From: Sean W. Frye <SFrye@axley.com>
Sent: Wednesday, August 15, 2018 4:02 PM
To: Lauridsen, Keld B - DNR
Cc: Donald P. Gallo
Subject: BRRTS #: 02-05-552214 - Smoke-Out Cleaners, Howard - Remedial Action Proposals
Attachments: 2018-15-18 LTR to Keld Lauridsen - Re Remedial Action Proposals - Smoke-Out Cleaners.pdf; 4400-212 - Smoke-Out Cleaners.pdf; P58187103.Smoke Out Cleaners Proposal.final.pdf

Good Afternoon Keld,

Please see the attached letter regarding our review of the Remedial Action Proposals submitted on behalf of Smoke-Out Cleaners in Howard, WI (BRRTS #: 02-05-552214). This letter provides a brief summary of each proposal, a comparison of these proposals, and it makes a recommendation for proceeding forward to negotiate a final proposal. Please provide your concurrence or alternative recommendation to our recommended proposal at your earliest convenience. If you are in agreement with our recommendation, we will submit the completed Form 4400-212, as well as a signed copy of the accepted proposal, as soon as possible. Thank you for your review and consideration in this matter, and have a great afternoon.

Sean Frye

Sean W. Frye, P.E.
Attorney

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Attorneys Since 1885

AXLEY BRYNELSON, LLP

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August 15, 2018

Via E-Mail (Keld.Lauridsen@wisconsin.gov)

Mr. Keld Lauridsen
Wisconsin Department of Natural Resources
2984 Shawano Avenue
Green Bay, WI 54313-6727

RE: REMEDIAL ACTION PROPOSALS
Smoke-Out Cleaners
1631 Brookfield Avenue, Unit D-4
Howard, WI 54313
BRRTS #: 02-05-552214

Dear Mr. Lauridsen:

This letter is submitted in regards to the Remedial Action Proposals submitted in response to our Request for Proposals for the anticipated remediation of the Smoke-Out Cleaners site located in Howard, WI. We were fortunate to have received several excellent proposals from four outstanding environmental consultants, which made our task of selecting a preferred proposal challenging. Each proposal was thoroughly reviewed, comparing the proposed methods of site remediation of each proposal for its effectiveness, in combination with the estimated costs of each proposal and the timeline for contamination mitigation and case-closure, and a preferred proposal has been selected. This letter provides a brief summary of each proposal, a comparison of these proposals, and it makes a recommendation for proceeding forward to negotiate a final proposal.

Background:

Smoke-Out Cleaners (the Site) is located within a commercial business park in an area of mixed commercial, industrial, residential, and vacant land uses. Smoke-Out began dry cleaning operations in a leased space centrally located within the western multi-tenant commercial building on the property in 2005. Also, it was determined that prior to development as a commercial building in 1999, the Site was on vacant land.

Giles Engineering completed a Preliminary Site Assessment (PSA) for the site in August 2008. Giles completed two interior soil borings near an existing dry cleaning machine (DCM), one exterior soil boring near the west service entrance, and a temporary groundwater well for sampling.

Volatile organic compounds (VOCs) were detected in the soil and in the groundwater samples collected from the borings. Subsequently, Giles performed the Site Investigation (SI). Over the course of the SI, Giles completed twelve soil borings from June 2011 to March 2017, to investigate the nature and extent of VOC-impacts in soil and groundwater.

Several chlorinated VOCs, including tetrachloroethene (PCE) and trichloroethene (TCE), were detected at concentrations that exceeded their respective NR 720 Residual Contaminant Levels (RCLs) for groundwater protection in soil samples collected from six soil borings near the DCM.

PCE and/or three of its daughter products were detected above their respective NR 140 Enforcement Standards (ESs) in groundwater collected from MW-1, -3, and -4 during the most recent sampling event (March, 2017). In addition, PCE was detected above its respective ES or PAL during the March 2017 sampling event.

TCE and/or PCE were detected above their respective sub-slab soil gas Vapor Risk Screening Levels (VRSLs) for small commercial buildings in the samples collected from four of the sub-slab vapor points from March 2016-17. The concentrations of vapors detected during the SI pose a risk of vapor intrusion. Therefore, Giles recommended that a sub-slab vapor mitigation system be installed to reduce the vapor intrusion risk.

Site Investigation - Addendum October 25, 2017:

Giles performed additional field investigation activities on October 25, 2017. Two eight-hour indoor air samples, IA-1 and IA-2, were collected in the office areas of Smoke-Out Cleaners and the south adjoining Badger Scale, respectively (Figure 2B). In addition, 30-minute sub-slab soil gas samples were collected from vapor points VP-3 through VP-8. The indoor air and sub-slab samples were tested, and indoor air sampling results indicates that PCE and TCE were detected in the sample from the Smoke-Out office, IA-1, and PCE was detected in sample IA-2, which was collected in the Badger Scale office. The concentration of PCE in sample IA-1 (Smoke-Out) was above the WDNR Vapor Action Level (VAL) for indoor air at a small commercial property.

In addition, between one and four chlorinated VOCs were detected in each of the most recent sub-slab vapor samples from VP-3 through VP-8. The concentration of PCE, which was detected in each of these sub-slab samples, exceeded the Wisconsin Vapor Risk Screening Levels (VRSL) for sub-slab soil gas at a small commercial property in samples collected from VP-4, VP-5, VP-7, and VP-8. Furthermore, TCE was detected above its VRSL in sub-slab soil gas samples collected from VP-4 and VP-5. These results are generally consistent with the sub-slab soil gas samples collected throughout the site investigation.

Proposal Review:

First, Giles Engineering Associates (Giles) submitted a proposal with two proposed options. The first, essentially an in situ injection of Bioavailable Absorbent Media (BAM) utilizing a proprietary product, included in an estimated cost of $140,353.00. The second option proposed using a coupled

Enhanced Reductive Dechlorination (ERD) and In Situ Chemical Reduction (ISCR) approach, also utilizing several proprietary products, with an estimated cost of $125,108. The timelines for both options from start to case-closure was anticipated to be 2.5-3 years. These options, although they both appear to be effective at mitigating groundwater contamination, did not include any sub-slab vapor sampling or contamination mitigation systems. Furthermore, both options were higher in cost than any of the other proposals.

Second, KPRG and Associates provided a proposal that recommended installing an extensive soil vapor intrusion system (also referred to as a sub-slab depressurization system). While this option would likely address some of the contamination on the site, it addresses the groundwater contamination via passive natural attenuation, as it proposes to utilize natural chemical degradation. Given the concentrations of some site contaminants, this option appears likely to incur additional groundwater mitigation costs down the road if the natural degradation is not fully successful. Therefore, although this proposal was the second lowest on estimated cost, it involves risk of incurring additional costs for longer-term monitoring if the natural attenuation fails.

Next, Fehr Graham Engineering and Environmental provided a proposal that recommended chemical injection of a proprietary brand of Enhanced Reductive Dechlorination (ERD). This plan appears to be effective at addressing the groundwater contamination; however, there are two significant shortcomings in the proposal that offer a substantial risk of increasing the project costs. First, the proposal anticipates utilizing the existing wells for monitoring and chemical injection. However, this may not be allowable per the WDNR, and new wells may have to be installed. Second, the proposal does not include a sub-slab vapor contamination system and allocates very minimal cost estimated for monitoring. Yet, this seems to be in contrast with the proposal narrative, which states that (vapor mitigation) “might be needed to address sub-slab vapor concentrations observed beneath the Badger Scale tenant space (which has no known source of PCE or TCE vapors), and possibly beneath the Smoke-Out Cleaner space.” Therefore, although this proposal provided the lowest estimated cost of site remediation in a similar anticipated timeframe as the other proposals (2.5-3 years), it leaves out costs that, if included, would likely make it competitive with the Terracon proposal (further explained below). Nonetheless, because these additional costs are not included and can only be estimated by us at this time, there is a realistic risk that costs could balloon with this proposal.

Finally, Terracon Consultants has submitted what appears to be the most complete and accurate proposal. It includes a proprietary groundwater treatment injection, similar to other plans, but the costs of this plan appear to be the most accurate and acceptable. The proposal also includes costs for sub-slab depressurization system (SSDS) that appears to be the most accurate and effective at remediating and monitoring contamination, including at the neighboring Badger Scale site. Therefore, because this proposal seems to be the most effective at mitigating and monitoring the site contamination, as well as the most accurate and realistic at estimating the project costs, while maintaining a similar three-year time schedule as the other proposals, this proposal, despite being the third-highest in cost at $101,637, is the preferred option. In addition, it does not appear that any additional, significant costs would be unique to this proposal.

Proposals Summary:

1. **Giles Engineering Associates** – Waukesha, WI

"The constituents of concern for soil and/or groundwater at the Site include PCE and the intermediate and daughter products produced through the reductive dechlorination of PCE. The PCE detected in the unsaturated soil profile of the Site can be subject to continued volatization/vapor migration and leaching to groundwater if left untreated. In addition, PCE-impacted groundwater has migrated more than 50 feet in a relatively short period of time, and if left unaddressed, the potential exists for migration and subsequent vapor intrusion into buildings down gradient from the plume." Giles prepared two alternative options.

a) Option 1: "In situ injection of Bioavailable Absorbent Media (BAM), a proprietary sustainable, pyrolized, recycled cellulosic bio-mass product with a high cation exchange capacity and an estimated half-life of 500 years, formulated by ORIN Technologies (ORIN).
   Estimated Cost: $140,353.00 (Giles [Consultant/Contractor]: $49,723.00, Subcontractor: $90,630.00)
   Estimated Schedule: 2.5 - 3 years

b) Option 2: A coupled Enhanced Reductive Dechlorination (ERD) and In Situ Chemical Reduction (ISCR) approach, which utilizes the in situ injection of several proprietary products (3-D Microemulsion, BDI Plus, and Micro ZVI) formulated by Regenesis, Inc. This approach would inject these products into the impacted area to provide an advanced electron donor and bioaugmentation culture to carry out ERD.
   Estimated Cost: $125,108.00 (Giles [Consultant/Contractor]: $49,723.00, Subcontractor: $75,385.00)
   Estimated Schedule: 2.5 - 3 years

Qualifications: Project Team (3 personnel) – Senior Project Manager, Project Hydrogeologist, Staff Geologist.

Summary: The primary difference between these options is an estimated additional $15,000 in cost for the Remedial Injection work. The purported benefit of the more expensive Option 1 is that according to ORIN, "BAM has diverse pore sizes and a honeycomb structure with a large surface area which provides increased pore space for microbes. This results in an affinity for organic and inorganic compounds which supports maximum contact with microbes allowing for complete degradation of the chlorinated compounds in the subsurface. ORIN estimates that, due to its 500-year half-life, BAM should provide Long-term maintenance free remedial abilities."

Note: This plan also does not include sub-slab vapor contamination system and really only addresses groundwater.

2. **KPRG and Associates** – Brookfield, WI

"The objectives of this project are to prepare a Remedial Action Options Evaluation, to develop an appropriate Remedial Action Plan (RAP) and implement the RAP to obtain closure for the site. The work is to be performed in a manner to maximize the DERF eligibility of project expenses by maintaining compliance with applicable requirements and guidelines in Wis. Stats. 292.65 and WAC Chapters NR 140, NR 169, and NR 700." KPRG's remediation plan is divided into 5 tasks:

1. Task 1: RAP Finalization and Commodity Services Bidding
   a. Proposed Site Remedies: Soil Vapor Intrusion System (Sub-Slab Depressurization System – SSDS); Groundwater monitored for natural attenuation; Institutional Control and Engineered Barriers.

2. Task 2: Remedial Construction
   a. Task 2a): Remedial Design Support (Soil Boring and Well Install)
   b. Task 2b): Field Extension Test (Pilot)
   c. Task 2c): SSDS Installations

3. Task 3: Construction Documentation / As-Built Report
4. Task 4: Operation, Maintenance, and Monitoring
5. Task 5: Case Closeout Report

Estimated Cost: $89,408.00 (KPRG – Consultant: $49,741.00; Contractors: $39,667.00)
Estimated Schedule: 2.5-3 years
Qualifications: Project Team (2 primary, other support staff as necessary) – Project Manager / Senior Engineer, Office Principal & Professional Geologist.

Summary: This plan has extensive Soil Vapor Intrusion SSDS Full Scale Design/Construct costs = $25,145, which is much higher than any of the other plans. Their plan also indicates that "groundwater results indicate that natural degradation is taking place based on the decreasing concentrations of PCE and the increasing concentrations of the breakdown products." Therefore, "KPRG believes that the natural degradation occurring has shown to be effective in decreasing groundwater concentrations of PCE and is not proposing to provide additional biostimulation at this time. KPRD proposes to continue groundwater monitoring to continue monitoring the natural degradation already occurring."

3. **Terracon Consultants, Inc.** – Franklin, WI

"After the WDNR approval of the RAOR and the RAP, Terracon will implement the RAP, which for purposes of this proposal will be for installation of a SSDS and a soil and groundwater treatment injection as detailed" in their plan. Terracon will engage Regenesis Remediation Services (RRS) or other remediation contractor as the injection contractor. Terracon will then perform a minimum of 8 quarterly groundwater monitoring rounds following the injection, as well as regular vapor monitoring.

Estimated Cost: $101,636.50 (Consultant [Terracon]: $58,544.50; Contractor: $43,092.00)
Estimated Schedule: 3 years
Qualifications: Project Team (3 personnel) – Project Manager / Professional Geologist and Hydrogeologist, Project Engineer / P.E., Remediation Specialist / P. E.

Summary: Terracon states that it has identified relatively small source area that could be targeted for in situ treatment. It states, "Because of the reducing conditions at this site, which would likely require multiple injections and increased monitoring required to safely inject oxidizers inside a building, in situ treatment via oxidation is not an economically viable option." Also, the proposal states that "conditions at the site are already chemically favorable for enhanced biodegradation."

4. **Fehr Graham Engineering & Environmental** – Plymouth, WI

"The overall goals for remediation at the site will be the NR 140 groundwater standards (ES and PAL). Efforts will be made to significantly reduce the soil contaminant mass. Elimination of all contamination in soil below the generic WDNR RCL's will not be possible, regardless of mediation method."

"Once the majority of the saturated soil and groundwater contamination has been treated, it is expected groundwater chemistry results will show improvement."

"The recommended remedial option for the site is chemical injection of Provect-Enhanced Reductive Dechlorination (ERD) CH_4 Ole Ego Antimethanogenic Reagent (AMR) In Situ Chemical Reduction (ISCR) Amendment to remove Chlorinated VOCs from the soil and groundwater at the site. This approach will drive the formation of anaerobic [degradation], and allow PCE to degrade to degradation products, and eventually to ethane and ethane."

Estimated Cost: $68,643.00 (Consultant [Fehr Graham]: $50,973; Contractor: $17,670)
Estimated Schedule: 2.5-3 years
Qualifications: Project Team (3 personnel) – "All Fehr Graham staff members working on the technical aspects of the project have college degrees in geology, hydrogeology, or engineering and a minimum of four years of experience in environmental consulting."

Summary: Plan does not include a sub-slab vapor mitigation system, which it states, "might be needed to address sub-slab vapor concentrations observed beneath the Badger Scale tenant space, and possibly beneath the Smoke-Out cleaner space. It estimates only about $1,470 in sub-slab vapor monitoring costs. If installed, ongoing operation, monitoring, and maintenance of the sub-slab vapor system will be required for future building owners." Therefore, it could add to the cost as estimated if additional vapor sampling and testing or mitigation becomes necessary.
Also, the plan has very minimal contractor costs, including only about $9,600 in chemical injection costs, compared to about $24,500 in costs just for the contractor in the Terracon plan. Cost difference appears to be mainly in the product used, as well as the amount of product used and the

number of injection sites. Terracon estimates 10 injection sites, but indicates it is flexible in that number based on further investigation or economic needs.

Conclusions:

Overall, the Terracon proposal and the Fehr Graham proposal seem most effective and economical in addressing the issues here. The Fehr Graham proposal may be slower at remediating because they plan to use less injection sites, which could extend the length of monitoring and require additional remediation later on if the product is not quick enough in addressing the contamination. The Terracon plan, while somewhat more expensive, may be a faster-reacting process that will ensure case closure within the three years. Terracon Consultants has submitted what appears to be the most complete and accurate proposal. It includes a proprietary groundwater treatment injection, similar to other plans, but the costs of this plan appear to be the most accurate and acceptable. The proposal also includes costs for sub-slab depressurization system (SSDS) that appears to be the most accurate and effective at remediating and monitoring contamination, including at the neighboring Badger Scale site. Therefore, because this proposal seems to be the most effective at mitigating and monitoring the site contamination, as well as the most accurate and realistic at estimating the project costs, while maintaining a similar three-year time schedule as the other proposals, this proposal, despite being the third-highest in cost at $101,637, is the preferred option. In addition, it does not appear that any additional, significant costs would be unique to this proposal.

