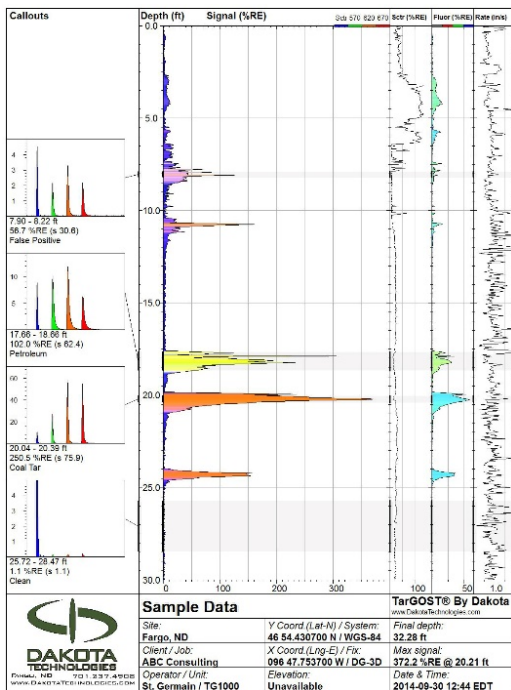


Dakota Technologies Statement of Qualifications



High Resolution Site Characterization Environmental Services

- Fargo, ND
- ◆
- Minneapolis, MN
- ◆
- Kansas City, MO
- ◆
- Morris, MN
- ◆
- Atlanta, GA
- Columbus, OH
- ◆
- Boston, MA
- ◆
- Charleston, SC
- ◆
- Virginia Beach, VA

Company Profile

- *Pioneers of Commercialized Laser Induced Fluorescence (LIF) Technologies*
- *Incorporated in 1993*
- *Owner Operated, Privately Held Company*
- *Nationwide and International Services*



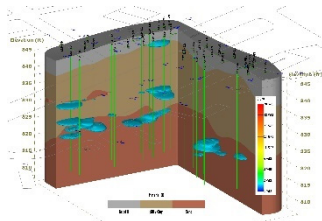
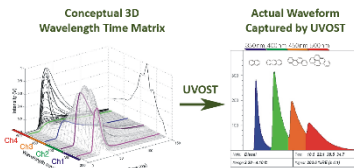
Dakota Technologies (Dakota) provides state-of-the-art, high resolution site characterization (HRSC) services for hazardous waste site investigations, specializing in the rapid assessment of subsurface LNAPL and multi-component DNAPL. Incorporated in 1993, Dakota has a combined 150+ years of related field experience and more Laser-Induced Fluorescence (LIF) sites completed than any other service provider.

Dakota's team members possess an array of expertise, interests and experience. These interests are well expressed in the professional services offered by Dakota, and provide the capability to perform tasks with professionalism and careful attention to detail. Our expertise enhances the success of our clients as we deliver reliable data and responsive service for every project. Our equipment operators are highly trained technicians and scientists that specialize in providing HRSC technology services, working with our clients to maximize the efficiency of field operations.

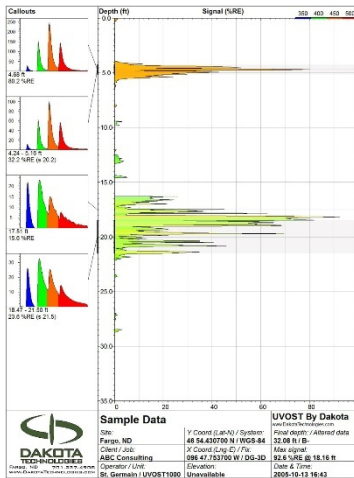
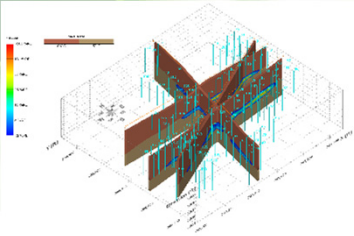
We also offer 2D and 3D visualizations of site characterization data in static and dynamic formats. Our visualization method incorporates direct sensing data, aerial photographs, CAD models, and GIS terrain, lithologic and contaminant chemistry data to build a robust Conceptual Site Model (CSM), elevating the level of understanding among all stakeholders.

