Report forms.

- Prepare closure request letter report and complete WDNR *Case Closure Request* and *GIS Registry Checklist* forms for submittal to WDNR.

COST AND SCHEDULE ESTIMATE

Estimated Cost

The estimated cost to complete the scope of work is summarized in Tables 1 through 3.

- Table 1 - cost to closure for on-site and contiguous near off-site impacts (northwest portion of SCJ property);
- Table 2 - costs for demolition; options are provided for complete building demolition and partial (dry cleaner portion) demolition; and
- Table 3 – SCJ prescribed excavation and disposal costs for non-contiguous impacted soil area.

Tables 1 through 3 include a detailed breakdown of the scope of work elements and the estimated unit rates and quantities for each element. The costs are based on the site investigation data collected to date are subject to change as additional site information is collected. It should be noted that the contractor costs are based on estimates Geosyntec has received for similar projects. Cost estimate assumptions are included in Tables 1 through 3 and in the text of this proposal.

Estimated Schedule

An estimated project schedule is provided in Table 4. The schedule includes the primary scope of work elements and anticipated DERP claim submittal milestones.

PROJECT TEAM

The project team was selected to satisfy the requirements of NR 169.23(3)(b). Specifically, the project team members assigned to implement the outlined scope of work were selected based on their experience in the following areas:

- Demonstrated successful experience in projects reimbursed by various funding programs in Wisconsin.
- Knowledge of the DERP and the evolving administrative rules.
- Experience in conducting site remediation activities at existing and former dry cleaning facilities.
- Technical expertise and experience with chlorinated VOCs in soil and groundwater.
- Experience with in-situ and ex-situ remediation of chlorinated VOCs.

The project team members will work under the direction of Project Manager Jim Bannantine, P.G., Senior Professional. Key project team members include Curt Hoffart, CHMM, Jeremiah Johnson, P.G., and David Zolp, P.G., Staff Professional. Mr. Greg Johnson, CHMM, P.G., P.H., P.E., Senior Professional, will serve as a technical advisor for the project. The project team is thoroughly familiar with technical and administrative issues associated with investigation and remediation aspects of dry cleaning projects, as well as the DERP. Resumes for the project team members are included in Appendix 1.

CERTIFICATION

This proposal has been prepared in accordance with the requirements of NR 169.23. In accordance with NR 169.23(9), Geosyntec certifies the following:

- If selected to complete the scope of work described herein, Geosyntec will comply with the applicable requirements of NR 169 and NR 700 to NR 728.
- Geosyntec will make available to the WDNR upon request, for inspection and copying, all of the documents and records related to the contract services.
- Geosyntec did not prepare this bid in collision with any other consultant submitting a bid on this site.

In accordance with NR 169.23(9)(b), Geosyntec' Certificate of Insurance is presented in Appendix 2.

QUALIFICATIONS

Geosyntec is a full-service environmental consulting company with over 30 years of experience in assessing soil and groundwater quality and developing cost effective solutions for achieving site closures. Our collaborative work environment provides ready access to corporate resources and technical experts in Geosyntec offices across the world.

Geosyntec is a leader in the development and successful application of innovative and cost-effective in situ remediation technologies. We have broad qualifications experience in the investigation and remediation of chlorinated solvent sites across the country. Some highlights of our qualifications include the following:

- Completed hundreds of bioremediation projects for chlorinated solvents and other contaminants.
- Recognized leader in the successful application of enhanced in-situ bioremediation to treat chlorinated solvents and other recalcitrant chemicals.
- Pioneered anaerobic bioaugmentation for chlorinated solvents using KB-1®, the first commercial dechlorinating culture for PCE and TCE.
- As a member of the Bioremediation of Chlorinated Solvents working group of the Remediation Technologies Development Forum (RTDF), spearheaded the development of the "Principles and Practices" manual on Natural Attenuation of Chlorinated Solvents in Groundwater.
- Recognized as one of the preeminent consultants for assessing and managing subsurface vapor intrusion to indoor air.

The following Geosyntec cut sheets further documenting our salient qualifications for this project are included in Appendix 3:

- Remediation Technology Tool Box
- In Situ Remediation Technologies
- Enhanced In Situ Bioremediation
- Subsurface Vapor Intrusion Assessment and Mitigation
- Vapor Intrusion (VI) Quick Reference Guide

The project team (Cedarburg office) has extensive experience in assessing and remediating chlorinated VOCs and implementing cost effective remedial solutions. Geosyntec has successfully implemented comparable remedial action approaches on several sites in the Midwest. The following matrix highlights some examples of recent projects:

Recent Project	Primary Contaminants of Concern	Remedial Action Options Evaluation	Remedial Design and Implementation	Demolition-Related Services	In-Situ Treatment of Hazardous Waste	Unsaturated Soil/Source Remediation	Enhanced Bioremediation of Groundwater	Monitored Natural Attenuation	Redevelopment Support
Former Erie Manufacturing Site **Milwaukee, WI** *Invensys, Inc.* *2007 to present*	TCE, PCE	X	X			X (SVE)	X (EVO /KB-1; see Note 1)	X	
Former Drum Reconditioning Facility **Milwaukee, WI** *We Energies* *2009 to present*	TCE, PCE, PAHs, PVOCs, PCBs, metals	X	X	X	X	X (excavation/ disposal)		X	X
Port Washington Generating Station **Port Washington, WI** *We Energies* *2008 to present*	TCA	X	X	X		X (excavation/ disposal)		X	X
Aircraft Parts Manufacturing Facility **Kalamazoo, MI** *Confidential Client*	TCE, TCA	X	X	X		X (excavation/ disposal, SVE)	X (EVO/KB-1; see Note 1)	X	
Dry Cleaner Site **Oscoda, MI** *Confidential Client*	PCE	X	X				X (EVO/KB-1; see Note 1)		
Instrument Manufacturing Facility **Elkhorn, WI** *The Getzen Company, Inc.* *2005 to present*	TCE	X	X				X (EVO/KB-1 planned)	X	

EVO = emulsified vegetable oil (EVO)
KB-1® = dechlorinating culture for PCE and TCE
(1) Performance monitoring results following amendment with EVO and KB-1® indicated accelerated degradation of chlorinated solvents.

The experience described above will enable the Geosyntec project team to meet and exceed the following criteria established in NR 169.23(3)(b):

- Be fully informed about this project's scope and 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.

- Provide necessary staff and facilities for all phases of planning, investigation, design, construction and operation.

- Retain and confer with specialists on unusual matters; provide qualified technical reviewers, who will keep the owners advised on technical and regulatory matters and work toward planned remediation goals.

- Perform all services in an ethical, professional and timely manner.

In accordance with the DERP requirements, project references are included in Appendix 4.