If you feel there are any additional factors that should be considered in this selection that might justify an alternative consultant selection, or if you feel there are any points that have been missed in this analysis, please provide your factors and/or points at your earliest convenience for further consideration. If, however, you are in agreement with this analysis and selection, please provide your written agreement and/or acceptance of this letter and preferred proposal, as applicable, so that the site remediation process can commence as soon as possible. Thank you for your review and consideration in this matter.

Sincerely,

AXLEY BRYNELSON, LLP

Donald P. Gallo

Donald P. Gallo

Sean W. Frye

Sean W. Frye

SWF:SWF:kab

State of Wisconsin
Department of Natural Resources
Box 7921, Madison, WI 53707-7921

Dry Cleaner Environmental Response Program
Interim and Remedial Action Bid Proposals Summary

Form 4400-212 (R 4/04)

Notice: This form is authorized under s. 292.65, Wis. Stats., and ch. NR 169, Wis. Adm. Code. The following information about the selection of consultants for interim actions, site investigations, and remedial action activities is required under ch. NR 169, Wis. Adm. Code. There are no penalties for failing to complete this form, but persons who do not complete and submit this form will not be eligible for reimbursement under this program. Personal information is not intended to be used for any other purpose other than that for which it is originally being collected. Information will be made available to requesters under Wisconsin's Open Records laws (s. 19.32-19.39, Wis. Stats.) and requirements.

Instructions: Complete this form and attach a copy of the accepted signed bid. See reverse side for detailed instructions. ***Copy this form as necessary.***

Applicant Information

Applicant Name	Business Name
Dry Cleaning Facility Name	**Location**

Consultant Information

Consultant Name	Bid Proposal Amount	Consultant Selected (select one)
		☐
		☐
		☐
		☐
		☐
		☐
		☐
		☐

If this summary is being provided as part of a reimbursement application, did your actual costs exceed the proposal costs by more than $3,000 or 5% of the original estimate (whichever is larger).

☐ Yes ☐ No

If yes, send a copy of he acepted amendment, signed by the DNR project manager.

Certification

I certify that the information contained above is true and correct to the best of my knowledge.

Applicant Signature	Date Signed

Department Use Only

Project Manager Signature	Date	Telephone Number

Consultant Selection	Reason For Rejection/Notes
☐ Accepted ☐ Rejected	

Instructions

You are required to submit this form with a copy of the signed accepted bid. The accepted bid must be signed by both the applicant and the Project Manager.

You are required to provide the bid proposals summary information on this form for interim and remedial actions.

a. Fill in applicant name, applicant business name, dry cleaning facility name and location.

b. Submit this form with the Dry Cleaner Environmental Response Program Application, Form 4400-211 to your DNR region Remediation and Redevelopment project manager.

c. **Attach a copy of the accepted proposal for services,** including copies of any records of contract negotiations. Remember to code the detailed costs on the accepted bid proposal to the program's standard cost categories. Also submit a copy of all signed amendments.

See the application instructions for information on coding bid proposals for reimbursement..

Definition of Form Sections

Applicant Information: Enter your name and check the appropriate box indicating why you are submitting this form.

Applicant Additional Information: If you are submitting this form to obtain DNR approval to select a consultant other than the lowest bidder, enter your mailing address and telephone number. Enter your fax number and e-mail address if you have them.

Consultant Information: Check the appropriate box to indicate the type of response action services you solicited bid proposals for. For each consultant that you received a bid proposal from (the program requires a minimum of three), list their name, the total amount of their bid proposal, and then in the "Consultant Selected" column check one box to indicate the consultant that you selected or would like to select. If you are submitting this form with a reimbursement application, check the box to indicate whether your actual costs exceeded the original proposal costs by more than $3,000.

Certification: Sign and date the application, certifying that the information you are submitting is true and correct.

FOR ADDITIONAL INFORMATION: see ch. NR 169.23, Wis. Adm. Code, Consulting and Contract Services, and publications RR #631, The Dry Cleaner Environmental Response Program and RR #635, Hiring a Consultant - What You Should Know. Contact your DNR regional Remediation and Redevelopment project manager, if you have any questions.

[1] This bid proposal amount relies on monitored natural attenuation of groundwater, which is not believed by the reviewers, and as stated in other reports, to be a sufficient remedy for this site. Adding costs groundwater injections as indicated in Terracon's proposal, for example, would be an additional $28,200 ($24,500 + $3,700 – see Terracon Proposal Detailed Cost Summary--Remedial Action), which would bring the total cost of KPRG's proposal to $117,608 ($89,408 + $28,200). This additional cost would place KPRG's proposal as the second highest in cost.

[2] This bid proposal amount does not appear to have any unique, significant unaccounted costs, which would place this estimate as approximately the lowest.

[3] This bid proposal amount, while at first glance appears to be the lowest, does not account for some potentially significant additional costs. For example, Terracon's proposal includes approximately $24,051 in additional costs for consultant and contractor services for drilling, monitoring, and closing the injection sites, which, if included in Fehr Graham's proposal, would bring their total to $92,694. The Fehr Graham proposal also does not include $3,000 for the installation of the Sub-Slab Depressurization System, as well as an additional $3,000 for monitoring well abandonment, bringing their total to about $98,694 if included. While this is still slightly lower than Terracon's overall estimate, it is important to note that the additional costs that are likely to accrue to Fehr Graham's proposal are simply estimates taken from Terracon's proposal; Fehr Graham is not guaranteed to be able to complete this work at the dollar amounts estimated by Terracon, which could then increase Fehr Graham's total costs even further. Thus, there is some risk in this bid proposal amount, and the dollar amount could end up as substantially higher or lower, however, it is difficult to predict these costs with adjusted costs with any certainty. Yet, it is very likely that Fehr Graham's estimated costs are going to be significantly higher given their proposed remediation plan and the actual remedial needs of the site.

June 21, 2018

Terracon

Mr. Mark Woppert
c/o Mr. Don Gallo
Axley Brynelson LLP
N20 W22961 Watertown Road
Waukesha, Wisconsin 53186

Telephone: 262.409.2283
E-mail: dgallo@axley.com

RE: **Remedial Action Proposal**
Smoke-Out Cleaners
1631 Brookfield Avenue, Unit D-4
Howard, Wisconsin ("Property")
BRRTS #02-05-552214
Terracon Proposal No. P58187103

Dear Mr. Gallo:

Terracon Consultants, Inc. (Terracon) appreciates the opportunity to prepare this proposal to provide environmental consulting services for the above-referenced site (Property), as requested in the May 14, 2018, Axley Brynelson LLP (Axley) *Request for Remedial Proposal*. This proposal includes a brief summary of the existing site conditions (Project Information), a recommended remedial action scope of services, associated costs, and project schedule necessary to achieve case closure in accordance with NR 726, Wisconsin Administrative Code (WAC).

This proposal is written to comply with the Wisconsin Department of Natural Resources (WDNR) requirements for maintaining eligibility for reimbursement of costs covered under the Dry Cleaner Environmental Response Fund (DERF). Terracon provides consulting services in compliance with the applicable requirements under NR 700, and is experienced at providing consulting services for the investigation and remediation of chlorinated volatile organic compounds (CVOC) -impacted soil and groundwater. We are also aware of the bid contract requirements of NR 169.13 and 169.23, WAC. Terracon provides consulting services in compliance with the applicable requirements under NR 169 and 700 to 728. Terracon will make available all of the project-related documents and records related to the contract services to the department for inspection and copying. Our proposal was prepared independently of the other consultants that submitted bids for the subject site. Terracon carries insurance coverage in compliance with NR 169.23(9)(b).

Terracon reviewed available environmental information of the property from the WDNRs on-line BRRTS web site, and understands the scope of your project and the services that will be required. We 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. We will provide necessary staff and facilities for the project. If necessary, Terracon will retain and confer with specialists on unusual matters. We will provide qualified technical reviewers and project management that will keep you advised on technical and regulatory matters and work toward planned remediation goals. Terracon's services are performed in an ethical, professional, and timely manner.

1.0 PROJECT INFORMATION

The Smoke-Out Cleaners Ltd (Smoke-Out) site is located at 1631 Brookfield Avenue, Unit D-4, Howard, Wisconsin. The site lies within a commercial business park, which is in an area of mixed industrial, commercial, and residential use. Beginning in 2005, Smoke-Out operated from a leased space within the western multi-tenant building on the property. The building is slab-on-grade construction with single story offices along the eastern part of the building, and with two-story work space in the western part of the building. A dry-cleaning machine (DCM) is located in the south-central part of the work area. Black Diamond Builders occupies the lease space adjacent north of Smoke-Out, and Badger Scale adjoins Smoke-Out to the south. Asphalt-paved parking areas exist to the east and west of the building.

A Preliminary Site Assessment (PEA) was completed at the site by Giles Engineering Associates (Giles) in August 2008. The PEA included two interior soil borings (HP-1 and HP-2) near the DCM and one exterior hand boring (GP-1) near the rear (west) service door. The PEA identified CVOCs in both soil and groundwater. As a result, a Notification of Release was submitted to the WDNR on August 21, 2008. The WDNR issued a Responsible Party (RP) letter on August 29, 2008, that named Mark Woppert of Smoke-Out as the RP and required a site investigation be performed to determine the magnitude and extent of contamination.

Giles performed the subsequent site investigation during multiple phases from 2008 through 2017. Giles advanced a total of 12 additional direct-push soil borings from July 2011 through March 2017, to investigate the nature and extent of soil and groundwater contamination. Nine shallow, small-diameter prepacked observation wells (MW-1 through MW-9) and one piezometer (PZ-1) were installed. Four observation wells (MW-1 through MW-4) were installed in the building's interior. A total of eight sub-slab vapor sampling points (VP-1 through VP-8) were installed during the course of the site investigation, including five within the Smoke-Out space, and three in the south adjacent Badger Scale space. Soil, sub-slab vapor, and groundwater samples were collected and analyzed for volatile organic compounds (VOC). Giles also collected groundwater samples from the four potable wells that serve the occupied buildings in the business park. The site investigation results indicated that soil and groundwater had been impacted above applicable standards by CVOCs, and that indoor air may be impacted based on sub-slab vapor results that exceeded small commercial vapor risk screening levels (VRSLs). The site investigation indicated that shallow soils were primarily fine to medium-grained sand with varying

amounts of silty to depths of approximately 10-12 feet below grade. The sand is underlain by clay, silt, and silty clay to the terminus of the deepest boring at approximately 30 feet below grade. The site investigation results were documented in Giles' *Site Investigation Report* dated August 31, 2017.

Specifically, the soil to groundwater pathway residual contaminant level for soil was exceeded for one or more CVOCs including cis-1,2-dichloroethene (cis-DCE), methylene chloride, tetrachloroethene (aka perchloroethylene, perc, or PCE), and trichloroethene (TCE) at interior borings HP-1, HP-2, MW-2, MW-3, and MW-4, and exterior boring GP-1. The highest concentration detected in soil was 2,500 micrograms per kilogram (µg/kg) at 2 to 3 feet below grade at interior soil boring MW-3, located near the DCM.

Groundwater at the site is shallow, typically ranging from approximately 2.5 to 4.5 feet below grade, but seasonally may be as shallow as 1.5 feet below grade in some parts of the site. Shallow groundwater flow is generally to the east.

During the most recent groundwater sampling event conducted in March 2017, the CVOCs cis-DCE, PCE, TCE, and vinyl chloride were detected at concentrations above their respective WAC, Chapter NR 140 Enforcement Standard (ES) at one or more interior observation wells, including MW-1, MW-3, and MW-4.

The sub-slab vapor sampling results indicated that PCE and/or TCE were detected at concentrations above their respective small commercial VRSLs at sub-slab vapor monitoring points VP-1, VP-4, VP-5, and VP-8 located within the Smoke-Out space, and at VP-2 and VP-7 located within the south adjoining Badger Scale space.

Based on review of the initial Site Investigation Report, the WDNR requested an additional round of sub-slab vapor sampling in conjunction with indoor ambient air sampling. The field work was performed on October 25, 2017. Two 8-hour indoor ambient air samples were collected. One was from the office area of Smoke-Out (IA-1) and the other from the office area of Badger Scale to the south. The results were documented in Giles' *Site Investigation Report Addendum*, dated December 6, 2017.

The results indicated that PCE concentrations in indoor ambient air sample IA-1 was above the WDNR small commercial vapor action limit (VAL). The sub-slab vapor sampling results confirmed that PCE and/or TCE concentrations remained above their respective small commercial VRSL at sub-slab vapor monitoring points VP-1, VP-4, VP-5, and VP-8 located within the Smoke-Out space, and at VP-2 and VP-7 located within the south adjoining Badger Scale space.

2.0 REMEDIAL ACTION OPTIONS EVALUATION

Potential remedial options were evaluated relative to Chapter NR 722 WAC, criteria to address the areas of impacted soil and groundwater identified during the site investigation. Remedial action options were also evaluated to address areas where sub-slab VRSLs were exceeded within the Smoke-Out Cleaners and adjacent Badger Scale lease spaces. In summary, areas where impacted soil, groundwater, and potentially indoor air at the site warrant a remedial response include the following:

- An area of mixed chlorinated ethene (predominantly PCE) and ethane contaminants in shallow soil is present (centered on the DCM) at concentrations above soil to groundwater pathway residual contaminant levels (RCLs). The area lies beneath the building under most of the southern half of the Smoke-Out Cleaners space and the northern part of the Badger Scale space, and extends west slightly beyond the building footprint encompassing direct-push boring GP-1, hand probe borings HP-1 and HP-2, and observation wells MW-1 through MW-4. The highest PCE concentration was detected at 2 to 3 feet below floor grade at observation well MW-3 near the DCM.
- The groundwater contaminant plume with CVOCs present above their respective ES lies entirely under the building centered on the DCM and encompassing observation wells MW-1, MW-3, and MW-4. The area extends southward beneath the adjacent Badger Scale space. At each observation well within the dissolved-phase CVOC contaminant plume, one or more CVOCs including PCE, TCE, cis-DCE, and vinyl chloride were present at concentrations above their respective ES in the most recent groundwater sampling event conducted in March 2017.
- Vapor concentrations in a large area beneath the Smoke-out Cleaners space and extending south to beneath the Badger Scale space exceed the small commercial sub-slab VRSLs. The area encompasses sub-slab vapor monitoring points VP-1, VP-2, VP-4, VP-5, VP-7, and VP-8 where PCE and/or TCE vapors were detected above their respective small commercial sub-slab VRSL. During the most recent air sampling event conducted in October 2017, the highest PCE vapor concentration detected was 564,000 micrograms per cubic meter (µg/m^3). PCE was also present at concentrations above its VAL in Indoor air sample IA-1, collected inside the Smoke-Out office area in October 2017.

Due to the relatively high concentrations of PCE in shallow, sandy, source area soil beneath the building, shallow groundwater, and high PCE vapor concentrations that exceed small commercial sub-slab VRSLs in a relatively large area, monitored natural attenuation (MNA) alone is not a sufficient remedy for this site. Other options or combinations of options for remedial action are also limited.

Another potential option with limited application at this site is removal of contaminated soil via excavation and treatment/disposal. The amount of soil accessible to excavation would be severely limited though because backhoe size (and therefore reach) would be limited by what could be brought into the building through the loading dock overhead door and by maneuverability inside the building. Because of the very shallow groundwater and sandy soils, the amount of contaminated soil that could be safely excavated, would be limited by the reach of the small backhoe and by necessary sidewall sloping due to the proximity of bearing walls and support columns to the contaminated areas. As such, the majority of the contaminant mass would remain inaccessible in saturated soil. There is not a viable area on the property for ex-situ onsite treatment of the soil and, therefore, excavated soil would have to be hauled to a landfill for disposal. However, hauling the contaminated soil to a landfill for disposal is not the best green/sustainable option. Overall this option is feasible albeit quite limited, but because it cannot remove much of the contaminant mass the relatively high cost for small gain makes it less desirable and economically unviable considering the potential long time-frame to closure.