The Dakota team of talented professionals includes:

- Hydrogeologists
- Engineers
- Geologists
- Environmental Scientists
- Chemists
- Data Modelers
- Environmental Technicians
- Field Service Specialists
- Licensed Monitoring Well Drillers and Installers



Summary of Services



High-Resolution Site Characterization (HRSC)

Dakota specializes in delivering HRSC strategies and techniques to our national and international clients. HRSC incorporates scale-appropriate measurement and sample density to define contaminant distributions, and the physical context in which they reside. This greater degree of certainty supports development of robust and reliable CSMs and faster and more effective site cleanup.

High Resolution Site Characterization services offered by Dakota:

- Laser-Induced Fluorescence (LIF) NAPL Screening Tools
 - ❖ DyeLIF™, TarGOST® & TarGOST-HP (DNAPL)
 - ❖ UVOST® & UVOST-HP (LNAPL)
 - ❖ Dual LIF Technology Tool (UVOST & TarGOST)
- Membrane Interface Probe (MIP), Hydraulic Profiling Tool (HPT) & MiHpt
- 2D and 3D Data Visualizations
- Electrical Conductivity (EC)

Direct Push Technology (DPT) & Environmental Drilling

Dakota provides the following direct push technology (DPT) and environmental drilling services:

Percussion DPT Systems (All Terrain and Truck Mounted)

- Continuous soil testing via Dual-Tube and/or Macro-Core samplers
- Discrete soil testing via Dual-Tube or Large-Bore Samplers
- Discrete water sampling via Screen Point 15 method
- Conventional water sampling via 1" pvc screens and casing
- Temporary and permanent soil gas monitoring points

Hollow Stem Auger (All-Terrain and Truck Mounted)

- Dakota provides hollow-stem auger services using all-terrain and truck-mounted equipment, and is a licensed monitoring well installation contractor (where required) in Alabama, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Montana, Nebraska, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, West Virginia and Wisconsin.
- Hollow-stem/Macro-Core Hybrid Continuous Soil Sampling

Well and Boring Sealing

- Monitoring and potable well sealing
- Site restoration and follow up reporting

Key Service Area

LIF: UVOST® & UVOST-HP



Statement of Qualifications

- *Dakota pioneered the UVOST technology and owns and operates more UVOST units than any other service provider and is prepared to meet our clients' time-critical project demands.*

Ultra-Violet Optical Screening Tool (UVOST®)

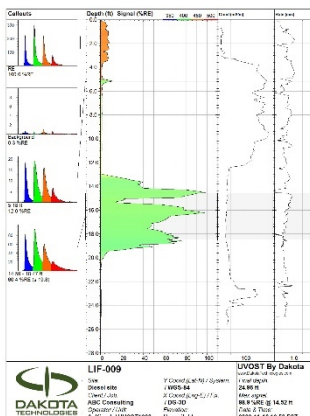
The UVOST is an LIF technology and the culmination of nearly two decades of field experience as LIF service providers. Its highly sophisticated yet rugged design allows the UVOST to reliably delineate nearly any petroleum NAPL including gasoline, diesel, crude oil, kerosene, and many others. It can be deployed by any type of direct-push platform. UVOST is simply the world's finest LIF system and it was built to do one thing – find petroleum NAPL.

UVOST is delivered with direct-push platforms such as Geoprobe (hammerable) and CPT. The probe features a sapphire window in the side allowing direct fluorescence measurements as the probe is steadily advanced into the soil.

PAH fluorescence of fuels/oils is directed back to the surface where it is analyzed. Responses are indicated in real-time on a graph of UVOST signal vs. depth. The logged results are color-coded and contain hundreds of waveforms to aid in proper interpretation of the fluorescence response.

