Terracon

LETTER OF TRANSMITTAL

TO: James Gastineau, Deputy Administrator
Iowa Underground Storage Tank Fund Program
2700 Westown Parkway, Suite 320
West Des Moines, IA 50265

FROM: Dennis Sensenbrenner, CGP, PG

RE: Environmental Support Services Proposal
RFP Number: RBCA 1509-01

Attached are four signed copies each of the Technical Proposal and four copies of the Cost Proposal in separate sealed envelopes as per the RFP. No request for confidential treatment of information is being made.

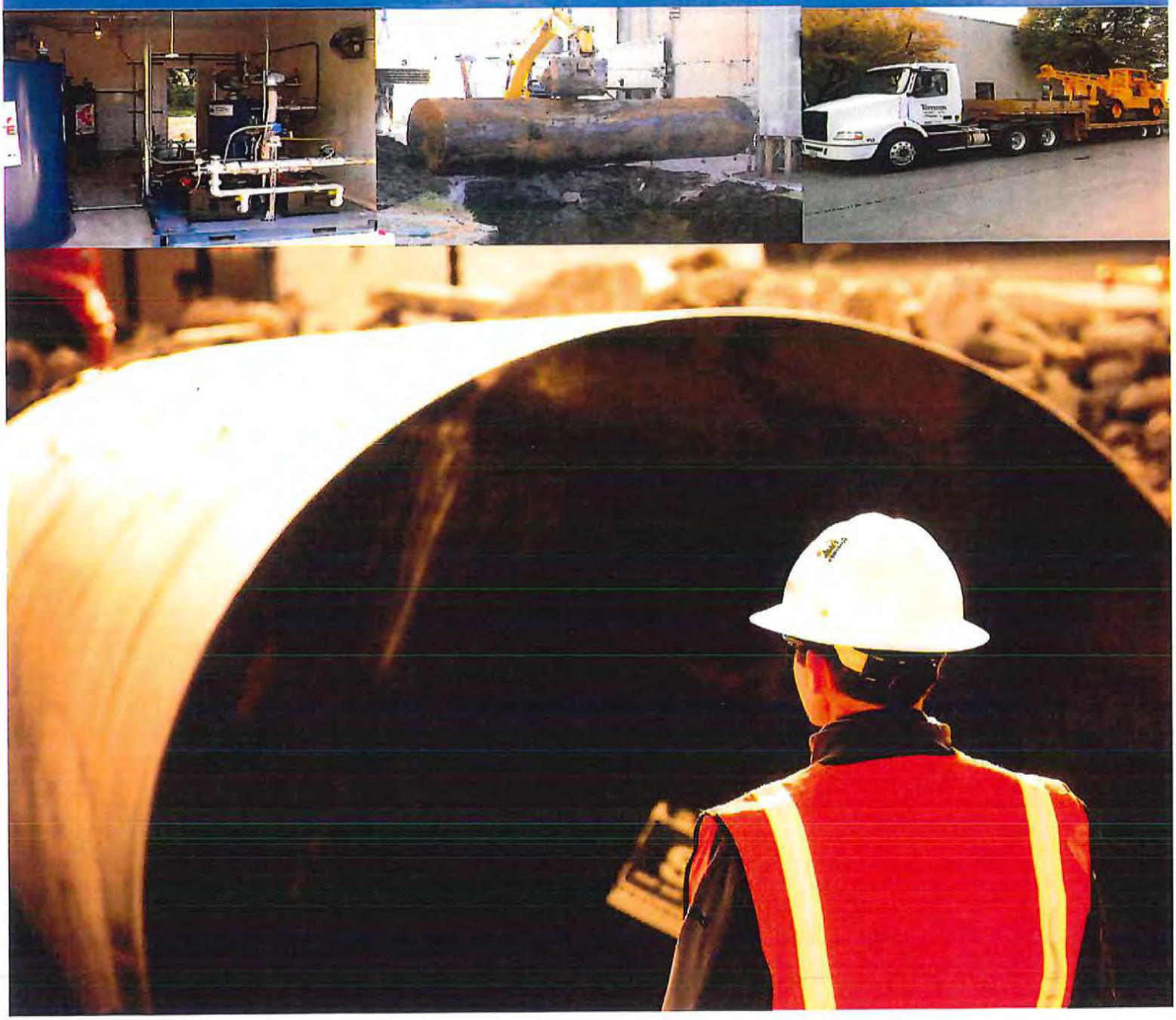
Thank you for allowing Terracon to assist you on this project. If you have any questions please let me know.

Sincerely,

Dennis Sensenbrenner, CGP, P.G.
Department Manager I Environmental

Terracon
600 SW 7th Street I Des Moines, Iowa 50309
D (515)-244-3184 I F (515) 244 5249 I M (515) 210 5207
Dennis.Sensenbrenner@terracon.com I terracon.com

Technical Proposal
to provide Environmental Support Services for UST Investigations



Presented to
Iowa Underground Storage Tank Fund Board
October 27, 2015

Terracon

Terracon Consultants, Inc.
600 SW 7th Street, Suite M
Des Moines, Iowa
515-244-3184

Jesse Nelson, CGP
Jesse.Nelson@terracon.com

Environmental ■ Facilities ■ Geotechnical ■ Materials

Terracon

TECHNICAL PROPOSAL
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October 27, 2015

James Gastineau, Deputy Administrator
Iowa Underground Storage Tank Fund Program
2700 Westown Parkway, Suite 320
West Des Moines, Iowa 50266

Re: Request for Proposals RBCA 1509-01
Environmental Support Services

Dear Mr. Gastineau:

A. Executive Summary

Terracon appreciates the opportunity to present our proposal to perform environmental support services for the Iowa Underground Storage Tank Fund Program (Fund). Terracon has read, understood, and agrees with the terms and conditions of the Environmental Support Services RFP (RBCA 1509-01) including the contract provisions in Section 6. Terracon has also read and understood information presented in the Questions and Answers Memorandum dated September 28, 2015 in preparation for this submittal. We are an employee-owned consulting; environmental engineering and testing is one of our key service lines, and strengths.

Terracon's Iowa offices have been providing engineering services for more than 40 years through a core group of professionals and support staff. These professionals and field staff have conducted more than 10,000 geotechnical and environmental projects in the Iowa. The Des Moines office routinely serves as a project center in addition to providing staff and environmental expertise to other offices. Terracon is ideally suited to meet the needs of the Fund with the following advantages:

- ***Terracon has successfully performed over 1,500 RBCA Site Check, Tier 1/Tier 2/Tier 3, Site Monitoring Report (SMR), Free Product Assessment and Recovery, and Corrective/Remedial Action projects in Iowa.*** Our approach focuses on cost-effective strategies to abate site risks including source removal, institutional controls, or Tier 3 analysis. We can also successfully design, oversee installation, operate, and maintain effective remediation systems when they are necessary.

- ***Terracon has nine (9) Iowa Certified Groundwater Professionals (CGP)*** and over 50 environmental professionals serving Iowa who have a broad range of expertise. Three Groundwater Professionals are in the Des Moines office with over 85 years of combined experience, supported by a staff of over 50 engineers, scientists, technicians and support staff. Other groundwater professionals are located in our Bettendorf, Cedar Rapids, and Omaha offices providing a statewide network of RBCA expertise. Our professionals include civil, chemical, agricultural, and environmental engineers, hydrogeologists, geologists, industrial hygienists, environmental scientists, Iowa certified well contractors, Iowa certified tank inspector, and environmental technicians.

- Terracon maintains a fleet of over 35 drilling rigs throughout the central United States, four of which are managed by the Des Moines office. ***This offers the advantage of providing full service environmental drilling and sampling of suspect soil and groundwater.*** In addition to our drilling rigs, Terracon also owns and operates two **Geoprobe™ units** from the Des Moines office, which are designed to provide rapid assessment of soil, groundwater, and soil vapor samples through collection and on-site analysis by laboratory grade equipment.

- Terracon has developed outstanding relationships with the Iowa Department of Natural Resources (IDNR) Underground Storage Tank Department and the Fund. This allows us to keep up-to-date on procedural changes so that the time and expense required for projects are minimized.

Terracon anticipates performing the majority of the proposed services internally. We will utilize third party laboratories for analytical analysis. TestAmerica of Cedar Falls, Iowa, is a State of Iowa Certified Labs that Terracon can utilize for laboratory analysis. Terracon would utilize the services of Unified Contracting Services, Inc. for specialized tanks services including removal, certifications, etc. We do not anticipate an immediate need for these types of services; however, the Board should know that if they are needed, Terracon's team has the resources and expertise.

The Technical and Cost proposals are submitted with this cover letter in separate sealed envelopes (one original and three copies of each). This proposal shall be firm for 120 days.

We appreciate the opportunity to present our Technical Qualifications and Cost Proposals for your review. If you have any questions, please feel free to contact us at 515-244-3184. We can also be reached by email at drsensenbrenner@terracon.com or sjuwarker@terracon.com.

Sincerely,
Terracon Consultants, Inc.

Dennis R. Sensenbrenner, CGP, PG
Environmental Department Manager

Sid A. Juwarker, CGP
Environmental Project Manager

B. Technical Specifications

Terracon's size, location and in-house resources allow us to satisfy every requirement of the scope of work described in the RFP. A sequential step-by-step description of tasks or events to accomplish the scope of work is provided below.

Safety

Terracon has a 100% commitment to the safety of all its employees. As such, and in accordance with our Incident and Injury Free® safety culture, Terracon will update our project safety plan for use by our personnel during field services. Prior to commencement of on-site activities, Terracon will hold a meeting to review health and safety needs for this specific project. At this time, we anticipate performing fieldwork in a United States Environmental Protection Agency (USEPA) Level D work uniform consisting of hard hats, safety glasses, protective gloves, and steel-toed boots. It may become necessary to upgrade this level of protection, at additional cost, during sampling activities in the event that petroleum or chemical constituents are encountered in soils or groundwater that present an increased risk for personal exposure.

Records Searches

The emphasis of this RFP is to assist the Board and the IDNR to assess underground storage tank sites which have been previously issued a No Further Action certificate in accordance with state regulations in an effort to assist the Department in determining if petroleum contamination from the release in question presents an unreasonable risk to public health and safety. Since the sites previously had a NFA status, Terracon would review historical IDNR records, the RBCA model, and site maintenance records for evidence of a new release. Assessment of current and previous tank records will be performed as follows:

- Conduct interviews with owners/occupants and local government officials to obtain information indicating the existence or former existence of UST use with the property;
- Perform a review of various records to help identify recognized USTs in connection with the subject property and nearby properties (Sanborns, Fire Marshal's Records, historical aerial photos, UST/LUST records, etc.);
- Review site records including IDNR tank files, integrity testing, and maintenance records, spill records;
- Perform an interview with onsite personnel for possible release identification; and
- Prepare a summary letter specific to each site that details the research findings including documentation.

Our downtown Des Moines office location allows for quick access to the Records section and our project personnel are experiences with reviewing all types of IDNR RBCA reports and correspondence. Pre-existing information will be reviewed to obtain complete project understanding prior to developing a complete scope of work will be completed at no charge.

Drilling, Soil Sampling, Monitoring Well Installation, Repair and Closure.

Terracon has over 80 drill rigs throughout the company including several specialty (track-mount and skid-mount) drill rigs to meet the needs of this project. Each Terracon office that offers environmental services, including Terracon's Iowa offices, owns and maintains field instruments typically required at LUST sites. We also maintain many specialty field instruments that are available to the project team on the environmental assessment and remediation contract. Terracon will dedicate the equipment necessary to meet the objectives of the contract. In addition to our drilling rigs, Terracon also owns and operates two Geoprobe™ units from the Des Moines office, which are designed to provide rapid assessment of soil,

groundwater, and soil vapor samples through collection and on-site analysis by laboratory grade equipment.

Terracon presently employs 12 individuals that are licensed drillers in the State of Iowa. In addition, Terracon has over 20 OSHA-trained field support staff that are capable of repairing damaged wellheads while performing field sampling at a site.

Terracon routinely installs several hundred monitoring wells in the States of Iowa, Illinois, Kansas, Missouri, Minnesota, and Nebraska on an annual basis. Terracon has the capabilities to install wells sized from small soil bas monitoring points to 16-inch production wells.

Terracon's scope of services includes the following:

- Terracon will request municipal utility locations through Iowa One-Call. On site and private utilities will be provided by the property owner or a third party locator will be contracted if necessary.
- The site specific Health and Safety Plan will be updated prior to starting field work and will be used by Terracon personnel while on site.
- Terracon will obtain the necessary right of way (ROW) permits from the City and/or the Iowa Department of Transportation (IDOT), if needed. This will include implementing the City and/or IDOT traffic control plan(s) during drilling activities. Terracon will obtain access agreements with private land owners, if required.
- Drilling services will be performed by a State of Iowa certified well contractor using truck-mounted (or ATV mounted) drilling rig under the supervision of a Terracon environmental professional. Drilling equipment will be cleaned using a high pressure washer prior to beginning the project. If soil sampling is deemed necessary as described previously, sampling equipment will be cleaned using an Alconox wash and potable water rinse prior to beginning the project and before beginning each monitoring well. The split spoon samplers will be cleaned using an Alconox wash and potable water rinse between continuous soil cores for each boring. Additional field decontamination and cleaning of the drilling equipment (clean augers and drill rods), drill rig, and other equipment will be conducted as needed between monitoring wells to prevent cross contamination between locations. Soil borings can be installed via Geoprobe where possible for efficiency and to limit site disruption and surface disturbance.
- The borings/wells will be advanced according to IDNR guidance by logging and field screening soil cores continuously using an organic vapor meter (OVM) to qualitatively evaluate for the presence of volatile petroleum hydrocarbons. Field screening will continue until results are less than 10 parts per million (ppm), until 10 feet below the first saturated zone, and/or to the bedrock interface. Terracon drill rigs are equipped for rock bit and air-rotary drilling techniques if bedrock drilling is necessary.
- The monitoring wells will be constructed with 2-inch diameter 0.010 machine slotted PVC well screen at the bottom of the well with a threaded bottom plug. The screen will be installed with 2-inch diameter PVC riser pipe extending to the surface. The screen will be placed with an annular graded silica sand pack around the well screen from the bottom of the well to one to two feet above the top of the screen. High solids bentonite grout will be placed in the borehole annulus from the top of the sand pack to within approximately one foot of the ground surface. The monitoring wells will have flush mount or stick-up protective covers encased in concrete and have an expandable cap installed at the top of casing. The wells will be constructed according to IDNR guidance to intersect the groundwater table and ensure the screened interval is not submerged based on drilling

observations and/or historical site data. Wells will be installed by Iowa certified well contractors.

- The ground surface and top of casing elevations will be measured for the permanent monitoring well locations. The monitoring wells will be surveyed to a reference point benchmark in feet converted to the USGS elevation above sea level. The ground surface elevations will be surveyed to an accuracy of +/- 0.01 feet and the horizontal location will determined by measuring to the existing structures and/or with GPS satellite location data. The existing well elevations and horizontal location will also be determined using the same procedures.
- Monitoring well covers, casings and j-plugs/caps of existing wells will be checked. Needed repairs or replacements will be conducted while onsite, as needed.

Following IDNR's acceptance of a Tier 1 / Tier 2 or corrective action NFA, Terracon has the capability to close sites in a very short order. Generally, upon receiving budgetary approval for site closure, Terracon can abandon the wells within 2 weeks of approval, weather dependent.

Multi-Media Sampling and Analytical Testing

Terracon performs multi-media sampling at many landfills and contaminated sites across Iowa and adjoining states. Multi-medial sampling is generally performed through a low flow purging device that is lowered such that the pump intake is within the screened interval so that stagnant water will be purged and fresh formation water will be sampled. Each well is purged using a submersible or peristaltic pump with an adjustable flow rate and new disposable tubing. The well is purged using a low flow rate, typically in the range of 0.1 to 0.5 liters per minute. Flow rates and flow rate adjustments are determined by pumping into a graduated container for a set amount of time and calculating the volume purged per minute. Water levels are continuously or periodically monitored in an effort to maintain a drawdown that is less than 0.3 feet.

- The hydraulic yield characteristics at each well location dictate low-flow purging activities.
- Purge water is pumped through flow cells where field equipment probes measure water quality parameters.
- The parameters that are generally used for stabilization are temperature, pH, oxidation/reduction potential (ORP), dissolved oxygen (DO), and specific conductance.

Sampling soil, groundwater and soil gas will be completed as follows:

Soil

Soil samples will be collected in 1-foot intervals in a decontaminated split-spoon sampler during borehole advancement. Upon recovery, the field professional will observe the core for visual indications of impact. A one-foot interval of core will be immediately split-sampled from the soil core. One of the split-samples will be immediately placed in labeled (boring number, sample identification and time) laboratory containers in a cooler on ice and the other split-sample will be placed into a labeled (sample boring number, sample identification and time) plastic sealable bag for headspace screening. The remainder of the soil core will then be visually described using the Unified Soil Classification System (USCS). The USCS information and the laboratory soil sample identification and depth will be recorded on the soil boring log.

Soil samples will be field-screened using a PID equipped with 10.6 eV lamp to screen for the presence of petroleum hydrocarbons. The PID screening method involves placing a representative soil sample from each sampling interval into a plastic sealable bag, filling each bag with similar volumes of trapped ambient air, resealing each bag, and allowing the bag contents to equilibrate to the surrounding ambient

conditions. Initially, the PID will be inserted into an empty bag to evaluate potential off-gassing of hydrocarbons from the bag. Then, the PID probe will be inserted into the sample bag and ionizable volatile vapor concentrations will be measured in parts per million equivalents of the unit's calibration gas (ppm). The soil sample PID field screening measurements will be provided on the soil boring logs.

Per IDNR guidance, soil samples will be collected from each new boring/well for laboratory analysis at the interval of highest OVM reading or, if OVM readings are 0 ppm, at the capillary fringe zone, bedrock interface, or other interval as determined by field personnel. Soil samples from replacement borings will be collected at the previous interval and at the interval of the highest OVM reading if different.

Groundwater

The monitoring wells will be constructed using 2.0-inch diameter PVC well screen and casing. The well screens and casings will be placed in the borings through the hollow-stem augers. After well construction, the wells will be developed by manually surging the well using a disposable bailer, surge block, or other approved method in accordance with IDNR guidance. This action removes fines from the wells, and will enhance the well production. The temporary wells may be allowed to recover for a sufficient period to allow groundwater to enter the well screens before sampling.

A groundwater sample will be collected from each well by manual bailing using disposable polyethylene bailers or low flow sampling techniques. Prior to sampling, the static water level in the wells will be measured with a decontaminated electronic multi-phase level detector capable of measuring product and groundwater levels. The wells will be sampled immediately following completion of the purging process.

Vapor Sampling

Soil gas wells will be logged, field screened, and constructed according to IDNR guidance to allow for sample collection within one foot of the static water level. Well construction will include installation of 1 feet of 1-inch diameter, 0.010-inch machine slotted PVC well screen with a threaded bottom cap; 1-inch diameter, threaded, flush-joint PVC riser pipe to just below surface; sand filter pack 6-inches above the top of the screen; and bentonite seal according to IDNR guidance in hydrated lifts to ensure a surface seal. The well will be installed with a 3-inch diameter auger and allowed to stabilize at least 24 hours before sample collection per IDNR guidance.

A groundwater/soil vapor sample will be collected from the confirmation well and submitted to a certified lab under standard chain of custody protocols for analysis of benzene and toluene according to National Institute for Occupational Safety and Health (NIOSH) Method 1501. As part of QA/QC protocols, we will obtain one trip blank sample for groundwater/soil vapor analysis

Analytical Testing

The soil and groundwater samples will be placed in laboratory prepared containers, sealed with custody tape and placed on ice in a cooler secured with a custody seal. The sample coolers and completed chain-of-custody forms will be relinquished to Test America analytical laboratory in Cedar Falls, Iowa for analysis. TestAmerica picks up samples from Terracon's offices daily so holding times being exceeded and damages to sample containers during shipping can be avoided.