In-situ treatment options via injection of amendments are technically feasible, but may become economically infeasible if required over large areas. In-situ options such as enhanced biodegradation or oxidation may become more economically viable when applied only to smaller, limited source areas. Further these types of treatments are more green/sustainable than excavation, hauling, and disposal at a landfill or excavation and ex-situ treatment.

For this site, Terracon has identified a relatively small source area that could be targeted for in-situ treatment. In-situ measurements and contaminant distribution in these areas suggest that geochemical conditions are largely reducing (e.g. generally low DO and ORP, reductive dechlorination products present). As such, in-situ treatment with oxidizers such as permanganate, persulfate, or hydrogen peroxide would be difficult because a large mass of oxidizer would need to be used to overcome the reducing conditions before the contaminants could be oxidized. In many cases multiple injections of oxidizers are necessary resulting in high costs. Further, an oxidant would have to be carefully selected and monitored after injection because of the plume location under the building and potential production of heat during the oxidizing process. In general, treatment with oxidizers can rapidly reduce very high contaminant concentrations (thousands of parts per million) by 90 percent (%) at locations where the initial conditions are not reducing, but typically cannot reduce the remaining 10%. Because of the reducing conditions at this site, which would likely require multiple injections and increased monitoring required to safely inject oxidizers inside a building, in-situ treatment via oxidation is not an economically viable option.

Because general reducing conditions already exist and reductive dechlorination has or is occurring to some extent at the site, conditions are already chemically favorable for enhanced biodegration. As such, Terracon also evaluated enhanced reductive dechlorination (ERD) in combination with in-situ chemical reductions (ISCR). Specifically, Terracon evaluated ERD via

injection of a carbon-hydrogen source, 3-D Micro Emulsion® (3DMe®), a Regenesis product. The ERD injection amendment would also include Bio-Dechlor INOCULUM® Plus (BDI Plus®). The 3DMe® is an engineered electron donor material that is delivered in-situ. BDI Plus® is an enriched natural microbial consortium containing species of Dehalococcoides sp (DHC) that should be applied in conjunction with the 3DMe®. The combination of 3DMe® and BDI Plus® has been shown to be effective at degrading CVOC contaminants. The degradation would be further enhanced by simultaneous injection of the ISCR agent Micro Zero Valent Iron (MicroZVI™). MicroZVI™ helps provide reducing conditions to enhance the ERD, which requires strong reducing conditions to be most effective. In some cases such as at Smoke-Out, which has sandy soils and shallow groundwater, general reducing conditions are present, but may not be as strongly reducing as are generally present in clay soils. ERD and ISCR via injection of 3DMe®, BDI Plus®, and MicroZVI™ is capable of reducing contaminants to no detect. Initial results may be evident in only 1 to 6 months whereby concentrations of the parent compound (PCE) are decreased as they are transformed into initial daughter products TCE and cis-DCE. Concentrations of daughter products first increase before being degraded further into eventual end products methane, ethane, and ethene. Increasing concentrations of ethene and ethane may be evidenced in only a few months to a year or more after injection. Overall injection and treatment via ERD is slower than for oxidation, but is less expensive and is capable of full degradation of the contaminants. As such, injection of 3DMe®, BDI Plus®, and MicroZVI™ for treatment of the soil and groundwater contamination source area via ERD and ISCR is both technically feasible and economically viable, and is, therefore, the option recommended by Terracon to fulfill the initial remedial objective of reducing contaminant mass within the identified CVOC source area. Following mass reduction within the source area via ERD, MNA may then be an appropriate alternative to further reduce groundwater contaminant mass.

Options to address sub-slab vapors are limited by the very shallow groundwater to low-vacuum systems. As such, a soil vacuum extraction system would not be feasible. Therefore, the most feasible and economic method to (temporarily) address the sub-slab VRSL exceedances, potential contribution to negative indoor air quality, and to control potential generation of methane during the in-situ degradation process, Terracon recommends installing a sub-slab depressurization system (SSDS). Assuming there or no subsurface barriers that would impede air flow, Terracon anticipates installing a two-suction point SSDS with one suction point in or near the office area in the east part of Smoke-Out Cleaners and the other on the south wall near the DCM. This should allow control of sub-slab vapors not only within the Smoke-Out Cleaners space, but also in the adjacent Badger Scale lease space to the south. Terracon anticipates that the SSDS would operate for approximately 2 years until the in-situ ERD/ISCR injection has sufficiently degraded contaminants in the source area such that contaminant vapors in the subsurface are reduced to levels below the small commercial sub-slab VRSLs.

3.0 SCOPE OF SERVICES

Terracon proposes the following scope of services to prepare a detailed Remedial Action Plan (RAP), implement the RAP, and bring the site to regulatory closure. A description of the major tasks is presented below.

3.1 Remedial Action Plan

3.1.1 Pre-Remedial Preparation

Following approval and authorization to proceed from the WDNR and client, Terracon will begin the following preparatory tasks:

- Prepare a site-specific Health and Safety Plan (HASP) to be followed during all field activities. The health and safety plan will be prepared in general accordance with 29 CFR 1910.120.
- Terracon will obtain written access permission from the property owner and adjacent occupant Badger Scale prior to work being performed at the site.
- Because groundwater has not been sampled at the site in more than 6 months, Terracon will prepare and submit a Work Plan for Baseline Groundwater Sampling for WDNR approval to obtain current data to serve as the basis for the development of the detailed RAP and injection design, and to serve as a baseline to compare post-injection results.

3.1.2 Baseline Groundwater Sampling

- Following WDNR approval of the work plan, Terracon will conduct the baseline groundwater sampling event to confirm shallow groundwater flow direction and verify groundwater quality. Terracon will measure static groundwater levels prior to purging, and collect groundwater samples from each of the 10 groundwater monitoring wells in the existing monitoring well network, which includes 9 water table observation wells and 1 piezometer. The groundwater samples will be submitted for analysis of VOCs by USEPA Method 8260B. A duplicate sample will also be analyzed for VOCs. Samples from selected observation wells will also be analyzed for methane/ethane/ethene (MEE), total organic carbon (TOC), and dissolved iron.
- During the mobilization for the baseline groundwater sampling, Terracon will also inspect the building and assess the overall condition of the building and sub-slab for the design of the SSDS system, including cracks, sumps, and drains, as well as access for interior injection borings.

3.1.3 Remedial Action Options and Remedial Action Plan Preparation

The results of the baseline groundwater sampling, in conjunction with previous investigation results, will be used to develop and evaluate remedial action options (RAO) in conformance with WAC Chapter NR 722. The selected alternative will be presented in the RAOR/RAP, which will also serve as the remedial action design report. As previously mentioned, injection of a carbon/hydrogen donor for EDR in conjunction with zero valent iron for ISCR has been identified as a technically feasible option to address impacted soil and groundwater in the source area. Following receipt of the baseline groundwater sampling results and further development of the injection design criteria, Terracon will contact injection contractors to obtain cost estimates for the final injection design.

For preliminary design and costing purposes, Terracon provided Regenesis groundwater quality, CVOC contaminant extent, and other data so that they could prepare a conceptual injection design and associated cost estimate. Regenesis recommended injecting the Regenesis products 3DMe®, BDI Plus®, and MicroZVI™ into 10 injection points in the CVOC contaminant source area. The targeted injection area is shown on the attached Exhibit 2. 3DMe® is an engineered electron donor material that is delivered in-situ. BDI Plus® is an enriched natural microbial consortium containing species of Dehalococcoides sp (DHC) that should be applied in conjunction with the 3DMe®. The ability of 3DMe® to create a neutral pH environment makes it ideal for use with BDI Plus®, which is a pH-sensitive bioaugmentation culture.

The application of 3DMe®, which provides an electron donor source, along with the application of BDI Plus®, which introduces a supply of microbes capable of complete reductive dechlorination, and MicroZVI™, is intended to create a favorable strongly reducing environment for anaerobic biodegradation of CVOCs. According to Regenesis, “the molecular structure of the main 3DMe® component allows it to distribute in the subsurface via micellar movement.” Regenesis asserts that this feature will allow for the migration of 3DMe® beyond the initial injection points and, as a result, remediation will occur over a larger area following the initial injection. Ideally, this remediation measure will result in complete reductive dechlorination.

Terracon has had great success at several chlorinated solvent sites in northeastern Wisconsin, including Green Bay, Ashwaubenon, and Appleton, using the combination of 3DMe® and BDI Plus®. We have used MicroZVI™ in conjunction with 3DMe® and BDI Plus® at one other sand site in southern Wisconsin where 3DMe® and BDI Plus® alone were not initially able to completely degrade the CVOCs.

Based on existing information only, injection would be from approximately 2 feet to 8 feet below the floor grade at each of the proposed 10 injection points within the source area. We will work with you to determine economic feasibility of the proposed alternative or possible staged implementation that may be economically feasible.

3.2 Remedial Action Plan Implementation

After the WDNR approval of the RAOR and RAP, Terracon will implement the RAP, which for the purposes of this proposal will be for installation of a SSDS, and soil and groundwater treatment injection as detailed in the following sections. The process of implementation will remain the same regardless of the scale of the injection.

3.2.1 Permits

Prior to injection, a Wisconsin Pollution Discharge Elimination System (WPDES) Permit will be required. In addition, a WAC, Chapter NR 140 exemption to inject materials for which a groundwater quality standard has not been established and a determination by WDNR that WAC, Chapter NR 812.05 (Injection Prohibition) does not apply, will be required. Terracon will prepare the WPDES application and the information necessary for WDNR to issue the NR 140 exemption and determination that NR 812.05 does not apply. The application (and costs included within this proposal) will include a proposed vapor and groundwater monitoring program in conformance with WPDES permits issued for other Terracon injection projects in Wisconsin; however, WDNR may identify additional monitoring requirements specific to this site. If that is the case, the scope of work and costs may need to be modified.

3.2.2 Sub-Slab Depressurization System Installation

Terracon contacted a local radon abatement contractor to obtain preliminary SSDS design and associated cost information. The preliminary design SSDS includes two suction drop points consisting of a 4-inch diameter polyvinyl chloride (PVC) pipe for control over the area of concern. One suction drop point will be placed in or near the office area on the east side of Smoke-Out Cleaners and one will be placed near the south wall by the DCM, which assuming no subsurface obstructions should be able to control sub-slab vapors in the adjacent Badger Scale space. Cracks and penetrations in the floor slab in the area should be sealed. A blower will be placed inline of the exhaust stack Because of the distance to an exterior wall, the exhaust stack will likely go vertically through the roof. A u-tube manometer or similar direct-read vacuum measuring device will be placed on each suction point riser. A sample port will also be placed on the riser pipe to allow air screening for VOCs with a photoionization detector (PID) and measurement of lower explosive limit (LEL) or methane. A system of small-diameter holes spaced throughout the area of concern will also be drilled through the concrete to be used as both vacuum monitoring points to verify the area of vacuum influence and points from which to measure the LEL to evaluate methane conditions. The vacuum monitoring points will be capped when not in use for measuring vacuum or the LEL. If necessary, an additional drop-point(s) could be installed based on vacuum monitoring results.

3.2.3 Injection Field Activities

Terracon will engage Regenesis Remediation Services (RRS, a division of Regenesis) or other remediation contractor as the injection contractor along with a direct-push driller to perform the fieldwork. A source of water to supply approximately 1,200 gallons of water during the injection activities will be necessary. The injection product will be delivered to the site in drums prior to commencement of the injection.

Prior to injection Terracon will complete pre-injection monitoring as required by the WPDES permit and exemptions. The groundwater monitoring performed as described in Section 3.1.2 above, will serve as the pre-injection baseline groundwater monitoring round for comparison with post-injection results. The WPDES permit may also require pre-injection baseline vapor monitoring (% LEL and VOCs via PID) at observation wells within and/or near the injection area, and at other nearby floor slab penetrations. In addition, baseline water levels and groundwater parameters such as pH, dissolved oxygen (DO), oxidation-reduction potential, temperature, and specific conductance will be measured at the primary monitoring point and two subsidiary monitoring points in each injection area prior to commencement of the injection activities.

The injection will be performed by RSS using an injection trailer equipped with pumps, a mixing tank, delivery manifold, injection heads with flow and pressure gauges, safety bypass valve, and a first aid station. Due to the small treatment area, up to three injection locations can be completed simultaneously. A direct-push boring subcontractor will advance injection rods to approximately 8 feet below floor grade at the initial injection point and will leave them in the ground and then move to the second and third injection locations where the rods will also be left in the ground. Two to three injection points will be connected by a header to allow injection at multiple points at a time. The rods will be raised as needed at each injection point until the injection is complete throughout the target interval at each injection point.

During the injection, Terracon will continuously or periodically monitor the water level and DO, ORP, pH, temperature, and specific conductance in observation wells MW-1, MW-3, and MW-4 using a water quality meter. Parameters may also be periodically monitored at additional nearby monitoring points. Changes in these parameters compared to pre-injection readings and water level measurements in these monitoring points will be used as initial evidence of potential successful injection in the targeted areas. Terracon will also periodically perform vapor monitoring during the injection process

Continued performance groundwater monitoring will be required to document the effectiveness of the injection to reduce groundwater contaminant concentrations as outlined in Section 3.5. In accordance with WDNR requirements, a minimum of 8 quarterly groundwater monitoring rounds will performed following the injection. The first post-injection quarterly groundwater sampling event will be performed approximately 1 month after the injection (or as specified in the WPDES

permit) with subsequent events approximately every 90 days thereafter.

3.3 Groundwater and Vacuum Monitoring

3.3.1 Post-Injection Groundwater and Vacuum Monitoring

Terracon will petition the WDNR to perform 1 year of post-injection quarterly groundwater monitoring prior to closure. However, recently the WDNR has been requiring a minimum of 2 years of quarterly monitoring prior to closure. As such, for the purposes of this proposal, Terracon has included the scope and costs for eight post-injection quarterly groundwater monitoring events with the first event performed approximately 1 month after injection or as otherwise specified in the WPDES permit. Subsequent groundwater monitoring events will be performed at approximate 90-day intervals thereafter. The fourth and eighth events will be annual groundwater monitoring events (see below). Static groundwater levels will be measured at each of the monitoring wells in the monitoring well network, prior to purging. Samples will be collected by low-flow purge and sample techniques as much as possible in consideration of the existing small-diameter monitoring wells. Post-injection groundwater sampling rounds one through three and five through seven will include sampling observation wells MW-1, MW-3, and MW-4 for VOCs and a suite of natural attenuation geochemical parameters including TOC, MEE, and dissolved iron.

Concurrent with the groundwater monitoring events, Terracon will also perform at least three vacuum monitoring events that will include measuring the vacuum using a magnhelic gauge at the 10 vacuum monitoring points and at observation wells MW-1, MW-3, and MW-4 to verify the SSDS area of influence.

3.3.2 Annual Groundwater Monitoring

Post-injection groundwater sampling events four and eight will be annual sampling rounds and will include measuring static groundwater levels and collecting samples from the entire monitoring well network including observation wells MW-1 through MW-9 and piezometer PZ-1 for analysis of VOCs. Monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-7 will also be sampled for the suite of natural attenuation geochemical parameters (TOC, MEE, and dissolved iron).

3.3.3 Vapor Monitoring

In conjunction with the last quarterly groundwater monitoring event, Terracon proposes to perform vapor monitoring to evaluate sub-slab vapor and indoor air CVOC concentrations after source area CVOC mass reduction through the injection treatment of groundwater and soil and to evaluate the continuing necessity of the SSDS. Terracon will collect 30-minute grab samples from existing sub-slab vapor monitoring points VP-4, VP-5, VP-7, and VP-8, and collect an 8-hour indoor air sample from within the Smoke-Out office area at the same location as the previous IA-1

sample collected in October 2017, which had PCE concentrations above the VAL. Leak testing will be performed at the sub-slab sampling points.

Samples will be collected into calibrated 6-Liter Summa Canisters and submitted to a Wisconsin-certified lab for analysis of CVOCs by EPA Method TO-15 (short list-PCE and associated CVOCs, only).

3.4 Purge Water Disposal

Contaminated purge water generated during the groundwater sampling events will be placed in labeled, 55-gallon drums for temporary storage onsite. Drums will periodically be removed from the site and properly disposed. Terracon assumes that three drums of purge water will be generated during the activities described in this proposal. It has not been determined whether the drums will require disposal as hazardous materials.