The following PAH-containing, non-aqueous phase liquids (NAPLs) are detected in-situ with the UVOST:

- Petroleum, Oils and Lubricants (POL)
- Gasoline
- Diesel Fuel
- Biodiesel
- Motor Oil
- Cutting Fluids
- Hydraulic Fluid
- Jet Fuel (Kerosene)

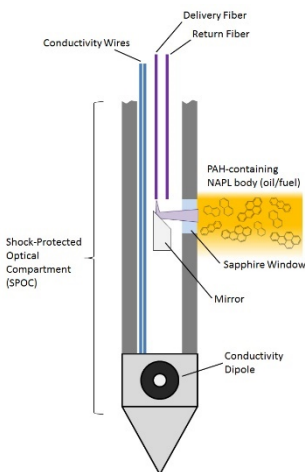


Electrical Conductivity (EC)

The EC instrument operates simultaneously with the UVOST system. Different soil types will conduct electricity in different manners, depending on particle size and mineralogy. For example, clays generally will have high conductivity while gravels will have low conductivity.

UVOST-HP

The new UVOST-HP tool enables the practitioner to efficiently delineate LNAPL petroleum while simultaneously classifying the scales of lithologic variability that control mass storage and transport in the source and distal segments of the LNAPL plume.



- | | | | | | | | | |
|--------------|---|-----------------|---|-----------------|---|--------------------|---|-------------|
| Fargo, ND | ◆ | Minneapolis, MN | ◆ | Kansas City, MO | ◆ | Morris, MN | ◆ | Atlanta, GA |
| Columbus, OH | ◆ | Boston, MA | ◆ | Charleston, SC | ◆ | Virginia Beach, VA | | |

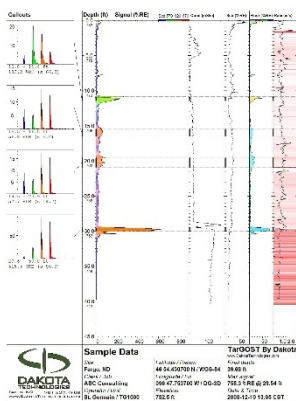
Key Service Area

LIF: TarGOST® & TarGOST-HP



Statement of Qualifications

- *Dakota Technologies specializes in delineating coal tar and creosotes at former manufactured gas plants (MGP) and wood treatment facilities.*



Tar-Specific Green Optical Screening Tool (TarGOST®)

Our Tar-specific Green Optical Screening Tool (TarGOST) is designed specifically for delineating coal tars and creosotes - the non-aqueous phase liquid contamination typically found at former MGP and wood treater sites.

TarGOST is delivered with direct-push platforms such as Geoprobe (hammerable) and CPT. The probe features a sapphire window in the side allowing direct fluorescence measurements as the probe is steadily advanced into the soil. The EC instrument operates simultaneously with the TarGOST system to map unconsolidated stratigraphy.

Coal tar and creosote fluorescence is directed back uphole to be analyzed. Responses are indicated in real-time on a graph of signal versus depth. The logged results are color-coded and contain hundreds of waveforms to aid in proper interpretation of the fluorescence response.

TarGOST benefits include:

- **Real-time data** — allows for “on-the-fly” guidance of the next bore-hole location, leading to better bounding of source term NAPL
- **No IDW** — true in-situ information without producing waste, carryover, or handling and storage of samples
- **Fast** — production rates of 300 to 500 feet per day (typical direct push conditions)
- **Flexible delivery** — percussion (i.e. Geoprobe®) or cone penetration test (CPT)
- **Color-coded logs** — the ultimate in qualitative and semiquantitative information “at-a-glance”
- **High data density** — one inch/data point
- **Sensitive** — low detection limits and quiet baselines that only laser-based systems provide
- **Selective** — TarGOST is “blind” to dissolved phase and the waveforms offer positive identification of NAPL vs natural fluorescence commonly encountered at MGP and wood treater sites

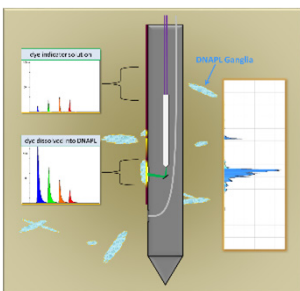
TarGOST-HP

The new TarGOST-HP tool enables the practitioner to efficiently delineate coal tar and creosote DNAPL while simultaneously classifying the scales of lithologic variability that control mass storage and transport in the source and distal segments of the DNAPL plume.