Sample preservation will be used to prevent or retard the degradation or modification of chemical compounds during transit and storage prior to laboratory extraction and analysis. Necessary preservatives will be selected by the state certified laboratory, TestAmerica based on the type of sample and required analyses. Preservatives will be added to containers by the laboratory prior to sampling. Laboratory tests will be performed within the maximum holding times established by the laboratory method and sample preservation procedure. Selection of sample containers and sample preservation methods will be in accordance with the laboratory analytical method.

Site Check

At the infancy of the Iowa tank program, non-LUST sites were investigated for determination if chemicals of concerns existed on site. These initial investigations were called Site Checks and their scopes of work varied based upon the sizes and number of tanks in the basin or basins, length of piping runs, and number of pump islands. Terracon has performed several hundred, if not thousands, of site checks in the past.

In addition to the records review and field procedures described above Terracon will complete the following for Site Check Reports.

Scopes of work for Site Checks will be based upon specific site needs since the sites previously had NARs. Sites with new source points would be evaluated by advancing a new soil boring/monitoring well and triangulating the new point to groundwater evaluations. New data would be compared to existing data to evaluate whether the new data resembles the previously collected data or supports a newer release. A similar approach would be recommended for sites where the UST systems have been replaced; however, the new source area would most likely be covered by the new tanks.

For sites that have a suspect release through other means (offsite testing, complaints, etc.), Terracon would recommend following the Petroleum Marketers Management Insurance Company (PMMIC) guidance to analyze the site. This approach presents a general outline for performing Site Checks.

The field activities and report will be handled by or under the management of a Certified Groundwater Professional (CGP) as required. The Site Check report will provide a summary of field activities and review of analytical data compared to IDNR Tier 1 action levels and previous concentrations reported for at the site and conclusions/recommendations from the CGP.

Limited Tier 1/Tier 2/SMR/Tier 3

In addition to the records review and field procedures described above Terracon will complete the following for

Tier 1 Reports

The purpose of the RBCA assessment is to classify LUST sites that have the most imminent danger to public health. This is achieved by determining receptors within the site vicinity, specifically within the soil and groundwater contamination plumes. The first step of the tiered approach uses limited site data to determine whether sites pose an unreasonable risk to the public or environment. During the second step, additional site-specific data is collected and, with the use of computer models, the maximum future extent of contamination is predicted. Using the computer model, "actual" and "potential" receptors that could be impacted are identified and cleanup levels are established. Based on the tiered assessment, corrective action must remove or minimize risks to IDNR approved levels. By evaluating soil and groundwater concentrations at the source locations, we are able to help manage our client's risks by evaluating the estimated worst-case concentrations at a site.

Following completion of the site reviews and tank system removals or closures, Terracon will design and implement a Tier 1 investigation in general accordance with the Iowa Administrative Code *Chapter 135: Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks.* Tier 1 evaluations and reporting will be completed at those sites that identify chemicals of concern above a Tier 1 action level.

Based on our understanding of the requirements outlined in the RFP, we propose the following general work scope for sites requiring Tier 1 Assessments for this project:

- Obtain appropriate budgets and property owner access.
- Prepare a scope of work based upon site inspections, file reviews, tank removal documentation, and interviews to perform Tier 1 fieldwork.

- Perform field investigations (drilling and sampling) at the soil failure point(s) or as outlined by Tier 1 Guidance and install three monitoring wells for groundwater sampling/analysis and groundwater flow delineation.
- As this RFP is to assess LUST sites that have previously been issues a No Further Action certificate it is assumed that hydraulic conductivity data will be available for the sites. Hydraulic conductivity data from the previous release incidents will be utilized in lieu of new testing and evaluation if available. If previous information is not available or considered inadequate, Terracon will perform a slug test in up to 3 wells (or evaluate existing) that would most likely identify the largest value for hydraulic conductivity. The data would then be analyzed using BR Slug and/or AQTESOLV modeling programs.
- Conduct a survey for active, abandoned, and plugged water wells within 1,000 feet of the site utilizing the IDNR Facility Explorer Database, County Health Department, and a 300 foot onsite pedestrian reconnaissance. Both drinking water wells and other use water wells will be identified.
- Conduct a supplemental risk-based receptor survey to identify surface water bodies, water lines, sanitary sewers, basements, and other enclosed/confined spaces within the site vicinity. An explosive vapor survey will also be conducted to determine if combustible gases exceed 10% of the Lower Explosive Limit (LEL) at enclosed/confined spaces in the vicinity of the site.
- Evaluate chemicals of concern against identified pathways and prepare a Tier 1 SCR report for submittal to the IDNR following the IDNR RBCA Guidelines.

If high-risk pathways, free product, shallow bedrock, and/or other information that would cause the site(s) to fail at Tier 1, Terracon would inform the IDNR of the pathway failures and recommend proceeding to Tier 2. Pathway failures at Tier 1 will be utilized to narrow the Tier 2 Scope of Work, which would be submitted for budgeting approval. Based upon IDNR direction, a Tier 1 report would be submitted or the project would proceed to Tier 2.

To date, Terracon staff personnel have completed over 150 Tier 1 Assessments based upon the Iowa RBCA Guidelines.

Tier 2 Reports

The purpose of the Tier 2 assessment is to collect additional site-specific data and, with the use of Tier 2 fate and transport modeling, determine what estimated actual and potential receptors could be impacted by chemicals of concern. A Tier 2 Site assessment should be conducted and a Site Cleanup Report submitted for all sites if any one or more of the following conditions occur:

- Free phase petroleum product is present at the site;
- The site owner or tank owner/operator has decided to bypass the Tier 1 assessment and go directly to the Tier 2 assessment phase;
- A pathway has failed the Tier 1 assessment;
- Bedrock was encountered before groundwater during drilling; and/or
- Explosive vapor levels were measured during a Tier 1 assessment or recent investigation of the site.

Unless limited by rule, an owner or operator may choose to prepare a Tier 3 site assessment as an alternative to completion of a Tier 2 Site Cleanup Report or Corrective Action Design Report. A Tier 3 discussion is presented under section 1A.06.01. Based on our understanding of the requirements outlined in the RFP, we propose the following general work scope for sites requiring Tier 2 Assessments for this project:

- Obtain appropriate budgets and property owner access.
- Prepare a scope of work based upon Tier 1-fieldwork results and/or existing site information.

- Perform a field investigation (drilling and sampling) to further evaluate soil and groundwater sources in the direction of failed pathways.
- Perform additional slug tests (or evaluate existing) to optimize hydraulic conductivity.
- Perform onsite and offsite receptor surveys to identify pathways and perform enclosed space surveys.
- Model chemicals of concern against identified pathways and re-evaluate new data against Tier 1 Action Levels.
- Identify potentially affected properties/owners.
- A Tier 2 Report with the required maps, appendices, and data, as required will be prepared in IDNR standard format utilizing version 3.0 of the Tier 2 software. Groundwater, Soil Leaching, Soil Vapor, and Water Line pathways will be evaluated according to IDNR guidance. Recommendations for site classification and future activities will be presented in the Tier 2 Report as appropriate.

Site Monitoring Reports

Annual site monitoring, including the submittal of a Site Monitoring Report (SMR), is required for sites with a low risk classification. An SMR is also required for high risk interim monitoring after the Tier 2 is completed, but before corrective action is initiated and for remediation monitoring. Terracon will perform site monitoring following pre-approved monitoring plans (Tier 2 and/or CADR) and after budgetary approvals.

Tier 3 Reports

Following determination of high-risk pathways from Tier 2 evaluations, INDR gives a responsible party an option of performing corrective measures via a CADR or performing a Tier 3 evaluation. If a Tier 3 approach is chosen, a work plan and budget will be submitted to the department for approval. The work plan will follow an outline similar to a scientific experiment and should include an introduction, description of methods and models to be used, discussion of risk classification and a summary and references. The Tier 3 Work Plan may include a proposal for additional site assessment, the use of probabilistic evaluations and/or more sophisticated chemical fate and transport modeling. Calibration of the IDNR Tier 2 model can also be considered with justification. Following approval of the work plan and budget, a Tier 3 assessment report will be prepared within a reasonable time designated by the IDNR.

The Tier 3 assessment report will include a recommendation for site classification as high risk, low risk, or no action required. If a corrective action is required, the Tier 3 report will provide an outline of possible corrective actions technologies and a recommendation for implementation of a remediation technology which is consistent with the standards and policies underlying the department's risk classification and corrective action response rules.

Free Product Assessment & Recovery

Free product recovery activities will be completed as directed by IDNR following pre-approval of project budgets by the IDNR. Terracon personnel will conduct free product recovery and reporting activities, when appropriate, in accordance with Chapter 567—135.7(4). Terracon will initiate free product removal; assess the extent of product present; and submit a Free Product Recovery Assessment Reports, as requested. Terracon will also arrange for disposal of accumulated product.

Terracon will assess free product by measuring estimated volume, type of product, thickness, and extent of free product in monitoring wells onsite. Once free product has been assessed and the free product plume has been defined, Terracon will measure recharge rate of the free product at the site. Based on the recharge rate and the size/thickness of the free product plume, Terracon will design an appropriate free product recovery method that is appropriate for the site. This may include hand bailing, installation of recovery socks, or active recovery by (HVAC) or skimming, or installation of a Soil Vapor Extraction (SVE)/Multi-Phase Extraction system. Free product removal will be conducted in a manner that

minimizes the spread of contamination into previously uncontaminated zones by using recovery and disposal techniques appropriate to the hydrogeologic conditions at the site, and that properly treats, discharges or disposes of recovery by-products in compliance with applicable local, state and federal regulations. All free product assessment work will be completed under the supervision of the Certified Groundwater Professional.

The ability to mobilize field personnel from any one of our eight offices servicing Iowa helps reduce mobilization costs associated with monthly free product checks. Terracon also has personnel solely dedicated to wastewater/NPDES projects to assist with any discharge considerations.

Petroleum Release "Forensic" Analyses

Due to Terracon's longevity and continued growth, it has allowed us to hire individuals with unique experience and further allowed staff to gain experiences in specialized industries. One of these areas is forensics associated with petroleum releases. Much of our experience has been achieved through working on legal cases requiring specialized evaluation of chemical constituents for determining origins and ages.

Terracon staff across the company has been involved with forensic analysis for legal cases and for internal purposes for major petroleum companies. Terracon has also worked with other State agencies assisting with forensic evaluations at petroleum sites in Wyoming and Nebraska.

Terracon's experience has dealt with product determination (gas/diesel), product age, commingling determination, percent responsibility of commingling, and releases within releases. Terracon provides many of these services in conjunction with laboratory industry experts working with Cascadia Forensics, International Lubrications and Fuel Consultants, and others. Of the legal projects Terracon has worked on in Iowa, results were consistently in favor of our client.

Existing site assessment/characterization data that can be used for the forensic investigation proposed is first identified. A thorough examination of the accuracy and reliability of the existing data is conducted. If the existing data is not sufficient to address the forensic questions, additional sampling and analysis will be proposed. A plan will be developed by Terracon and the Fund. In general, a preliminary GC/FID analysis is conducted on one or a combination of samples of free product (if available), groundwater and soil. This is necessary in order to identify the type of petroleum contamination present (gasoline, diesel, kerosene, etc.) and in some cases the approximate mixing ratios of the different products. The hydrocarbon patterns observed can also provide preliminary data information.

Terracon uses the various analytical testing tools and site information to assess weathering of the fuels (volatilization, dissolution, biodegradation). Various weathering indices are used to evaluate the different types and degrees of weathering in fuels. In addition, the data collected can be used to compare various fuel samples from a site to assess the presence or absence of multiple sources of the fuels. Age dating of the fuels can also be estimated. For gasoline, age dating can be estimated based on a combination of factors such as the rate of weathering, gasoline additives, temporal trends in refining and blending, and groundwater BTEX ratios, if applicable.

Corrective Action Design & Implementation

Terracon has broad experience in assessment and remediation of petroleum hydrocarbons. Utilizing our professional staff of Iowa groundwater professionals, environmental engineers, regulatory compliance specialists, chemists, hydrologists, geologists, and risk assessment specialists, Terracon can conduct corrective action design to determine remedial options. Our ability to provide environmental engineering services for a wide variety of tasks ensures strong technical support throughout all phases of the project.

The results are cost-effective and timely solutions that balance economic resources to environmental challenges.

Remediation services typically require the development and implementation of a corrective action plan. The selected actions may require additional assessment, design of remedial systems, pilot testing and life-cycle cost estimates. Intent on helping clients reduce project costs and expedite site cleanup, Terracon develops bid documents and design specifications associated with subcontractor services for excavation, construction, operation, maintenance and monitoring. We also have the experience to design and operate our own remedial systems including pump and treat systems, soil vapor extraction systems, and bioremediation systems. Terracon constructs, performs system start-up, operates and maintains remedial treatment systems. Once a remedial system has been implemented, Terracon works with the client to maintain the system and keep it operating efficiently. This includes periodic sampling, monitoring, and maintenance activities. The ability to mobilize field personnel from any one of our eight offices servicing Iowa helps reduce mobilization costs associated with monthly operation and maintenance.

Corrective action, in response to high-risk conditions identified by the Tier 1 or Tier 2 assessments, has both short-term and long-term considerations. Short-term goals are to eliminate or reduce the immediate risk of exposure at actual receptors, which have been or are imminently threatened by exposure above the RBCA actual or modeled target levels. The long-term goals are to prevent exposure to actual receptors, which are not currently impacted or are not imminently threatened with exposure but could be at some time in the future.

Non-intrusive approaches such as institutional controls and technological controls may be used to sever some pathways or control the risk to actual or potential receptors. For the soil vapor and soil to plastic water line pathways, objectives are normally achieved by active remediation of soil contamination to below the target level at the point(s) of exposure or other designated point(s) of compliance using the same methodologies for receptor evaluation under subrules 135.10 (7) and 135.10 (9). For a site classified as high risk or reclassified as high risk for the soil leaching to groundwater ingestion pathway, objectives are achieved by active remediation of soil contamination to reduce the soil concentration to below the site-specific target level at the source. Sites that are not able to reduce their respective risk through institutional or technological controls normally require active remediation. For sites that have water well pathway failures, replacement or deepening the well to produce from a protected aquifer (having an aquiclude) can eliminate this pathway.

Terracon's design methodology allows us to apply innovative ideas and engineering solutions to environmental problems, often using a turn-key approach. Terracon's experience and resources result in designs that cost-effectively meet project goals while maintaining a high standard of quality.

After completion of the pilot studies and selection of the approved remedial approach, Terracon will develop a CADR to include the following elements:

- Completed CADR cover page and checklist
- Executive Summary
- Comparison of Two Corrective Action Alternatives
- Justification for Selected Corrective Action
- Timetable and Critical Performance Benchmarks
- System Design
- Pilot Test
- Operation and Maintenance Plan
- Start-up Period Plan
- Groundwater Summary Corrective Action Map from Tier 2 Report
- Soil Summary Corrective Action Map from Tier 2 Report
- Groundwater Flow Direction Maps (Current and Historic)
- Monitoring Plan
- Waste Management Disposal Plan
- Security/System Protection
- Appendices

Pilot Studies

Terracon's experience in the areas of process design and regulatory compliance allows us to implement remediation strategies that strike a balance between cost-effectiveness and regulatory compliance. Our remediation experts consist of a multi-disciplinary group of engineers and scientists with years of direct field experience. Terracon utilizes the latest computer applications to assist in designing remedial treatment systems. We implement a pilot-testing program to evaluate formational responses at the site to support or refute the remedial approaches recommended. Some of the properties that may be evaluated in the field or laboratory include:

- Intrinsic permeability (Vadose and/or saturated)
- Aquifer Responses (extraction/injection)
- Aquifer Parameters (Redox, pH, Temp, metals, Conductivity's, etc.)
- Biological Responses (Aerobic/Anaerobic)
- Vapor Extraction Responses
- Chemical Responses (ORC, BiOx, hydrogen peroxide, nutrient injection)
- Multiple applications of differing technologies in combination

C. Background Information

Terracon is a 100 percent employee-owned consulting engineering firm providing quality services to clients since its start in Cedar Rapids, Iowa in 1965. Terracon currently has 3,000 employees in 140 offices and 40 states nationwide. These numbers consist of multi-disciplined staff with professionals in the fields of geology; hydrogeology; chemistry; biology; industrial hygiene; chemical, civil, environmental, geological and geotechnical engineering; and specialists in environmental and geotechnical field investigation and construction materials testing.

Terracon is an experienced environmental consultant, with field engineers and technicians trained in the handling of toxic and hazardous materials, personal protection procedures, and compliance with air/water discharge and emission standards. The professional and technical members of Terracon's proposed team are OSHA qualified under 29 CFR 1910.120 for hazardous waste site work.

Terracon Information

Project Headquarters
Terracon Consultants, Inc.
600 SW 7th Street, Suite M
Des Moines, Iowa 50309
Phone [515] 244 3184
Fax [515] 244 5249

Corporate Headquarters
Terracon Consultants, Inc.
18001 W. 106th Street
Olathe, Kansas 66061
Phone [913] 599 6886
www.terracon.com

Entity Organization:	Privately Held Corporation
State of Incorporation:	Delaware
Year of Incorporation:	2003
Year Registered to do Business in Iowa:	1965
FEIN Number:	42-1249917

Supporting Locations

Our Terracon office in Des Moines, Iowa, will be responsible for coordinating and managing all work orders under this contract. Supporting CGPs and environmental field and drilling personnel are available in Terracon offices in Ames, Bettendorf, Cedar Rapids, Cedar Falls, Sioux City and Omaha. The offices serving Iowa have over 100 environmental staff, thus the size and resources to address any needs for the site.

Terracon Contacts

Contractual and Technical Matters

Dennis Sensenbrenner
600 SW 7th Street, Suite M
Des Moines, Iowa 50309
Phone [515] 244 3184
Fax [515] 244 5249
dennis.sensenbrenner@terracon.com

Scheduling & Other Arrangements

Jesse Nelson, CGP
600 SW 7th Street, Suite M
Des Moines, Iowa 50309
Phone [515] 244 3184
Fax [515] 244 5249
jesse.nelson@terracon.com

Subcontractors

Terracon has identified TestAmerica and Unified Contracting Services, Inc. as potential subcontractors for projects related to the Fund contract.

TestAmerica Laboratories, Inc. is recognized as the leading environmental testing firm in the United States. Operations include a nationwide network of 37 environmental testing laboratories and 29 service centers. The Cedar Falls location has been providing laboratory services to customers in the Upper Midwest since 1969. TestAmerica responds to the needs of a multitude of industries, including energy and petroleum companies, waste management providers, consulting and environmental engineers, government and municipal agencies, and a broad range of commercial business.

The Cedar Falls laboratory has extensive experience with samples related to the Iowa Underground Storage Tank (UST) Program and petroleum products. TestAmerica has maintained certification for UST laboratory analyses in Iowa since the inception of Iowa UST program many years ago. In addition to holding Iowa certifications, the Cedar Falls laboratory is also certified under NELAP.

Please refer to the summary of capabilities identified at the end of the vendor information section to learn more about the services TestAmerica offers.

Unified Contracting Services, Inc. is licensed and insured to work on underground and above ground storage tanks in the States of Iowa, Nebraska, Kansas, and Missouri.

Services offered include internal tank inspections, compliance inspections, cathodic protection service, tank removals, vacuum truck service, repair and upgrades on all types of petroleum equipment, and new ground up installations.

Unified Contracting Services, Inc. has Safety, Health, and Environmental Plans in effect for all employees. All employees are subject tot Unified Contracting Services, Inc. safety plans including Confined Space entry, First Aid/CPR qualified, HazWoper 40, Lifting/Rigging, Fall Protection, Excavation/Shoring and "Hot Work."

Accounting Firm

Dun & Bradstreet
D & B ID Number 61-356-9961

BKD, LLP (Auditors)
1201 Walnut Street, Suite 1700
Kansas City, MO 64106
Contact: John Kmetz (816) 221-6300

D. Experience of the Firm

Since 1965, Terracon has helped our clients succeed in their business ventures by effectively executing projects, controlling costs and managing risk. Terracon has been providing professional and technical environmental support services to the underground storage tank industry in Iowa for 50 years.