3.5 Reporting

3.5.1 Remedial Action Documentation Report

Following completion of the injection and initial post-injection groundwater monitoring event, a Remedial Action Documentation Report (RADR) will be prepared that will include the following items:

- Documentation of SSDS installation activities;
- Vacuum monitoring results;
- Photographs of the SSDS installation activities;
- Documentation of injection field activities;
- WPDES monitoring results;
- Baseline groundwater monitoring results;
- Initial post-injection groundwater monitoring results;
- Laboratory reports;
- Site plan showing pertinent site features and final injection point locations;
- Injection contractor report; and
- Photographs of the injection activities.

The RADR will be provided to you as a draft for review. The final RADR will be submitted to WDNR to document the remediation activities.

3.5.2 Groundwater Monitoring and Remediation Report

Assuming the WDNR requires eight quarterly groundwater sampling events, A *Groundwater Monitoring and Remediation Report* (GWMR) will be prepared following the last (eighth) post-injection quarterly groundwater sampling event or after an earlier monitoring event if conditions suggest closure is possible. The GWMR will document the monitoring and remediation results, and make recommendations for continued monitoring, modified monitoring, or site closure, as appropriate. Terracon will submit electronic copies (only) of updated summary tables to WDNR following receipt of results from post-injection quarterly monitoring events 2 through 7.

The GWMR will include a groundwater contour map for the two annual groundwater monitoring rounds, trend graphs for selected monitoring points, a groundwater elevation table, a groundwater results table, laboratory analytic test reports, and field sampling sheets.

The report will be provided to you as a draft for review. The final report will be submitted to the WDNR to document the groundwater and remediation results.

3.5.3 Semi-Annual Electronic Reporting

The WDNR requires semi-annual electronic reporting for open cases including this site. Reporting is required in July for the period of January 1 through June 30, and in January for the period of July 1 through December 31. Terracon estimates that six reporting events will be required for the scope of work described in this proposal.

3.6 Regulatory Closure

Terracon anticipates that the site may be ready for closure within 1-2 years following the groundwater amendment injection. Once the WDNR indicates the site is ready for closure, Terracon will prepare a Request for Closure/Geographic Information Systems (GIS) Registry packet that will include Form 4400-202 and supporting documentation, offsite owner notification letters, and maintenance plan, as appropriate. Terracon anticipates that closure will require GIS registry of residual soil and groundwater contamination.

Once the WDNR reviews the closure request and concurs that the site can be closed, the monitoring wells, SSDS, vacuum monitoring points, and sub-slab vapor monitoring points will be abandoned and documentation submitted to WDNR.

4.0 ANTICIPATED SCHEDULE

Terracon proposes to initiate these remedial actions as soon as possible upon client and WDNR authorization. Specifically, the proposed schedule is as follows:

TASK	ANTICPATED SCHEDULE	ANTICIPATED COMPLETION DATE*
Client Authorization/WDNR Approval		July 2018
Preparation and Submittal of Baseline Groundwater Monitoring Work Plan	14 days following client authorization to proceed	July 2018
WDNR Approval of Work Plan/Authorization to Proceed	30 days after receipt	August 2018
Baseline Groundwater Monitoring	14 days following authorization to proceed	September 2018
Preparation of the Remedial Action Options Report (RAOR)/Remedial Action Plan (RAP)	30 days after receipt of groundwater results	October 2018
WDNR Approval of RAOR/RAP	30 days after receipt	November 2018
WPDES Permit Application	30 days after WDNR RAP approval	December 2018
SSDS Installation	30 days after WDNR RAP approval	December 2018
WPDES Permit Issued by WDNR	30 days after receipt	January 2019
Injection Activities	30 days after WPDES Permit issued	February 2019
Initial Post-Injection Groundwater and Vacuum Monitoring Event	30-45 days after injection	March 2019
Preparation of the Remedial Action Documentation Report	45 days after receipt of results from the initial post-injection groundwater monitoring event	May 2019
Quarterly Post-Injection and Annual Groundwater Monitoring Events (7)	Every 90 days	June 2019 September 2019 December 2019 March 2020 June 2020 September 2020 December 2020
Groundwater Monitoring and Remediation Report	45 days after receipt of results from the December 2020 sampling event	February 2021
Preparation of Closure Request		April 2021
WDNR Closure Review	60 days after receipt	June 2021
Well Abandonment	30 days after closure	July 2021
Continued on next page		

TASK	ANTICPATED SCHEDULE	ANTICIPATED COMPLETION DATE*
Semi-Annual Electronic Reporting	Twice per year through closure	January 2019 July 2019 January 2020 July 2020 January 2021 July 2021

*Anticipated completion dates are contingent upon WDNR and client review time, and the schedules of Terracon, laboratory, and subcontractors.

5.0 PROJECT TEAM AND QUALIFICATIONS

Mr. Scott A. Hodgson, P.G., a registered Professional Geologist and hydrogeologist according to NR 712, WAC, will manage your project. Mr. Blaine R. Schroyer, P.E. will provide technical review and input, and serve as the NR 712, WAC, registered Professional Engineer. Mr. David Wolfgram, P.E. is a registered Professional Engineer, and will function as the Remediation Specialist. Field services will be performed by other Terracon personnel.

As required by NR 712, these staff will meet the appropriate professional requirements necessary for each phase of the project. Resumes are attached. We have also attached selected project capsules and other information demonstrating our qualifications.

6.0 COMPENSATION

Consulting services are considered “contract services” by the DERF program. Prior to selecting a consultant, DERF requires you to review a minimum of three bids. The intent of this requirement is to allow you to compare experience, qualifications, costs, or other factors you consider important. The DERF program can reimburse for reasonable services provided by your consultant even when they were not the lowest bidder, provided the costs are reviewed and approved in advance of the work. The intent of this provision is to allow you to select the best consultant based on all factors. Please refer to the attached **Detailed Cost Summary-Remedial Action** for the estimated costs for performing the above-described scope of services. We believe we have estimated the number of hours and units conservatively, so the actual costs may be less than estimated. The costs for performing activities are summarized as follows:

Total Project Cost	$101,637.00
Ineligible WDNR Fees	$1,700.00
Total DERF Eligible Expenses	$99,937.00

Costs for DERF reimbursement claim preparation are not shown on the Detailed Cost Breakdown. Terracon anticipates that a claim would be prepared immediately following the remedial action

fieldwork and then annually thereafter for a total of approximately three claims during the remaining course of the project through closure.

The estimated eligible DERF costs, as summarized on the attached Linking Spreadsheet (LSS) is $99,937, which includes approximately $56,845 in consulting costs (labor and expenses) and $43,092 in subcontractor costs.

Terracon will invoice on a time and materials basis according to the rates identified in the cost summary and attached fee schedule; we will invoice for the actual number of hours and units. Laboratory and other subcontractor invoices will be sent to you for direct payment to avoid a markup assessed by Terracon. Markups are not reimbursable through DERF and our cost summary does not include our markup.

Should additional consulting services be advisable because of the conditions encountered, Terracon will invoice based on the rates listed on the attached fee schedule. Only upon your authorization and WDNR's will Terracon complete additional tasks.

Costs for consulting must be pre-approved by WDNR and our client to be eligible for reimbursement. Terracon understands these requirements and does not perform work without your authorization.

7.0 GENERAL COMMENTS

The analysis and opinions expressed in this proposal are based upon data obtained from the previous assessments and laboratory chemical analyses at the indicated locations or from other information discussed in this proposal. This proposal does not reflect variations in subsurface stratigraphy, hydrogeology, and contaminant distribution that may occur across the site. Actual subsurface conditions may vary and may not become evident without further assessment.

This proposal was prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted environmental engineering practices. No warranties, express or implied are intended or made. In the event any changes in the nature or location of suspected sources of contamination as outlined in this proposal are observed, the conclusions and recommendations contained in this proposal shall not be valid unless these changes are reviewed and the opinions of this proposal are modified or verified in writing by Terracon.

8.0 AUTHORIZATION TO PROCEED

We have attached an Agreement for Services that is incorporated into this proposal. This proposal is valid for 90 days from the date of this proposal. If this proposal meets with your approval, please sign the attached Agreement for Services and return it via email to Scott.Hodgson@terracon.com or mail to our Milwaukee office.

Terracon appreciates the opportunity to submit this proposal and we look forward to working on this project with you. If you have questions or require additional information, please do not hesitate to contact our office.

Sincerely,

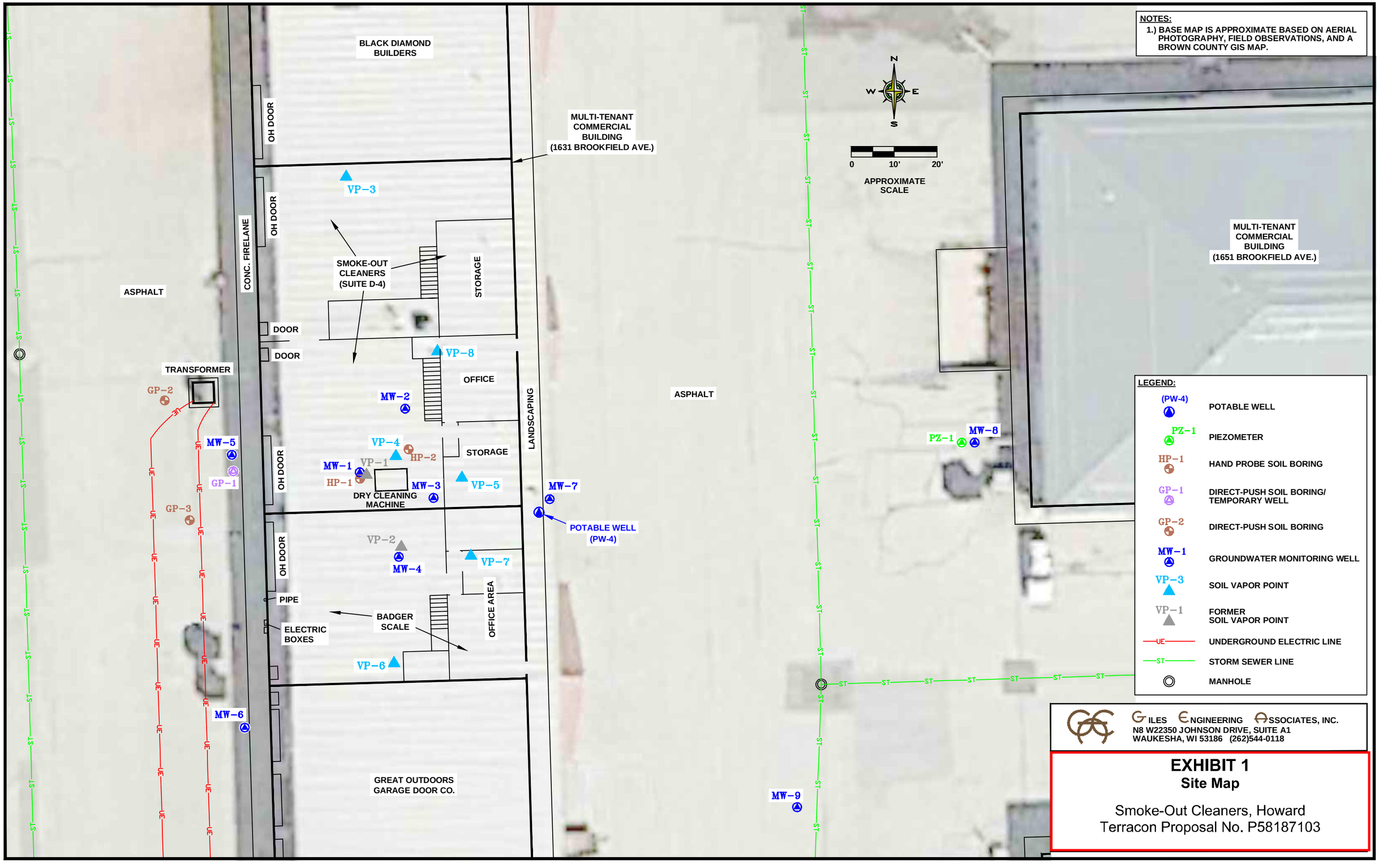
Scott A. Hodgson, P.G.
Senior Project Manager

Timothy P. Welch, P.G.
Manager, Environmental Services

Attachments – Exhibit 1: Site Map
Exhibit 2: Proposed Injection Treatment Area
Cost Summary
Linking Spreadsheet
Fee Schedule
SOQ/Project Capsules
Resumes
Certificate of Insurance
Agreement for Services

SAH/TPW:sah/N:\Proposal Documents\2018\P58187103\P58187103.Smoke Out Cleaners Proposal.docx

Copy to: Mr. Keld Lauridsen-WDNR (Sealed Bid)
File


NOTES:
1.) BASE MAP IS APPROXIMATE BASED ON AERIAL PHOTOGRAPHY, FIELD OBSERVATIONS, AND A BROWN COUNTY GIS MAP.
N
W
E
S
0
10'
20'
APPROXIMATE SCALE
BLACK DIAMOND BUILDERS
MULTI-TENANT COMMERCIAL BUILDING (1631 BROOKFIELD AVE.)
MULTI-TENANT COMMERCIAL BUILDING (1651 BROOKFIELD AVE.)
OH DOOR
OH DOOR
OH DOOR
OH DOOR
CONC. FIRELANE
ASPHALT
ASPHALT
SMOKE-OUT CLEANERS (SUITE D-4)
STORAGE
DOOR
DOOR
TRANSFORMER
OFFICE
LANDSCAPING
STORAGE
DRY CLEANING MACHINE
PIPE
BADGER SCALE
ELECTRIC BOXES
OFFICE AREA
GREAT OUTDOORS GARAGE DOOR CO.
VP-1
VP-2
VP-3
VP-4
VP-5
VP-6
VP-7
VP-8
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
PZ-1
GP-1
GP-2
GP-3
HP-1
HP-2
POTABLE WELL (PW-4)
LEGEND:
(PW-4) POTABLE WELL
PZ-1 PIEZOMETER
HP-1 HAND PROBE SOIL BORING
GP-1 DIRECT-PUSH SOIL BORING/ TEMPORARY WELL
GP-2 DIRECT-PUSH SOIL BORING
MW-1 GROUNDWATER MONITORING WELL
VP-3 SOIL VAPOR POINT
VP-1 FORMER SOIL VAPOR POINT
UE UNDERGROUND ELECTRIC LINE
ST STORM SEWER LINE
MANHOLE
GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON DRIVE, SUITE A1
WAUKESHA, WI 53186 (262)544-0118
EXHIBIT 1
Site Map
Smoke-Out Cleaners, Howard
Terracon Proposal No. P58187103