TABLE 1

COST ESTIMATE - REMEDIAL ACTION SERVICES

Express Cleaners Site
3941 North Main Street, Racine, Wisconsin
Geosyntec Consultants Proposal No. NCP2011-8036

Item	Cost Component	Unit	Unit Cost	Qty	Cost	Assumptions/Notes
1	**Initial Project Meeting and Coordination**					
A	Senior Professional	HR	$125	4	$500	
B	Project Professional	HR	$100	4	$400	
C	Administrative Assistant	HR	$50	2	$100	
	Subtotal				**$1,000**	
2	**Pre-Remedial Action**					
	Soil Sampling and Groundwater Monitoring Well Abandonment					
A	Senior Professional	HR	$125	2	$250	*to support delineation > "contained out", disposal facility profiling and bench-scale testing*
B	Project Professional	HR	$100	8	$800	*7 wells within unsaturated soil remedial action target area*
C	Staff Professional	HR	$85	8	$680	
D	Field Expenses (Supplies and Equipment)	LS	$250	1	$250	
E	Geoprobe Soil Borings	DAY	$2,000	1	$2,000	*5 Geoprobe soil borings; cart-mounted unit for interior*
	Laboratory Analysis					
F	VOCs	EA	$60	5	$300	*further delineate area > "contained out" concentrations*
G	TCLP VOCs	EA	$110	1	$110	*profiling support*
	NR 140 Exemption Application, WPDES Permit					*for pre-removal soil treatment and enhanced bioremediation*
H	Senior Professional	HR	$125	4	$500	
I	Project Professional	HR	$100	16	$1,600	
J	Staff Professional	HR	$85	8	$680	
K	CAD	HR	$70	4	$280	
L	Administrative Assistant	HR	$50	4	$200	
M	Oxidant Bench-Scale Testing and Report	LS	$1,500	1	$1,500	*conducted by Carus Chemical*
	Coordination and Review of Bench-Scale Testing Report					
N	Senior Professional	HR	$125	4	$500	
O	Project Professional	HR	$100	4	$400	
P	Enhanced Bioremediation Pilot Study					
Q	Emulsified Vegetable Oil (EVO) Purchase	LB	$2	40	$80	
R	EVO Delivery	LS	$200	1	$200	
S	KB-1 Purchase	LITER	$250	1	$250	
T	KB-1 Delivery	LS	$100	1	$100	
U	Test Trench and Backhoe Mixing	DAY	$2,000	1	$2,000	*assume test trench excavated upgradient of existing MW-8*
	Coordination, Oversight, Sampling and Data Analysis					
V	Senior Professional	HR	$125	2	$250	
W	Project Professional	HR	$100	4	$400	
X	Staff Professional	HR	$85	16	$1,360	
Y	Field Expenses (Supplies and Equipment)	DAY	$100	3	$300	*1 day for implementation and 4 half-day sampling events*
	Laboratory Analysis					
Z	VOCs	EA	$60	4	$240	*assume 4 groundwater sampling events from existing MW-8*
AA	Methane, Ethane, Ethene	EA	$75	4	$300	
BB	TOC	EA	$35	4	$140	
	Data Analysis and Pilot Study Report					
CC	Senior Professional	HR	$125	8	$1,000	
DD	Project Professional	HR	$100	12	$1,200	
	Subtotal				**$17,870**	
3	**Pre-Removal Soil Treatment**					*target area soil impacts > "contained out" concentrations*
A	Construction Staking	DAY	$1,000	0.5	$500	*to be initiated following demolition*
B	Mobilization/Demobilization	LS	$1,000	1	$1,000	
C	Oxidant Purchase	LB	$3.00	4,840	$14,520	*assume 40% solution of sodium permanganate (NaMnO4)*
D	Oxidant Delivery	EA	$2,500	1	$2,500	
E	In-Situ Mixing and Ancillary Equipment	DAY	$3,000	2	$6,000	*assume significant dust/emissions control will not be required*
	Coordination, Oversight, Air Monitoring and Verification Sampling					
F	Senior Professional	HR	$125	6	$750	
G	Project Professional	HR	$100	20	$2,000	
H	Staff Professional	HR	$85	20	$1,700	
I	Field Expenses (Supplies and Equipment)	DAY	$100	2	$200	
	Laboratory Analysis					
J	VOCs	EA	$60	3	$180	*assume 3 verification samples*
K	TCLP VOCs	EA	$110	3	$330	
	Subtotal				**$29,680**	
4	**Unsaturated Soil Excavation and Disposal**					
A	Construction Staking	DAY	$1,000	0.5	$500	
B	Mobilization/Demobilization	LS	$1,000	1	$1,000	*assume temporary construction fencing not required*
C	Silt Fence	LF	$3	250	$750	
D	Pavement Removal and Recycling	SF	$8	800	$6,400	*asphalt resurfacing not included*
E	Excavation	TON	$2.50	2,400	$6,000	
F	Transport to Disposal Facility	TON	$4.50	2,400	$10,800	*assume excavation water management will not be required*
G	Disposal (direct landfill)	TON	$35	2,400	$84,000	*assume disposal at Kestrel Hawk landfill in Racine, WI*
H	Dust/Emissions Control	DAY	$250	5	$1,250	
I	Backfill	TON	$12	2,400	$28,800	*clay backfill with surface traffic bond*
J	Compaction Testing	DAY	$600	1	$600	
	Coordination, Oversight, Air Monitoring and Confirmation Sampling					
K	Senior Professional	HR	$125	2	$250	
L	Project Professional	HR	$100	8	$800	

TABLE 1

COST ESTIMATE - REMEDIAL ACTION SERVICES

Express Cleaners Site
3941 North Main Street, Racine, Wisconsin
Geosyntec Consultants Proposal No. NCP2011-8036