Terracon is ideally suited to meet the needs of the Fund with the following advantages:

- ***Terracon has successfully performed over 800 RBCA Site Check, Tier 1/Tier 2/Tier 3, Site Monitoring Report (SMR), Free Product Assessment and Recovery, Petroleum Release Forensic Analyses, and Corrective/Remedial Action projects in Iowa.*** Our approach focuses on cost-effective strategies to abate site risks including source removal, institutional controls, or Tier 3 analysis. We can also successfully design, oversee installation, operate, and maintain effective remediation systems when they are necessary.

- ***Terracon has nine (9) Iowa Certified Groundwater Professionals (CGP)*** and over 50 environmental professionals serving Iowa who have a broad range of expertise. Three Groundwater Professionals are in the Des Moines office with over 85 years of combined experience, supported by a staff of over 50 engineers, scientists, technicians and support staff. Other groundwater professionals are located in our Bettendorf, Cedar Rapids, and Omaha offices providing a statewide network of RBCA experience. Our professionals include civil, chemical, agricultural, and environmental engineers, hydrogeologists, geologists, industrial hygienists, environmental scientists, Iowa certified well contractors, and environmental technicians.

- Terracon maintains a fleet of over 35 drilling rigs throughout the central United States, four of which are managed by the Des Moines office. ***This offers the advantage of providing full service environmental drilling and sampling of soil and groundwater.*** In addition to our drilling rigs, Terracon also owns and operates two **Geoprobe™ units** from the Des Moines office, which are designed to provide rapid assessment of soil, groundwater, and soil vapor samples through collection and on-site analysis by laboratory grade equipment.

- Terracon has held similar contracts for several states including the Nebraska Department of Environmental Quality (NDEQ), Minnesota Pollution Control Agency (MPCA), Wyoming Department of Environmental Quality (WDEQ) and Missouri Department of Natural Resources (MDNR).

Client References

Letters of reference from three (3) previous clients where Terracon has performed services similar to those sought by this RFP are included in Attachment A of the Technical Proposal.

Reference Projects

The following three recently completed contracts were carried out by key personnel assigned to this contract.

City of Eldora 1442 Washington Street Eldora, Iowa 50627 Kelly Haskins (641) 939-2393	**Grants Corner; 198605509/9LTQ53** Following a UST Closure, soil and groundwater results exceeded the IDNR Tier 1 Action Levels. Terracon performed a Tier 1 assessment, which was elevated to a Tier 2 due to failed pathways for soil leaching and soil vapor. Terracon prepared the plans and specifications, which were used to solicit bids for excavation services. Field services for remedial excavation were accomplished during November 2014. Three additional USTs were located during the excavation and were removed and properly closed including preparation of a UST Closure Report. Additional impacted soil was removed above the estimated due to the orphan USTs and field screening readings. Post remediation monitoring was not necessary as the groundwater pathways had been classified as NAR during the Tier 2. Revised Tier 2 with post over excavation data modeled the site NAR. The IDNR approved the reclassification during February 2015. • Terracon performed Tier 2 evaluation, expedited corrective measures for NAR. • Engineering Estimate $80K, actual $115K (including orphan UST removal and additional excavation activities) • Site closure allowed the City to immediately sell the site and return to the tax roll. • Supervised by Jesse Nelson, REM, CGP • Subcontractors – Terracon Drilling, Gehrke, Inc.; Test America
Bimbo Bakeries USA, Inc. c/o Phillips Services Corporation 210 West Sand Bank Road, Columbia, IL 62236 Paul Anderson (618) 281-1543	**Bimbo Bakeries USA, Inc.; 198607011/9LTO74** Following a UST Closure, soil and groundwater results exceeded the IDNR Tier 1 Action Levels. Terracon performed a Tier 1 assessment, which was elevated to a Tier 2 due to failed pathways for groundwater ingestion, soil leaching, and water line. The Tier 2 was accepted by the IDNR during March 2012 that classified the site as High Risk. Semiannual monitoring was instituted to evaluate the water line and PGWS pathway. Soil source resampling was successful at reclassifying the soil leaching pathway as NAR. The groundwater concentrations have fluctuated not allowing for site reclassification. Due to the extensive linear footage of at risk water lines and their location, Terracon received approval from the IDNR to conduct Tier 3 monitoring to document plume stability and allow the use of the actual plumes to evaluate the water line and PGWS pathways. The site currently has an environmental covenant onsite that prohibits the installation of water wells that will be used to close the PGWS pathway if the actual plumes are used as they remain within site boundaries. The Tier 3 Work Plan was approved by the IDNR during June 2015 and quarterly monitoring through low-flow sampling is being conducted with an anticipated submittal date of July 2016 for the Tier 3 Report. • Tier 2 evaluation, well installation and sampling, and environmental covenants. • Currently being conducted with the $40K budget • Supervised by Jesse Nelson, REM, CGP • Subcontractors – BGS, Inc., Soil Essential, Inc., Test America

YUM! Brands
17901 Von Marman,
MD 700
Irvine, CA 92614

Julie Reese
(949) 863-3934

Former Long John Silvers; 197910555/9LTM36

During a Phase I/II ESA at a site on NE 14th Street, Des Moines, the site was discovered to be a former gas station that had a release. Site pre-dated IDNR requirements for registration or closure testing. Terracon performed a Tier 1 assessment, which was elevated to a Tier 2 due to failed pathways for vapor and plastic waterline pathways.

Terracon prepared the plans and specifications, which were used to solicit bids for excavation services and retained the services of the City of Des Moines Water Department to replace failed plastic water line segments. Field services for remedial excavation were accomplished in November 2006. Waterline replacement occurred in March of 2007. Terracon provided construction oversight for the project.

Revised Tier 2 with post over excavation data modeled the site Low Risk. Terracon proposed and received approval to perform a Site Monitoring Report utilizing soil gas to clear the low risk pathway. Site received a NAR classification by the IDNR in June 2007.

- Terracon performed Tier 2 evaluation, expedited corrective measures and water line replacement for NAR.
- Engineering Estimate $160K, actual $148K, under budget
- Completed ahead of schedule for property transaction.
- Supervised by Dennis Sensenbrenner, PG, CGP
- Subcontractors - J. Pettiecord; Test America, City of Des Moines Water Department

D. Personnel and Equipment

Experience and Reliability of Personnel Responsible for Project

Terracon's dedicated Technical Support and Quality Assurance Manager for this contract, Mr. Dennis Sensenbrenner, CGP, has more than 30 years of experience. In addition to the experience mentioned in his resume, the following table quantifies his UST experience related to Board projects.

Report Category	Quantity
Closures	50+
Tier 1 Reports (Stand-a-lone)	25+
Tier 2 Reports	35+
Corrective Action Design Reports (CADR)	45+
Free Product Recovery Reports	100+
Site Monitoring Reports	100+

Terracon believes that milestones will be met or exceeded and if they cannot (due to weather, access denial, etc.), very early notifications and approvals for extensions will be made.

Terracon Iowa RBCA Experience Matrix			(# of Iowa Sites by CGWP)						
Name	CGP #	Tnk Clsr	Tier 1	Tier 2	Tier 3	ECA*	SMR	FP	CADR
Dennis Sensenbrenner	1066	51	25	35	3	5	50	20	45
Sid Juwarker	1988	30	15	50	5	10	50	30	15
Dave Jordan	1648	10	10	15		1	5	5	
Scott Killip	1420	20+	20+	20+	5+	5+	20+	20+	10+
Kirk Johnson	2096	2	10+	10+		5+	2	2	
Jesse Nelson	2002	20	5	15	2	2	50	20	15

* = Expedited Corrective Action

Personnel Assigned to Project and Role

Terracon will utilize qualified staff located in offices throughout the State to accomplish the scope of work efficiently and cost effective. All reporting and communication with the Board will proceed through the Project Manager, Jesse Nelson, CGP, located in the Des Moines office. Credentials, project assignment and experience of the project team follow:

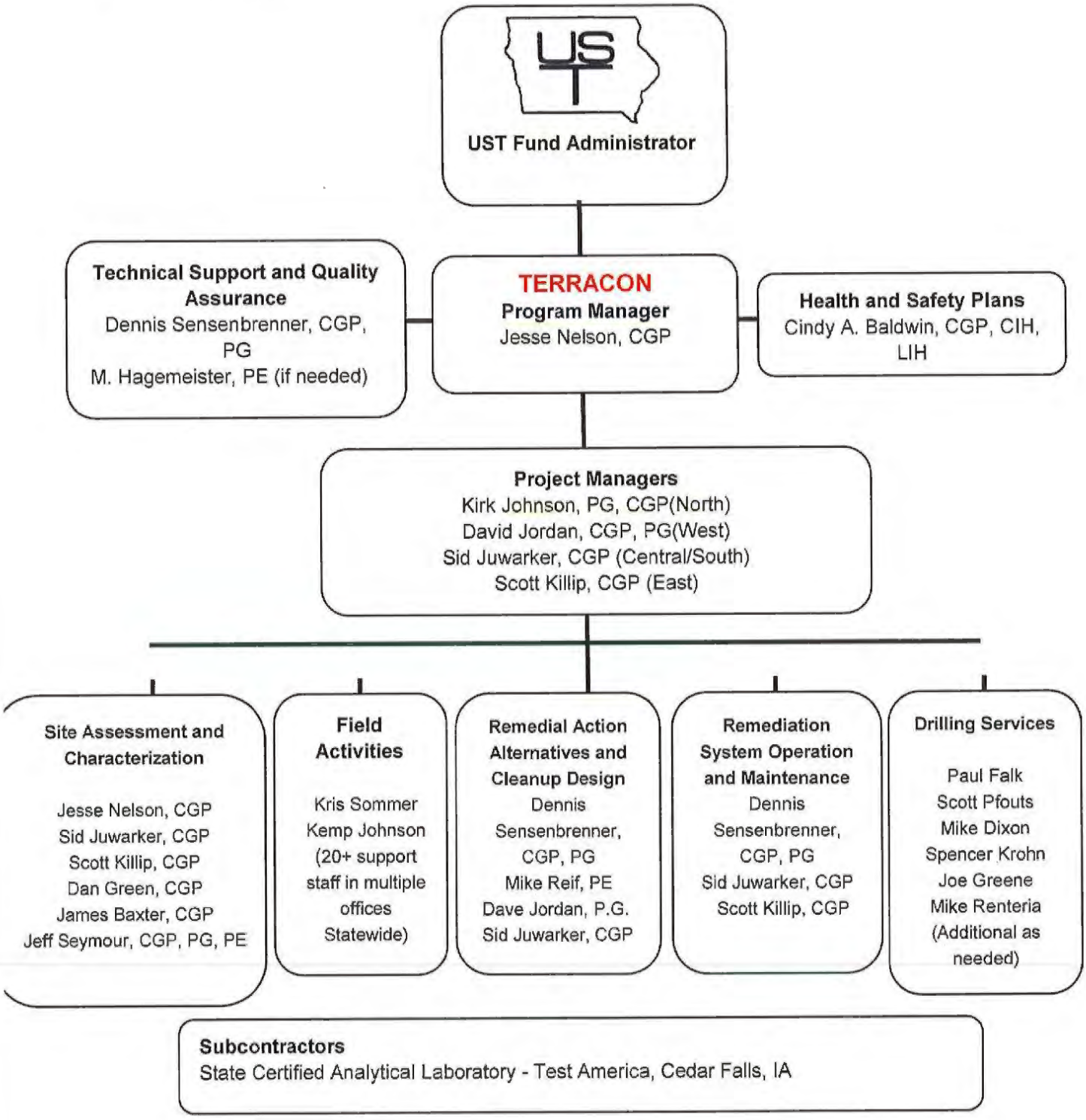
Name	Project Assignment	Years of Experience	Project Role						Degrees/Other Credentials
			Site Specific Plans for Cleanup Activities	Quality Assurance Plans	Tier 1 Assessment	Tier 2 Assessment	Corrective Action	Site Monitoring	
Dennis Sensenbrenner, CGP	Technical Support and Quality Assurance	34	▪	▪			▪		BS / Geology Iowa CGP #1006
Jesse Nelson, CGP	Program Manager	13	▪	▪	▪	▪	▪	▪	BA / Environmental Science Iowa CGP #2002
Dave Jordan, PG, CGP	Project Manager (West)	33	▪		▪	▪	▪	▪	MS /Environmental Health MS / Geology BS/Geology Iowa CGP #1648
Scot Killip, CGP	Project Manager (East)	15	▪	▪	▪	▪	▪	▪	BS / Geology Iowa CGP #1420
Sid Juwarker, CGP	Project Manager (Central/South)	15	▪	▪	▪	▪	▪	▪	BA / Environmental Science
Kirk Johnson, PG, CGP	Project Manager (North)	28	▪	▪	▪	▪	▪	▪	BA / Geology Iowa CGP #2096
Kris Sommer	Field Activities	20	▪		▪	▪		▪	BS / Environmental Science Iowa Certified Well Contractor/Iowa UST Remover, Installer/Inspector
Mike Reif, PE	Remediation System O&M	18					▪		BS / Engineering and Public Policy

Relationship of Personnel

As a consultant with nine offices serving Iowa, Terracon is familiar with the Board through our previous project work. Additionally, we are familiar with Iowa's geology and hydrology through our experience of hundreds of projects throughout the state.

Terracon proposes to provide staff and equipment resources from our Iowa and Nebraska offices. Our offices are well-staffed and well-equipped, and can provide timely mobilization response and site coverage for the entire State of Iowa. Terracon has designated a highly-qualified professional/technical team, described later in this section that will remain dedicated to the management and technical assignments throughout the life of the contract. Resumes of project personnel listed in the Organization Chart below are included in Attachment B.

Organizational Chart



Equipment

Terracon has over 80 drill rigs in the company including several specialty (track-mount and skid-mount) drill rigs to meet the needs of this project. Each Terracon office that offers environmental services, including Terracon's Iowa offices, owns and maintains field instruments typically required at LUST sites. We also maintain many specialty field instruments that are available to the project team on the environmental assessment and remediation contract. Terracon will dedicate the equipment necessary to meet the objectives of the contract.

Location			
(1) Personnel	(2) Drilling Equipment		
Des Moines, IA			
D. Sensenbrenner, CGP J. Nelson, CGP Sid Juwarker, CGP P. Falk Kris Sommer Kemp Johnson Mike Dixon Spencer Krohn Joe Greene Mike Renteria	2015 2011 2013 2013	CME 550X CME 550X Geoprobe 7822DT Geoprobe 7822DT	Drill ATV Drill ATV Drill-Track CPT-Track
Omaha, NE			
D. Jordan, CGP, PG M. Hagemeister, PE M. Reif, PE J. Seymour, CGP, PG, PE S. Pfouts	2008 2001 2000 2015 2015 2008	CME 750 CME 75 Drill Cummins Rig CME 55 Drill Cummins 4 Cyl CME 550 Vertek CPT CME 55	Drill ATV RIG-Truck RIG-Truck Drill ATV RIG-Truck RIG-Truck
Cedar Rapids, IA			
Kurt Nilsson, CHMM Dan Green – CGP Kirk Johnson, P.G. – CGP, Eric Harris Jacob Stahl	2006 2015 2003 2013	CME 850X Drill Rig CME 550 X ATV FREIGHTLINER M2 CME 55	Drill RIG Drill RIG RIG-Truck Drill RIG
Bettendorf, IA			
Scott Killip, CGP James Baxter, CGP	1989 1998 2007	CME 75 GMC C70 TOW Geoprobe 6620DT Track	Drill RIG RIG-Truck Drill RIG
Cedar Falls, IA			
Dave Cleary Rob Bergman	2013 2000	CME 55 CME 55	Drill Rig Drill ATV

Support Equipment

The following support equipment is located or easily accessible to all personnel in Iowa.

Drilling Equipment	
3¼" Hollow Stem Augers	4 ¼" Hollow Stem Augers
6¼" Hollow Stem Augers	8¼" Hollow Stem Augers
Electric Cones	Mud rotary rod
Grout Mixers	Concrete Coring
HPHW Washers	Soil Sampler/Hand Augers

Vehicles	
Compact and ½ ton pickups	¾ ton pickups
1 ton pickups	1 ton flat bed w/ crane
12,000 lb flat bed trailers	Fork lifts
Monitoring/Sampling Equipment	
Hermit (with transducers)	Oil/Water Interface Probe
Water level indicator	Photoionization Detectors
LEL/ Combustible Gas Meter	MSA Passport Personal Alarm – 4gas
H2S Meter	Temp/pH/Conductivity Multimeter
pH Meter	Dissolved Oxygen Meter
Turbidity Meter	Temp/pH/DO/ORP/Conductivity Multimeter
Ferrous Iron Meter	Colorimeter
Flow Cell	Micro-Purge Controller (QED)
Surveying Equipment	Measuring Wheel
Metal Detector	Peristaltic Pump
Redi-Flow 2 Pump	4" Electric Pump
Micro-Samplier 12 volt pump	Gasoline Motor Utility Pump
Remediation and Miscellaneous Equipments	
Portable Knockout Tank	Variable Venturi Vacuum
Regenerative Blower	Oil/Water Separator
Stacked Tray Air Stripper	Diffused Air Tank
Air Compressor	Oxygen/Acetylene Welder
Arc Welder	GPS units
Digital Cameras	John Boat
Air chisel	Various power and hand tools

Resources needed

With nine well staffed offices throughout the state, Terracon will not need additional facilities to successfully accomplish the work associated with this project.

E. Financial Information

Bank References

Bank of America
1200 Main Street
Kansas City, MO 64105

Contact: J. Mack Bowen, Client Manager
Phone: (816) 292-4248

Trade References

Print Time
1105 W. 24th
Kansas City, MO 64108
Contact: Kelli Beckman
Phone: (816) 756-3900
Fax: (816) 756-2982

Central Mine Equipment Co.
4215 Rider Trail North
Earth City, MO 63045-1106
Contact: Mark Kubik
Phone: (314) 291-7700
Fax: (314) 291-7290

GFI Digital
3225 Emerald Lane, Ste. D
Jefferson City, MO 65109
Contact: Pam Wolken
Phone: (573) 659-8914, ext 3209
Fax: (573) 659-7824

General Information

Terracon is a privately held corporation that has been providing consulting services since 1965. For the year ended December 31, 2014, the company had gross revenue of $479 million.

Terracon is a 100% employee-owned corporation. As such, financial information is not made public. Please refer to the list of financial references or contact Donald Vrana, Chief Financial Officer, or Doug Loveridge, Controller, at (913) 577-0302 if you have questions or need additional information.

F. Terminations, Litigation, Debarment

Terracon is a large engineering firm specializing primarily in geotechnical, environmental, and construction materials testing and we perform tens of thousands of projects nationwide. Given the large volume of projects we perform annually, we are subject to periodic claims and litigation. The number of claims received annually is a very small percentage of the overall number of projects performed, well less than 0.5% of the total. The majority of our reported claims are not ultimately pursued against Terracon. In the claims that are pursued, Terracon has been very successful in defending itself against claims and in many of these cases, has been able to be completely vindicated. None of our claims have in the past impacted or are estimated in the future to impact either the financial strength of our company or the ability to provide quality services to our clients. Due to the confidentiality and sensitivity of claim information, Terracon does not provide specific information on individual claims or litigation. If you have any specific questions or concerns about this disclosure, feel free to contact us to discuss further.

Terracon has not been the subject of any order, judgment or decree of any federal or state authority barring, suspending or otherwise limiting our right to engage in any business, practice, or activity.

Terracon has not, nor have any owners, officers, or primary partners, been convicted of a felony.

G. Acceptance of Terms & Conditions

The terms and conditions of the RFP and General Terms and Conditions are accepted.

H. Proposal Certification

See Attachment C immediately following.

I. Authorization to Release Information

See Attachment D immediately following.

J. Firm Proposal Terms

Terracon guarantees the availability of the services offered and that all proposal terms, including price, will remain firm for 120 days from October 27, 2015 (deadline for submitting this proposal).