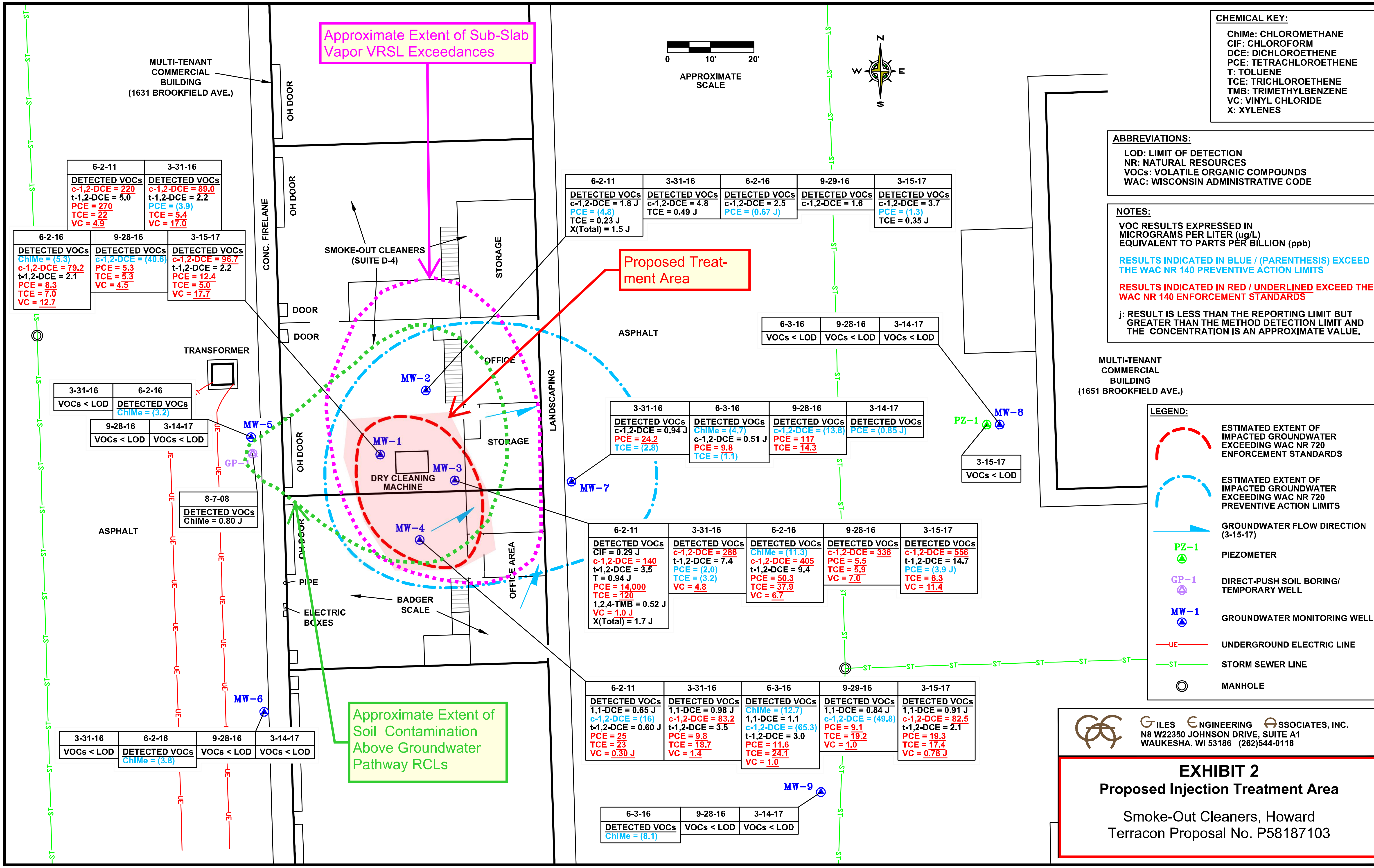


EXHIBIT 2
Proposed Injection Treatment Area

Smoke-Out Cleaners, Howard
Terracon Proposal No. P58187103

Smoke-Out Cleaners--1631 Brookfield Avenue, Unit D-4, Howard, Wisconsin
Proposal #P58187103
BRRTS #02-05-552214

Detailed Cost Summary--Remedial Action

				Terracon									Subcontractors											
																	Number of Analyses							
TASK	Description	Unit	Estimated Quantity	Principal/ Senior Professional $ 167.50	Project Professional IV $ 145.00	Project Professional I $ 105.00	Staff Professional III $ 88.00	Staff Professional II $ 80.00	Drafts Person $ 65.00	Clerical $ 55.00	Expenses and WDNR Fees	Terracon Total	Drilling/Well Abandonment	Injection Contractor	SSDS Installation Contractor	Purge Water Disposal	GW VOC + Dups $ 62.00	Methane, Ethane, Ethene $ 59.00	TOC $ 30.00	Dissolved Fe $ 12.00	Vapor (TO-15 short list) $ 225.00	Laboratory	Subcontractors Total	TOTAL
1	**Remedial Action Plan (RAP)**																							
a	Health and Safety Plan; Access Permission; Work Plan for Baseline Groundwater Monitoring	Each	1		2		8		2	1		$ 1,179.00										$ -	$ -	$ 1,179.00
b	Pre-Injection Baseline Groundwater Monitoring (10 MWs)	Each	1		2			18			$ 569.00	$ 2,299.00					11	5	5	5		$ 1,187.00	$ 1,187.00	$ 3,486.00
c	Development of remedial action options/remedial action plan	Each	1	2	22	5			8	6		$ 4,900.00										$ -	$ -	$ 4,900.00
2	**Implementation of RAP**																							
a	WPDES/Injection Permit	Each	1		2	8			3	2		$ 1,435.00										$ -	$ -	$ 1,435.00
b	SSDS Installation and Initial Vacuum Monitoring	Each	1		2	10					$ 190.00	$ 1,530.00			$3,000.00							$ -	$ 3,000.00	$ 4,530.00
c	Injection Coordination and Field Activities	Each	1		6	20					$ 624.00	$ 3,594.00	$3,700.00	$24,500.00								$ -	$ 28,200.00	$ 31,794.00
3	**Groundwater and SSDS Vacuum Monitoring**																							
a	Post-Injection Performance Monitoring (3 MWs, 6 rounds)	Each	6		2			10			$ 262.00	$ 8,112.00					4	3	3	3		$ 551.00	$ 3,306.00	$ 11,418.00
b	Annual GW Monitoring (10 MWs)	Each	2		1			18			$ 509.00	$ 4,188.00					11	5	5	5		$ 1,187.00	$ 2,374.00	$ 6,562.00
c	Vapor Monitoring (in conjunction with the last groundwater sampling round)	Each	1		1			5			$ 340.00	$ 885.00									5	$ 1,125.00	$ 1,125.00	$ 2,010.00
4	**IDW Disposal**																							
a	Purge Water-(permitting , coordination, and disposal)	Each	1		1		6					$ 673.00				$900.00						$ -	$ 900.00	$ 1,573.00
5	**Project Management/Reporting**																							
a	Project Management	Each	1		30		20			30		$ 7,760.00										$ -	$ -	$ 7,760.00
b	Data Tabulation and Analysis	Each	1		2	6		20				$ 2,520.00										$ -	$ -	$ 2,520.00
c	Remedial Action Documentation Report	Each	1	2	10		30		10	10		$ 5,625.00										$ -	$ -	$ 5,625.00
d	Groundwater Monitoring and Remediation Report (after post-injection monitoring round 8)	Each	1	2	4		23	5	8	5		$ 4,134.00										$ -	$ -	$ 4,134.00
e	Semi-annual Electronic Reporting (6 reports)	Each	6		0.5							$ 435.00										$ -	$ -	$ 435.00
6	**Site Closure**																							
a	Closure Request Form 4400-202 and Documentation	Each	1		10		30		12	6	$ 1,700.00	$ 6,900.00										$ -	$ -	$ 6,900.00
b	Offsite Property Owner Notifications	Each	1		2		6		3	1		$ 1,068.00										$ -	$ -	$ 1,068.00
c	Maintenance Plans: Cover (and VMS??)	Each	1		2		6		2	1		$ 1,003.00										$ -	$ -	$ 1,003.00
d	Monitoring Well Abandonment and Abandonment Form Submittal	Each	1		1		1.5			0.5		$ 304.50	$3,000.00									$ -	$ 3,000.00	$ 3,304.50
	ESTIMATED TOTAL											$58,544.50	$6,700.00	$24,500.00	$3,000.00	$900.00							$ 43,092.00	**$ 101,636.50**

*Expense Breakdown as follows:

Item 1b: PID-2 days; water quality meter (including shipping)-2 days; low-flow pump and electronic water level-2 days; filters-5; drum-1;
Item 2b: PID-1 day; multigas meter-1 day; magnehelic gauge-1 day
Item 2c: PID-2 days; water quality meter (including shipping)-2 days; low-flow pump and electronic water level-2 days
Item 3a: water quality meter (including shipping)-1 day; low-flow pump and electronic water level-1 day; filters-3;
Item 3b: water quality meter (including shipping)-2 days; low-flow pump and electronic water level-2 days; filters-3; drum-1
Item 3c: PID-1 day; multigas meter-1 day; magnehelic gauge-1 day
Item 5a: WDNR closure fee ($1050); GIS soil fee ($300); and GIS groundwater fee ($350)

Expense Unit Costs			
Water Level Indicator	$27/Day	PID	$95/Day
Bailers	$13/Each	Rotary Hammer Drill	$10/Day
Water Quality Meter	$150/Day	Sub-slab Vapor Point	$50/Each
Low-flow Pump	$40/Day	Air Sampling Kit	$150/Day
0.45 um filter	$15/Each	Magnehelic Gauge	$30/Day
Dedicated Purge Pump	$170/Each	Multi-gas Meter	$65/Day
Pump Controller	$50/Day	Drum	$60/Each

APPROVED BY: _____ **Date:** _____
Responsible Party

Site Name: *Smoke-Out Cleaners*
BRRTS #: *02-05-552214*
Type of Action: *Remedial Action*

Dry Cleaner Environmental Response Program

TASKS	BUDGET				INVOICES					
Bid / Budgeted Description	**Remedial Action**	**INSERT**	**Total Approved Budget**	**Previous Claims (If applicable)**	***Provider Name, Invoice #, Billing Date***	***Provider Name, Invoice #, Billing Date***	**INSERT**	**Total Invoiced Costs**	**Budget Remaining Use (-) to indicate cost over-run**	**% Task Complete, Remarks**
Consultant Costs										
HASP, Access, Work Plan, Baseline GW Monitoring, and Preparation of Remedial Action Plan	$ 8,378.00	$ -	$ 8,378.00					$ -	$ 8,378.00	Task % Complete
Permit Applications	$ 1,435.00		$ 1,435.00					$ -	$ 1,435.00	
SSDS Installation, Injection Coordination and Fieldwork	$ 5,124.00		$ 5,124.00					$ -	$ 5,124.00	
Groundwater Sampling-Post-Injection Quarterly Sampling Rounds (6) and Annual Sampling Rounds (2); and SSDS Vacuum Monitoring	$ 13,185.00		$ 13,185.00					$ -	$ 13,185.00	
Purge Water Disposal	$ 673.00		$ 673.00					$ -	$ 673.00	
Project Management, Data Tabulation and Analysis	$ 10,280.00		$ 10,280.00					$ -	$ 10,280.00	
Reporting--RADR, GWMR, and Semi-annual Electronic Reporting	$ 10,194.00		$ 10,194.00					$ -	$ 10,194.00	
Closure Request Preparation and SSDS/Well/Sub-slab Vapor Point Abandonment	$ 7,576.00		$ 7,576.00					$ -	$ 7,576.00	
			$ -					$ -	$ -	
			$ -					$ -	$ -	
			$ -					$ -	$ -	
Consultant Cost Total	*$ 56,845.00*	*$ -*	$ 56,845.00	$ -				*$ -*	*$ 56,845.00*	
Sub-Contractor Costs										
SSDS Contractor	$ 3,000.00	$ -	$ 3,000.00					$ -	$ 3,000.00	
Injection Contractor	$ 24,500.00		$ 24,500.00					$ -	$ 24,500.00	
Injection Driller/Well Abandonment	$ 6,700.00		$ 6,700.00					$ -	$ 6,700.00	
Purge Water Disposal	$ 900.00		$ 900.00					$ -	$ 900.00	
Laboratory	$ 7,992.00		$ 7,992.00					$ -	$ 7,992.00	
			$ -					$ -	$ -	
			$ -					$ -	$ -	
Sub-Contractor Cost Total	*$ 43,092.00*	*$ -*	*$ 43,092.00*	$ -				*$ -*	*$ 43,092.00*	
DERF ELIGIBLE SUB-TOTALS	**$ 99,937.00**	**$ -**	**$ 99,937.00**	**$ -**	**$ -**	**$ -**	**$-**	**$ -**	**$ 99,937.00**	

2018 Terracon Fee Schedule
Smoke Out Cleaners

		DESCRIPTION	TERRACON FEES	
I.	**PERSONNEL**			
A.	Professional Staff			
1		Staff Professional	$65.00	hour
2		Staff Professional I	$75.00	hour
3		Staff Professional II	$80.00	hour
4		Staff Professional III	$88.00	hour
5		Project Professional	$95.00	hour
6		Project Professional I	$105.00	hour
7		Project Professional II	$120.00	hour
8		Project Professional III	$130.00	hour
9		Project Professional IV	$145.00	hour
10		Principal/Senior Professional	$167.50	hour
11		Senior Principal	$185.00	hour
B.	Support Staff			
1		Clerical	$55.00	hour
2		Draftsman	$65.00	hour

Note: Deposition or court testimony at a minimum of 1.75 times regular rate - minimum of $175.00 hour

		EXPENSES/SUPPLIES / EQUIPMENT / SUBCONTRACTED SERVICES*		
1		Transportation (Mileage) (not DERF Eligible)	$0.65	mile
2		Per Diem (not DERF Eligible)	$150.00	Day
3		Bailer (disposable)	$25.00	Each
4		Drum	$60.00	Each
5		Water Quality Meter (includes rental and shipping)	$150.00	Day
6		Peristaltic Pump	$40.00	Day
7		Electronic Water Level Indicator	$27.00	Day
8		Photoionization Detector (PID)	$95.00	Day
9		Multigas Meter (includes rental and shipping)	$65.00	Day
10		Sub-Slab Vapor Point	$45.00	Each
11		Air Sampling Kit	$150.00	Day
12		Magnehelic Gauge	$30.00	Day
13		Other Equipment Rental	@ Cost	
14		Other Materials and Supplies	@ Cost	

* - Terracon will send subcontractor invoices to client for direct payment whenever possible.

ROYAL CLEANERS – Allouez, Wisconsin

Terracon was retained to provide remediation services at this dry cleaning site impacted from historical dry cleaning operations with tetrachloroethene (aka perchloroethylene or PCE) and its degradation products. Terracon developed an initial Remedial Action Plan (RAP) that included excavation of accessible impacted soil, installation of an infiltration gallery in the excavation bottom prior to backfilling, gravity infiltration of a carbon/hydrogen donor amendment for enhanced anaerobic dechlorination treatment of groundwater, and post-injection groundwater monitoring. The RAP was approved by WDNR in July 2009 and implemented in August 2009 (see photo, upper left) with excavation and disposal of approximately 949 tons of impacted soil and gravity infiltration/injection of the amendment in November 2009. Post-injection groundwater monitoring indicated decreasing chlorinated volatile organic compound (CVOC) concentrations in downgradient monitoring well MW-1, but CVOC concentrations, primarily PCE and trichloroethene (TCE), continued to increase in monitoring well MW-2. As a result Terracon proposed to directly inject a carbon/hydrogen donor amendment and an inoculum containing CVOC-degrading bacteria in an area around monitoring well MW-2. Following WDNR approval of the injection program and after obtaining the necessary permits, the injection was performed in November 2012 (see photo at left).

CLIENT NAME

Bay Towel, Inc.

CONTRACT VALUE

$130,000

COMPLETION DATE

2009 through present

RELEVANT FEATURES

- ü Remediation of Chlorinated Solvents in Soil, Groundwater, and Air
- ü Excavation of Impacted Soil
- ü Passive In-situ Treatment of Groundwater Via Infiltration
- ü Secondary In-Situ Treatment of Groundwater Via Direct-Injection in a Targeted Area
- ü On and Offsite Vapor Intrusion Assessment
- ü Installation of a Sub-Slab Depressurization System for Mitigation of Vapors

The results of six post-injection groundwater monitoring events indicated that PCE was reduced from 2,000 micrograms per liter (µg/L) in MW-2 prior to injection to 7.3 µg/L in January 2015. As anticipated, PCE degradation products initially increased with degradation of PCE, and then decreased dramatically by January 2015. The remedial actions successfully addressed the impacted soil and groundwater such that closure would be possible. As part of the closure process, an on- and offsite vapor intrusion assessment was performed, which included installing and sampling three sub-slab vapor monitoring points in the basement of the Royal Cleaners building and one in the basement of the adjacent office building. The results indicated potential vapor intrusion issues in the Royal Cleaners building. Consequently a sub-slab depressurization system (SSDS) was installed in the basement of the building to mitigate the vapors. The SSDS consists of two suction drop points, each with a separate fan, installed through the floor slab. Vacuum monitoring indicates that the SSDS has influence over the area of concern. Following successful remediation of impacted soil and groundwater and mitigation of vapor intrusion issues, a request for regulatory closure of the site is being prepared which will include Geographic Information System (GIS) registry of residual soil and groundwater contamination. Closure is anticipated in fall 2016.