- Fargo, ND ◆ Minneapolis, MN ◆ Kansas City, MO ◆ Morris, MN ◆ Atlanta, GA
Columbus, OH ◆ Boston, MA ◆ Charleston, SC ◆ Virginia Beach, VA

- *Immediately prior to conducting each log, two measurements – an RE and a Background – are recorded. This normalizes the DyeLIF data across the entire investigation and against prior or proceeding investigations and lab studies.*

- *Non-target fluorescence almost always contains a different fluorescence waveform compared to the solvated indicator dye and/or the LNAPLs and DNAPLs. This allows for differentiation between the target dye/NAPLs and the assorted false positives.*



Dye-enhanced Laser Induced Fluorescence (DyeLIF)

Dye-enhanced laser induced fluorescence system, or DyeLIF, is Dakota's new chlorinated DNAPL sensing technology. DyeLIF has the ability to rapidly and precisely delineate DNAPL because it does not respond to dissolved-phase chlorinated solvents.

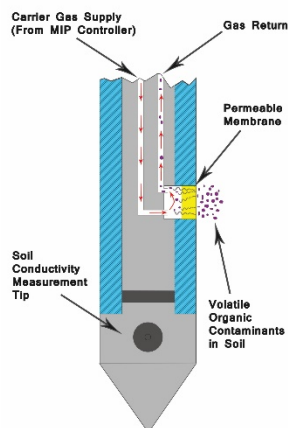
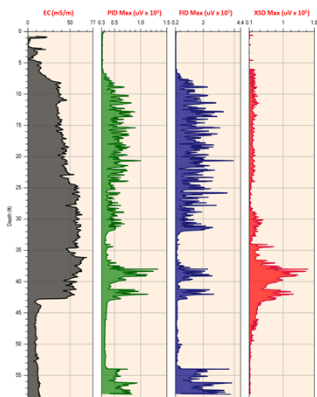
The DyeLIF system renders typically non-fluorescent chlorinated DNAPLs fluorescent by injecting an indicator dye through an injection port that is situated below the LIF sapphire window. As the probe is advanced through the subsurface, the injected dye continuously contacts the soil and instantly partitions into any DNAPL that may be present. Our standard LIF tooling is used to detect the fluorescence emitted by the dye-labeled DNAPL.

DyeLIF benefits include:

- **Real-time data** — allows for “on-the-fly” guidance of the next bore-hole location, leading to better bounding of source term
- **No IDW** — true in-situ information without investigation derived waste, carryover, or handling and storage of samples
- **Fast** — production rates of 200 to 500 feet per day (typical direct push conditions)
- **Flexible** — delivery with percussion (i.e. Geoprobe®) or cone penetration test (CPT)
- **High data density** — one inch/data point. A typical day's probing provides the equivalent of ~12,000 oil red O shake tests
- **Sensitive** — 0.1 to 1.0% pore saturation limit of detection
- **Selective** — fluorescence time-domain waveforms offer positive DNAPL identification and interference rejection – with ZERO response from dissolved-phase chlorinated solvent
- **Proven** — based on mature LIF technology – recently evaluated under Environmental Security Technology Certification Program (ESTCP ER-201121) - final report under review as of 5/2016
- **Geology** — uphole and downhole injection pressure sensors on the dye injection system provide hydraulic profiling information useful for remedy design
- **100% recovery** — no partial recoveries, sloughing, or questionable sample representativeness



- *Dakota is proud to be in an exclusive group of world-wide service providers to offer Low Level MIP with EC.*
- *Dakota is the leading provider of LL MIP with more sites completed than any other provider.*



Membrane Interface Probe (MIP)

The Direct Image (Geoprobe®) MIP logs chlorinated and non-chlorinated volatile contaminants in soil and ground water. As the probe is pushed into the soil, VOCs in the subsurface come into contact with the heated surface of the MIP polymer membrane. Upon contact, a portion of the VOCs will partition into the polymer membrane. Once they are absorbed into the membrane, VOC molecules will move by diffusion across the membrane to regions where their concentration is lowest. Because the membrane is heated and its profile thin, this movement across the membrane is very rapid, taking place in less than 1 second for light hydrocarbons.