Attachment A

Letters of reference

Terracon

PETROLEUM MARKETERS MANAGEMENT INSURANCE COMPANY
2894 106th St., Ste. 220, PO Box 7628, Urbandale, Iowa 50323
Ph: 800/942-1000, 515/334-3001 Fax: 515/334-3013

October 26, 2015

Mr. Sid Juwarker
Terracon
600 S.W. 7th Street
Des Moines, Iowa 50309

Re: Letter of Reference

To Whom It May Concern:

It is a pleasure to provide a letter of reference regarding PMMIC's and my experience in working with Terracon on UST projects in the past.

Personally, I have worked with Terracon on UST projects for 30 years with a number of their offices around the U.S. many of those throughout the Midwest including their offices in Iowa. I have had the opportunity to work with individuals in their Des Moines, Iowa office for over 20 years.

I can personally attest to their background and skills in handling various aspects of UST projects including those services similar to those sought in this RFP. I have worked with them in a competitive bidding environment where it was necessary for them to be highly cost effective while providing scientifically sound solutions to address UST related issues.

I would highly recommend Terracon as an experienced qualified vendor to provide services outlined in this RFP.

Thomas J. Norris ARM CPCU

Vice President
PMMIC
tnorris@roundsassociates.com

CITY OF DES MOINES
ENGINEERING DEPARTMENT

October 27, 2015

Sid Juwarker
Environmental Project Manager
Terracon Consultants, Inc.
600 SW 7th Street, Suite M
Des Moines, IA 50309

RE: Reference Letter
Activity ID 02-1111-000

Dear Mr. Juwarker:

I am writing this reference letter in response to your request.

The City of Des Moines has hired Terracon Consultants, Inc. (Terracon) for many of the City's leaking underground storage tank (LUST) sites over the past 20 years. Terracon has always performed in a timely manner and within budget. The staff at Terracon has the creativity and diligence in dealing with LUST sites.

If you need further information, please do not hesitate to call me at (515) 283-4028.

Sincerely,

David N. McGuffin, P.E.
Civil Engineer II

CLOW

Clow Valve Company
902 South 2nd Street
Oskaloosa, IA 52577
Telephone: 641-673-8611
Fax: 641-673-1934

October 27, 2015

Mr. Jesse Nelson
Terracon
600 S.W. 7th Street
Des Moines, Iowa 50309

RE: Letter of Reference

To Whom It May Concern:

I have worked with Terracon Consulting Inc. (Des Moines, Iowa) on three separate projects over the past six years and would highly recommend their consulting services. The Terracon organization has proven capabilities in areas of underground storage tank assessment and remediation which has benefited the manufacturing facility at Clow. The Terracon organization has always maintained a high level of commitment when taking on any projects.

The manufacturing of valves & hydrants is a competitive industry and Terracon has always maintained their competitiveness as environmental consultants.

I would highly recommend the Terracon organization to provide competent environmental expertise.

Sincerely,

Doug Stracke

Doug Stracke
Environmental Manager
CLOW VALVE COMPANY
doug.stracke@clowvalve.com

Attachment B

Resumes of Key Personnel

Terracon

DENNIS R. SENSENBRENNER, P.G., C.G.P.
ENVIRONMENTAL DEPARTMENT MANAGER/SENIOR ASSOCIATE

PROFESSIONAL EXPERIENCE

Mr. Sensenbrenner is a Nebraska Certified Professional Geologist and an Iowa-Certified Groundwater Professional with over 34 years professional experience. He manages the Des Moines, Iowa office Environmental Department overseeing highly complex hydrological site characterizations including aquifer response testing, Phase I & Phase II ESA's, closure investigations, Landfills, RBCA Tier 1/Tier 2/Tier 3's, and remedial system design and installations for Ag chemical, petroleum hydrocarbon and chlorinated solvent sites throughout the Midwest. Other duties include management of asbestos and lead base paint inspection projects and air quality monitoring projects.

Mr. Sensenbrenner serves as a Terracon Environmental Professional and Authorized Project Reviewer (APR) for projects including Phase 1s, Phase 2s, and Property-Specific Sampling and Analysis Checklists. Over the last 5 years, Mr. Sensenbrenner has be the APR on over 1,500 Phase 1/2 projects and 15 remediation projects.

Mr. Sensenbrenner is a co-inventor of an air delivery system to aerobically degrade in-situ, organic compounds in groundwater systems. The Vacuum Vortex Spargaerator (VVS) is a patented process where micro air bubbles are produced under a partial vacuum and introduced into the groundwater system to enhance the natural attenuation processes. The apparatus has been successfully used to treat LNAPL contaminants and can be adapted to treat DNAPL contaminants.

Education
B.S., Geology, 1980, University of Louisville, Louisville, KY

Geology Field Camp, 1980, University of Kentucky, Lexington, KY

Registrations/Certifications
Licensed Professional Geologist, Nebraska, #G-0209

Certified Groundwater Professional, Iowa 1066

EPA Accredited, AHERA Certified Building Inspector, Iowa #14-3136I

OSHA 29 CFR 1910.120, 40-hour Hazardous Waste Site Operations Training

OSHA 29 CFR 1910-120, Hazwoper Refresher courses, 1989 to Present

OSHA 29 CFR 1910-120 (e), (4), Hazardous Waste Supervisor

OSHA 29 CFR 1910.146 (h), (I), (J), Confined Space Entry

OSHA 29 CFR 1910.120, 10-hour Construction, Trenching and Excavation

Affiliations
Terracon Remediation PRG/APR

Terracon APR for Phase 1s

Terracon APR for Phase 2s

Environmental Professionals of Iowa (EPI)

Iowa Groundwater Association (IGWS)

Leadership Network of Des Moines (Past President)

West Side Breakfast Network Group (President)

Work History
Terracon, Environmental Department Mngr. 2005 - Present

Terracon, Sr. Hydrogeologist, 2003-2005

Apex Environmental, Sr. Project Manager, 1996-2003

Seneca Environmental Services, Senior Hydrogeologist/Group Leader, 1990-1996

Geotechnical Services, Project Geologist/Manager, 1988-1990

Waste Deposit Impact Committee, Hereford, Texas, Geotechnical and Environmental Program Manager, 1987-1988

High Plains Underground Water Conservation District #1, Lubbock, Texas, Resident Geologist/Inspector, 1986-1987

Exploration Logging of U.S.A., Senior Wellsite Geologist & Petroleum Technologist, 1982-1986

PROJECT EXPERIENCE
PHASE I/II EXPERIENCE

Brownfield Projects

Coralville, Iowa –APR for Phase 1/2 and Checklists.

Dubuque, Iowa –APR for Phase 1/2 and Checklists and remedial cleanup strategies on the Ice Harbor project.

Former PDM – Remedial Cleanup

Phase I/II Site Assessment Southeast Connector, SE 14th to US Highway 65 – Des Moines, Iowa: Terracon conducted site investigations on potential contamination sites located within or adjacent to the proposed improvement corridor. Potential contamination sites were photographed, and interviews with property owners will be conducted as necessary. The consultant will review available regulatory files and records for sites determined to have a potential for contamination, as well as review local property appraiser records for each site to verify legal site ownership and previous owners.

Fort Dodge Multi-Purpose Trails Project Phase I/II ESA – Fort Dodge, Iowa

Terracon partnered with the Rock Island District of the United States Army Corps of Engineers to provide Phase I environmental site assessment and Phase II site assessment with preliminary geotechnical drilling and sampling for the Central Riverfront, Sunkist Meadows, Low Dam, and Westbluff neighborhoods. The following trails are included in the project area: Central Riverfront, Sunkist Meadows, Sunkist Meadows East option, Low Dam, Karl King Bridge option, Sunkist Meadow Bridge Option, Low Dam Bridge Option, and Westbluff Neighborhood Wayfinding Option. The site is a 354-acre tract of land extending approximately 3.2 miles that has been improved with some perimeter roads. Fees: approximately $45,000 for Phase I ESA and approximately $58,958 for the Phase II assessment.

** Work performed prior to joining Terracon.*

Phase 1 - Large Ag Client Portfolio of Various Sites in Iowa
Terracon's Des Moines office performed Phase I Environmental Site Assessments at six major agribusiness facilities. Terracon designed part of the scope of services to comply with due diligence requirements under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) innocent landowner defense.

Phase 1/Compliance Review, Large Ag Client, Portfolio of Various Sites in Iowa and Nebraska
Terracon's Des Moines office performed Limited Environmental Compliance Reviews and Phase I Environmental Site Assessments at three of nine major agribusiness facilities. In addition, three of twelve hog transfer stations in Iowa and Nebraska were included. Terracon designed part of the scope of services to comply with due diligence requirements under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) innocent landowner defense. In addition, a limited compliance review of each facility was performed by senior Terracon personnel to determine if the facility was in material compliance with important environmental regulations on a State and Federal level. The sites ranged from slaughterhouses and meat processing facilities, to spice and dry goods storage warehouses, hog

Big Springs Shooting Range, Poweshiek County, IA
Performed a limited site investigation to provide additional information regarding background levels of metals in soils and surface water at the above referenced property. Advanced eleven Hand Auger borings and collected four composite surface samples at the subject site. One hand auger sample and one composite surface sample were collected at each of the four backstop areas. Surface groundwater samples collected were submitted for analysis of lead, arsenic and cadmium by Methods SW 7421, 7060A, and 7131A. Soil samples collected from the hand auger borings and composite surface samples were also submitted for an analysis by Method SW 6010B for lead and cadmium and SW 7060A for Arsenic. Analysis confirmed background concentrations in soil and groundwater analysis collected.

AST/LUST EXPERIENCE

State-lead American Recovery and Reinvestment Act Contract (ARRA), Various Site in Iowa
Terracon provided services to the Iowa Department of Natural Resources (IDNR) through the State-lead American Recovery and Reinvestment Act Contract (ARRA) under state contract ESD7525KAnder100011. Terracon was one of four consultants to win an awarded under the program. The ARRA program allowed the IDNR to address petroleum releases from underground storage tanks (USTs) where the responsible party is unknown, recalcitrant, or insolvent. Terracon provided services to the IDNR at seventeen sites under the ARRA contract. Terracon was able to close nearly 65% of the sites assigned thru risk based assessments and remediation. Terracon performed RBCA Tier 1 and 2's; performed site monitoring reports and site treatment system reports under the contract.

VALLEY HIGH SCHOOL TANK SERVICES – WEST DES MOINES, IA: Performed Iowa Tank Removals, RBCA Tier 1, Tier 2, and expedited CADR services to address high-risk pathways and expeditiously close the site. Site was being remodeled and two tanks had been closed in place adjacent to the gym foundations. Performed expedited tank removals, spot over-excavation and RBCA Tier 2 assessment for closure.

Long John Silvers – Des Moines, IA: During a Phase I/II ESA site was discovered to be a former gas station that had a release. Site pre-dated IDNR requirements for registration. Performed Tier 2, expedited over-excavations and water line replacement for NFA.

HAWK I TRUCK STOP – CORALVILLE, IA: Performed Iowa RBCA Tier1 evaluation services to convert the existing SCR that was performed by others. Free product was discovered during field work and project elevated to Tier 2. Received an NAR with free product by using an environmental covenant.

Cargill – Hamburg, IA: Following completion of an Iowa Tier 2 evaluation indentifying high risk pathways, a corrective action strategy was generated. The soil and groundwater sources were both in similar areas. In the Corrective Action Design Report, Terracon proposed a combination of soil excavation at the source area and injection of BiOx®, an in-situ bioremediation agent. This approach was chosen based on the limited area of soil and groundwater impact and to find the most cost-effective approach for the client. The design approach was accepted by the IDNR. Following over escavation monitoring, the site was reclassified as NFA.

***STATE BIO TIER 1, TIER2, AND CADR – BEVINGTON, IA**
Performed Iowa RBCA Tier 1, Tier 2, Tier 3, and CADR services to address high-risk pathways and recover free phase gasoline. RBCA evaluations identified several high-risk pathway failures. Designed a Tier 3 approach to eliminate PVC water lines as pathways. Tier 3 included installing nested wells and performing alternate sampling depths to clear over 1500-ft of water line receptor. Performed pilot studies and prepared a design to install non pressure bio-sparging and dual phase high vacuum extraction for addressing source areas and removing extensive free product plume.

** Work performed prior to joining Terracon.*

***PERCIVAL OIL – PERCIVAL, IA**
Performed Iowa RBCA services for Tier 1 and Tier 2 evaluations. Site is high-risk with 55+ drinking water well failures. Performed expedited excavation in attempt to remove soil source areas. However, utilities had installed fiber optics before budgetary approval could be acquired. Performed baseline study and pilot testing for determining if pay for performance remediation was a feasible approach. Designed a corrective action strategy to close site in 5 years.

***STATE BID TWO SITE CO-MINGLED IOWA RBCA TIER 1/TIER 2 INVESTIGATION – Wall Lake, IA**
Performed Iowa RBCA Tier 1, Tier 2, Tank Removal/ECA and CADR services to address high-risk pathways and recover free phase gasoline. RBCA evaluations identified several high-risk pathway failures and a third site. Performed tank removal activities and expedited corrective action (over-excavation of tank pit area) to close one site. Performed SMR monitoring to close a second site and replaced a domestic PVC water line to eliminate the remaining high risk pathway. Constructed a CADR to utilize an existing SVE system to remove persistent free product. Remedial system was installed on time and on budget.

***STATE BID TWO SITE CO-MINGLED IOWA RBCA TIER 1/TIER 2 INVESTIGATION – Indianola, IA**
Performed Iowa RBCA Tier 1, Tier 2, CADR, and CADR implementation services to address high-risk pathways and recover free phase gasoline. RBCA evaluations identified several high-risk pathway failures. Performed source removal activities to install oxygen treatment cells. Constructed a CADR to utilize non-pressurized bio-sparging and bio-venting. Remedial system was installed on time and on budget. Performed quarterly SMRs, free product recovery and reporting, semi-annual reporting and system O & M.

REMEDIATION EXPERIENCE

Newton Village Vapor Intrusion Project, Newton, IA
Terracon provided services to Developer for an addition to an existing senior care facility. The addition was built over a historical LUST site having residual soil and groundwater impacts. The State of Iowa had given the site a no further action certificate. The design included the upgrade of the vapor barrier to petroleum resistance material and the addition of a passive sub-slab vapor mitigation system. The passive system was designed to be upgraded to a mechanical system if future conditions warranted.

State-lead American Recovery and Reinvestment Act Contract (ARRA), Various Site in Iowa
Terracon provided services to the Iowa Department of Natural Resources (IDNR) through the State-lead American Recovery and Reinvestment Act Contract (ARRA) under state contract ESD7525KAnder100011. Designed and installed an aggressive free product recovery system utilizing an open pit recovery and recirculation. Recovery fluids were separated followed by sparging and surface re-introduction on the upgradient end of the pit. Free product was removed within two weeks.

Former Pittsburg Des Moines Steel LSI and Remediation, Des Moines, IA
Responsible for working with a major Des Moines developer, the City, the Iowa Department of Natural Resources and EPA to rehabilitate a former industrial site contaminated with metals and petroleum compounds. Developed and executed a Phase II action plan to better define previously discovered contamination in soil and groundwater. Constructed remedial action plans, Quality Assuranct Project Plan and Sampling Plans in conjuction with proposed site redevelopment efforts. Remedial approaches included soil stabilization and chelation, excavation and replacement, total fluids extraction and re-infiltration, and biosparging. Project completed in Spring 2009.

Former Manufacturing Facility Solvent Investigation/Remediation, Des Moines, IA
An Phase II Environmental Site Assessment (ESA) was completed by Terracon in 2000 to provide additional information with regard to the Phase II and to present initial findings on the extent on soil and groundwater impact. A Site Characterization was completed and detailed the site conditions. The overall proposed remedial alternative for treating the chlorinated solvent constituents in groundwater will involve insitu treatment with the EOS® Compound (EOS®) to enhance the natural biodegradation of the chemicals of concern (COC's). Injection were completed in 2008 and post remedial monitroing is ongoing. Site is maintaining steady and declining conditions.

Former Hawk-I Truck Stop – Coralville, IA
Performed Iowa RBCA CADR services to address high-risk pathways and recover free phase diesel fuel. RBCA analysis achieved a not further action status for the site. Free product remedial efforts included performing and analyzing one aquifer response tests and two multi-phase aquifer response tests, one in each hydrogeologic unit, vadose zone vapor response test and designing a remedial strategy to recover free product which at times exceeded 16 feet in thickness. The multi-phase product and groundwater recovery system was approved and installed. The system recovered approximately 63,000-gallons of free product in the first year. Sytem became ascymtotic after 2 years. A focused pursulfate injection was perfored to address hot spots.

** Work performed prior to joining Terracon.*

***Three Site Co-mingled Innovative Remedial Installation–Council Bluffs, IA**
Responsible for the installation of a three-site innovative remedial technologies installation project consisting of bioventing and air sparging, oxygen release compounds and bioventing, and natural attenuation monitoring for co-mingled LUST sites. Several recommendations were made and accepted to improve the original CADR design for system operational performance and installation cost optimization. The two mechanical systems were installed within the required schedule. The project included monthly O&M, quarterly monitoring and reporting, and evaluation of the three technologies with respect to overall cleanup efficiencies compared to risk. The sites were closed within 2 years of system startup.

***Bussanmass APCO – Bevington, IA**
Performed Iowa RBCA CADR services to address high-risk pathways and recover free phase gasoline. RBCA evaluations identified several high-risk pathway failures. Designed a Tier 3 approach to eliminate PVC water lines as pathways. Tier 3 included installing nested wells and performing alternate sampling depths to clear over 1500-ft of PVC water line receptor. Performed pilot studies (SVE and Pump testing) and prepared a design to install non pressure bio-sparging and dual phase high vacuum extraction for addressing source areas and removing extensive free product plume. Remedial system was installed on time and on budget.

***TRANSWOOD, INC., IDNR SPILL NO. 09216-RK-0352 – STORY CITY, IA**
Primary responder to a MEK truck spill on a federal highway. Coordinated the emergency recovery of 4,000 gallons of spilled product and removal of impacted soils to eliminate potential public exposure risks. Performed an investigation defining the extents of dissolved product and designed a remedial strategy utilizing a combination of groundwater removal with disposal at a licensed facility and inoculating the spill area with an oxygen release compound to expedite natural attenuation. Responsibilities included ER coordination, construction of work plans, pilot testing, corrective action design and oversight of remedial strategies. All facets were overseen by USEPA and State of Iowa regulators. The site received no further action status by the IDNR in 2003.

***Chlorinated Solvent Investigation and Remediation – Ames, IA**
Investigation and remediation of a 12-acre tetrachloroethene contamination release in Central Iowa. Responsibilities included development of detailed work plans for CADR, performing pilot tests for air sparging, soil vapor extraction, and groundwater recovery utilizing dual phase recovery technologies. Work also included NPDES permitting with weekly monitoring, quarterly and semi-annual reporting, development and implementation of aggressive multi-technological remedial strategies including 20 air sparging wells and 12 dual phase extractions wells for groundwater recovery by SVE, detailed groundwater and air exposure monitoring plans, and risk evaluations with respect to plume migration pathways, exposure pathways, and time lines for cleanup.

***Two Site Co-mingled Innovative Remedial Installation–Council Bluffs, IA**
Responsible for the installation of a Two-site innovative remedial technologies installation project consisting of a Funnel & Gate technology with oxygen release compounds at the treatment gates for co-mingled LUST sites. Several recommendations were made and accepted to improve the original CADR design for system installation (Sheet piles vs. slurry wall), operational performance and installation cost optimization. A dual phase free phase product system was later installed to remove persistent free phase product. The project was executed within the required schedule. The project included monthly O&M, quarterly monitoring and reporting, and evaluation of the technologies with respect to overall cleanup efficiencies compared to risk. The sites were closed within 2 years of system startup. Also performed Iowa RBCA Tier 1 and Tier 2 evaluations as project additions.

***KEN'S 66 SERVICE – OMAHA, NE**
Redesigned remedial strategy constructed by others to collect persistent free product from a low risk site. Supervised the installation of a down gradient impermeable barrier with a collection sump. Upgraded to SVE to expedite free product removal and eliminate handling of collected fluids. Performed sample for NDEQ to model site against Nebraska RBCA protocols. Site obtained closure in 3-years following upgrades.