CONFIDENTIAL SITE – Ashwaubenon, Wisconsin

Terracon was retained to initiate site investigation activities after a limited site investigation performed by others documented chlorinated volatile organic compounds (CVOCs) in groundwater within a former auto service center of a big box retail facility. The Wisconsin Administrative Code (WAC), Chapter NR 716 site investigation included advancing direct-push soil borings, collecting soil samples, and converting three of the soil borings into temporary groundwater monitoring wells to collect groundwater samples. Based on the results an area of groundwater contaminated with CVOCs was identified near a former hydraulic lift. A NR 141, WAC-compliant monitoring well (MW-1) was subsequently constructed to confirm the temporary well results. Groundwater monitoring confirmed that vinyl chloride was present above its NR 140 Enforcement Standard at MW-1. Because the property owner, who was different than the building owner, wanted an unrestricted closure, remediation activities were undertaken to reduce the vinyl chloride concentration at MW-1 to below its ES.

CLIENT NAME

Confidential

CONTRACT VALUE

$90,000

COMPLETION DATE

June 2016

RELEVANT FEATURES

- ü Site Investigation and Remediation of Chlorinated Solvent Plume in Groundwater
- ü High Vacuum Extraction
- ü WPDES Permit and Injection Exemption
- ü In-situ Treatment of Groundwater Via Direct-Injection of Carbon/Hydrogen Donor Amendment
- ü Site Closure

To initially address the groundwater plume, the Wisconsin Department of Natural Resources (WDNR) approved a high vacuum extraction program from monitoring well MW-1 using a vacuum truck. Three vacuum extraction events were performed over the course of a year, but CVOC concentrations were not reduced to the extent that unrestricted closure would be possible. As a result, Terracon proposed to inject a carbon/hydrogen donor amendment and inoculum containing CVOC-degrading bacteria in an area around monitoring well MW-1 for enhanced anaerobic dechlorination to treat the groundwater, which was subsequently approved by the WDNR. After obtaining a Wisconsin Pollution Discharge Elimination System (WPDES) permit and an NR 812 exemption to allow injection, the injection program was performed in May 2013 in conformance with the WPDES permit. Nine quarterly post-injection performance groundwater monitoring events indicated that within a month after the injection, vinyl chloride concentrations spiked as anticipated, and then consistently decreased to no-detect during the last three events. The injection successfully reduced the groundwater plume to allow unrestricted site closure, which was granted by WDNR on June 21, 2016.

AHLMAN STEELYARD – Appleton, Wisconsin

Terracon was retained to initiate site investigation activities as a result of observed staining and odors associated with drums of spent chlorinated solvents on the Ahlman Steelyard property. Onsite soil and groundwater investigation identified four source area soil hotpots requiring excavation, including soil with concentrations of tetrachloroethene (PCE) above hazardous criteria, if removed. Offsite soil, groundwater, and vapor intrusion investigation identified an area of PCE-impacted soil on the adjacent property to the west that required excavation, including additional soil above hazardous criteria. In 2008, Terracon implemented a WDNR approved Remedial Action Plan (RAP) for excavation of the four onsite soil hotspots with ex-situ chemical oxidation (onsite) of hazardous soil. The RAP included the following elements—segregation of hazardous soil onto constructed pads rimmed with berms and covered with plastic; pretreatment of soil with slaked lime ($Ca[OH]_3$) to disaggregate the clay soil; treatment of 208 tons of hazardous soils with a chemical oxidant (see photo above left); post-treatment verification sampling; disposal of the treated soil at a Subtitle D landfill; the excavation and landfill disposal of 1,586 tons of non-hazardous chlorinated volatile organic compound (CVOC) impacted soil; application of an amendment for enhanced anaerobic dechlorination treatment of groundwater prior to backfilling and compaction of the excavation (see photo at upper left); and the implementation of a quarterly groundwater monitoring plan to document contaminant attenuation. Subsequent groundwater monitoring through August 2012 indicated a 80% reduction in total VOC and 88% reduction in PCE in the most highly contaminated monitoring well.

CLIENT NAME

R. Sabee Company LLC

CONTRACT VALUE

$700,000

COMPLETION DATE

2004 through present

RELEVANT FEATURES

- Site Investigation of Large Chlorinated Solvent Plume in Soil and Groundwater
- Offsite Vapor Intrusion Assessment
- Hazardous Waste Excavation and Innovative Onsite (Ex-situ) Treatment
- In-situ Treatment of Groundwater Via Infiltration and Direct-Injection
- Utility Corridor Investigation
- First NR 670.079 Hazardous Waste Remediation Variance Granted in Wisconsin
- Less Than $90 per ton for Onsite Treatment of Hazardous Soil/Non-Hazardous Disposal compared to $400-800 per ton for Offsite Treatment/Disposal, a Savings of up to $640,000

In 2012, the approved RAP for the offsite excavation included similar elements but also included approval of an NR 670.079 Hazardous Waste Remediation Variance (HWRV), the first granted in Wisconsin. The HWRV allows onsite treatment of hazardous waste (via specific approved methods) for a period of up to 5 years without obtaining a hazardous waste treatment license. The HWRV required treatment of hazardous soils within roll-off boxes (see photo at right). A total of approximately 51 tons of hazardous soil was treated in the rolloff boxes and disposed at a Subtitle D landfill. Approximately 923 tons of nonhazardous CVOC-impacted soil was excavated and disposed during the 2012 remedial activities.

Additional work included investigation of the utility corridor in the adjacent street as a potential preferential contaminant migration pathway. An innovative investigation technique was employed whereby suction lysimeters were placed through the wall or base of storm sewer manholes into the adjacent backfill to collect groundwater samples directly from the backfill. Results suggested that the sewer was not acting as a preferential migration pathway. Due to persistent and increasing vinyl chloride concentrations in one monitoring well, Terracon performed additional investigation in that area consisting of a grid of direct-push soil borings and temporary monitoring wells, which indicated shallow and deep soil hotspots impacted with high CVOC concentrations and additional shallow. Terracon proposed to excavate soil to a depth of 4.5 feet in five small areas followed by direct

injection of a carbon/hydrogen donor amendment and an inoculum containing CVOC-degrading bacteria in an area around the impacted monitoring well for enhanced anaerobic dechlorination treatment of groundwater. Following WDNR approval of the proposed remedial activities and obtaining the necessary permits, the excavation and injection proceeded in February 2015. The results of six post-injection groundwater monitoring events indicate that PCE was reduced from 1,480 micrograms per liter (µg/L) in the monitoring well prior to the injection to no detect only 3 months later. As anticipated the vinyl chloride concentrations in the monitoring well initially increased following the injection to 1,260 µg/L 6 months after the injection but then decreased by two orders of magnitude to 17 µg/L 3 months later (9 months after the injection). If the post-injection contaminant concentration trends continue, site closure is anticipated in 1-2 years.

CLARE CENTRAL – Milwaukee, Wisconsin

Terracon performed a Limited Site Investigation (LSI) at the Clare Central apartment complex property to evaluate recognized environmental conditions (RECs) identified in a Phase I ESA performed by others in 2006. An automatic control manufacturing facility, a wire and iron works factory, and an automotive service facility were historically located on the subject property. The site is developed on an irregularly-shaped parcel, which contains a paved parking lot, and two multi-story 8-unit apartment buildings (slab on grade) located in a residential area in the City of Milwaukee. Chlorinated volatile organic compounds (CVOCs) were identified in soil and groundwater beneath the site during the direct-push LSI, which included the installation of temporary groundwater monitoring wells to evaluate the extent and magnitude of impacts, prior to the implementation of a Wisconsin Administrative Code (WAC), NR 716 compliant site investigation. The site investigation included obtaining access permits from the City of Milwaukee, installation of WAC, NR 141 compliant groundwater monitoring wells, and a vapor intrusion (VI) assessment of each apartment complex. The site investigation results indicated that the primary contaminant of concern is trichloroethylene (TCE). Approximately 3,200 tons of CVOC affected soils are present at concentrations above (potentially) hazardous waste levels in soil adjacent to the complexes. TCE was also detected in groundwater at concentrations above its WAC, NR 140 Enforcement Standard.

CLIENT NAME

Telos, Inc.

CONTRACT VALUE

$80,000

COMPLETION DATE

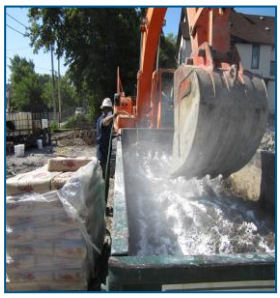
Ongoing

RELEVANT FEATURES

- ✓ Phase II Environmental Site Assessment
- ✓ NR 716 site investigation
- ✓ Off-site access agreements
- ✓ Vapor Intrusion Assessment
- ✓ Interim Action Vapor Mitigation
- ✓ Remedial Action Option Analysis
- ✓ VPLE Site Investigation

The VI assessment consisted of the installation of sub-slab vapor monitoring points and collection of ambient air samples in each complex over a 24-hour period. TCE and other CVOCs were reported at concentrations above vapor action levels; therefore, an interim remedial action consisting of the installation of sub-slab depressurization systems was implemented for the health and safety of the building residents. Terracon developed and presented several remedial action options to the WDNR. Based on the projected expenses associated with remediation, Terracon prepared an application for a $300,000 WDNR Ready for Reuse Hazardous Substance Loan and Grant. The Redevelopment Authority of the City of Milwaukee (RACM) owns a portion of the alley adjacent to the apartment complexes, and worked with the WDNR to obtain additional grant funds to assist in site investigation completion for the non-profit business.

ALTERRA-BAYVIEW COFFEE ROASTERS & BAKERY – Milwaukee, Wisconsin



Terracon reviewed Phase I and Phase II ESA reports prepared by others to evaluate remedial action options relative to petroleum-affected soil, and chlorinated volatile organic compound (CVOC) affected soil and groundwater at the former Maritime Savings property. Development plans for the property included demolition of the buildings to accommodate the new structure. Prior to demolition, Terracon assisted the client in obtaining a Wisconsin Department of Natural Resources (WDNR) Ready for Reuse Hazardous Substance Grant for remediation, and performed a geotechnical exploration. Subsequent to demolition, Terracon implemented a WDNR-approved Remedial Action Plan (RAP), which included the following components: direct-push soil borings drilled in a grid array to delineate the extent of CVOC-impacted soil that required handling as hazardous waste; excavation and on-site pre-treatment of 150 tons of hazardous soils with a chemical oxidant in roll-off boxes so they could be transported to a Subtitle D landfill for disposal; the excavation and landfill disposal of 2,000 tons of non-hazardous CVOC affected soil; the installation of an underground infiltration gallery for groundwater amendment distribution concurrent with backfilling and compaction of the excavation; off-site vapor intrusion assessment of several residences, and the implementation of a quarterly groundwater sampling and analyses plan to document contaminant attenuation. During footing excavation for the new structure, several unknown petroleum USTs were encountered, and Dakota Intertek (also on our team for this project) was retained to remove the USTs. Based upon two quarters of groundwater attenuation monitoring performed subsequent to excavation, the CVOC dissolved phase groundwater contaminant plume is substantially reduced, with concentrations of tetrachloroethylene in the former source zone reduced by 80%. The case file related to the petroleum release was closed by the DSPS and it is anticipated that the Wisconsin Environmental Repair Program (ERP) case file related to the CVOC release will be closed utilizing the institutional and engineering controls of the Geographic Information System (GIS) registry and Cap Maintenance Plan, respectively.

CLIENT NAME

Lap Dog, LLC

CONTRACT VALUE

$250,000

COMPLETION DATE

2010-2013

RELEVANT FEATURES

- ✓ Innovative Remedial Action Option Evaluation
- ✓ Remedial Action Plan Implementation
- ✓ Geotechnical exploration
- ✓ Ready for Reuse grant-writing assistance
- ✓ Construction Materials Consultation and Testing
- ✓ Vapor Intrusion Assessment
- ✓ UST excavation and disposal

Scott A. Hodgson, P.G.
SENIOR PROJECT MANAGER

PROFESSIONAL EXPERIENCE

Mr. Hodgson is a senior project manager in Terracon's Franklin, Wisconsin office, with more than 24 years of experience in geologic interpretation, hydrogeology, and environmental cleanups. Mr. Hodgson is well versed in Wisconsin regulatory requirements and is well-known within the Wisconsin Department of Natural Resources (WDNR). He presented a case study for innovative cleanup to the WDNR Bureau of Remediation & Redevelopment annual statewide training meeting on November 7, 2012.

Mr. Hodgson's experience includes project scope development, cost estimating, supervision and training of personnel, technical data analysis, technical report preparation and review, and client management.

Mr. Hodgson has performed EPA Brownfields assessments, numerous Phase II limited site investigation as well as full-scale site investigations within complex geologic regimes; performed vapor intrusion assessment and mitigation, performed groundwater pump & treat, soil vapor extraction, and air sparge pilot tests; designed groundwater and soil remediation systems including plan and specifications preparation; performed system construction oversight and QA/QC; and operated, monitored, and evaluated remediation system operation. His experiences have included investigation and remediation of sites contaminated with agricultural chemicals, metals, petroleum hydrocarbons, chlorinated solvents, and semi-volatile organic compounds, including hazardous waste remediation.

EDUCATION

Master of Science, Geology, New Mexicao State University, 1991

Bachelor of Science, Geology and Geography, University of Wisconsin-Platteville, 1986

REGISTRATIONS

Professional Geolpist: Wisconsin, No. PG-1229

CERTIFICATIONS

40-Hour HAZWOPER

WORK HISTORY

Terracon Consultants, Inc., Senior Project Manager, 2011-Present; Project Geologist, 2007-2011

Miller Engineers & Scientists, Project Engineer/Scientist, 2005-2007; Staff Engineer/Scientist, 1995-2005; Junior Engineer/Scientist, 1992-1995

PRESENTATIONS/PUBLISHED ARTICLES

See Endnote[1]

.

* *Work performed prior to joining Terracon.*

PROJECT EXPERIENCE

AGRICULTURAL

Agricultural Facility – Fond du Lac County, Wisconsin

Project manager for site investigation of fertilizer/pesticide contamination as well as buried drums of a banned herbicide. Investigation techniques included geophysics to define target areas followed by carefully excavating test pits utilizing a mini-back hoe and hand digging. Subsequent remediation included removal and disposal of liquids, contaminated drum remnants and debris, and impacted soil as separate hazardous waste streams. Additional non-hazardous impacted soil was excavated following the hazardous waste removal during several remedial action events. Groundwater investion is ongoing.

Professional Services Completed: 2005-present

Terracon Fee: $400,000

FEDERAL/BROWNFIELDS REDEVELOPMENT

Ripon Brownfields – Ripon, Wisconsin

Project manager for community-wide assessments of brownfield properties including developing a brownfields property inventory, providing community outreach, and preparing a Multi-site Quality Assurance Project Plan for the purpose of performing Phase I and II Environmental Site Assessments (ESA) at numerous brownfield sites throughout Ripon to spur redevelopment. A total of nine Phase I and four Phase II ESA's were performed.

Professional Services Completed: 2011

Terracon Fee: $200,000

SCOTT A. HODGSON, P.G. (continued)

STATE GOVERNMENT-ENVIRONMENTAL

N.W. Mauthe Superfund Site – Appleton, Wisconsin

Project manager for this continuing Wisconsin Department of Natural Resources state-lead site for operation and maintenance of a remediation system. Activities include operation, maintenance, and monitoring of existing groundwater remediation systems for hexavalent chromium and volatile organic compounds, and groundwater monitoring. Work included evaluation of the systems and improvements to increase efficiency, improve safety, and reduce costs. Additional work has included chromium and hexavalent chromium soil sampling in residential areas to further define the distribution of remaining hexavalent chromium contamination

Professional Services Completed: 2011-present
Terracon Fee: $180,000

Former Quicfrez Complex – Fond du Lac, Wisconsin*

Lead investigator and project manager for characterization and remediation of 4.5 acre high priority old industrial site with metals, semi-volatile, and chlorinated solvent contamination. Site investigation included sediment and surface water sampling, soil borings, and construction of multiple 3-well monitoring well nests. High concentrations of chlorinated solvent contamination were documented in soil and groundwater to depths of 45 feet adjacent to, and under a river. Innovative in-situ remediation of the chlorinated solvent contamination involved the second large-scale application of the Lasagna™ electro-osmosis/treatment wall technology in the US. Implementation of the technology required design and construction of a bulkhead into the river to allow treatment of contaminated soil beneath the river. Work included system construction oversight of the $1.2 million dollar system, including construction observation, preparation and administration of contract documents, process contractor payment requests, conduct construction meetings, and review contractor submittals. Work also included development of specialized techniques to sample soil and groundwater at temperatures of 180ºF, and specialized system and remediation monitoring plans to ensure public safety (such as stray voltage monitoring), protect nearby utilities, protect the river environment, and collect data to assess the remediation.