Item	Cost Component	Unit	Unit Cost	Qty	Cost	Assumptions/Notes
M	Staff Professional	HR	$85	50	$4,250	
N	Field Expenses (Supplies and Equipment)	DAY	$100	5	$500	
O	Laboratory Analysis (VOCs)	EA	$60	25	$1,500	
	Subtotal				**$147,400**	
5	**Enhanced Bioremediation of Groundwater**					
A	EVO Purchase	LB	$2	4,200	$8,400	*1,100 gal (4,200 lb) EVO for 1% solution within target saturated zone*
B	EVO Delivery	LS	$2,000	1	$2,000	
C	Backhoe Mixing of EVO	DAY	$3,000	3	$9,000	*assume significant dust/emissions control will not be required*
D	KB-1 Purchase	LITER	$250	20	$5,000	
E	KB-1 Delivery	LS	$1,800	1	$1,800	
	KB-1 Placement and Future EVO/KB-1 Placement Contingency					
F	Perforated and Solid PVC Pipe	LF	$7	250	$1,750	*piping for KB-1 placement and potential future EVO/KB-1 placement contingency*
G	Fittings	LS	$200	1	$200	*contingency placement of EVO and KB-1 not included*
H	Flush-Mount Covers	EA	$150	10	$1,500	
I	Geotextile	SY	$3	110	$330	
	Coordination, Oversight, and Air Monitoring					
J	Senior Professional	HR	$125	6	$750	
K	Project Professional	HR	$100	30	$3,000	
L	Staff Professional	HR	$85	30	$2,550	
M	Administrative Assistant	HR	$50	4	$200	
N	Field Expenses (Supplies and Equipment)	DAY	$100	3	$300	
	Performance and MNA Groundwater Monitoring					
	Monitoring Well Installation, Development and Surveying					
O	Project Professional	HR	$100	8	$800	
P	Staff Professional	HR	$85	30	$2,550	
Q	Field Expenses (Supplies and Equipment)	DAY	$100	3	$300	
R	Drilling and Installation	EA	$1,500	4	$6,000	*replacement of 4 well assumed*
S	Surveying	DAY	$1,000	1	$1,000	
	Groundwater Sampling					*assume 1 yr of quarterly performance and 2 yrs of semi-annual MNA*
T	Project Professional	HR	$100	16	$1,600	
U	Staff Professional	HR	$85	64	$5,440	
V	Field Expenses (Supplies and Equipment)	DAY	$100	8	$800	
	Laboratory Analysis					
W	VOCs	EA	$60	48	$2,880	*includes 10 wells, one duplicate and one blank per sampling event*
X	Methane, Ethane, Ethene	EA	$75	48	$3,600	
Y	TOC	EA	$35	48	$1,680	
	Subtotal				**$63,430**	
6	**WDNR Reporting and Closure**					
	Project Status Update Letters					*assume 4 status update letters*
A	Senior Professional	HR	$125	4	$500	
B	Project Professional	HR	$100	24	$2,400	
C	Administrative Assistant	HR	$50	4	$200	
	NR 724 Remedial Action Documentation Report					
D	Senior Professional	HR	$125	12	$1,500	
E	Project Professional	HR	$100	32	$3,200	
F	Staff Professional	HR	$80	8	$640	
G	CAD	HR	$70	16	$1,120	
H	Administrative Assistant	HR	$50	4	$200	
	WDNR Request for Closure and GIS Registry Package					
I	Senior Professional	HR	$125	4	$500	
J	Project Professional	HR	$100	16	$1,600	
K	CAD	HR	$70	6	$420	
L	Administrative Assistant	HR	$50	4	$200	
M	WDNR Review and GIS Registry Fees	LS	$1,200	1	$1,200	
	Monitoring Well Abandonment and Form Preparation/Submittal					*following conditional closure*
N	Staff Professional	HR	$85	24	$2,040	
O	Field Expenses (Supplies and Equipment)	LS	$500	1	$500	
	Subtotal				**$16,220**	
	TOTAL				**$275,600**	

TABLE 2

COST ESTIMATE - REMEDIAL ACTION SERVICES [BUILDING DEMOLITION]

Express Cleaners Site
3941 North Main Street, Racine, Wisconsin
Geosyntec Consultants Proposal No. NCP2011-8036

OPTION 1 - COMPLETE BUILDING DEMOLITION

Item	Cost Component	Unit	Unit Cost	Qty	Cost	Assumptions/Notes
1	**Building Demolition**					*does not include hazardous materials assessment or abatement*
	Permits/Notifications/Coordination/Concrete Sampling					*assume concrete sampling required to confirm concrete not impacted*
A	Senior Professional	HR	$125	1	$125	
B	Project Professional	HR	$100	6	$600	
C	Staff Professional	HR	$85	4	$340	
D	Administrative Assistant	HR	$50	2	$100	
E	Field Expenses (Supplies and Equipment)	LS	$100	1	$100	
F	Private Utility Locates	LS	$1,000	1	$1,000	
G	Razing and Debris Removal and Recyling	LS	$31,625	1	$31,625	*building, concrete pad, and sidewalk; foundation removal not included*
H	Seal Sewer and Water Laterals	LS	$1,890	1	$1,890	*concrete pad can be recycled, landfill disposal not required*
	TOTAL				**$35,780**	

OPTION 2 - PARTIAL BUILDING DEMOLITION [DRY CLEANER PORTION ONLY]

Item	Cost Component	Unit	Unit Cost	Qty	Cost	
1	**Building Demolition**					*does not include hazardous materials assessment or abatement*
	Permits/Notifications/Coordination/Concrete Sampling					*does not include restoration of building to remain*
A	Senior Professional	HR	$125	1	$125	*assume concrete sampling required to confirm concrete not impacted*
B	Project Professional	HR	$100	6	$600	
C	Staff Professional	HR	$85	4	$340	
D	Administrative Assistant	HR	$50	2	$100	
E	Field Expenses (Supplies and Equipment)	LS	$100	1	$100	
F	Private Utility Locates	LS	$1,000	1	$1,000	
G	Razing and Debris Removal and Recyling	LS	$23,690	1	$23,690	*building, concrete pad, and sidewalk; foundation removal not included*
H	Seal Sewer and Water Laterals	LS	$1,270	1	$1,270	*concrete pad can be recycled, landfill disposal not required*
	TOTAL				**$27,225**	

TABLE 3

COST ESTIMATE - REMEDIAL ACTION SERVICES [SCJ PROPERTY]

Express Cleaners Site
3941 North Main Street, Racine, Wisconsin
Geosyntec Consultants Proposal No. NCP2011-8036