AG CHEM EXPERIENCE

***Ag Chemical Source Evaluation – Beatrice, NE**
Designed a scope of work and field procedures for a detailed site assessment of releases of nitrogen constituents and volatile organic compounds (VOC's) from potential source areas at the facility. Developed Work Plans and Quality Control/Quality Assurance Plans for field and laboratory procedures. Implemented the Work Plans and prepared a Detailed Site Assessment evaluating source areas.

***Shirley Ag Services – Percival, IA**
Designed an investigative program to sample soils and groundwater for herbicides and pesticides at the storage facility located in southwest Iowa. The analytical methods selected were based on the information provided by the Iowa Department of Natural Resources (IDNR) Contaminated Sites Division regarding the Agricultural Chemicals (Ag chemicals) identified in their field investigation. Performed a Geoprobe investigation and converted probes into temporary monitoring wells for the collection of groundwater samples. The investigation was used to evaluate risks to area drinking water wells and exposure potential to the area population and environment.

** Work performed prior to joining Terracon.*

***Anhydrous Ammonia Release – Port Neal, IA**
Performed emergency response sampling for an anhydrous pipeline release under level C conditions. Designed and executed an investigative program to sample soils and groundwater for ammonia/nitrates to evaluate aerial extents of the release. Excavated soils were treated onsite by stockpiling soils on a liner with a soil vapor extraction tile at the base. Soils experienced a 75% reduction in three weeks. Vadose soils were treated by setting an SVE tile at the base of the excavation to remove residual ammonia from the release area.

***ANHYDROUS AMMONIA RELEASE – VALLEY, NE**
Performed emergency response sampling for an anhydrous pipeline releases under level D & C conditions. Designed and executed an investigative program to sample soils and groundwater for ammonia/nitrates to evaluate aerial extents of the release for State of Nebraska Step 6 and Step 7 reporting. Design and installed a domestic treatment system as a preventative measure to protect a down gradient domestic well. Performed preliminary soil remedial evaluations and costs comparisons of cleanup strategies for cost to closure scenarios. Designed and implemented a data collection program to perform 2 dimensional fate and transport modeling. Model results will be used to propose alternative cleanup levels and construct final groundwater cleanup strategy.

INDUSTRIAL HYGIENE PROJECTS

Regulated Material Removal Design and Oversight in Federal Facilities – USDA, Ames Iowa – Program manager for regulated materials inspections abdabatement oversight activities completed throughout Buildings 1 and 2 located at the facility. Completed the development of project specification revisions and directed field staff throughout the duration of the twelve month asbestos abatement project. Completed extensive communications with contractors and owners while reviewing work for compliance with project specifications, drawings, and plans.

Hawthorn Hill Historical Building Renovation
Terracon was chosen to provide hazardous materials surveys & inspections including asbestos, HUD compliant lead-based paint (LBP), mold, polychlorinated biphenyls- (PCB-), mercury-, and chlorofluorocarbon- (CFC-) containing devices. Performed inspections and developed abatement plans/designs for asbestos/LBP/mold. Performed abatemetn monitorng and clearance inspections.

State of Iowa Vocational Rehabilitation Building Des Moines, IA
Expedited Asbestos Renovation Survey and Report. Terracon performed an asbestos renovation survey, which included visual and physical assessment of the observed building materials, sample collection and analysis, regulatory overview, and the findings and recommendations for the renovations planned for the three story East Wing. In addition, onsite demolition monitorng was performed during abatement activities.

State of Iowa Records Storage Building –Des Moines, IA
Project Manager for Asbestos, Lead-Based Paint and PCB Renovation Survey and Report, for Abatement Design. Terracon performed an asbestos and lead based paint renovation survey, which included visual and physical assessment of the observed building materials, sample collection and analysis, regulatory overview, and the findings and recommendations for the renovations planned for the five story building. Prepared lead and asbestos abatement design for renovation contracting.

Job Corps Center Dormatory Bldg 3 Remodel –Denison, IA
Project Manager for Asbestos, Lead-Based Paint and PCB Renovation Survey and Report, and Abatement Design. Terracon performed an asbestos and lead based paint renovation survey, which included visual and physical assessment of the observed building materials, sample collection and analysis, regulatory overview, and the findings and recommendations for the renovations planned for the three story building. Prepared asbestos abatement design for renovation contracting.

***Mary Greeley Medical Center–Ames, IA**
Project Manager for an Indoor air quality monitoring project. Performed initial interviews with site personnel on complaints of feeling lethargic, headaches, and burning eyes. Developed a work plan to perform air quality monitoring in a phased approach. It was determined after completion of Phase 1, higher than normal concentrations of CO_2 and humidity were present in all complaint areas. An evaluation of the HVAC system was performed and was discovered to be out of calibration, essentially shutting off outside mix air. Re-calibration of the HVAC system eliminated complaints.

PUBLIC HEARINGS AND EXPERT TESTIMONY

Mr. Sensenbrenner has assisted sanitary landfills, underground storage tanks, and agricultural clients with exposure assessments and the technical submittals required for testimony. He has successfully represented clients at several public meetings and informational hearings regarding high and low level nuclear waste repository issues, Ag chemical exposure discussions and third party law suits for underground storage tanks.

** Work performed prior to joining Terracon.*

PRESENTATIONS/PUBLISHED ARTICLES

Sensenbrenner, Dennis R., Hallie Stil-Caris, The Impact of Soil Vapor Intrusion Rules on Estate Transactions, Iowa Commercial RealEstate Seminar, November 2012.

Sensenbrenner, Dennis R., The Impact of Soil Vapor Intrusion Rules on Estate Transactions, Iowa Bar Association 2012 Environmental Law Seminar, October 2012.

Dennis Sensenbrenner: Asbestos Awareness for Architects, American Institute of Architects (AIA) Continuing Education Program 2009, 2010, 2011, 2013

Dennis Sensenbrenner and Edward Bertch: Terracon Environmental, Free Product Recovery - Coralville Iowa Project, EPI Symposium, November 2006.

Robert Richards, Dennis Sensenbrenner, and Chuck Becker; The New "All Appropriate Inquiry" Rules Presentation, Iowa Bar Association 2006 Environmental & Natural Resources Seminar, October 2006.

Sensenbrenner, Dennis R., "An Overview and Analysis of the City of Hereford's Water Supply System, Now and for the Future," The Waste Deposit Impact Committee, Hereford, Texas, Winter 1988.

Sensenbrenner, Dennis R., *"A Bibliography of the Environmental, Geotechnical, Socioeconomic and Transportation Literature Associated with the Proposed Deaf Smith County, Texas,"* Nuclear Waste Repository Site. The Waste Deposit Impact Committee, Hereford, Texas, Winter 1988.

Sensenbrenner, Dennis R., *"Environmental Background Study on Water Quality and Quantity for the Deaf Smith Proposed Repository Site,"* High Plains Underground Water Conservation District #1, December 1987.

Sensenbrenner, Dennis R., *"Radiation Background Study, Deaf Smith County Proposed Repository Site,"* High Plains Underground Water Conservation District #1, May 1987.

Sensenbrenner, Dennis R., *"Soil Fertility Study, Deaf Smith County Proposed Repository Site,"* High Plains Underground Water Conservation District #1, May 1987.

Sensenbrenner, Dennis R., *"A Technical Synopsis of the Department of Energy's Environmental Assessment and its Supporting Studies for Deaf Smith County,"* Texas, High Plains Underground Water Conservation District #1, Fall 1986

"The Need for On-Site Studies to Support the Decision to Characterize the Deaf Smith County Site for a Possible High-Level Nuclear Waste Repository," Panel discussion by the League of Women Voters, Lubbock Texas Chapter, April 1987.

"Additional Geotechnical Studies Required to Justify Placing a High-Level Nuclear Waste Repository in Deaf Smith County, Texas," Serious Texans Against Nuclear Dumping, Amarillo Chapter, May 1987 and West Texans Environmental Association, Lubbock Texas Chapter, September 1987.

"District Analysis of DOE's Selection of Deaf Smith County as a Candidate Site for a High-Level Nuclear Waste Repository," American Association of University Women, Brownfield Texas Chapter, October 1987.

Geological Assumptions in Selecting Deaf Smith County as a Candidate Site for a High-Level Nuclear Waste Repository, American Association of Petroleum Geologist, Texas Tech Chapter, October 1987.

(Various presentations to grade schools on environmental and geological issues relating to the local community.)

** Work performed prior to joining Terracon.*

JESSE M. NELSON, REM, CGP

ENVIRONMENTAL PROJECT MANAGER

PROFESSIONAL EXPERIENCE

Mr. Nelson is a Registered Environmental Manager and an Iowa-Certified Groundwater Professional with over 13 years professional experience. He manages environmental projects for the Des Moines, Iowa office overseeing projects ranging from Phase I & Phase II ESA's, tank closure investigations, RBCA Tier 1/Tier 2/Tier 3's, and site characterizations for commercial/industrial sites throughout Iowa. Other duties include management of asbestos and lead base paint inspection projects and air quality monitoring projects.

Education

B.S., Environmental Science, 2002, Simpson College, Indianola, IA

Registrations/Certifications

Registered Environmental Manager #191652956

Certified Groundwater Professional, Iowa #2002

Well Contractor, Iowa #6874

UST Remover License, Iowa #1232

Asbestos Inspector, Iowa #13-1367I

OSHA 29 CFR 1910.120, 40-hour Hazardous Waste Site Operations Training

OSHA 29 CFR 1910-120, Hazwoper Refresher courses, 2002 to Present

OSHA 29 CFR 1910-120 (e), (4), Hazardous Waste Supervisor Training

Affiliations

Environmental Professionals of Iowa (EPI)
Iowa Groundwater Association (IGWA)
Iowa Water Well Association (IWWA)

Work History

Terracon, Environmental Project Manager 2011 - Present

Delta Consultants/Antea Group, Project Professional, 2009-2011

Trileaf Corporation, Staff Scientist, 2004-2009

Trileaf Corporation, Field Technician, 2002-2004

Comprehensive Emissions Service, Field Technician, 2002

PROJECT EXPERIENCE

American Recovery and Reinvestment Act, Multiple Sites, Iowa: Provided management for the assessment and remediation of 17 sites throughout Iowa under the ARRA stimulus contract with the Iowa Department of Natural Resources. Project work consisted of Tier 1 and 2 Assessments, Corrective Action Reports, site monitoring, free product recovery/reporting, tank closure, water well and monitoring well abandonment, and remediation. Upon contract completion (2 years), 10 sites were reclassified as No Action Required with No Further Action certificates issued. The sites remaining likely required minimal monitoring to reach closure criteria. The work was completed within the contract budget.

Iowa Building, Des Moines, Iowa: Completed a tank closure at the former Mercy Captial Buliding in preparation of buildling demolition by working with demolition subcontractor and engineering design firm. Soil and groundwater sampling conducted according to IDNR guidance and was analyzed below target levels. Additional assessment was not required. Assisted the State of Iowa with applying for reimburesment of associated cost through the Iowa UST Fund.

Marshalltown School Warehouse, Marshalltown, Iowa: Submitted proposal to the Iowa Department of Natural Resources and funding agency to investigate the off site free product (LNAPL) that had been attributed to the warehouse property. The adjacent site had been a large bulk fueling facility that had recently ceased operations and all equipment had been removed. Proposed a scope of work to assess previous loading area, bulk tank installation, and delineation between warehouse property and site. The subsequent data analysis removed the free product responsibilities from the warehouse site and moved the site to a lower classification rating.

Holiday Station Store #44, Mason City, Iowa: Took over management of the site from a previous consultant at the client's request. After extensive file review and discussions with Iowa Department of Natural Resources, client was able to conduct several rounds of soil gas sampling and additional receptor investigation, which lead to the site being reclassified to No Further Action (NFA). This approach alleviated the need for a costly excavation that was planned at the site by the previous consultant. Especially important as the client was able to sell the property soon after the NFA classification, which had been delaying the sale.

Community State Bank, Grimes, Iowa: Conducted tank closure assessment on a property where two orphan tanks were discovered during construction of an addition to the bank. Provided oversight and expertise as to the proper removal, cleaning/disposal of the tanks, and required sampling. Impacted soil above state limits was noted at several piping locations. Assisted the bank in conducting expedited corrective action and removal of the impacted soil to eliminate the need for future assessment. The Iowa Department of Natural Resources accepted the closure and did not require additional investigation. The construction of the addition proceeded with limited interruption.

River Walk Tier 1 – Des Moines, IA
Completed a Tier 1 assessment on a site where several tanks were located during construction activities of new flood walls. The assessment was expedited to limit disruption to construction schedule. The report was submitted with a request for expedited review and was accepted as No Action Required within one week of submittal.

Former Howard's Amoco – Aplington, IA
Completed a Site Monitoring Report with Tier 2 revisions on a site utilizing new IDNR software. The site had undergone remediation, but had had dormant for 10 years when the IDNR notified the site owner that evaluation of the site was required. Using the new software, several drinking and non-drinking water wells were removed from risk although the site remained High Risk. Monitoring conducted allowed the remaining High Risk receptors to be reclassified. Following completion of one additional groundwater monitoring event, the site closed.

Gasland – Keokuk, IA
Completed a Tier 2 assessment on an active fueling station that had an emergency response due to a fuel release report from the public to the Keokuk Fire Department and IDNR. Soil and groundwater soil sampling conducted according to IDNR guidance and pathway evaluation indicated that the site was classified as No Action Required. Monthly free product monitoring and reporting was conducted, which concluded that after 24 months the site meet IDNR closure requirements.

Anawim Housing – Des Moines, IA
Closure activities were conducted on a tank located during construction of a low income housing project. Based on the impacts, the IDNR required a Tier 1 assessment. The assessment was completed within the IDNR timeline accounting for construction schedule and activities on site. The site was classified as closed and a No Further Action certificate was issued without interruption to construction.

Merle Leise Property – Albion, IA
Corrective action was conducted at the site via excavation of impacted soil. The impacted soil was land farmed on the responsible parties property to reduce associated costs and according to land farming rules. Sampling conducted during the excavation indicated that the source material had been removed. Post remediation monitoring was successful at reclassifying the site as No Action Required.

Midland Distributing – Oskaloosa, IA
Completed a Tier 2 assessment at a former service station following the discovery and closure of an UST during construction of a skate park. Assisted the City in obtaining reimbursement benefits by proving the site was taken by the City via condemnation. Soil and groundwater soil sampling conducted according to IDNR guidance and pathway evaluation indicated that the site was classified as High Risk for an adjacent water line. The water line was replaced with approved material and the site was reclassified as No Action required and a No Further Action certificate was issued following well abandonment.

Clow Valve Company – Oskaloosa, IA
Completed a Tier 2 assessment at an industrial facility following the discovery and closure of an UST during construction. Soil and groundwater soil sampling conducted according to IDNR guidance and pathway evaluation indicated that the site was classified as Low Risk for potential pathways. Annual monitoring was conducted until site closure.

Lou Walsh Motors, Inc. – Carroll, IA
Completed a tank closure at a car dealership. Soil and groundwater sampling conducted according to IDNR guidance and was analyzed below target levels. Additional assessment was not required.

Former Feed Mill – Fort Dodge, IA
Completed a tank closure and Tier 2 assessment on a former agricultural feed production facility during demolition activities. Soil and groundwater soil sampling conducted according to IDNR guidance and pathway evaluation indicated that the site was classified as No Action Required. However, significant free product remained at the site and is recovered on a monthly basis. Recently a large excavation of the former tank area was conducted to remove source material and future monitoring is expected to close the site.

Lamoni Municipal Services – Lamoni, IA
Completed a Site Check for a newly installed tank to meet insurance coverage requirements. Soil and groundwater sampling was conducted according to the insurance company requirements, which indicated results below laboratory detection limits and/or statewide standards. The client was granted insurance coverage.

Billion Fiat – Clive, IA
Closure activities were conducted on a tank following purchase of the property and completion of a Phase I Environmental Site Assessment and Limited Site Investigation, which indicated a release had occurred from the tank. Based on the impacts, the IDNR required a Tier 1 assessment. The assessment was completed and accepted as No Action Required.

Wistrom Oil Company – Stanton, IA
Closure activities were conducted on several tanks during site closure. Based on the impacts, a Tier 2 was completed that classified the site as High Risk. Corrective action is planned for the site following IDNR review and acceptance of the report.

Farmer Nick's – Victor, IA
Closure activities were conducted on two tanks during site closure. Based on the sample results, the IDNR did not require additional assessment. Assistance was provided to the client to reimbursement for closure costs.

Albia Wastewater Treatment Plant – Albia, IA
Closure activities were completed on a former tank that was removed during 2005 without proper closure sampling and reporting. The closure sampling and reporting was completed on a two week turn around to the time sensitivity of the project. Based on the sample results, the IDNR did not require additional assessment and the City of Albia avoided fines from the IDNR.

United Point Health Methodist Hospital – Des Moines, IA
Completed a Limited Site Investigation for a local hospital following an overfill of the UST. Soil and groundwater concentrations exceeded the state wide standards; however, due to a City and County ordinance additional work was not recommended. The IDNR accepted the recommendation.

Blue Jay Market, Inc. – Perry, IA
Completed a UST Closure Report for a closed gas station. Groundwater results indicated concentrations that exceeded the state wide standards and additional sampling conducted outside of standard UST closure guidance allowed for the site to close.

City of Des Moines Property – Des Moines, IA
Completed a UST Closure Report for an orphan UST discovered during street construction. Soil and groundwater results did not exceed the statewide standards and the IDNR did not require further assessment. The street construction project continued without significant disruption.

Grant's Corner – Eldora, IA
Completed a Tier 2 Report for a former gas station recently obtained by the City due to delinquent taxes. The site was accepted into the Iowa UST Fund and following acceptance of High Risk classification, an excavation was conducted which closed the site. The City was able to advertise the site for sale before the expected timeframe.

Big Spring Fish Hatchery – Elkader, IA
Completed a Tier 1 Report for a fish hatchery operated by the IDNR. Tier 1 services included a second round of groundwater sampling due to impacts observed during the removal of the USTs. The IDNR accepted closure of the site and well plugging is pending.

Des Moines Area Regional Transit – Des Moines, IA
Completed a Piping Closure Report for a bus transportation facility. Groundwater concentrations exceeded the state wide standards; however, additional information regarding water wells within the site vicinity, the local City and County ordinance, and comparison to previous groundwater results reported at the site indicated further evaluation was not necessary. The IDNR approved the recommendation and further assessment was not required.

American Equity Group – Des Moines, IA
Completed a UST Closure Report for a large financial services building. The UST was utilized for operating the building boiler system exempting it from formal UST closure guidance. However, it was recommended to conduct the closure for future environmental concerns during property sale or refinancing. Soil and groundwater concentration did not exceed the state wide standards and the IDNR did not require additional assessment.

SID JUWARKER, C.G.P
ENVIRONMENTAL PROJECT MANAGER

PROFESSIONAL EXPERIENCE

Mr. Juwarker is a project manager with over fourteen years' experience in the environmental field. He is responsible for the management and remediation of Underground Storage Tank (UST) projects, Phase I & Phase II Environmental Site Assessments (ESAs), Brownfields Redevelopment, and RCRA Investigations.

Mr. Juwarker is well versed in environmental projects involving assessment and remediation of industrial, agricultural chemical, and petroleum storage sites throughout Iowa and the Midwest. His management expertise includes subsurface assessment, remedial design, construction observation, operation and maintenance of remedial systems, and regulatory liaison. His technical expertise includes performing and managing Phase I and Phase II Environmental Site Assessments, NEPA Screens, State of Iowa Brownfield and Land Recycling Program Investigations and Cleanups, Resource Conservation and Recovery Act (RCRA) Investigations and Closures, EPA Remedial Action Plans, Site Health and Safety Plans, Risk-Based Corrective Action (RBCA) documentation, subsurface assessment, aquifer testing, hydrogeologic characterization, and soil/groundwater remediation.