A clean carrier gas is circulated across the internal surface of the membrane and sweeps the volatiles to the system at the surface. Prior to reaching the detectors, the carrier gas is passed through a nafion dryer tube which removes water vapor from the carrier gas. The MIP lab at the surface will be configured with a PID/XSD and FID for contaminant response, which is recorded as detector signal with depth on the acquisition software. Soil electrical conductivity (EC) is plotted on each MIP log for determining site lithology. MIP/EC logs will be printed immediately after each probe location is completed.

Low Level MIP (LL MIP)

This advancement in MIP technology generally offers a 10x reduction in detection limits for most compounds. The technology works similarly to traditional MIP except that the carrier flow is controlled (shut off and on). When the carrier is shut off, VOCs are allowed to accumulate behind the membrane. Once the carrier flow is resumed, the contaminant mass is allowed to pass by the detectors. The dramatically lower detection limits allow the practitioner to use MIP technology with confidence at the edge of a plume.

MiHPT

The MiHPT a combination probe that can perform MIP, hydraulic profiling tool (HPT), and EC measurements in one push. The new probe detects volatile contaminants with the MIP, measures soil electrical conductivity with a dipole array, and measures HPT injection pressure using the same down-hole transducer as the Geoprobe stand-alone HPT system.

Key Service Area

Hydraulic Profiling Tool (HPT)

- *Produces a detailed hydrostratigraphic log and can be used to estimate hydraulic conductivity in the saturated zone*
- *Measures hydrostatic pressure and depth to water table*
- *Supplements direct sensing data such as laser-induced fluorescence (LIF) or membrane interface probe (MIP) for a comprehensive subsurface characterization*

Hydraulic Profiling Tool (HPT)

The Direct Image® (Geoprobe) Hydraulic Profiling Tool (HPT) was developed to evaluate the hydraulic properties of unconsolidated materials.

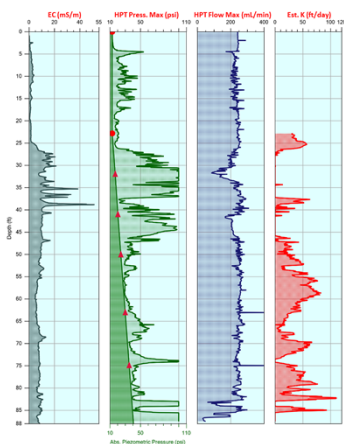
Water is pumped out of the HPT Probe and into the formation at a constant rate of typically 250 ml/min. Injection pressure is monitored using a sensitive pressure transducer in the probe. The pressure is then plotted with depth as an indication of the hydraulic properties of the soil.

A change in flow (usually accompanied by an inverse pressure change) is an indicator of the hydraulic properties of the soil. High pressure responses generally indicate a relatively small grain size and the lack of ability to transmit water. Low pressure responses generally indicate large grain size and the ability to transmit water. The HPT data can be used along with dissipation tests to estimate hydraulic conductivity (K).

Electrical Conductivity is also measured by the probe using a Wenner array. The two data streams are plotted and displayed in real-time, allowing the client to make quick decisions. Logs are printed following each push.

Hydraulic Conductivity (k) Estimation

Formation hydraulic conductivity can be estimated from HPT logs. HPT logs are also used to develop lithologic cross sections of the subsurface. This allows the site investigator to trace aquifer materials or confining zones across a site. It also supports comparison of lithology between locations based on apparent permeability.



Key Service Area

Darts

- Particularly well suited for characterization work in shorelines, marshes, or shallow bodies of water adjacent to former MGP or creosote sites

Darts

The Dart system is designed to quickly and inexpensively screen for polycyclic aromatic hydrocarbons (PAHs) in sediments and similar soft soils, where LIF, traditional soil boring, and other mechanized sampling are difficult, if not impossible.