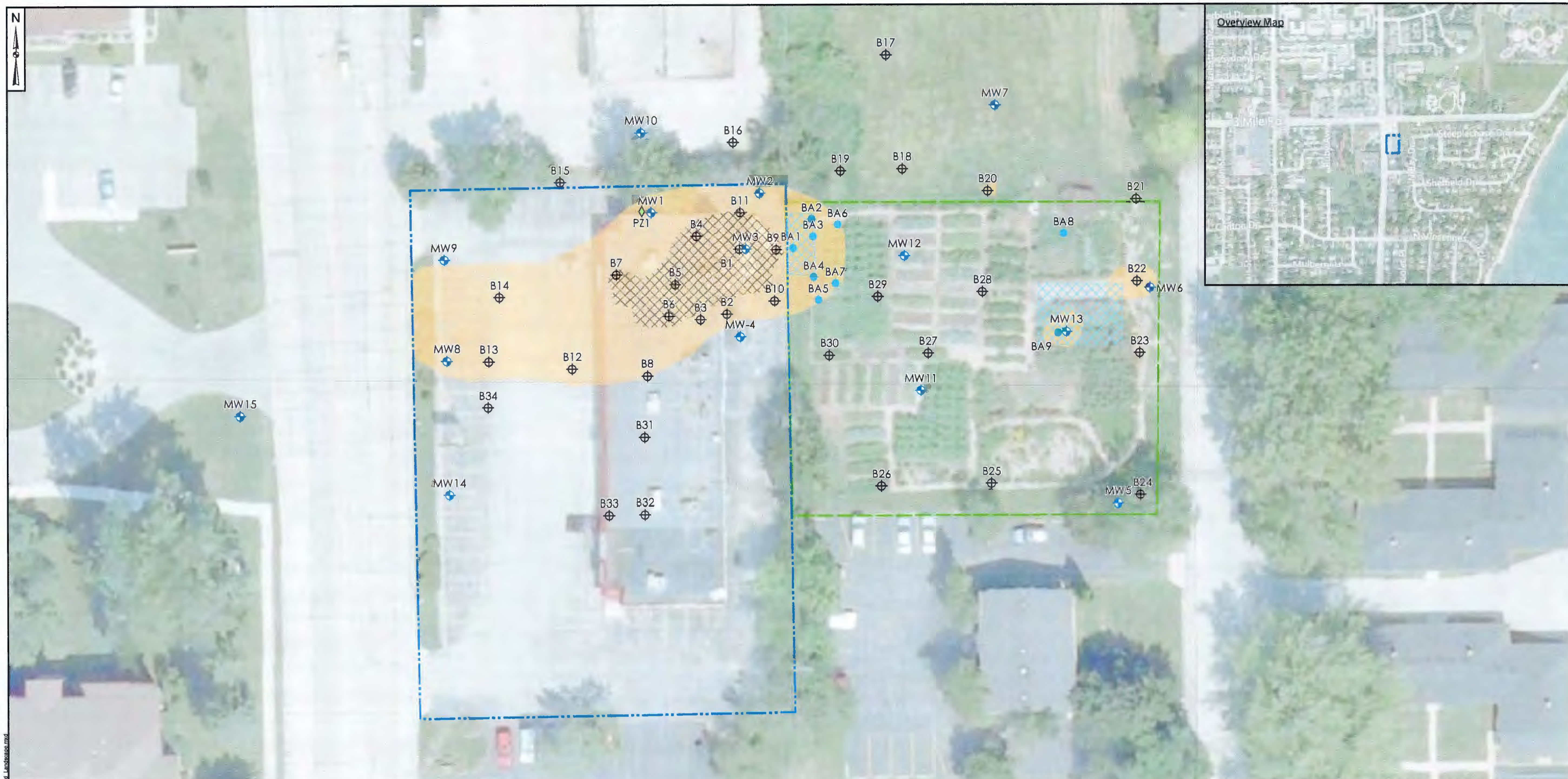
Item	Cost Component	Unit	Unit Cost	Qty	Cost	Assumptions/Notes
1	**Unsaturated Soil Excavation and Disposal**					*per extent depicted on RSV proposal*
A	Construction Staking	DAY	$1,000	0.25	$250	*assume enhanced bio for NW portion of SCJ included in on-site cost*
	Groundwater Monitoring Well Abandonment					
B	Staff Professional	HR	$85	4	$340	
C	Field Expenses (Supplies and Equipment)	LS	$100	1	$100	
D	Mobilization/Demobilization	LS	$1,000	0	$0	*assume continuous with on-site work and no addition mob/demob cost*
E	Excavation	TON	$2.50	100	$250	*assume silt fence and tracking pad not required for small area*
F	Transport to Disposal Facility	TON	$4.50	100	$450	
G	Disposal (direct landfill)	TON	$35	100	$3,500	
H	Dust/Emissions Control	DAY	$250	1	$250	
I	Backfill	TON	$12	100	$1,200	*assume compaction testing not required*
	Coordination, Oversight, Air Monitoring and Confirmation Sampling					
J	Staff Professional	HR	$85	8	$680	
K	Field Expenses (Supplies and Equipment)	DAY	$100	1	$100	
L	Laboratory Analysis (VOCs)	EA	$60	5	$300	*assume 5 post-excavation confirmation samples*
	TOTAL				**$7,420**	

TABLE 4

SCHEDULE AND CASH FLOW

Express Cleaners Site
3941 North Main Street, Racine, Wisconsin
Geosyntec Consultants Proposal No. NCP2011-8036

Time		Event	Estimated Claim Amount
Year 1	Week 1	Contract Award Client Meeting	
	Week 2-24	Pre-Remedial Action, Pilot and Bench Scale Test Activities	
	Weeks 25-28	Pre-Removal Soil Treatment	
	Weeks 28-32	File Claim # 1	$50,000
	Week 40	Claim Reimbursed (Estimated 2 Months)	
	Week 41-44	Soil Excavation and Off-Site Disposal	
	Week 45-46	Enhanced Bioremediation Application	
	Week 47	Backfill	
	Week 50	File Claim # 2	$165,000
Year 2	Week 58	Claim Reimbursed (Estimated 2 Months)	
	Week 60	Monitoring Well Installation	
	Week 60-86	Performance Monitoring (2 Quarters)	
	Week 86-90	Semi-Annual Monitoring Report	
	Week 92	File Claim # 3	$13,000
	Week 100	Remedial Action Summary Report	
	Week 100	Claim Reimbursed (Estimated 2 Months)	
	Weeks 100-126	Performance Monitoring (2 Quarters)	
	Weeks 126-130	Semi-Annual Monitoring Report	
Year 3	Week 132	File Claim # 4	$10,000
	Week 140	Claim Reimbursed (Estimated 2 Months)	
	Weeks 140-166	MNA Monitoring (1 Event)	
	Weeks 166-170	Semi-Annual Monitoring Report	
	Week 172	File Claim # 5	$7,000
Year 4	Week 180	Claim Reimbursed (Estimated 2 Months)	
	Weeks 180-206	MNA Monitoring (1 Event)	
	Weeks 206-210	Semi-Annual Monitoring Report	
	Week 212	File Claim # 6	$7,000
	Week 220	Claim Reimbursed (Estimated 2 Months)	
	Weeks 220-246	MNA Monitoring (1 Event)	
	Weeks 246-250	Semi-Annual Monitoring Report	
	Week 252	File Claim # 7	$7,000
Year 5	Week 260	Claim Reimbursed (Estimated 2 Months)	
	Weeks 260-286	MNA Monitoring (1 Event)	
	Weeks 286-290	Semi-Annual Monitoring Report	
	Week 292	File Claim # 8	$7,000
	Week 300	Claim Reimbursed (Estimated 2 Months)	
	Weeks 300-306	Prepare Request for Closure Documentation	
	Weeks 306 - 314	WDNR Review and Closure	
Year 6	Weeks 314-318	Well Abandonment/Project Closeout	
	Week 320	File Claim # 8	$9,000
	Week 328	Final Reimbursement	



Legend

- Monitoring Well
- Hand Auger Sample Near Surface
- Piezometer
- Borehole
- PCE > 33,000 µg/kg ("Contained-Out" Concentration)
- PCE > 41 µg/kg (Calculated Groundwater Protection RCL)
- Planned SCJ Property Excavation Area
- Approximate Site Property Boundary
- Approximate SCJ Property Boundary

Notes
Basemap imagery source: Bing Maps 2011

50 25 0 50 Feet

Proposed Unsaturated Zone Remedial Action Target Area
3941 N. Main St., Racine, WI

Geosyntec consultants

Cedarburg | 18-Aug-2011

Figure 1

N

MW-10
< 0.44

MW-7
< 0.44

MW-2
24

PZ1 MW-1
2.34 173

MW-3
770

MW-9
1.52

MW-12
5.4

MW-6
6.5

MW-13
< 0.44

MW-4
< 0.44

MW-8
810

MW-11
< 0.44

MW-15
< 0.44

MW-14
< 0.44

MW-5
< 0.44

Overview Map

Legend

- Piezometer
- Monitoring Well
- PCE > 5 µg/L (NR 140 Enforcement Standard) (Dashed where inferred)
- Enhanced Bioremediation Treatment Area
- Approximate Site Property Boundary
- Approximate SCJ Property Boundary

Depicted data represents PCE concentrations (µg/L) collected on 04/07/2011

Notes
µg/L - micrograms per liter
PCE - tetrachloroethene
Basemap imagery source: Bing Maps 2011

Path: P:\RU\Projects\TR0195.AMPAC Fuji\Work\GIS\Exports\Chevron_Tabled_Landscape.mxd