Mr. Juwarker has supervised hundreds of Phase I and Phase II Environmental Site Assessments including management/oversight of drilling operations including scheduling, boring layouts, soil and groundwater sampling plans, Iowa DNR Site Monitoring and Clean Up Plans, and EPA Quality Assurance Project Plans. Mr. Juwarker's regulatory compliance experience includes preparation of storm water pollution prevention plans (SWPPP); spill prevention, control and countermeasure (SPCC) plans; regulatory compliance audits, and preparation of industrial air construction permits, annual air emission inventories, and National Pollutant Discharge Elimination System (NPDES) permits.

PROJECT EXPERIENCE

Phase I and II Environmental Site Assessments: Project role: Project Manager. Duties include site reconnaissance, data analysis, records research (federal, state and local), contamination assessment, owner/tenant interviews, and site monitoring and report preparation. Completion of over 100 Phase I/II projects at various locations in Iowa.

LUST Assessment & Remediation: RBCA Tier I, II, SMR and CADR's: Project role: Senior Project Manager. Duties include contamination assessment, free product assessment and monitoring, groundwater, soil and soil vapor assessment, over-excavation and plastic water line replacement oversight, remediation system design and installation, determining underlying geology and hydrogeology, interpretation of data, and report preparation for submittal to the Iowa Department of Natural Resources. Completion of over 75 UST projects at various locations in Iowa.

Education
Bachelor: Environmental Science; Drake University;
Des Moines, Iowa 2000

MBA: Tippie School of Business
University of Iowa;
Iowa City, Iowa
Currently Enrolled

Registrations
Certified Groundwater Professional: Iowa

Certifications
Licensed Tank Closure and Well Monitoring: State of Nebraska
40-Hour HAZWOPER
Licensed Well Contractor: State of Nebraska
Basic Wildland Fire (S-110, S-130, S-190) Certified
ESRI ArcView GIS Certified
Nuclear Gauge & Radiation Safety Certified
IOWATER 1 & 2 Water Monitoring Certified

Affiliations
Iowa Groundwater Association
Iowa Environmental Council
Environmental Professionals of Iowa:
President 2005/2006
Leadership Iowa 2007 - 2008
U.S. Fish & Wildlife Burn Crew Member

Work History
Terracon Consultants, Inc., Environmental Project Manager, 2013-Present

Barker Lamar, Environmental Project Manager, 2005-2013;

Geotechnical Services, 2000-2005

Terracon

Remediation: Project role: Project Manager. Duties include design and installation of soil and groundwater remediation systems including soil vapor extraction systems, air sparge systems, dual phase extraction systems, product pumping systems, soil excavation and landfarm permitting and closure. Reporting duties included preparation of Corrective Action Design Reports (CADR), Remediation Action Implementation Reports, Operation & Maintenance Reports (O&M), Site Monitoring Reports (SMR), and Remedial Activity Closure Reports.

Underground Storage Tank Removal: Project role: Project Manager. Duties include environmental oversight and sampling during the removal of USTs. Projects require coordination with contractors to ensure proper tank removal and sampling procedures, local area surveying to determine receptor information, preparation of Tank Closure Report and extensive documentation of the tank closure activities with submittal to client and regulatory agencies.

Regulatory Compliance: Mr. Juwarker has consulted with various industrial clients providing assistance for reporting under Clean Air Act regulations, which has included preparation of minor source air permits, emissions inventories and reports for the Iowa DNR and Polk County Air Quality Bureau. Mr. Juwarker has conducted regulatory audits, assisted in determining regulation applicability, monitoring and reporting requirements as well as assisting in completion of SWPP and SPCC Plans.

Targeted Brownfield Assessments

Mr. Juwarker has performed Brownfield Assessments for the City of Des Moines at multiple sites throughout Des Moines. The projects involved Phase I and Phase II ESAs and redevelopment strategies and cleanup planning to support the redevelopment of the properties within the city. Additional activities included field investigations, EM surveys, development of QAPPs, Work Plans, Health and Safety Plans, cleanup oversight, and remedial completion reports.

RCRA TSDF Closure

Mr. Juwarker has performed closure activities for Treatment, Storage and Disposal Facilities (TSDF) in accordance with the RCRA closure and post-closure care requirements at various locations in Iowa. The projects involved preparation of EPA Closure Plans, development of QAPPs, Health and Safety Plans, cleanup oversight, closure verification sampling (soil, groundwater, PCB wipe sampling, wash water sampling), and Closure Completion reports.

DAVID C. JORDAN, P.G., C.P.G.
ENVIRONMENTAL GEOLOGIST

PROFESSIONAL EXPERIENCE

Mr. Jordan has extensive experience in management and supervision of environmental projects involving assessment and remediation of industrial, agricultural, chemical and petroleum storage sites throughout Nebraska and Iowa. This management expertise includes subsurface assessment, remedial design, construction observation, operation and maintenance of remedial systems and regulatory liaison. He is also well versed in preparing Phase I and II site assessments and NEPA transportation-related Categorical Exclusions (CE) and Environmental Assessments (EA) for urban roadway improvements with traffic-noise analysis for existing and 20-year future traffic volumes.

Mr. Jordan is a Professional Geologist, Nebraska UST Closure Individual, Well Driller/Pump Installer Supervisor, and an Iowa Groundwater Professional. His technical expertise includes soil and groundwater remediation pump test evaluations, aquifer testing, and hydrogeologic characterization. He has special experience as a geologist for mineral exploration and mining companies in the western United States. He supervised drilling crews in mineral exploration and provided sampling, reporting, geochemical results, and geotechnical data at the McLaughlin open-pit mine in California.

PROJECT EXPERIENCE

Former Manufacturing Facility – Des Moines, Iowa

Mr. Jordan conducted subsurface assessments for six separate affected areas including uncontrolled dump sites impacted with RCRA metals, near-surface soils impacted by semi-volatile compounds, a waste oil release, as well as petroleum and chlorinated solvent releases. Assessments included the use of Geoprobe, conventional drilling, and lazer-induced fluorescence (LIF). He managed remedial excavations and waste disposal. He also prepared site-specific remedial designs, provided construction observations and monitoring of groundwater plumes from four separate UST source areas impacted with naphthalene, chlorinated solvents, gasoline or diesel. He designed, supervised the installation, and operated a multi-phase extraction system (MPE) for removal of free product. Remedial action strategies were coordinated with representatives of the state, county, former and current landowners, and adjacent land owners. Services were coordinated with construction of a county flood-control basin and several property transactions. Site closure was achieved through the Iowa Department of Natural Resources (IDNR) Land Recycling Program for each of the six impacted areas.

Petroleum Remediation System - Ogallala, Nebraska

Conducted free product and dissloved plume delineations and pilot tests

Education

Master of Science, Environmental Health Science, 1989, University of Kansas
Master of Science, Geology, 1984, University of Idaho
Bachelor of Science, Geology, 1979, University of Akron

Certifications

Wetlands Delineation Certificate, U.S. Army Corps of Engineers, Regulatory IV, 2013
Traffic Noise Model version 2.5 (TNM 2.5), 2012 and TNM version 1.0, 2000.
MOVES2010 Air Quality Workshop, EPA/FHWA, 2010
Well Driller/Pump Installer Supervisor, Nebraska, No. 69306
Professional Geologist, Nebraska, 2000, No. G-0132
Introduction to Section 106 Review, 2000
Practical Project Development and Environmental Documentation, for NEPA/Section 4(f) Transportation Projects, 1999
Certified Groundwater Professional, Iowa, 1998, No. 1648
Fundamentals and Abatement of Highway Traffic Noise, 1994
Certified Professional Geologist, 1993, No. 8295

Affiliations

Association of Groundwater Scientists and Engineers
Nebraska Geological Society

Work History

Terracon Consultants, Inc., Omaha, Nebraska, Environmental Hydrogeologist, 1988-present; Geo-Environmental Technician, 1986-1988
T and T Exploration Services, Nevada, Geologic Consultant, 1985-1986
Newmont Exploration, Limited, Nevada, Geologist, 1984-1985
Placid Oil Company, Aleska, Geologist / Surveyor, 1983-1984

for an active truck stop. Calculated cancer risk based on the results of air emission samples. Improved an existing 3-well, passsive, free-product recovery system by others to include a remediation system using soil-vapor extraction alternating with vacuum-enhanced free product recovery from 13 recovery wells. As a cost savings, the system was designed and installed to convert to a dissolved groundwater treatment system, when required. Provided construction observation and compliance monitoring. Conducted post-remediation monitoring. Site closure is pending.

Major Oil Company – Grand Island, Nebraska
Operated an existing passive free product recovery system on a site with a downgradient public water supply well within 200 feet. Recommended and conducted additional subsurface assessments and remediation system pilot testing. Designed and installed a soil-vapor extraction and air sparge treatment system. Operated the system for two years prior to post-remediation monitoring. Site closure was achieved through the NDEQ Title 200 program.

Municipal UST Site – Fremont, Nebraska
Conducted subsurface assessments. Also designed, constructed, and operated a groundwater recovery and treatment system to remove subsurface petroleum contamination. Constructed an infiltration gallery to treat unsaturated zone soils.

Former & Current Service Station – Auburn, Nebraska
Conducted Tier 1 and Tier 2 Assessments for an active service station. Results indicated a upgradient petroleum source, which was also assessed. Coordinated services with adjacent property owners. Conducted pilot testing for evaluation of remedial technologies. With NDEQ approval, designed, installed, and operated on multi-phase extraction system for the recovery of free product from both sites, resulting in a significant cost savings for the NE Title 200 program. Conducted closure monitoring.

Manufacturing Facility – Muscatine, Iowa
Project manager for closure of a RCRA hazardous waste storage area. Services included development of a closure plan, delineation of impacted area, implementation of a remedial plan, and successful closure.

Bulk Petroleum Pipeline Terminal – Council Bluffs, Iowa
Provided remedial design expansion for a 400-gallon-per-minute groundwater recovery and treatment system, in addition to construction observation and monitoring.

Sinclair Station - Grand Island, Nebraska
Operated a low-profile groundwater treatment system with two high-flow recovery wells. Modified the monitoring program to reduce project costs and applied oxygen release compound (ORC) to reduce remediation duration. Abandoned the monitoring and recovery wells and successfully closed the site.

Wetland Delineations – Iowa and Nebraska
Mr. Jordan has proposed, managed, conducted, and supervised several parcel and linear wetland delineation projects. Delineations were conducted in accordance with the USACE *1987 Manual* and the *2010 Regional Supplemental Manual.* He also conducts an intermediate review of reports and proposals.

NEPA Studies - Environmental Assessments (EA) and Categorical Exclusions (CE)
Evaluations of social, economic, and environmental impacts for the construction or expansion of roadways, airports, and pedestrian trails. Projects include NEPA documentation, public hearings, Section 4(f) evaluation, traffic noise analysis with reasonable/feasible evaluations, farmland impacts, Section 106 Historic

Preservation, environmental justice, and endangered species evaluations. NEPA Projects include the following:

96th Street EA, Papillion and La Vista, Nebraska
108th Street EA, Omaha, Nebraska
Arlington Safe Route To School CE, Arlington, NE
Belle Plaine Airport EA, Belle Plaine, Iowa
Belmont Road CE, Bettendorf, Iowa
Bennett Avenue Connector EA, Council Bluffs, Iowa
Blondo Street Extension CE, Omaha, Nebraska
Cornhusker Road EA, Papillion, Nebraska
Loop Road CE, Scott Community College, Riverdale, Iowa
Q Street, Omaha, Nebraska
Rawhide Creek Trail CE, Fremont, Nebraska
St. Joseph Riverfront Trail EA, St. Joseph, Missouri
Walnut Creek Trail CE, Papillion, Nebraska
Wesley Parkway CE, Sioux City, Iowa

Feasibility Studies and Specialized NEPA Studies – Nebraska and Iowa
Conducted feasibility studies or specialized studies for NEPA documents to evaluate wetlands, threatened & endangered species, migratory birds, discharge permits, and archaeological impacts along possible construction sites or roadway alignments. Also conducted specialized studies for NEPA documents. Projects include the following:

12th Street, NEPA Review, Hastings, Nebraska
72nd Street Noise and Wetlands Study, Omaha, Nebraska
96th Street Traffic Noise Study, Omaha, Nebraska
Bell Street Noise Study, Fremont, Nebraska
Cavett Connector Trail NEPA Review, Lincoln Nebraska
"L" Street Noise Study, Omaha, Nebraska
Nebraska Army National Guard Feasibility Study, Lincoln, Nebraska
Sun Valley Blvd Hazardous Materials Survey, Lincoln, Nebraska
West Bypass Feasibility Study, North Platte, Nebraska

Nevada Bureau of Land Management – Las Vegas, Nevada
Provided evaluation of the potential for properties to be used for future mineral production, which included information on site geology, known mineral deposits, past and present mineral production, claims and leases.

PUBLICATIONS/PRESENTATIONS

Jordan, David C., *An Assessment - Nitrate Contamination in Groundwater.* Masters Thesis, University of Kansas, 1989.

Jordan, David C., *The Geology and Geochemistry of the South Central Portion of Lemhi Quadrangle, Idaho.* Masters Thesis, University of Idaho, 1984.

JEFFREY S. SEYMOUR, P.E., P.G.
SENIOR STAFF ENVIRONMENTAL ENGINEER

PROFESSIONAL EXPERIENCE
Mr. Seymour is an environmental engineer in the Omaha, Nebraska office. His responsibilities include overseeing field personnel, engineering evaluation and design, project management, and report preparation. He has been responsible for conducting numerous chemical injection projects, Risk-Based Corrective Action (RBCA) investigations, and environmental site assessments. Additionally, Mr. Seymour has also managed soil and groundwater remediation projects in Nebraska and Iowa. More specifically, these projects have included in-situ chemical oxidation using sodium permanganate, numerous Tier I and Tier II RBCA investigations, Phase I and Phase II environmental site assessments, and numerous petroleum remediation projects using techniques such as soil vapor extraction, air sparging, pump and treat, and over-excavation.

PROJECT EXPERIENCE
Chemical Injections
Mr. Seymour has conducted in-situ chemical oxidation projects in western and central Nebraska.

He was responsible for planning, managing, and performing injection of potassium permanganate at over 100 injection points at a tetrachloroethylene (PCE) contaminated site in Grand Island, Nebraska. The solid potassium permanganate was mixed with water on-site for an injection volume of 500 gallons of 5% potassium permanganate at each injection point.

In Ogallala, Nebraska, he was responsible for planning, managing, and performing injection of sodium permanganate at two separate plume sites (OU-1 and OU-2). The OU-2 site involved performing quarterly injection events directly for the U.S. Environmental Protection Agency (EPA). His responsibilities also included managing the contract with the EPA and coordinating field activities with EPA representatives. At the OU-1 site, 5% sodium permanganate was injected at over 70 locations. Mr. Seymour submitted the winning bid, and managed the project to completion on-budget and ahead of schedule.

RBCA Investigations
Mr. Seymour has conducted numerous Tier I and Tier II site investigations in Nebraska and Iowa. He is responsible for proposal and budget preparation and submission, project coordination and management (including fieldwork oversight and client contact), assessment and interpretation of field and laboratory data, and final report preparation and submittal. He has conducted Tier I and Tier II site investigations directly for the Nebraska Department of Environmental Quality under the SPARC contract for private clients under both the Title 200 and Voluntary Cleanup Programs. He is very familiar with the RBCA guidance documents in both Iowa and Nebraska. He has performed field explorations for both Tier I

Education
Bachelor of Science, Geological Engineering, 2006, South Dakota School of Mines and Technology

Certifications
40-hour Hazardous Waste Site Operations (HAZWOPER) Training

HAZWOPER 8-hour Annual Refresher Courses, 2006 to Present

UST Closure: Nebraska, License #2856

Certified Groundwater Professional: Iowa, License #2082

Registrations
Professional Civil Engineer: Nebraska, License #E-13548

Professional Geologist: Nebraska, License #G-0377

Affiliations
American Society of Civil Engineers

Nebraska Geological Society

Work History
Terracon Consultants, Inc., Environmental Engineer, March 2012 - Present

Geotechnical Services, Inc., Project Engineer, June 2006 – March 2012

and Tier II site investigations and is familiar with soil and groundwater sampling requirements in both Iowa and Nebraska. He has worked behind several types of drill rigs (including CME-45 and Mobile B-61) using hollow stem augers, and has also worked with track-mounted direct-push Geoprobe units. He has installed various sizes of monitoring wells and piezometers, recovery wells, and soil gas well. He is also familiar with, and has implemented, Nebraska's waiver of groundwater sampling requirements at Tier I sites.

Mr. Seymour's Tier I and Tier II projects have included vacant and active small corner gas stations, vacant and active large truck stops, redeveloped properties (including a university campus and retail shopping centers), and abandoned U.S. Army missile sites.

Environmental Site Assessments
Mr. Seymour has conducted Phase I Environmental Site Assessments on many types of sites and facilities, ranging from undeveloped land to commercial properties and large industrial sites. He has worked on multi-site assessments for financial institutions. The multi-site assessment for a retail tire store spanned across Nebraska and Iowa, and involved coordinating between three separate offices and eight different site contacts for successful completion of the project.

Mr. Seymour has conducted subsurface Phase II Environmental Site Assessments to assess the impact and extent of soil and groundwater contamination at many types of facilities, including industrial and manufacturing facilities, grain storage, private airports, and petroleum storage and distribution. Projects have included risk assessments and risk-based corrective action. His experience includes using conventional drilling methods for soil sampling and well installation as well as direct-push methods such as Geoprobe for soil, groundwater, and soil-gas sampling.

Soil and Groundwater Remediation
Mr. Seymour has designed and managed several soil and groundwater remediation projects located in Nebraska and Iowa.

His management experience has included performing operation and maintenance (O&M) on soil vapor extraction (SVE) systems, pump and treat systems, and free product recovery systems. The SVE systems he has managed have been operated under a variety conditions, including shallow and deep groundwater and varying soil conditions, including clay to sand and gravel. His pump and treat system experience includes a three-well extraction system in Thedford, Nebraska. The wells were installed upgradient of a pond to protect the surface water from impact from a petroleum plume located directly upgradient. Mr. Seymour also managed a contract O&M project for a pump and treat system in Hastings, Nebraska. The project involved weekly O&M site visits and monthly groundwater sampling from various ports along different stages of the pump and treatment system. The system was monitored by an electronic monitoring system, which could also be used to adjust certain parameters in the field such as pumping and discharge rates. His free product recovery system experience includes a free product skimming system located in Grand Island, Nebraska. The free product skimmers had to be continually adjusted to account for fluctuating groundwater levels.

Mr. Seymour's remediation design experience includes SVE systems and a dual-phase extraction system. He was involved from the design, installation, and implementation of the systems. He has developed bid documents to obtain remediation equipment from specialty suppliers in compliance with applicable building, electrical, and fire codes including the National Electric Code requirements for hazardous locations and National Fire Protection Association code for flammable and combustible liquids. He has experience with various aspects of air emissions from remediation systems, including familiarity with methods of air sampling, calculating emission rates and cancer risk from remediation system discharges, and working with control technologies. He is familiar with operating principals and has experience operating various types of equipment for controlling air emissions, including carbon vessels and catalytic and thermal oxidizers.

Scott E. Killip
ENVIRONMENTAL DEPARTMENT MANAGER

PROFESSIONAL EXPERIENCE
Mr. Killip is the Environmental Department Manager in the Bettendorf, Iowa office. His duties include managing a staff of environmental professionals responsible for a number of compliance-driven projects such as annual water quality reports for landfills, NDPES, Iowa and Illinois LUST projects, wetlands studies, Phase I and II ESAs, soil and groundwater remediation, underground storage tank (UST) removal and remediation, and Illinois Site Remediation (SRP) projects. Mr. Killip oversees a staff of five environmental professionals and is responsible for office financials, employee staffing, environmental sales and marketing.

Mr. Killip was involved with landfill compliance issues while employed in the greater Chicago area. His work covered numerous projects in in US EPA Region V including several Superfund sites. He was a subcontractor for the Chicago Transit Authority (CTA) during assessment and remediation of seven Leaking UST (LUST) sites in the city of Chicago.