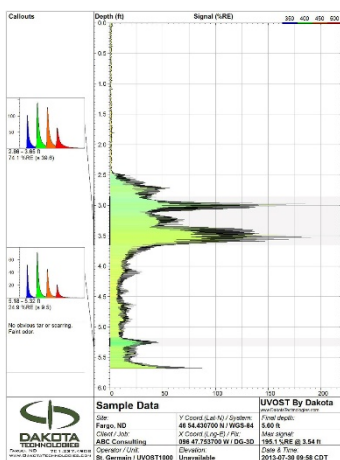
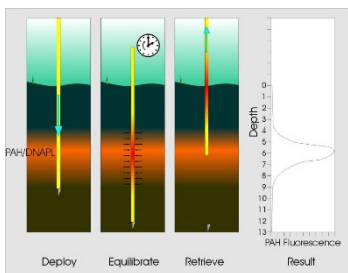
The Dart sampler is comprised of a continuous rope or rod made from or coated with solid-phase extraction (SPE) media – the same type of materials used in labs for EPA-approved cleanup and pre-concentration of PAHs in traditional grab samples. PAHs are attracted to and absorb into the SPE media. Once they've migrated into the Dart, they're held in solid solution and remain trapped there almost indefinitely.

The Dart samplers are inserted into the sediments and left in place for 24 hours to allow PAHs to transfer into the SPE cladding. Buoys are used to pre-mark the Dart locations and divers place the Darts into the sediment by hand, on occasion using a small customized drive hammer to achieve full penetration.

Short lengths of floating cord attached to each Dart allows the divers to find the Darts 24 hours later and retrieve them. After retrieval, the Darts are wrapped in aluminum foil and taken to shore and shipped to Dakota lab for LIF analysis if not performed onsite. Analysis of each Dart takes about 30 minutes.

Laboratory evidence suggest that Darts will also be effective for non-NAPL associated PAHs, such as the "black mayonnaise" that is commonly found to be plugging large urban waterways.

Research by others also suggests that the Darts will be capable of acting as biological surrogates due to the SPE material's similarity to biological tissues with regard to absorbing biologically available PAHs in sediments, allowing for surveys of biological uptake risk as opposed to total PAH analyses of sediment using aggressive Soxhlet extractions, which often overestimate risk. Dakota is continuing to investigate the efficacy of applying Darts to these and other screening applications.



Key Service Area

2D and 3D Data Visualizations

- *Our data visualization deliverables prevent misconceptions that often result when using two-dimensional plots to represent the three-dimensional subsurface environment.*

2D and 3D Data Visualizations

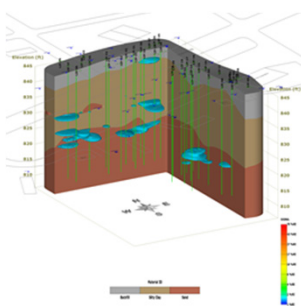
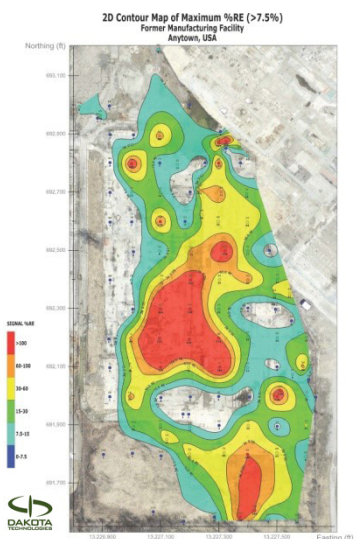
Dakota provides data visualization services to deliver 2D and 3D representations of the conceptual site model (CSM). High resolution site characterization technologies such as LIF (UVOST, TarGOST, DyeLIF), MIP, HPT and EC offer high data density, non-subjective data sets that are ideally suited to modeling. Inclusion of these data sets greatly enhances the accuracy and usefulness of the CSM.

Our 2D and 3D visualizations can incorporate any of our direct sensing technologies with high resolution GIS imagery and traditional base map features, such as CAD drawings, topographic maps, or aerial photographs. The 3D visualizations may then incorporate lithologic information from boring logs, as well as analytical results from soil and groundwater samples. The synthesis of this information into an interactive database visualization tool allows the distribution of contaminants to be clearly shown within the hydrogeologic framework and can be used to demonstrate how the various media interact in the subsurface.