50 25 0 50 Feet

Proposed Groundwater Remedial Action Target Area

3941 N. Main St., Racine, WI

Geosyntec consultants

Cedarburg | 19-Aug-2011

Figure 2

Geosyntec
consultants

GREG JOHNSON, CHMM, P.G., P.H., P.E.

environmental science/engineering
geology/hydrogeology
remedial investigation
remedial action
geotechnical engineering
hydrological engineering
facility decommissioning

EDUCATION

Purdue University, M.S.E., *Geotechnical Engineering*, 1989
Purdue University, B.S.E., *Civil/Geological Engineering*, 1987
Purdue University, B.S., *Geology*, 1986

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Professional Engineer
Wisconsin P.E. Number 29898
Tennessee P.E. Number 106303
Ohio P.E. Number 70529

Professional Hydrologist
Wisconsin P.H. Number 70-111

Professional Geologist
Wisconsin P.G. Number 629
Tennessee P.G. Number 4527
Illinois P.G. Number 196-000593

Certified Hazardous Materials Manager
Master Level Number 8950

Hydrogeologist as defined by Wisconsin Administrative Code Chapter NR 712

PROFESSIONAL EXPERIENCE SUMMARY

Mr. Johnson has more than 22 years of experience in the performance and direction of environmental/remedial, geological, hydrogeological, hydrological and geotechnical investigation and analysis; risk assessment; feasibility study; remedial action design and implementation; environmental due diligence; environmental impact analysis; and facility decommissioning and demolition-related services.

Mr. Johnson has experience with a broad range manufacturing and utility industry, commercial (petroleum and dry cleaning) facility, waste disposal facility, Brownfields redevelopment, RCRA, CERCLA and TSCA projects involving soil and groundwater impacted by chlorinated solvents, petroleum constituents, PAHs, PCBs and heavy metals.

Mr. Johnson has extensive experience working under the Wisconsin Department of Natural Resources (WDNR) Remediation and Redevelopment, Waste and Material's Management and Division of Water Programs pursuant to the Wisconsin Administrative Code.

Geosyntec
consultants

JAMES BANNANTINE, P.G.

contamination assessments
remediation strategy
development
hydrogeology

EDUCATION

M.S., Geology, Northern Illinois University, Dekalb, Illinois, 1990
B.S., Geology, University of Wisconsin-Oshkosh, Oshkosh, Wisconsin, 1987

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

American Institute of Professional Geologists, Certification No. CPG-9666
Certified Professional Geologist
40-Hour OSHA 29 CFR 1910.120
8-Hour Annual Refresher
Wisconsin Registered Professional Geologist, Registration No. 447

PROFESSIONAL EXPERIENCE SUMMARY

Mr. Bannantine is a geologist with over twenty years of experience throughout the United States performing site investigation, remediation and construction oversight. He has focused on contaminated site management and remediation projects, having significant involvement in hundreds of sites providing professional services including project management, client advocacy, site characterization, feasibility studies, bench/pilot studies, and litigation support.

He has completed field studies including geologic and hydrogeologic studies, aquifer testing, and the characterization of volatile organic compounds (PCE, TCE and by-products), semi-volatile organic compounds, PCBs, lead, and MGP waste.

His clients have primarily included major industrial manufacturers (utilities, automotive, railroads, petroleum), and attorneys involved in property transactions and environmental matters. He has been the project lead for several major (multi-million dollar) remediation sites, including large fixed-price contracts.

Mr. Bannantine has achieved project closure at over 200 sites and has managed projects using a variety of contract vehicles including cost plus fixed fee arrangements, guaranteed fixed fee remediation contracts, and incentivized contracts to seed Brownfield development projects. Mr. Bannantine has a reputation for understanding the business aspects of an environmental project, and for being closure-focused. His project experience ranges from environmental site assessments for real estate transactions to multi-plume industrial site closures.

Geosyntec
consultants

CURTIS M. HOFFART, CHMM

remedial investigation
remedial action
contaminated property/brownfield redevelopment
environmental assessment/due diligence
asbestos/hazardous materials assessment

EDUCATION

B.S., Environmental and Public Health, University of Wisconsin-Eau Claire, 1994

PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

Certified Hazardous Materials Manager - Number 8948

Wisconsin Certified Asbestos Inspector - Number AII-11111
Wisconsin Certified Asbestos Supervisor - Number ACS-11111

Michigan Certified Asbestos Inspector Number A34017

PROFESSIONAL EXPERIENCE SUMMARY

Mr. Hoffart has more than 16 years of experience in the areas of environmental investigation and analysis, environmental due diligence, risk assessment, feasibility study, remedial action, pre-demolition asbestos and other hazardous materials assessment and facility decommissioning/demolition-related services. Mr. Hoffart has experience with a broad range of industrial, utility and commercial projects involving chlorinated and petroleum VOCs, PAHs, PCBs and heavy metals. The work has been conducted pursuant to various regulatory programs, including Wisconsin soil and groundwater cleanup regulations and EPA TSCA and RCRA regulations.

In addition to other chlorinated VOC projects, Mr. Hoffart served as Project Manager and technical lead for several dry cleaner projects in Wisconsin, including projects conducted under the Wisconsin Dry Cleaner Environmental Response Program. These included site redevelopment projects for which the schedule and investigation and remedial action approach was conducted to facilitate expedite site redevelopment. Mr. Hoffart has extensive experience with waste characterization issues related to chlorinated VOC contamination.

Geosyntec
consultants

JEREMIAH JOHNSON, P.G.

environmental science
site investigation
site characterization
construction/quality control oversight
remedial action

EDUCATION

B.S., Geology and Geophysics, Certificate in Environmental Studies, University of Wisconsin, Madison, Wisconsin, 2000

PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

Professional Geologist, Wisconsin No. 1270-013

40-Hour OSHA Hazardous Waste Operation and Emergency Response (HAZWOPER)

10-Hour OSHA Construction Safety

Construction Quality Management Certification (Army Corps of Engineers)

Confined Space Training

XRF Soil Lead Testing

CPR/AED & First Aid

PROFESSIONAL EXPERIENCE SUMMARY

Mr. Johnson is a geologist with over 10 years of professional experience. He is a registered professional geologist in the state of Wisconsin, and has extensive in the areas of environmental investigation and analysis and remedial action services. Mr. Hoffart has experience with a broad range of industrial, utility and commercial projects involving chlorinated and petroleum VOCs, PAHs, PCBs and heavy metals. The work has been conducted pursuant to various regulatory programs, including Wisconsin soil and groundwater cleanup regulations and EPA TSCA and RCRA regulations.