Professional Services Completed: 2007
Project Cost: >$1,500,000

Ripon Wells 6 & 9 – Ripon, Wisconsin*

Project manager and lead author for a city-wide Phase I and limited Phase II Environmental Assessment performed for the Wisconsin Department of Natural Resources to identify potential source(s) for trichloroethene contamination in City of Ripon Municipal Wells No. 6 and No. 9. The Phase I ESA identified a number of potential sources that were previously unknown. Phase II activities involved identifying and sampling existing monitoring wells, private potable wells, and surface water localities throughout the city.

Professional Services Completed: 2006
Project Cost: $200,000

Lakewood Pelky DX – Lakewood, Wisconsin*

Project manager and lead investigator for a diving trichloroethene plume in a complex geologic setting for the Wisconsin Department of Natural Resources. The plume was identified at depths greater than 150 feet, covered an area of over ½ square mile, and contaminated more than seven private wells. The investigation successfully identified the hydrogeologic characteristics responsible for plume migration and identified several additional contaminated or at-risk private potable wells.

Professional Services Completed: 2005
Project Cost: $185,000

UTILITIES

Electric Company – Appleton, Wisconsin*

Project manager for Quality Assurance testing for in-situ stabilization at a former manufactured gas plant site. Responsible for overseeing sample collection and preparation, coordination and communication with the consultant and contractor, and timely reporting of the results.

Professional Services Completed: 2005
Project Cost: $50,000

INDUSTRIAL

Ahlman Steelyard – Appleton, Wisconsin

Coordinated and managed multiple investigation phases to determine the extent of soil and groundwater contamination impacted by industrial solvents on and off site. Investigation also included vapor intrusion assessment of adjacent structures. Investigation of underground utility lines in the adjacent street as potential contaminant migration pathways utilized lysimeters installed through the sidewalls of sewer manholes. Initial remediation included onsite hotspot source removal and injection of a carbon/hydrogen source to treat groundwater. Additional hotspot required preparation of an NR 670.079 Remediation Variance to allow treatment of hazardous soil in roll-off boxes via chemical oxidation onsite. WDNR approved the Variance, which was the first in Wisconsin to receive such approval. Additional remediation measures included targeted injection for shallow and deep groundwater remediation.

Professional Services Completed: 2004-present

Terracon Fee: $730,000

Weathershield Facility – Ladysmith, Wisconsin

Project manager for site investigation (SI) to determine the magnitude and extent of pentachlorophenol (PCP) associated with a dip tank for wood treatment and associated volatile organic compounds (VOCs) in soil and groundwater at their northern Wisconsin facility where they manufactured windows and doors. The SI included performing interior and exterior soil borings and constructing groundwater monitoring wells, but was complicated by commingling with an area-wide "phantom" tetrachloroethene (PCE) plume investigated by the Wisconsin Department of Natural Resources (WDNR) in conjunction with the US Environmental Protection Agency.

Professional Services Completed: 2011

Terracon Fee: $25,000

COMMERCIAL

Multiple Dry Cleaner Investigations and Remediations – Various, Wisconsin

Coordinated and managed investigation and remediation of numerous drycleaner sites throughout northeast Wisconsin. Work included investigation of soil and groundwater using a variety of techniques. Vapor intrusion assessment was performed, which included construction and sampling of permanent shallow soil-gas monitoring points and sub-slab monitoring points, indoor air sampling, and outdoor ambient air sampling. Remediation included installation and operation of vapor mitigation systems, contaminated soil excavation, in-situ treatment of groundwater by injection of a carbon/hydrogen source, and monitored natural attenuation.

Professional Services Completed: 2007-present

Terracon Fee: $500,000 (aggregate)

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[1]Hodgson, Scott A., . "*InnovativeRemediation (Chemical Oxidation and Enhanced Anaerobic Dechlorination) Case Study—Ahlman Steelyard, Appleton, Wisconsin*" (Presentation), presented at the Wisconsin Department of Natural Resources Bureau of Remediation and Redevelopment Statewide Training Conference, Waupaca, Wisconsin, November 7, 2012.

Hodgson, S.A., *Structural Geology and Laramide Tectonics of the Little Hatchet Mountains, Southwestern New Mexico* (New Mexico Geological Society Guidebook, 51st Field Conference, Southwest Passage—A Trip through the Phanerozoic, 2000), pp. 109-116.

Blaine R. Schroyer, P.E.
PRINCIPAL/OFFICE MANAGER

PROFESSIONAL EXPERIENCE
Blaine is responsible for all aspects of operations in the Milwaukee, Wisconsin office. This includes technical oversight, client management, business development, quality review, and mentoring staff. In addition, Blaine manages national accounts involving work performed by other offices nationwide.

Blaine's career started over 25 years ago, specializing in investigation and remediation of agricultural pesticides and fertilizers. Since then, Blaine has assisted clients with a wide range of environmental needs. He has managed projects involving environmental compliance, due diligence, spill response, air quality, solid waste, and regulatory-driven site investigation and remediation of soil, groundwater, and soil vapor. In addition to understanding pesticides and fertilizers, Blaine has experience with asbestos, lead-based paint, mold, PCBs, solvents, petroleum products, and metals. Over the years, Blaine has managed projects involving dozens of staff working together on projects in multiple states. However, Blaine's expertise is most prevalent in Wisconsin where he has[i] spent the majority of his career.

PROJECT EXPERIENCE
BANKING/DUE DILIGENCE
Multiple Clients – Multiple Locations, Wisconsin
As the due diligence authorized project reviewer (quality control) in Milwaukee, Blaine has directed performance and provided quality review for Transaction Screens, Phase I ESAs, and Limited Site Investigations for several hundreds of sites across Wisconsin. As a result of the quality of the due diligence group in Milwaukee, multiple lenders have turned to Terracon for support. Some of the larger banking clients include: JPMorgan Chase, FifthThird Bank, and BMO Harris Bank.
Professional Services Completed: Ongoing
Terracon Fees: >$1 million

AGRICULTURAL
Agriliance/United Cooperative – Johnson Creek, Wisconsin
Project manager for environmental site investigation and remediation at a large agricultural chemical facility. As a result of historical operations, significant quantities of herbicides and fertilizers were released to the subsurface at the facility. A large groundwater plume was identified. In response, the onsite potable well was abandoned and replaced and a groundwater extraction system with carbon absorption treatment was installed. Groundwater treatment and monitoring is ongoing due to the presence of down-gradient private and municipal water supply wells. Remediation efforts also involved soil excavation and landspreading.
Professional Services Completed: Ongoing
Project Cost: $600,000
Terracon Fee: $250,000

GOVERNMENT
Wisconsin Chromium – Kaukauna, Wisconsin
Performed a treatment system evaluation for an existing carbon absorption/ion exchange groundwater treatment system designed to remove solvents and chromium. Proposed improvements enhanced system performance dramatically, decreasing the required life of the system. The property is owned by Outagamie County and funded/managed by the Wisconsin Department of Natural Resources.
Professional Services Completed: 2002-2005 and 2012-2015
Project Cost: $1.6 million
Terracon Fee: $245,000

EDUCATION
Master of Science, Civil Engineering, University of Minnesota, 1999

Bachelor of Science, Civil and Environmental Engineering, University of Wisconsin, 1991

REGISTRATIONS
Professional Engineer: Wisconsin, No. E31505; Minnesota, No. 24803

PECFA Consultant, No. 253922

AFFILIATIONS
American Society of Civil Engineers

WORK HISTORY
Terracon Consultants, Inc., Terracon, Office Manager, 1997-present; Environmental Engineer, 1994-1997; Environmental Engineer, 1992

USGS/University of Minnesota, Hydrologist/Research Assistant, 1992-1994

Bureau of Land Management, Land Surveyor, 1990-1991

PRESENTATIONS/PUBLISHED ARTICLES
See Endnote.[i]

UTILITIES

Wisconsin Public Service – Green Bay, Wisconsin

Managed site visits, evaluated compliance status, and prepared spill prevention, control and countermeasures (SPCC) plans for substations, hydroelectric generation facilities, coal-fired plants, natural gas plants, diesel plants, a nuclear plant, warehouses, and operations facilities. Over 200 SPCC plans were generated.

Professional Services Completed: 2002

Terracon Fee: $135,000

SOLID WASTE

Herbrand Sand and Gravel Pit – Middleton, Wisconsin

Prepared an investigative work plan to determine whether or not a former demolition landfill which had accepted paint solvents and medical waste had impacted groundwater to the extent that could necessitate active remediation. After determining the groundwater was only minimally impacted, we designed the landfill cap and implemented capping and closure of the landfill. The cap plan was coordinated with plans for surrounding development so the landfill could be repurposed as a park.

Professional Services Completed: 2014

Construction Completed: 2013

Construction Cost: $1.4 million

Terracon Fee: $250,000

ENERGY

Explorer Pipeline – East Caddo Creek, Texas

Researched and developed a stream bed sediment sampling plan for a large petroleum spill. More than 500,000 gallons of unleaded gasoline containing nine percent methyl tert-butyl ether (MTBE) was released to an intermittent stream bed extending approximately 28 miles to a water supply reservoir. Assessment of the stream bed sediments for the entire 28 miles was complete within seven days of initiation. Sediment sampling was repeated on affected reaches two more times. A cross-sectional sampling plan was implemented, perennial pool sampling was conducted, and monitoring wells were installed to assess the stream/groundwater interactions. The data was utilized to evaluate appropriate remedial actions for the stream bed sediments. As a result of the data obtained, active cleanup of the stream bed sediments was avoided.

Professional Services Completed: 2003

Terracon Fee: $200,000

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[i] Blaine R. Schroyer, P.E. M.ASCE, *Talk to a Local*, February 2014, CE News, pp. 27-28.

Engineers Remediate Land Polluted with Fertilizer, Pesticide – by Brett Hanson. Civil Engineering, Vol. 76, No. 3, March 2006. Article highlights an environmental project and innovative solution designed and permitted by Mr. Schroyer.

Schroyer, Blaine R., *Remediation of Chlorinated Pesticides using Thermal Desorption* (Presentation), presented at the State Approaches to Agricultural Cleanups, Minnesota Department of Agriculture Conference in St. Paul, Minnesota, February 18-19, 2000.

Schroyer, Blaine R., G.N. Delin, M.K. Landon, K.J. Nelson, R.B. Wanty, R.W. Healy, H.W. Olsen, J.K. Bohlke and P.D. Capel, *Hydrogeologic and Water Quality Data Used to Evaluate the Effects of Focused Recharge on Groundwater Quality Near Princeton, Minnesota*, 1991-1995. U.S. Geological Survey, Open file report 97-21.

Schroyer, Blaine R. and Paul D. Capel, *A High-Performance Liquid Chromotography-Based Screening Method for the Analysis of Atrazine, Alachlor, and Ten of Their Transformation Products* (Proceedings of American Chemical Society, 1996), pp. 34-42.

Schroyer, Blaine R., Paul D. Capel, Lin Ma, Steven J. Larson and Therese A. Gilchrist, *Analysis and Detection of the New Corn Herbicide Acetochlor in River Water and Rain*. Environmental Science and Technology, Vol. 29, No. 6, 1995.

Timothy P. Welch, P.G.

ENVIRONMENTAL DEPARTMENT MANAGER

PROFESSIONAL EXPERIENCE

Mr. Welch is a professional geologist with 25 years diverse experience in project management, environmental due diligence, site investigation and remediation of environmental projects. As Environmental Department Manager for Terracon's Milwaukee, Wisconsin office, his responsibilities include administering staff and scheduling projects covering the range of environmental services. Mr. Welch provides client development, project management, technical input, project cost management, and report review services. His technical expertise includes conducting subsurface investigations, providing hydrogeological oversight and support, preparing remedial action plans, and developing and implementing innovative remediation strategies. His primary role at Terracon is to identify client objectives; map project strategy; and develop a project scope, schedule and budget that meets client needs and, where applicable, satisfies regulatory agency requirements.

PROJECT EXPERIENCE

Village of Whitefish Bay – Whitefish Bay, Wisconsin

Managed the subsurface investigation and feasibility study of the Village's abandoned solid and hazardous waste landfill that contained chlorinated, petroleum hydrocarbon and metals contamination. Performed vapor intrusion assessment of surrounding residences and school.

Alterra Coffee Roasters – Milwaukee, Wisconsin

Developed and implemented a Remedial Action Plan (RAP) for hazardous chlorinated hydrocarbon impacted soils and groundwater, prior to construction. The remedial action consisted of the pre-treatment of soils in roll-offs with a chemical oxidant to acceptable Subtitle D landfill criteria, excavation of non-hazardous soils to below site-specific direct-contact standards, installation of a subsurface amendment distribution system, installation of sub-slab vapor monitoring points in a residence, performance of vapor and indoor air quality monitoring, and implementation of a groundwater sampling and analysis plan to document contaminant plume stability and attenuation.

Sears Holding Company – Sheboygan, Wisconsin

Performed a site investigation, developed and implemented a RAP for chlorinated and petroleum impacted soils and groundwater remediation, and prepared plans and specifications for building demolition at a former K-Mart facility. In preparation of the RAP, numerous stakeholders were involved in negotiations, including the regulator, the developer and their consultants, proposed tenants, their consultants and residents. The RAP included in-situ remediation, utilizing zero-valent iron and emulsified vegetable oil, to enhance anaerobic bioremediation of the down gradient dissolved phase chlorinated plume toward a subdivision. Implemented a groundwater sampling and analysis plan to document contaminant plume stability and attenuation.

Former Camelot Cleaners – Wausau, Wisconsin

Developed a RAP, and prepared plans and specifications for the installation of a soil vapor extraction system to address chlorinated impacted soils. The RAP included vapor intrusion assessment, and the installation of off-site groundwater monitoring wells to delineate contaminant plume extent and document contaminant attenuation.

Redevelopment Authority – Milwaukee, Wisconsin

Provided fiscal and technical program management for the Redevelopment Authority City of Milwaukee contract of Phase II Environmental Site Assessments, Subsurface Investigations, and Remediation of Brownfield projects ranging in contract value from $5,000-$200,000.

EDUCATION

Hydrogeology, Wright State University, Dayton, Ohio 1993-1994

Bachelor of Science, Geological Sciences, University of Wisconsin-Milwaukee, 1985

REGISTRATIONS

Professional Geologist: Wisconsin, No. 558-013

CERTIFICATIONS

40-Hour Health and Safety

8 Hour OSHA refresher training

PECFA Consultant

FRA Railroad Training and ERAIL Safe Certified

AFFILIATIONS

American Association of Petroleum Geologists

National Ground Water Association

Wisconsin Ground Water Association

WORK HISTORY

Terracon Consultants, Inc., Environmental Department Manager, 2013-Present

Terracon Consultants, Inc., Senior Project Manager, 2010-2013

Shaw Environmental & Infrastructure, Inc., Program Manager, 2004-2010;

Giles Engineering Associates, Inc., Project Hydrogeologist/Manager, 2002-2004

Sigma Environmental Services, Inc., Project Hydrogeologist/Manager, 1989-2002

H.G. Weber – Kiel, Wisconsin
Managed the Voluntary Party Liability Exemption site investigation at the 50,000-square foot manufacturing facility. Commingled contaminant plumes were delineated beneath the building prompting a vapor intrusion assessment. The WDNR issued a Certificate of Completion, and the $200,000 project was completed within budget and ahead of schedule.

Redi-Quick Cleaners – West Allis, Wisconsin
Managed the subsurface investigation and subsequently developed a RAP for vapor intrusion mitigation and in-situ amendment injection for chlorinated compound-impacted soils and groundwater. Installed sub-slab vapor points in three residences, performed vapor and indoor air quality monitoring of residences, completed an in-situ amendment injection, installed a vapor mitigation system, and prepared and implemented a groundwater sampling and analysis plan to document remediation effectiveness.

Caleffi-North America – Milwaukee, Wisconsin
Performed a methane study and designed a vapor mitigation system for the 35,000-square foot building in the Milwaukee River Valley. Evaluated vapor mitigation alternatives, designed, and prepared technical drawings for the installation of a passive subsurface venting system network covered by a cold-sprayed, rubberized asphaltic geomembrane.

King Drive Commons – Milwaukee, Wisconsin
Prepared and implemented a Remedial Action Plan for the City of Milwaukee-EPA Brownfield project. Characterized petroleum and chlorinated hydrocarbon contaminated soils as hazardous and non-hazardous waste streams, documented source soil excavation, prepared a soil management plan for construction, and installed a passive vapor mitigation system concurrent with construction.