PROJECT EXPERIENCE
Iowa Risk-Based Corrective Action (RBCA) Program
Mr. Killip was the Davenport Branch Manager and Program Manager for RBCA assessment and cleanup at over 200 Iowa LUST sites throughout the State of Iowa. Services included designing field work for assessment, RBCA report completion, Site Monitoring Reporting (SMR) and corrective action. Correction action activities included implementing groundwater pump and treat systems, soil vapor extraction and air sparge (SVE/AS). Mr. Killip also managed the American Recovery and Reinvestment Act (ARRA) Iowa RCBA LUST projects in Eastern Iowa during 2009 through 2011 and the USTFields Pilot Project in Clinton Iowa during 2005.

COMMERCIAL
Big Reds Auto Salvage Phase II ESA – Davenport, IA
Mr. Killip designed and implemented a Phase II environmental site assessment for a large salvage yard. Recalcitrant onsite conditions consisting of 10 to 15 foot thick concrete demolition debris throughout the study area necessitated alternative investigative methods compatible to site conditions.
Professional Services Completed: 2015
Project Cost: $9,000.00

EDUCATION
Bachelor of Science, Geology,
University of Iowa, 1986

CERTIFICATIONS
40-Hour HAZWOPER

Iowa Groundwater Professional (1420)

Wisconsin Professional Geologist (653-013)

Iowa Certified UST Remover (1374)

ICC UST Decomissioner (8210350)

AFFILIATIONS
Environmental Professionals of Iowa

WORK HISTORY
Terracon Consultants, Inc.,
Environmental Department Manager
2015-Present

Seneca Companies, Inc.,
Senior Project Manager
2013-2015

Seneca Companies, Inc.,
Environmental Branch Manager
2000-2013

Seneca Companies, Inc.,
Project Manager
1997-2000

CDM Smith
Project Manager
1988-1997

Eldredge Engineering
Field Technician
1986-1988

JAMES R. BAXTER
SENIOR STAFF ENVIRONMENTAL SCIENTIST

PROFESSIONAL EXPERIENCE

Mr. Baxter is a senior staff environmental scientist in the Bettendorf, Iowa office with over eight years of experience in the environmental field. He has provided services to municipal, commercial, and industrial clients under a variety of federal and state programs including environmental site assessment, leaking underground storage tank (LUST) evaluation, site remediation, waste disposal, stormwater permitting, lead and asbestos surveys, and industrial hygiene/air quality sampling services.

Services include the completion of field activities, review and evaluation of field and analytical data, and final report preparation. His project experience includes LUST investigations under Iowa Department of Natural Resources (DNR) and Illinois Environmental Protection Agency (EPA) programs, brownfield redevelopment assessments under the United States Environmental Protection Agency (USEPA) brownfield grant program, landfill groundwater monitoring and reporting, storm water sampling, and other project activities.

Mr. Baxter's previous environmental experience includes collection of soil and groundwater samples, evaluation of data, and preparation of reports for LUST sites. Through his analytical laboratory experience, he conducted a wide variety of routine and complex testing on submitted samples and performed quality control procedures on submitted samples and laboratory equipment.

PROJECT EXPERIENCE

Moline Brownfields Project – Moline, Illinois

Served as field captain on the Phase II environmental site assessment of four brownfield sites under the provisions of the USEPA-approved Quality Assurance Project Plan (QAPP) and Site-Specific Sampling and Analysis Checklist (Checklist). Activities included coordination with subcontractors, completion of field activities including boring layout, sample collection, and field screening, and documentation of field activities and quality assurance/quality control parameters. Upon receipt of laboratory reports, assisted with the compilation and evaluation of analytical data and developed draft site investigation reports. Subject sites included former commercial, light industrial, and automotive repair facilities.

Skills, Inc. – Moline, Illinois

Conducted field investigation activities for an Illinois EPA LUST site including the collection of soil and groundwater samples and documentation of site-specific information for the evaluation of the subject site under the Illinois EPA Tiered Approach to Corrective Action Objectives (TACO) program. Based on the results of site investigation and evaluation activities, developed a Corrective Action Completion Report for review and approval by the IEPA LUST project manager. Site assessment activities resulted in the issuance of a letter of No Further Remediation.

Education

Bachelor of Science, Environmental Science, Northern Illinois University, 2005

Certifications

OSHA 29 CFR 1910.120, 40-Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) and Refresher Courses, 2005-present

Licensed Asbestos Inspector, Iowa/Illinois – License Nos. 13-1587I (Iowa) and 100-19250 (Illinois)

State of Iowa Department of Public Health Certified Lead Inspector/Risk Assessor (Certification Number 0016476-INSP)

Asbestos Fiber Counting (NIOSH 582) and Asbestos Air Sampling Practices

Iowa Certified Groundwater Professional, License No. 2104

State of Iowa Tank Remover, Certification No. 1318

MSHA Certified (Mine Safety Health administration), Part 46

Adult First Aid / CPR

Work History

Terracon Consultants, Inc., Bettendorf, Iowa, Senior Staff Environmental Scientist, 2013-present; Environmental Scientist, 2010-2013;

Mississippi Valley Regional Blood Center, Processing Lab/Reference Lab Technician, 2008-2010

Eastern Iowa Grain Inspection, Field Technician/Special Projects Manager, USDA licensed, 2005-2009

Superior Environmental Corp., Hydrogeologist/Project Geologist, 2006-2008

Terracon

Professional Arts Building – Davenport, Iowa

Conducted field investigation activities for an Iowa DNR LUST site including the collection of soil and groundwater samples and documentation of site-specific information for the evaluation of the subject site under the Iowa DNR RBCA program.

HNI Corporation – Oak Steel Plant – Muscatine, Iowa

Conducted field investigation activities to evaluate site conditions related to a historical release of aromatic solvents. Services included the collection of soil and groundwater samples from machine base excavations within the facility, the advancement of soil borings and construction of groundwater monitoring wells inside the facility using a Geoprobe® rig with augering capabilities, the collection of soil, groundwater, and storm water samples, and monitoring for the presence of light non-aqueous phase liquids (LNAPL).

Gerdau Ameristeel – Wilton, Iowa

Conducted field investigation activities to evaluate site conditions related to a release of machine coolant. Services included the advancement of soil borings and construction of groundwater monitoring wells inside the facility using a Geoprobe® rig with augering capabilities, the collection of soil and groundwater samples, and groundwater monitoring for the presence of LNAPL.

Leaking Underground Storage Tank Services – Various Sites

Conducts monthly free product monitoring, recovery, and reporting at Iowa LUST sites under the provision of 567 IAC 135. Completes data entry and quarterly reporting to the Iowa DNR. Also conducts annual groundwater monitoring and develops annual Site Monitoring Reporting for submittal to the Iowa DNR.

KIRK R. JOHNSON, PG, CGP
ENVIRONMENTAL PROJECT MANAGER

Education
Bachelor of Arts - Geology, University of South Florida, 1980

Registrations
Professional Geologist: Kansas, Nebraska, Wyoming and Florida

Certified Groundwater Professional: Iowa

Certifications
OSHA 29CFR1910.120 40-Hour HAZWOPER

Work History
Terracon Consultants, Inc., Environmental Project Manager, 2010-Present

MILCO Environmental Services, Inc., Project Manager, 2009-2010

GeoScience & Engineering, Inc., Senior Scientist, 1994-2009

Environmental Consulting & Technology, Inc., Senior Scientist, 1989-1994

Florida Department of Environmental Protection, Environmental Supervisor, 1986-1989

Various Energy Companies, well site logging, 1980-1986

US Geological Survey, Water Resources Division, Hydrogeologic Assistant, 1980

PROFESSIONAL EXPERIENCE

Mr. Johnson is an Environmental Project Manager in Terracon's Cedar Rapids, Iowa office with 28 years professional experience in emergency response, soil and groundwater assessment and remediation and environmental compliance. Mr. Johnson is a licensed Professional Geologist in four states and a Certified Groundwater Professional in Iowa.

Mr. Johnson has held positions in government environmental programs, has extensive experience in soil and groundwater remediation for private and public clients, and has prepared Spill Prevention, Control and Countermeasures Plans for a number of bulk fuel storage and power generation facilities as well as Storm Water Pollution Prevention Plans for landfills, sewage treatment plants, industrial and commercial properties and power generation facilities.

ASSESSMENT PROJECTS

Grand Teton National Park Maintenance Facility, Moose, Wyoming

Drilling and installation of monitor wells for collection of groundwater samples in the vicinity of former USTs under contract with the National Park Service. Quarterly groundwater monitoring results generally found petroleum constituent concentrations below state environmental restoration standards. Because of current and planned property uses and asymptotic concentration trends in groundwater, the National Park Service received an NFA determination from the Wyoming Department of Environmental Quality.

Burns Brothers Truck Stop, Fort Bridger, Wyoming

Drilling of soil borings, installation of monitor wells and collection of soil and groundwater samples for laboratory analysis in the vicinity of LUSTs under contract with the Wyoming Department of Environmental Quality. The sources and extent of petroleum impacts were identified sufficiently for the state to proceed with risk assessment and or remedial design.

Mule Creek Junction Saloon, Mule Creek Junction, Wyoming

Assessment of soil and groundwater impacts in the vicinity of former USTs at a former truck stop and service station under contract with the Wyoming Department of Environmental Quality. The Wyoming Department of Environmental Quality was able to close the site due to the low contaminant concentrations and current and planned property uses.

Public Works Building, Cedar Rapids, Iowa

Drilling of soil borings, installation of monitor wells and collection of soil and groundwater samples for laboratory analysis within the building and throughout the equipment yard under contract with the City of Cedar Rapids, Iowa. Identified areas of soil and groundwater impacts and prepared the soil and groundwater management plan as part of the building demolition contract documents.

UST CLOSURE PROJECTS

City Services Center, Cedar Rapids, Iowa

Attended UST removal and overexcavation under contract with the City of Cedar Rapids. Soil and groundwater samples were collected as required for LUST Closure, and additional soil borings were drilled for monitor well installation within a recently constructed building to evaluate contaminant concentrations in soil and groundwater. Data gathered during the UST Closure was used as part of a Tier 2 Assessment.

Dusty Roads, LLC, Cedar Rapids, Iowa

Attended removal and overexcavation of an UST that was discovered during installation of a new water line as part of a redevelopment project. Soil and groundwater samples were collected as required for UST Closure. Data gathered during the UST Closure was used as part of a Tier 2 Assessment.

REMEDIATION PROJECTS

Centerfire 66, Pinedale, Wyoming

Operation, maintenance, monitoring, modification and decommissioning of four LUST remedial systems under contract with the Wyoming Department of Environmental Quality. Remedial systems were designed to reduce gasoline impacts in groundwater and abate vapor accumulation in nearby residences. Remedial system modifications were made to address impacts from a fugitive UST discovered during tank upgrades. Remedial systems were decommissioned as cleanup progressed until closure was achieved.

Country Lane Gas and Grocery, Pinedale, Wyoming

Operation, maintenance and monitoring of a LUST remedial system under contract with the Wyoming Department of Environmental Quality. The remedial system was designed to reduce gasoline and diesel impacts in groundwater and abate vapor accumulation in nearby residences. LUST closure was achieved after six years of remedial system operation.

Trailside General Store, Lusk, Wyoming

Managed remedial system design and construction under contract with the Wyoming Department of Environmental Quality. Remedial design was based on assessment data compiled by others. A vapor extraction pilot test was performed to optimize extraction well spacing and blower specification. Construction plans and specifications were prepared for incorporation into bid documents, and a bid tour

was conducted to familiarize prospective contractors with site conditions and operational constraints. Assisted client with contractor selection and supervised construction to ensure adherence to specifications.

Former Hawk-I Truck Stop, Coralville, Iowa

Monitor well installation, product monitoring, laser-induced fluorescence survey and in-situ chemical oxidation at a former truck stop under contract with the City of Coralville. Following five years of remedial system operation, a laser-induced fluorescence survey was conducted to assist in delineating subsurface zones with residual product. Sodium persulfate solution was applied within subsurface zones of residual product as indicated by the laser-induced fluorescence survey. The remedial system was decommissioned and monitor wells were abandoned to allow for temporary use of the site as a construction staging area. Following a period of time, new monitor wells were installed and monitored for product accumulation and a second in-situ chemical oxidation program was implemented to treat residual product in several subsurface zones. A new laser-induced fluorescence survey was conducted to provide for a better understanding of subsurface conditions. Based on results of the recent laser-induced fluorescence survey, some monitor wells were abandoned and new monitor wells were installed for the ongoing monitoring required for closure.

Bills Bait and Tackle Shop, Waterloo, Nebraska

An existing vapor extraction and air sparge system was modified and operated to treat petroleum impacts at a LUST site under contract with the Nebraska Department of Environmental Quality. Following a period of evaluation, the remedial system was found not to be operating as effectively as intended. Design and operational changes were made including specification of an alternative blower, reconfiguration of piping and routine optimization adjustments. The modified remedial system was operated for five months prior to entering the long-term groundwater monitoring phase.

CENEX Station, Alliance, Nebraska

Vapor extraction and air sparge system maintenance and monitoring at an active gas station and convenience store under contract with the Nebraska Department of Environmental Quality. Directed field personnel in implementation of routine procedures of the Operation and Maintenance Manual and provided occasional assistance with routine groundwater monitoring. Tracked groundwater quality trends for necessary system adjustments to optimize performance.

Bill's Amoco, Jackson, Wyoming

Maintenance and monitoring of two vapor extraction and groundwater recirculation systems at a former service station under contract with the Wyoming Department of Environmental Quality. Implemented routine procedures of the Operation and Maintenance Manual and performed quarterly groundwater monitoring. Tracked groundwater quality trends for performance recommendations.

Reynold's Petroleum, Jackson, Wyoming

Maintenance and monitoring of a vapor extraction and air sparge system at a former service station under contract with the Wyoming Department of Environmental Quality. Implemented routine procedures of the

Operation and Maintenance Manual and performed quarterly groundwater monitoring. Tracked groundwater quality trends for performance recommendations.

DANIEL M. GREEN, CGP
SR. STAFF SCIENTIST

PROFESSIONAL EXPERIENCE

Daniel is a Sr. Staff Scientist and Iowa Certified Groundwater Professional (CGP). He is the primary Phase I Environmental Site Assessment practitioner in Terracon's Cedar Rapids, Iowa office researching historical uses of properties, conducting interviews with property owners, performing property and building inspections and preparing draft reports. Daniel is skilled in skilled in various types of environmental sampling included soil and groundwater sampling procedures and preservation methods. Since 2010, Dan has been the Phase I ESA coordinator for the Coralville Brownfields Project and is thoroughly familiar with ESA quality requirements for EPA Brownfields assessment grants.

Education
Bachelor of Science, Geoscience, University of Iowa, 2007

Certifications/Licenses
Licensed Asbestos Inspector, Iowa

Licensed Asbestos Abatement Contractor/Supervisor, Iowa

Licensed Lead Inspector/Risk Assessor, Iowa

Asbestos Air Monitoring, NIOSH 582 E

Iowa Certified Groundwater Professional (CGP# 2092)

40 hour OSHA HAZWOPER

Adult First Aid / CPR

Work History
Terracon Consultants Inc., Cedar Rapids, Iowa, Environmental Geologist, 2009-present

Aquadrill Inc., Swisher, Iowa Driller Helper, 2007-2009

PROJECT EXPERIENCE

Iowa DNR Risk Based Assessments

Mr. Green has conducted assessments and site monitoring reports for various fuel spill sites through the Iowa DNR Risk Based Corrective Action program. Mr. Green's experience includes well installation, soil and groundwater sampling, data validation, data entry, final report preparation, and communications with state regualtory agencies and insurance companies. Mr. Green has acted as project manager or team member on the following sites:

- Jiffy Lube LUST site, Coralville, Iowa
- Hawk-I Truck Stop LUST site, Coralville, Iowa
- WARCO LUST site, Coralville, Iowa
- Cedar Rapids Bus Garage LUST site, Cedar Rapids, Iowa
- Lion Bridge LUST site, Cedar Rapids, Iowa
- City of Iowa Levee Project UST site, Iowa City, Iowa
- Newhall ROW UST site, Newhall, Iowa
- Transport America UST site, North Liberty, Iowa
- ACRO Manufacturing UST site, Cedar Rapids, Iowa
- Cedarapids Inc. LUST site, Cedar Rapids, Iowa

Phase I/II ESAs

Mr. Green has more than 200 Phase I ESAs and dozens of Phase II ESAs, including site work and sample collection, data interpretation, report preperation, and project management for a variety of industrial and commercial sites which include the following:

- Coralville Brownfields, numerous locations, Coralville, IA
- Iowa Renewable Energy, biodiesel plant, Washington, IA
- Santa Fe Train Depot, Ft. Madison, IA
- Former Paintcraft Site, former paint manufacturing facility, Galesburg, IL
- Midland Forge, former 120,000 SF hammer forging operation, Cedar Rapids, IA
- Brookview Senior Living Center, Cedar Rapids, IA
- Cargill Meat Solutions (Former John Morrell Packing House), Ottumwa, IA
- Marion Shopping Center, approximately 16 acre multitenant commercial shopping center, Marion, IA
- 63 acre Westdale Mall site, Cedar Rapids, IA
- City of Cedar Rapids, Propose Fire Station #3, vacant land, Cedar Rapids, IA

Regulatory Compliance

- Prepared 2009 Tier II assessment for Diamond V Mills, Cedar Rapids, Iowa
- Prepared 2010 Tier II assessment for Public Works Facility, Cedar Rapids, Iowa

Additional Work

- Jefferson City, MO—Site Characterization for petroleum contamination at location of future U. S. Court House. Preformed soil and groundwater sampling in accordance with MDNR LUST guidelines, as well as field interpretation of analytical data.

KURT S. NILSSON, CHMM
ENVIRONMENTAL DEPARTMENT MANAGER II

PROFESSIONAL EXPERIENCE

Mr. Nilsson is the Environmental Department Manager in Terracon's Cedar Rapids, Iowa office. He has over 25 years of experience in environmental due diligence and corrective measures. He has worked with local and state regulatory agencies across the nation to address environmental concerns. Mr. Nilsson has extensive experience in environmental remedial action, regulatory compliance, training, and emergency spill response and recovery. Mr. Nilsson provides technical oversight and support for site assessments, investigations, cleanups and compliance work to environmental staff based in Terracon's east central Iowa offices. He provides regulatory compliance support to construction companies, commercial and industrial facilities and local government agencies with the following environmental regulatory programs:

- Comprehensive Environmental Response Compensation and Liability Act (CERCLA);
- National Pollutant Discharge Elimination System (NPDES);
- Resource Conservation and Recovery Act (RCRA);
- Storm Water Pollution Prevention Plans (SWPPP),
- Spill Prevention Control and Countermeasures (SPCC).

PRIOR EXPERIENCE

City of Coralville EPA Brownfields, 2012-2014

Project Manager to implement EPA grants at the Iowa River Landing project in Coralville, Iowa. Responsibilities include communicating with the client, completion of assessment activities, quality control and quality assurance, and EPA grant compliance.

AEGON USA, Investment Division, Cedar Rapids, Iowa, 1994 - 2010

Responsiblities included due diligence on commercial, residential, industrial, agricultural and alternative energy (wind) properties prior to acquisition or investment. Worked with AEGON loan officers and investment professionals to properly characterize and position assets for investment or disposition. Worked with developers and other end users in completion of environmental investigations.

Mr. Nilsson participated as acquisition team member responsible for environmental review on numerous real estate portfolios prior to investment or acquisition. He managed the completion of Phase I and II Environmental Site Assessments before defining risk. Portfolios ranged from over 200 assets in the five boroughs of New York City to 20 apple and cherry orchards in Washington State. Efforts specific to environmentally distressed assets included valuation considerations for appraisal purposes, completion of assessments necessary to satisfy stakeholds including financial institutions.

Mr. Nilsson completed environmental studies and remedial efforts on distressed and foreclosed assets in an effort to revitalize and add value to the properties. These efforts often included working with a team of architects and designers as we worked to improve value of the asset.