Geosyntec
consultants

DAVID ZOLP, P.G.

geological/hydrogeological investigation
remedial investigation
remedial action
geotechnical investigation
operations and maintenance manager

EDUCATION

University of Wisconsin – Oshkosh, B.S., Professional Geology, 2000
University of Wisconsin – Oshkosh, B.S., Professional Hydrogeology, 2000

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Professional Geologist, Wisconsin Number 1264-013

40-Hour OSHA Hazardous Waste Operation and Emergency Response (HAZWOPER)

8-Hour OSHA HAZWOPER Supervisor Training

CPR/AED & First Aid

PROFESSIONAL EXPERIENCE SUMMARY

Mr. Zolp has extensive experience in the performance of environmental, geological, hydrogeological, hydrological and geotechnical investigation and in data compilation and analysis. His investigation experience includes environmental and geotechnical soil borings; groundwater monitoring well installation and development; hydraulic conductivity testing; and soil, soil gas, groundwater, surface water and sediment sampling. He has performed investigation work associated with landfill siting, expansions, landfill gas, and borrow source studies; environmental due diligence, state and federal cleanup sites; and various industrial, commercial and utility industry sites (electrical generation and distribution facilities). Mr. Zolp also has extensive experience performing data compilation and analysis using database and statistical software.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 08/30/2010

PRODUCER
Marsh USA Inc.
1560 Sawgrass Corporate Pkwy, Suite 300
Sunrise, FL 33323-2858
Attn: Fax: 212-948-0512 FtLauderdale.certs@marsh.com

S81127-ALL-CAS1-10-11 BOCA ALL4 .

INSURED
GEOSYNTEC CONSULTANTS, INC.
5901 BROKEN SOUND PARKWAY NW
SUITE 300
BOCA RATON, FL 33487-2775

THIS CERTIFICATION 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.

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Commerce And Industry Ins Co	19410
INSURER B: American International Specialty Lines Ins Co	26883
INSURER C: New Hampshire Insurance Company	23841
INSURER D: Insurance Company Of The State Of PA	19429
INSURER E:	

COVERAGES 4

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 LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
A		GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE [X] OCCUR X DEDUCTIBLE: $100,000 GENERAL AGGREGATE LIMIT APPLIES PER X POLICY PRO-JECT LOC	GL4178618	09/01/2010	09/01/2011	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 $ 1,000,000 $ 25,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A A		AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS	CA5053937 (AOS) CA1955451 (MA)	09/01/2010 09/01/2010	09/01/2011 09/01/2011	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY EA ACC AGG	$ $ $
B		EXCESS / UMBRELLA LIABILITY X OCCUR CLAIMS MADE DEDUCTIBLE X RETENTION $ 10,000	UMB8085625	09/01/2010	09/01/2011	EACH OCCURRENCE AGGREGATE	$ 10,000,000 $ 10,000,000
C D		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N [N] (Mandatory in NH) If yes, describe under SPECIAL PROVISIONS below	WC6987876 (AOS) WC6987877 (CA)	09/01/2010 09/01/2010	09/01/2011 09/01/2011	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
B		OTHER Prof. Liability & Contr. Poll. Liab. Claims Made Form	COPS1951904	09/01/2010	09/01/2011	Each Claim Aggregate Ded: Each Claim Incl. Prod. & Completed Ops	8,000,000 10,000,000 250,000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

CERTIFICATE HOLDER ATL-002005200-18

GEOSYNTEC CONSULTANTS, INC.
5901 BROKEN SOUND PARKWAY NW, SUITE 300
BOCA RATON, FL 33487-2775

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 of Marsh USA Inc.
Rosalia A. Croes

Rosalia A. Croes

ACORD 25 (2009/01)

Geosyntec consultants

Remediation Technology Tool Box

TECHNOLOGY LEADERSHIP

Geosyntec's remediation technology tool box is based on technology leadership from internally- and externally-funded R&D, which forged the development of ground-breaking technologies, centered on in situ applications. Our tool box is filled with "first-to-field" experience that puts practical knowledge to work for our clients as quickly as possible.

Geosyntec's advantage is our hands-on experience that gives us the knowledge to apply advanced and conventional technologies in ways that optimize the technology for the benefit of our clients.

PRACTICE AND RESEARCH PIONEERS

We combine extensive experience in the design, construction, and operation of remediation systems with our commitment to remain at the forefront of the development of innovative technologies with proveable benefits to clients. Maintaining a "tool box" of technical solutions allows us to consider a number of alternatives for a site and leads to a remedy selection based on the optimum combination of technical merit, client requirements, and cost considerations.

For more than 20 years, Geosyntec professionals have pioneered remediation technologies through practice and applied research. Our professionals have authored/co-authored seminal guidance documents for the U.S. EPA, Department of Energy, Air Force Center for Engineering and the Environment, multiple state and environmental agencies, and industry technical associations.

Our relationships with, and acceptance by, regulators spawned from our contributions to governmental research programs, technical papers, guidance manuals, and training courses helped us create successful solutions for the most challenging sites and complex projects.

Geosyntec's remediation "tool box" offers our clients practical experience with numerous technologies and the credentials to convince regulators that the optimal combinaton will be successful. Our robust set of full-scale technologies includes:

- Enhanced bioremediation and bioaugmentation
- Zero Valent Iron (ZVI) applications in multiple delivery forms for organics and inorganics
- In situ chemical oxidation
- Monitored natural attenuation for organics or metals in groundwater
- Metals stabilization of soils and sludges
- Phytoremediation and constructed wetlands
- In situ thermal desorption

Geosyntec consultants

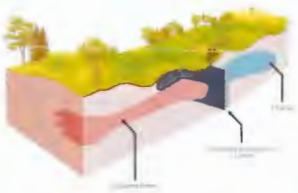
www.geosyntec.com

In Situ Remediation Technologies

Geosyntec is a leader in the development, commercialization and successful application of innovative and cost-effective in situ remediation technologies. These technologies include enhanced in situ bioremediation (EISB) and bioaugmentation, monitored natural attenuation (MNA), in situ chemical oxidation (ISCO), and metal-catalyzed reduction of chlorinated solvents using permeable reactive barriers (PRBs) containing zero-valent iron (ZVI). Our projects include research and technology development and validation funded by federal and state organizations such as the Department of Defense, as well as both small and large remediation projects for industrial clients, providing us with an optimal balance of innovation and real world application experience.

ENHANCED BIOREMEDIATION AND BIOAUGMENTATION

Geosyntec is a recognized leader in the successful application of EISB to treat chlorinated solvents and other recalcitrant chemicals such as perchlorate and MTBE. Geosyntec experts are co-developers and instructors of courses taught by the Interstate Technology & Regulatory Council (ITRC) to federal and state regulators on both MNA and EISB. Geosyntec has also pioneered the use of bioaugmentation, a practice that involves the injection of specific bacterial cultures (e.g., KB-1®) to rapidly convert chlorinated solvents to non-toxic ethene at sites where this activity does not occur naturally.



ZERO-VALENT IRON PERMEABLE REACTIVE BARRIERS

Geosyntec experts were involved in the commercialization of the ZVI PRB technology in tandem with academics at the University of Waterloo, and as such we have extensive experience with application of the technology under wide ranging conditions. Geosyntec staff have designed and installed numerous PRBs for the treatment of chlorinated solvents, hexavalent chromium and other contaminants using diverse installation methods including sheet piles, caissons, continuous trenching machines and bio-polymer trenches.

CHEMICAL OXIDATION

Geosyntec's oxidation experts have been actively involved in the development and validation of this technology for the remediation of DNAPL source areas in porous media and fractured bedrock. Geosyntec's efforts to expand the use and applicability of the ISCO technology include fundamental research to improve the understanding of the impact of site conditions on technology performance at the field-scale, as well as practical field applications of the technology to remediate PCE and TCE DNAPL source areas at industrial sites.