Wendy's Restaurant – Chicago, Illinois
Conducted a subsurface investigation/geotechnical exploration with subsequent remedial action implementation of a vapor mitigation system to meet an aggressive construction schedule.

Coachella Elementary School District – Coachella, California
Performed a Preliminary Endangerment Assessment for the proposed West Coachella Elementary School. The risk assessment included the performance of risk/hazard calculations for chemicals of potential concern including metals, pesticides, and dioxins.

Condon Companies – Markesan, Wisconsin
Conducted a subsurface investigation and subsequent remedial action of two petroleum bulk distributors adjacent to the Del Monte Foods high capacity production well. Negotiated the first cost partitioning strategy with the Wisconsin Department of Commerce, Condon Companies, and Grand River Cooperative. Performed a pump test on the Del Monte well during production, excavated and landfilled approximately 8,800 tons of petroleum-impacted soils at three former bulk petroleum storage facilities, and implemented a groundwater sampling and analysis plan to document contaminant attenuation and dissolved phase plume stability. Performed a pump test on the Del Monte Foods high-capacity production well that pumps 2 to 2.5 million gallons of water per day during production season, and is located 200 feet down-gradient of the contaminant source. The pump test was performed to evaluate the vertical flow of groundwater relative to the dissolved phase contaminant plume during Del Monte's canning season.

Milwaukee Metropolitan Sewerage District – Milwaukee, Wisconsin
Performed rock core logging, formation permeability testing, and curtain grouting on the MMSD deep tunnel project.

CERTIFICATE OF LIABILITY INSURANCE

1/1/2019

DATE (MM/DD/YYYY) 5/9/2018

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 have ADDITIONAL INSURED provisions or 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 Lockton Companies 444 W. 47th Street, Suite 900 Kansas City MO 64112-1906 (816) 960-9000	**CONTACT NAME:** **PHONE (A/C, No, Ext):** **FAX (A/C, No):** **E-MAIL ADDRESS:**
	INSURER(S) AFFORDING COVERAGE — **NAIC #**
	INSURER A : Lexington Insurance Company — 19437
INSURED 1312891 TERRACON CONSULTANTS, INC. 10841 S. RIDGEVIEW ROAD OLATHE KS 66061	**INSURER B :** Travelers Property Casualty Co of America — 25674
	INSURER C : The Travelers Indemnity Company — 25658
	INSURER D :
	INSURER E :
	INSURER F :

COVERAGES MAIN **CERTIFICATE NUMBER:** 13881552 **REVISION NUMBER:** XXXXXXX

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 INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
B	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE X OCCUR X CONTRACTUAL LIAB X XCU COVERAGE GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC OTHER:	N	N	TC2J-GLSA-1118L293	1/1/2018	1/1/2019	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 $
B	**AUTOMOBILE LIABILITY** X ANY AUTO OWNED AUTOS ONLY HIRED AUTOS ONLY SCHEDULED AUTOS NON-OWNED AUTOS ONLY	N	N	TC2J-CAP-131J3858	1/1/2018	1/1/2019	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) 	$ 2,000,000 $ XXXXXXX $ XXXXXXX $ XXXXXXX $ XXXXXXX
B B	X **UMBRELLA LIAB** X OCCUR **EXCESS LIAB** CLAIMS-MADE DED RETENTION $	N	N	ZUP-91M46583 (EXCLUDES PROF. LIAB.)	1/1/2018	1/1/2019	EACH OCCURRENCE AGGREGATE 	$ 5,000,000 $ 5,000,000 $ XXXXXXX
B C C	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N: N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	N	TC2JUB131J374218 (AOS) TRKUB131J384618 (AZ,MA,WI) TC2JUB131J374218 (CA)	1/1/2018 1/1/2018 1/1/2019	1/1/2019 1/1/2019 1/1/2019	X PER STATUTE 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
A	PROFESSIONAL LIABILITY	N	N	26030216	1/1/2018	1/1/2019	$1,000,000 EACH CLAIM & $1,000,000 ANNUAL AGGREGATE	

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

THIS CERTIFICATE SUPERSEDES ALL PREVIOUSLY ISSUED CERTIFICATES FOR THIS HOLDER, APPLICABLE TO THE CARRIERS LISTED AND THE POLICY TERM(S) REFERENCED.

PROOF OF COVERAGE. THE UMBRELLA LIABILITY IS FOLLOW FORM OVER THE GENERAL LIABILITY, AUTO LIABILITY, AND EMPLOYER'S LIABILITY PER THE POLICY TERMS, CONDITIONS, AND EXCLUSIONS.

CERTIFICATE HOLDER

13881552
SPECIMEN

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

Terracon

AGREEMENT FOR SERVICES

This **AGREEMENT** is between Smoke-Out Cleaners Ltd ("Client") and Terracon Consultants, Inc. ("Consultant") for Services to be provided by Consultant for Client on the Smoke-Out Cleaners - Howard project ("Project), as described in the Project Information section of Consultant's Proposal dated 6/21/2018 ("Proposal") unless the Project is otherwise described in Exhibit A to this Agreement (which section or Exhibit is incorporated into this Agreement).

1. Scope of Services. The scope of Consultant's services is described in the Scope of Services section of the Proposal ("Services"), unless Services are otherwise described in Exhibit B to this Agreement (which section or exhibit is incorporated into this Agreement). Portions of the Services may be subcontracted. Consultant's Services do not include the investigation or detection of, nor do recommendations in Consultant's reports address the presence or prevention of biological pollutants (e.g., mold, fungi, bacteria, viruses, or their byproducts) or occupant safety issues, such as vulnerability to natural disasters, terrorism, or violence. If Services include purchase of software, Client will execute a separate software license agreement. Consultant's findings, opinions, and recommendations are based solely upon data and information obtained by and furnished to Consultant at the time of the Services.

2. Acceptance. Client agrees that execution of this Agreement is a material element of the consideration Consultant requires to execute the Services, and if Services are initiated by Consultant prior to execution of this Agreement as an accommodation for Client at Client's request, both parties shall consider that commencement of Services constitutes formal acceptance of all terms and conditions of this Agreement. Additional terms and conditions may be added or changed only by written amendment to this Agreement signed by both parties. In the event Client uses a purchase order or other form to administer this Agreement, the use of such form shall be for convenience purposes only and any additional or conflicting terms it contains are stricken. This Agreement shall not be assigned by either party without prior written consent of the other party.

3. Change Orders. Client may request changes to the scope of Services by altering or adding to the Services to be performed. If Client so requests, Consultant will return to Client a statement (or supplemental proposal) of the change setting forth an adjustment to the Services and fees for the requested changes. Following Client's review, Client shall provide written acceptance. If Client does not follow these procedures, but instead directs, authorizes, or permits Consultant to perform changed or additional work, the Services are changed accordingly and Consultant will be paid for this work according to the fees stated or its current fee schedule. If project conditions change materially from those observed at the site or described to Consultant at the time of proposal, Consultant is entitled to a change order equitably adjusting its Services and fee.

4. Compensation and Terms of Payment. Client shall pay compensation for the Services performed at the fees stated in the Compensation section of the Proposal unless fees are otherwise stated in Exhibit C to this Agreement (which section or Exhibit is incorporated into this Agreement). If not stated in either, fees will be according to Consultant's current fee schedule. Fee schedules are valid for the calendar year in which they are issued. Consultant may invoice Client at least monthly and payment is due upon receipt of invoice. Client shall notify Consultant in writing, at the address below, within 15 days of the date of the invoice if Client objects to any portion of the charges on the invoice, and shall promptly pay the undisputed portion. Client shall pay a finance fee of 1.5% per month, but not exceeding the maximum rate allowed by law, for all unpaid amounts 30 days or older. Client agrees to pay all collection-related costs that Consultant incurs, including attorney fees. Consultant may suspend Services for lack of timely payment.

5. Third Party Reliance. This Agreement and the Services provided are for Consultant and Client's sole benefit and exclusive use with no third party beneficiaries intended. Reliance upon the Services and any work product is limited to Client and third parties granted reliance in Section B(5) of the Report, if any, and is not intended for other third parties. For a limited time period not to exceed three months from the date of the report, Consultant will issue additional reports to others agreed upon with Client, however Client understands that such reliance will not be granted until those parties sign and return Consultant's reliance agreement and Consultant receives the agreed-upon reliance fee.

6. LIMITATION OF LIABILITY. **CLIENT AND CONSULTANT HAVE EVALUATED THE RISKS AND REWARDS ASSOCIATED WITH THIS PROJECT, INCLUDING CONSULTANT'S FEE RELATIVE TO THE RISKS ASSUMED, AND AGREE TO ALLOCATE CERTAIN OF THE RISKS SO, TO THE FULLEST EXTENT PERMITTED BY LAW, THE TOTAL AGGREGATE LIABILITY OF CONSULTANT (AND ITS RELATED CORPORATIONS AND EMPLOYEES) TO CLIENT AND THIRD PARTIES GRANTED RELIANCE IS LIMITED TO $1,000,000 FOR ANY AND ALL INJURIES, DAMAGES, CLAIMS, LOSSES, OR EXPENSES (INCLUDING ATTORNEY AND EXPERT FEES) ARISING OUT OF CONSULTANT'S SERVICES OR THIS AGREEMENT REGARDLESS OF CAUSE(S) OR THE THEORY OF LIABILITY, INCLUDING NEGLIGENCE, INDEMNITY, OR OTHER RECOVERY. THIS LIMITATION SHALL NOT APPLY TO THE EXTENT THE DAMAGE IS PAID UNDER CONSULTANT'S COMMERCIAL GENERAL LIABILITY POLICY.**

7. Indemnity/Statute of Limitations. Consultant and Client shall defend, indemnify, and hold harmless the other, their agents, and employees, from and against legal liability for all claims, losses, damages, and expenses to the extent such claims, losses, damages, or expenses are caused by their negligent acts, errors, or omissions. In the event such claims, losses, damages, or expenses are caused by the joint or concurrent negligence of Consultant and Client, they shall be borne by each party in proportion to its own negligence under comparative fault principles. Causes of action arising out of Consultant's services or this Agreement regardless of cause(s) or the theory of liability, including negligence, indemnity or other recovery shall be deemed to have accrued and the applicable statute of limitations shall commence to run not later than the date of Consultant's substantial completion of services on the project.

8. Warranty. Consultant will perform the Services in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. **CONSULTANT MAKES NO WARRANTIES OR GUARANTEES, EXPRESS OR IMPLIED, RELATING TO CONSULTANT'S SERVICES AND CONSULTANT DISCLAIMS ANY IMPLIED WARRANTIES OR WARRANTIES IMPOSED BY LAW, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

9. Insurance. Consultant represents that it now carries, and will continue to carry: (i) workers' compensation insurance in accordance with the laws of the states having jurisdiction over Consultant's employees who are engaged in the Services, and employer's liability insurance ($1,000,000); (ii) commercial general liability insurance ($1,000,000 occ / $2,000,000 agg); (iii) automobile liability insurance ($1,000,000 B.I. and P.D. combined single limit); and (iv) professional liability insurance ($1,000,000 claim / agg). Certificates of insurance will be provided upon request. Client and Consultant shall waive subrogation against the other party on all general liability and property coverage.

Agreement Reference Number (Terracon Proposal or Project Number):P58187103

10. Dispute Resolution. Client shall not be entitled to assert a Claim against Consultant based on any theory of professional negligence unless and until Client has obtained the written opinion from a registered, independent, and reputable engineer, architect, or geologist that Consultant has violated the standard of care applicable to Consultant's performance of the Services. Client shall provide this opinion to Consultant and the parties shall endeavor to resolve the dispute within 30 days, after which Client may pursue its remedies at law. This Agreement shall be governed by and construed according to Wisconsin law.

11. Subsurface Explorations. Subsurface conditions throughout the site may vary from those depicted on logs of discrete borings, test pits, or other exploratory services. Client understands Consultant's layout of boring and test locations is approximate and that Consultant may deviate a reasonable distance from those locations. Consultant will take reasonable precautions to reduce damage to the site when performing Services; however, Client accepts that invasive services such as drilling or sampling may damage or alter the site. Site restoration is not provided unless specifically included in the Services.

12. Testing and Observations. Client understands that testing and observation are discrete sampling procedures, and that such procedures indicate conditions only at the depths, locations, and times the procedures were performed. Consultant will provide test results and opinions based on tests and field observations only for the work tested. Client understands that testing and observation are not continuous or exhaustive, and are conducted to reduce - not eliminate - project risk. Client agrees to the level or amount of testing performed and the associated risk. Client is responsible (even if delegated to contractor) for notifying and scheduling Consultant so Consultant can perform these Services. Consultant shall not be responsible for the quality and completeness of contractor's work or their adherence to the project documents, and Consultant's performance of testing and observation services shall not relieve contractor in any way from its responsibility for defects discovered in its work, or create a warranty or guarantee. Consultant will not supervise or direct the work performed by contractor or its subcontractors and is not responsible for their means and methods.

13. Sample Disposition, Affected Materials, and Indemnity. Samples are consumed in testing or disposed of upon completion of tests (unless stated otherwise in the Services). Client shall furnish or cause to be furnished to Consultant all documents and information known or available to Client that relate to the identity, location, quantity, nature, or characteristic of any hazardous waste, toxic, radioactive, or contaminated materials ("Affected Materials") at or near the site, and shall immediately transmit new, updated, or revised information as it becomes available. Client agrees that Consultant is not responsible for the disposition of Affected Material unless specifically provided in the Services, and that Client is responsible for directing such disposition. In the event that test samples obtained during the performance of Services (i) contain substances hazardous to health, safety, or the environment, or (ii) equipment used during the Services cannot reasonably be decontaminated, Client shall sign documentation (if necessary) required to ensure the equipment and/or samples are transported and disposed of properly, and agrees to pay Consultant the fair market value of this equipment and reasonable disposal costs. In no event shall Consultant be required to sign a hazardous waste manifest or take title to any Affected Materials. Client shall have the obligation to make all spill or release notifications to appropriate governmental agencies. The Client agrees that Consultant neither created nor contributed to the creation or existence of any Affected Materials conditions at the site. Accordingly, Client waives any claim against Consultant and agrees to indemnify and save Consultant, its agents, employees, and related companies harmless from any claim, liability or defense cost, including attorney and expert fees, for injury or loss sustained by any party from such exposures allegedly arising out of Consultant's non-negligent performance of services hereunder, or for any claims against Consultant as a generator, disposer, or arranger of Affected Materials under federal, state, or local law or ordinance.

14. Ownership of Documents. Work product, such as reports, logs, data, notes, or calculations, prepared by Consultant shall remain Consultant's property. Proprietary concepts, systems, and ideas developed during performance of the Services shall remain the sole property of Consultant. Files shall be maintained in general accordance with Consultant's document retention policies and practices.

15. Utilities. Client shall provide the location and/or arrange for the marking of private utilities and subterranean structures. Consultant shall take reasonable precautions to avoid damage or injury to subterranean structures or utilities. Consultant shall not be responsible for damage to subterranean structures or utilities that are not called to Consultant's attention, are not correctly marked, including by a utility locate service, or are incorrectly shown on the plans furnished to Consultant.

16. **Site Access and Safety.** Client shall secure all necessary site related approvals, permits, licenses, and consents necessary to commence and complete the Services and will execute any necessary site access agreement. Consultant will be responsible for supervision and site safety measures for its own employees, but shall not be responsible for the supervision or health and safety precautions for any other parties, including Client, Client's contractors, subcontractors, or other parties present at the site.

17. **Termination**. Either party may terminate this Agreement or the Services upon written notice to the other. In such case, Consultant shall be paid costs incurred and fees earned to the date of termination plus reasonable costs of closing the project.

Consultant: **Terracon Consultants, Inc.**	Client: Smoke-Out Cleaners Ltd
By:	Date: 6/21/2018
Name/Title: **Blaine Schroyer/Env. Dept.** Mgr.	
Address: **9856 South 57th Street**	
Franklin, Wisconsin 53132	
Phone: 414.423.0255	Fax: 414.423.0566
By:	Date:
Name/Title: Mark Woppert	
Address: 535 Half Mile Road	
Verona, Wisconsin 53593	
Phone:	Fax: email: mark.woppert@smoke-out.net

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