Education

Bachelor of Arts, Environmental Planning, 1988, University of Northern Iowa, Cedar Falls, Iowa

Registration

Certified Hazardous Materials Manager

40-Hour HAZWOPER

Work History

Terracon, Environmental Department Manager, 2012-Present

AEGON USA Realty Advisors, Inc. Cedar Rapids, Iowa Senior Environmental Engineer, 1994-2010

Converse Consultants, Pasadena, California, Project Manager 1988-1994

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Assessment and management of hazardous building materials in commercial, residential and industrial buildings. Projects included ongoing management of hazards (asbestos, lead-based paint) in occupied spaces, hazardous material assesssments and abatement management as part of renovation or demolition activities.

Responsible for remedial activities and regulatory compliance with owned real estate and investment portfolios. Impacts to soil and groundwater included petroleum, volatile organic compounds, pesticides and metals contamination.

Conducted indoor air quality assessments as necessary to address employee concerns/complaints. Recommended modifications to HVAC systems and altered work-place activities to improve air quality.

Converse Environmental, Pasadena, California, 1987 - 1994
As a Project Manager, Mr. Nilsson conducted numerous Phase II assessments of retail gasoline service stations located across greater Los Angeles, CA. In addition to assessments, responsibilities included overseeing the installation and operation of remedial systems for petroleum impacted soil and groundwater.

Mr. Nilsson also managed air quality projects for a wide range of clients. These projects included permitting, transportation demand management, worker and community-right-to-know, and hazardous building material management.

KRISTOPHER M. SOMMER
ENVIRONMENTAL SPECIALIST

PROFESSIONAL EXPERIENCE

Mr. Sommer is an environmental scientist with approximately nineteen years of experience in the environmental field. He has been involved in various site investigation and remediation projects throughout the Midwest. Mr. Sommer has been associated with federal and state regulatory compliance in reference to underground storage tanks (UST's), indoor air quality, solid waste and geothermal systems. His responsibilities at Terracon Consultants, Inc. include performing field work, monthly free product recovery and reporting, communicating with subcontractors and clients, and report preparation.

PROJECT EXPERIENCE

Hazardous Material Removal and Oversight in Educational Facilities – Des Moines, Iowa

Project oversight for several projects for the Des Moines Independent Community School District that have included: review of historical construction documentation; collection of bulk asbestos samples; and air quality parameters, preparation of asbestos and mold inspection reports; development of project specifications, contract documents and; reviewing and maintaining progress schedules; communications with contractors, building occupants and owners; and reviewing work for compliance with project specifications, drawings and plans.

Commercial

Environmental Phase I and Phase II Site Assessments – Multiple Clients and Locations

Project manager and field representative for the completion of more than 50 Phase I and Phase II environmental site assessments across the United States. Projects completed for various clients including confidential transportation, financial sector, and manufacturing clients.

Subsurface Soil and Groundwater Investigations – Multiple Clients and Locations

Provided field and project-level management, and technical oversight for multiple environmental soil and groundwater investigations at sites across the United States. Project responsibilities have included: design and oversight of groundwater monitoring and remediation wells in a variety of subsurface environments; design, oversight, and data evaluation of numerous seismic and ground-penetrating-radar (GRP) investigations; development and oversight of groundwater sampling and aquifer characterization programs; and coordination of investigation-derived waste (IDW) disposal activities.

Retail Service Station Assessments – Multiple Clients and Locations

Project responsibilities have included: statistical inventory reconciliation reporting (SIR), spill prevention measures, implementation of vapor recovery programs, installation and oversight of fuel storage and distribution systems.

Education
Bachelor of Science Degree, Northwest Missouri State University, 1990

Registrations
Iowa Water Well Association (IWWA)

Certifications
40-Hour HAZWOPER

Nuclear Density Gauge Safety Training

State of Iowa Asbestos Inspector

State of Iowa Certified Well Contractor

State of Iowa UST Remover, Installer/Inspector

Work History
Terracon Consultants, Inc., Geotechnical Engineer, 2012-Present

Apex Companies, LLC Environmental, Specialist II, 2011-2012

Barker Lemar Engineering Environmental Specialist 2006-2010

Seneca Environmental Services Environmental Specialist 2005-2006

ATC Associates, Inc. Environmental Specialist 1999-2005

Maxim Technologies/Patzig Testing Laboratories Environmental Technician 1996-1999

CMS Incorporated Environmental Technician 1995-1996

National Environmental Service Company Environmental Technician 1993-1995

Terracon

PAUL FALK

DRILLING SUPERVISOR/SENIOR TECHNICIAN
TERRACON

PROFESSIONAL EXPERIENCE

Mr. Falk supervises the drilling operations and assists with the construction testing and laboratory testing services in the Des Moines, Iowa office. His responsibilities include scheduling drilling and testing services including field and laboratory operations, maintenance of field and laboratory testing equipment and drilling fleet, development of proposals and cost estimates for drilling and testing projects and report preparation for field testing services. Mr. Falk is also responsible for invoicing drilling and field testing projects in this office.

Mr. Falk has over ten years experience installing temporary and permanent monitoring wells and conducting sampling activities for environmental investigations.

Mr. Falk's experience in drilling operations includes operation of all types of truck and ATV mounted drilling equipment using solid-flight augers, hollow stem augers, wash boring techniques and coring techniques. His field testing services for geotechnical investigations also includes specialized testing including cone penetrometer testing, vane shear testing, and Iowa borehole shear testing. He is also familiar with in-situ permeability tests using packer tests and slug tests in monitoring wells.

Mr. Falk is knowledgeable in all aspects of laboratory and field testing services performed in this office. His experience includes field and laboratory testing of soil and concrete, non-destructive testing of concrete and masonry units, reinforcing steel placement, post-tensioned projects and deep and shallow foundation construction. His laboratory experience includes classification of soils and aggregates, proctors, strength testing, Atterberg limits, hydrometer, sieves, specific gravity's, and various other soils testing services.

PROJECT EXPERIENCE

- **Kate Shelly High Bridge, Boone County, Iowa**
  Supervised drilling operations and coordinated access to perform 18 soil borings as a preliminary investigation of a new bridge site.
- **US Highway 34 Fairfield Bypass**
  Supervised drilling operations, coordinated landowner contacts and reviewed field and laboratory data from 700 borings performed along an eleven mile proposed bypass.
- **City of Des Moines Riverwalk**
  Supervised drilling and coring operations and reviewed field logs for 13 borings performed for the Corps of Engineers as part of the Riverwalk project along the Des Moines River Levee System.

EDUCATION

Associate of Applied Science Degree, Civil Engineering Technology, Hawkeye Institute of Technology, Waterloo Iowa, 1988

40-hour Hazardous Material Safety Training.

REGISTRATION

Level I, ACI Certified Technician

NICET Level II – Soils/Concrete

Safety Training for Nuclear Density Gauges

Iowa Certified Well Driller

WORK HISTORY

Terracon Department Manager, 1994 - Present

Terracon, Engineering Technician/ Driller 1988-1994.

Attachment C
Proposal Certification

Terracon

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October 27, 2015

James Gastineau, Deputy Administrator

Iowa Underground Storage Tank Fund Program

2700 Westown Parkway, Suite 320

West Des Moines, Iowa 50266

Re: RFP Number RBCA 1509-01- PROPOSAL CERTIFICATIONS

Dear Mr. Gastineau:

I certify that the contents of the Proposal submitted on behalf of **Terracon Consultants, Inc.** (Contractor) in response to Iowa Underground Storage Tank Fund Program (Board) for RFP Number RBCA 1509-01 for Environmental Support Services are true and accurate. I also certify that Contractor has not knowingly made any false statements in its Proposal.

Certification of Independence

I certify that I am a representative of Contractor expressly authorized to make the following certifications in behalf of Contractor. By submitting a Proposal in response to the RFP, I certify in behalf of the Contractor the following:

1. The Proposal has been developed independently, without consultation, communication or agreement with any employee or consultant to the Board or with any person serving as a member of the evaluation committee.

2. The Proposal has been developed independently, without consultation, communication or agreement with any other contractor or parties for the purpose of restricting competition.

3. Unless otherwise required by law, the information found in the Proposal has not been and will not be knowingly disclosed, directly or indirectly prior to Board's issuance of the Notice of Intent to Award the contract.

4. No attempt has been made or will be made by Contractor to induce any other contractor to submit or not to submit a Proposal for the purpose of restricting competition.

5. No relationship exists or will exist during the contract period between Contractor and the Board or any other State Board that interferes with fair competition or constitutes a conflict of interest.

Certification Regarding Debarment

6. I certify that, to the best of my knowledge, neither Contractor nor any of its principals: (a) are presently or have been debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by a Federal Board or State Board; (b) have within a three year period preceding this Proposal been convicted of, or had a civil judgment rendered against them for commission of fraud, a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction, violation of antitrust statutes; commission of embezzlement, theft, forgery, falsification or destruction of records, making false statements, or receiving stolen property; (c) are presently indicted for or criminally or civilly charged by a government entity (federal, state, or local) with the commission of any of the offenses enumerated in (b) of this certification; and (d) have not within a three year period preceding this Proposal had one or more public transactions (federal, state, or local) terminated for cause.

This certification is a material representation of fact upon which the Board has relied upon when this transaction was entered into. If it is later determined that Contractor knowingly rendered an erroneous certification, in addition to other remedies available, the Board may pursue available remedies including suspension, debarment, or termination of the contract.

Certification Regarding Registration, Collection, and Remission of Sales and Use Tax

7. Pursuant to Iowa Code sections 423.2(10) and 423.5(8) (2011) a retailer in Iowa or a retailer maintaining a business in Iowa that enters into a contract with a state Board must register, collect, and remit Iowa sales tax and Iowa use tax levied under Iowa Code chapter 423 on all sales of tangible personal property and enumerated services. The Act also requires Contractors to certify their compliance with sales tax registration, collection, and remission requirements and provides potential consequences if the certification is false or fraudulent.

By submitting a Proposal in response to the (RFP), the Contractor certifies the following: (check the applicable box)

☒ Contractor is registered with the Iowa Department of Revenue, collects, and remits Iowa sales and use taxes as required by Iowa Code Chapter 432; or

☐ Contractor is not a "retailer" or a "retailer maintaining a place of business in this state" as those terms are defined in Iowa Code subsections 423.1(42) and (43).

Contractor also acknowledges that the Board may declare the Contractor's Proposal or resulting contract void if the above certification is false. The Contractor also understands that fraudulent certification may result in the Board or its representative filing for damages for breach of contract in additional to other remedies available to Board.

Sincerely,

Terracon Consultants, Inc.

Dennis R. Sensenbrenner, CGP, PG

Environmental Department Manager

Attachment D

Authorization to Release Information

Terracon

Terracon

October 27, 2015

James Gastineau, Deputy Administrator

Iowa Underground Storage Tank Fund Program

2700 Westown Parkway, Suite 320

West Des Moines, Iowa 50266

Re: RFP Number RBCA 1509-01- AUTHORIZATION TO RELEASE INFORMATION

Dear Mr. Gastineau:

Terracon Consultants, Inc. (Contractor) hereby authorizes the Iowa Underground Storage Tank Fund Program ("Board") or a member of the Evaluation Committee to obtain information regarding its performance on other contracts, agreements or other business arrangements, its business reputation, and any other matter pertinent to evaluation and the selection of a successful Contractor in response to RBCA 1509-01.

The Contractor acknowledges that it may not agree with the information and opinions given by such person or entity in response to a reference request. The Contractor acknowledges that the information and opinions given by such person or entity may hurt its chances to receive contract awards from the State or may otherwise hurt its reputation or operations. The Contractor is willing to take that risk.

The Contractor hereby releases, acquits and forever discharges the State of Iowa, the Board, their officers, directors, employees and agents from any and all liability whatsoever, including all claims, demands and causes of action of every nature and kind affecting the undersigned that it may have or ever claim to have relating to information, data, opinions, and references obtained by the Board or the Evaluation Committee in the evaluation and selection of a successful Contractor in response to the RFP.

The Contractor authorizes representatives of the Board or the Evaluation Committee to contact any and all of the persons, entities, and references which are, directly or indirectly, listed, submitted, or referenced in the Contractor's Proposal submitted in response to RFP.

The Contractor further authorizes any and all persons and entities to provide information, data, and opinions with regard to its performance under any contract, agreement, or other business arrangement, its ability to perform, business reputation, and any other matter pertinent to the evaluation of the Contractor's Proposal. The Contractor hereby releases, acquits and forever discharges any such person or entity and their officers, directors, employees and agents from any and all liability whatsoever, including all claims, demands and causes of action of every nature and kind affecting the Contractor that

it may have or ever claim to have relating to information, data, opinions, and references supplied to the Board or the Evaluation Committee in the evaluation and selection of a successful Contractor in response to RFP.

A photocopy or facsimile of this signed Authorization is as valid as an original.

Sincerely,

Terracon Consultants, Inc.

10-27-2015

Dennis R. Sensenbrenner, CGP, PG

Date

Environmental Department Manager]

Terracon
10/27/2015

ATTACHMENT # 4
Exhibit A
Schedule of Costs and Fees

Payment Terms
Per *Iowa Code § 8A.514* the State of Iowa is allowed sixty (60) days to pay an invoice submitted by a vendor. What discount will you give for payment in 30 days?

Cost Proposal
The Contractor shall prepare and submit a Cost Proposal to include the Contractor's Schedule of Costs and Fees for typical environmental work as described in Section 3.3.1 that may be associated with the services described in this RFP or those services not identified in this RFP but which may be necessary for completion of the contract requirements. The schedule shall include a listing of standard rates and reimbursable expenses or fees that are expected to be paid by the Board and based on net 60 days payment terms. These are all subject to review, negotiation and a maximum, as agreed. The Schedule of Costs and Fees will be used as a starting point for Service Agreement negotiations.

1. Report Costs (completed per Department requirements)
   - (a) RBCA Tier 1 — $1,250.00
   - (b) RBCA Tier 2 — $2,000.00
   - (c) Site Monitoring Report — $525.00
   - (d) Free Product Assessment Report — $350.00
   - (e) Free Product Recovery & Reporting:
     1. Mobilization (per visit): — $220.00 + $0.68/mi over 50 miles
     2. Free Product measurement & recovery (per well) — $55.00
     3. Disposal of water & free product (per gallon) — $Cost +15%
     4. Free Product Recovery Report (per report) — $115.00
     5. Other costs (identify and explain) — $15.00/well PPE; $85/drum
2. Mobilization Costs
   - (a) Mobilization including mileage / vehicle for field staff — $220.00 + $0.68/mi over 50 miles
   - (b) Mobilization including mileage / vehicle for drilling rig & crew — $450.00 + $1.68/mi over 50 miles
3. Receptor Survey — $315.00
4. Pathway Evaluations (RBCA Tier 2 / SMR - itemize) — $150.00/each
5. Soil Borings
   - (a) Soil boring cost, 25 ft. deep per borehole — $400.00
   - (b) Additional cost per ft. for borings greater than 25 ft. deep — 16.50/ft to 50-ft
6. Monitoring Wells (inclusive of boring costs)
   - (a) Monitoring wells, 25 ft deep per well — $650.00
   - (b) Additional cost per ft. for monitoring wells greater than 25 ft. deep — $25.00 to 50-ft

7. Soil and Groundwater Sampling

(a) Groundwater sampling – collection and analytical costs

1. Method OA-1, MtBE, per sample	$145.00
2. Method OA-1, per sample	$105.00
3. Method OA-2, per sample	$45.00
4. Method OA1, MtBE, OA-2, per sample	$190.00

(b) Soil sampling – collection and analytical costs

1. Method OA-1, MtBE, per sample	$110.00
2. Method OA-1, per sample	$105.00
3. Method OA1, OA-2, per sample	$145.00
4. Method OA1, MtBE, OA-2, per sample	$175.00

(c) Plugging of monitoring wells	$2.00/ft
(d) Completion of monitoring wells abandonment form	$15.00/each

8. Sampling of receptors including water lines, drinking water wells, non-drinking water wells – collection and analytical costs

(a) Method OA-1, MtBE, per sample	$165.00
(b) Method OA-1, per sample	$135.00
(c) Method OA-1, OA-2, per sample	$190.00
(d) Method OA-1, MtBE, OA-2, per sample	$210.00

9. Soil Gas Points @ 10 ft. per point	$400.00
10. Soil Gas sampling – collection and analytical costs (NIOSH 1501), per sample	150.00
11. Hydraulic Conductivity Testing (per Department requirements), each test	$125.00
12. Access Agreements (neighboring properties)	$150.00
13. Utility Notifications (if no RBCA report is completed)	$65.00
14. Iowa Groundwater Professional, hourly rate	$115.00

Other Items (identify and explain when item applies)

Per Diem $120/day/person

See attached Fee Schedule for typical environmental work that may be associated with the services described in this RFP or those services not identified in this RFP but which may be necessary for completion of the contract requirements. These are all subject to review, negotiation and a maximum, as agreed. The Schedule of Costs and Fees will be used as a starting point for Service Agreement negotiations.

Based on distance to site Drill Rigs and Field Personnel/Vehicles will be mobilized from the closest office of the following: Des Moines, Cedar Rapids, Bettendorf, Omaha, and Cedar Falls.

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2014 Schedule of Services and Fees
Environmental Services

I. PERSONNEL

Principal	$155.00/hour
Program Manager	$135.00/hour
Certified Industrial Hygienist	$125.00/hour
Senior Industrial Hygienist	$105.00/hour
Project Industrial Hygienist	$100.00/hour
Phase I Project Manager	$85.00/hour
Certified Lead Inspector/Risk Assessor	$75.00/hour
Environmental Scientist	$70.00/hour
IH Technician III	$70.00/hour*
IH Technician I	$65.00/hour*
Technician I	$45.00/hour*
Drafts Person/Cad Operator	$70.00/hour
Clerical/Administrative Staff	$55.00/hour

** An overtime premium of 1.5 times the hourly rate will apply for services provided Monday through Friday that are in excess of 8 hours per day and for services provided before 7:00 AM and after 6:00 PM, as well as for services provided on Saturday, Sunday and Terracon recognized Holidays.*
NOTE: Deposition or court testimony at a minimum of 1.75 times regular rate - minimum of $200.00/hour

II. EXPENSES AND SUPPLIES

Vehicle Charge	$0.68/mile
Per Diem, Lodging and Food	Minimum of $130.00/day
Miscellaneous charges, including analytical laboratory tests, shipping charges, rental equipment, outside labor, public transportation, materials, permit fees or other contracted services	Cost + 15%

III. ENVIRONMENTAL EQUIPMENT RENTAL (Personnel time not included)

Asbestos and Lead Sampling Equipment

XRF (Lead in Paint Analyzer)	$290.00/day
Asbestos Sampling Tools	$15.00/day
HEPA Vacuum	$10.00/day
Sample Borers	$2.45 each
3x5" Write-on Bags	$0.04 each when using >100

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Asbestos Abatement Monitoring Equipment

High Volume Sample Pump	$10.00/day
Rotameter Calibrator for Pumps	$5.00/day
Primary Calibrator for Pumps	$35.00/day
Tyvek Suit/Respirator	$10.00/day
Leaf Blower	$5.00/day
Fan	$10.00/day
Cassettes – PCM	$1.00 each
TEM	$1.00 each
Microscope (Phase Contrast)	$30.00/day
Asbestos PCM Analysis	$15.00/sample

Lead-Based Paint Removal Monitoring Equipment

High Volume Sample Pump	$10.00/day
Rotameter Calibrator for Pumps	$5.00/day
Primary Calibrator for Pumps	$35.00/day
Tyvek Suit/Respirator	$10.00/day
Lead Wipes and Tubes	$0.70/each

Mold Sampling Equipment

High Volume Sample Pump	$10.00/day
Rotameter Calibrator for Pumps	$5.00/day
Primary Calibrator for Pumps	$35.00/day
Tyvek Suit/Respirator	$10.00/day
Air-O-Cell Cassettes (for mold air sampling)	$6.00/each
Temperature/Humidity Pen	$12.00/day
Protimeter Surveymaster	$30.00/day
Viable Microorganism Sampler/Pump	$85.00/day
Borescope	$25.00/day

Other Equipment

Mercury Vapor Analyzer	$75.00/day
Detector Tubes, Colorimetric	Cost + 20%