PHYTOREMEDIATION

Geosyntec phytoremediation specialists have been involved with the development and implementation of plant-based remediation technologies since the company began operations in the mid 1980s. Over the years, we have helped our clients apply this innovative technology to manufacturing and industrial sites. Projects have included the use of terrestrial and wetland species for remediation of perchlorate and explosives, installation of hybrid poplars for hydraulic control of contaminant plumes, design of constructed wetlands for treatment of chlorobenzenes and nitroaromatics, and design of phytocaps for municipal and industrial landfills.

Geosyntec consultants

Enhanced In Situ Bioremediation

BIOAUGMENTATION AND BEYOND

Geosyntec is a recognized world leader in the development, commercialization, and successful application of enhanced in situ bioremediation (EISB), an innovative and cost-effective treatment technology for chlorinated solvents and other recalcitrant chemicals in groundwater.

Geosyntec is at the forefront of EISB development and application to provide plume and source area treatment for chlorinated solvents and other recalcitrant compounds.

Geosyntec pioneered bioaugmentation, the injection of specific bacterial cultures (KB-1® and KB-1®Plus), to rapidly convert compounds like trichloroethene (TCE) to the non-toxic end product ethene. SiREM, a division of Geosyntec that specializes in environmental remediation technology, has emerged as a leading specialty service provider to support evaluation and implementation of remediation technologies. Geosyntec has applied biostimulation and bioaugmentation at hundreds of sites and continues to provide our clients with innovative designs to manage source and dissolved plume groundwater contamination.

LEADING PRACTITIONERS

Geosyntec is an industry leader for EISB. Our leading national practitioners are co-developers and instructors of courses taught by the Interstate Technology & Regulatory Council (ITRC) to federal and state regulators on EISB. We continue to lead the remediation field by:

- Working with researchers to develop microbial cultures to treat other contaminants such as 1,1,1-trichloroethane (1,1,1-TCA), chloroform, and RDX.
- Working with government and industry in the SABRe (Source Area BioRemediation) program to evaluate the use of biological means for source mass reduction.
- Authoring/co-authoring multiple bioremediation guidance documents and peer reviewed publications.

Geosyntec is the preferred choice for EISB and bioaugmentation at challenging sites. We provide our clients with an optimal balance of innovative approaches, real world application experience, and exceptional client service.

Geosyntec consultants

Subsurface Vapor Intrusion Assessment and Mitigation

PIONEERING PRACTICE AND RESEARCH

Geosyntec has an international reputation as one of the preeminent consultants for assessing and managing subsurface vapor intrusion to indoor air.

For more than 20 years, Geosyntec professionals have pioneered the assessment and management of vapor intrusion, through practice and applied research. Our practitioners co-developed the most widely used (Johnson and Ettinger, 1991) and most detailed (Abreu and Johnson, 2005) mathematical models for vapor intrusion to indoor air, pioneered soil gas sampling and analysis methods to assess vaporization of volatile chemicals from groundwater (Kerfoot, 1988), and conducted basic research into vapor diffusion through unsaturated soil (McAlary, 1988).

Geosyntec professionals have performed more applied research in the field of vapor intrusion than any other consultancy.

LEADERSHIP

In the past decade we've peer reviewed and authored/co-authored many of the regulatory and industry guidance documents, including U.S. EPA (RCRA and OSWER), Electric Power Research Institute, Interstate Technology and Regulatory Council, American Petroleum Institute, New Jersey Department of Environmental Protection, and several others in Canada and the United Kingdom.

Geosyntec's value-added innovations include:

- **Only firm with 3-D modeling** of vapor intrusion that incorporates a bio-attenuation component for estimating the magnitude of the attenuation as a function of source concentration and source-building separation.
- **First application** of building pressure cycling and compound-specific stable carbon isotope analysis for forensic analysis of background source contributions.
- **Developed high purge volume sampling** for low cost, high quality data collection in large buildings -- minimal disruption, minimal risk of failing to identify a sub-slab source area, and maximal understanding of properties required for optimal mitigation design.
- **Application of passive (wind and solar) powered systems** for sub-slab venting, with innovative performance monitoring via flux measurement, and correlating flow rates to wind-speed or vacuum via analysis of the pneumatic conductivity, leakance, and specific capacity.

VAPOR INTRUSION (VI)
Quick Reference Guide

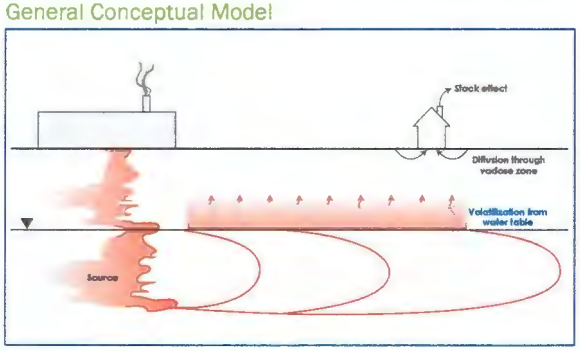
July 2009

Geosyntec consultants

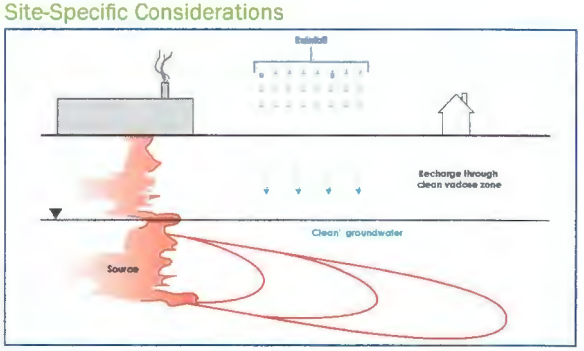
www.geosyntec.com

Most sites have complexities that do not fit the generic conceptual model – check for barriers!

General Conceptual Model



Site-Specific Considerations



Site-specific conditions (e.g., hydrologic barriers) may mitigate vapor intrusion

Most VI projects involve sampling and analysis of groundwater, soil gas, and indoor air. Other lines of evidence can also be useful in refining the conceptual model and assessing the VI pathway

Typical Investigation Methods


Groundwater


External Soil Gas

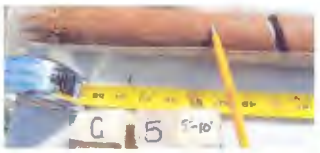

Near-Slab Soil Gas


Sub-Slab Soil Gas


Outdoor Air


Indoor Air

Additional Lines of Evidence


Soil Coring for Inspection and Lab Tests

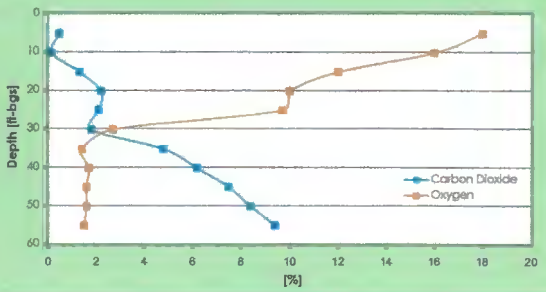

Field Screening for O_2, CO_2 and Tracers

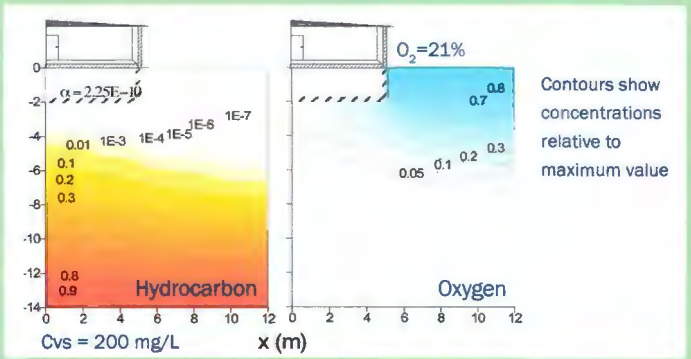

Barometric and Differential Pressure to Assess Permeability and Gradients


Building Pressure and Ventilation Testing

Biodegradation can result in orders of magnitude reduction in vapor intrusion for petroleum hydrocarbons relative to chlorinated solvents

Biodegradation





KEEP IN MIND

- Biodegradation analysis can often demonstrate no VI risks for moderate to low concentration (i.e., dissolved) hydrocarbon sources
- Biodegradation can be demonstrated by vertical profiles showing consumption of oxygen and generation of carbon dioxide
- Mathematical models are available to quantitatively evaluate the significance of biodegradation at a specific site

VAPOR INTRUSION (VI)
Quick Reference Guide

Geosyntec consultants

Background sources affect all indoor air samples; if you sample indoor air, you will detect something.

Typical Residential Background Concentrations

Chemical	Average Typical ($\mu g/m^3$)	Upper-end ($\mu g/m^3$)	Potential Sources
TCE	<0.3	1-2	Solvents, degreasers (i.e., gun cleaner)
PCE	0.9-2	6-10	Dry cleaning, solvents, degreasers
Vinyl Chloride	ND	0.05	Vinyl shower curtains
Benzene	2-3	12-17	Fuels, paints, cigarette smoke, solvents
Naphthalene	0.5	2	Moth balls, gas/carburetor treatments

For more information, see http://householdproducts.nlm.nih.gov/index.htm

KEEP IN MIND

- Background concentrations may be greater than risk- based screening levels (benzene, PCE, chloroform, carbon tetrachloride)
- Concentrations above literature median values may still be due to background sources

Screening levels vary over a wide range from state-to-state and residential vs commercial.

The ideal assessment strategy and methods may also change because of the screening level.

Range of Residential Screening Levels

Chemical	Indoor Air ($\mu g/m^3$)	Soil Gas ($\mu g/m^3$)	Groundwater ($\mu g/L$)
TCE	0.02-12	0.2-700	1-15,000
PCE	0.3-100	8-3,800	1-42,000
Benzene	0.3-10	3-2,500	5-5,600

Screening levels from various regulatory guidance documents

Typical Occupational Indoor Air Screening Levels ($\mu g/m^3$)

Chemical	Risk-based level	OSHA PEL
TCE	6.1-610	540,000
PCE	2.1-210	170,000
Benzene	1.6-160	3,200

USEPA Regional Screening Levels(Sept 2008)

KEEP IN MIND

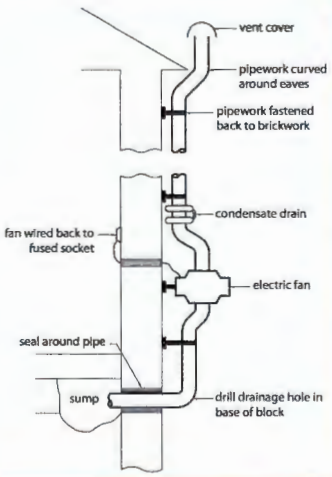
- Screening levels are, in some cases, below background levels
- Occupational screening levels may be based on OSHA PEL (8-hour exposure limit) or risk (e.g., incremental cancer risk range of 10^{-6} to 10^{-4})
- Site-specific screening levels may be considered
- 1 $\mu g/m^3$ = 0.001 $\mu g/L$
- Reporting limits are so low that you must be especially careful about using clean equipment

Mitigation measure should be customized to site conditions and level of protection needed. Combinations of technologies should be considered.

Confirmation of mitigation system performance may be necessary.

Mitigation Options

Technology	Pros	Cons	Applications
Indoor Air Treatment	Quick Installation	Potentially higher capital cost Difficult to control	Best as an interim measure
Passive Barrier	Often simple addition to construction activities	Limited data on long-term effectiveness	Best for new construction or during renovations
Passive Venting	Low O&M cost Upgradable to SSD	Not suitable for moderate to high concentration ranges	Best for low concentration areas, often combined with competent floor slab or passive barrier
HVAC Operation Modification	Potentially low capital cost	High O&M cost Occupant comfort Difficult to control	Best for buildings where air conditioning and/or dehumidification is always needed
Sub-Slab Depressurization	Proven technology Wide acceptance	Higher capital cost Air permitting needs variable	Best for low to moderate concentrations
Soil Vapor Extraction	Aggressive mass removal	Typically requires permitting and more expensive O&M	Best for high concentrations and moderate to high permeability soils



KEEP IN MIND

- Long-term operation, monitoring and reporting requirements
- Deed restriction
- Financial assurance requirements
- Communication/public participation needs
- Rough costs for commercial Sub slab venting:
  - Design: ~$20K to $90K
  - Construction: ~$5 to $10/$ft^2$
  - Annual O&M:~$0.1 to $0.5/$ft^2$

vaporintrusion@geosyntec.com

Todd McAlary (905) 339-7066 | Greg Corcoran (858) 674-6559 | Robert Ettinger (805) 897-3800

References

Frank Dombrowski
We Energies
Senior Environmental Consultant

1-414-221-2156 Work
1-414-587-4467 Mobile
Frank.Dombrowski@we-energies.com
333 Everett Street
A231
Milwaukee, WI 53203

Don Gallo
Reinhart Boerner

1-262-951-4555 Work
1-414-507-8687 Mobile
dgallo@reinhartlaw.com

N16 W23250 Stone Ridge Drive, Suite 1
Waukesha, WI 53188

Mark Sylvester
ATS2 LLC

(443) 812-3192 Mobile
sylvester@ats2.org

9229 Winterfield Lane
Columbia, MD 21045
www.ats2.org

Keith Hitzke
North Shore Environmental Construction

1-262-255-4468 Work
1-414-708-0536 Mobile
khitzke@nsecinc.com

N117 W18493 Fulton Drive
Germantown, WI 53022

Sandy Orsted
Hoffman, LLC
Director of Strategic Alliances

1-920-731-2322 Work
1-920-574-7396 Mobile
sorsted@hoffman.net
122 East College Avenue #1G
Appleton, WI 54911-5741

Jennifer Drury Buzecky
Whyte Hirschboeck Dudek

1-414-978-5749 Work
1-414-333-3643 Mobile
jbuzecky@whdlaw.com

555 East Wells Street
Suite 1900
Milwaukee, WI 53202-3819