Standard deliverable packages include static images, 2D visualizations, and dynamic 3D files with an interactive viewer. Advanced packages can include horizontal slices, cross sections/fence diagrams, channel separation (for LIF), Lithology/EC data, drawing site features such as buildings, tanks, and utilities, and animations.

Conceptual Site Model (CSM)

Identification, assessment, and remediation of environmentally affected sites often require an understanding of complex physical settings and issues. Data visualization is used as a tool to elevate the level of understanding among all stakeholders so that appropriate decisions can be made. Our visualizations integrate multiple sources and types of data into one medium for evaluation and development of the conceptual site model. Use of three-dimensional visualization tools allows complex information to be easily evaluated and understood by both technical and non-technical interested parties.



Contact Us

LIF Technology Expert

Randy St. Germain

President

Fargo, ND

stgermain@dakotatechnologies.com

HRSC Proposals & Scheduling

Jim Dzubay

Chief Operating Officer

New Hope, MN

jdzubay@dakotatechnologies.com

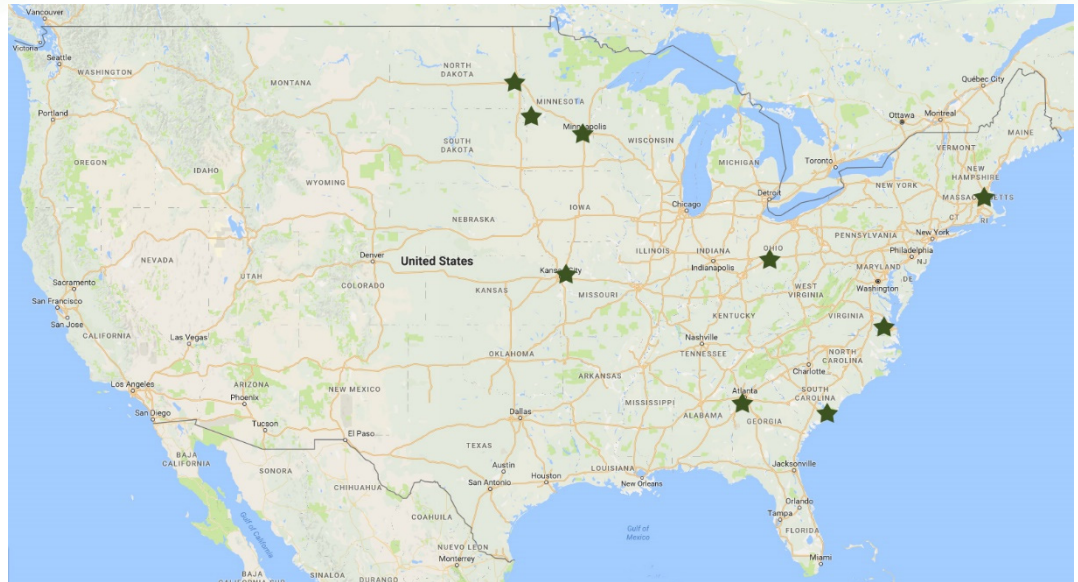
General Inquiries & Proposals

Ed Creaden

Director of Marketing

Overland Park, KS

ecreaden@dakotatechnologies.com



www.dakotatechnologies.com

National Toll-Free Number: 844.GET.HRSC (844.438.4772)

Fargo, North Dakota

2201-A 12th St N
Fargo, ND 58102
Tel: 701.237.4908
Fax: 701.237.4926

Minneapolis, Minnesota

5001 Boone Ave. N
New Hope, MN 55428
Tel: 763.424.4803
Fax: 763.424.9452

Kansas City, Missouri

1625 SE Decker
Lee's Summit, MO 64081
Tel: 816.525.7483
Fax: 816.525.7103

Morris, Minnesota

14 Green River Road
Morris, MN 56267
Tel: 320.589.4610
Fax: 320.589.2814

Atlanta, Georgia

87 Brooklyn Ave
Forsyth, GA 31029
Tel: 678-409-7925

Columbus, Ohio

P.O. Box 364
Galena, OH 43021
Tel: 740.965.8271

Boston, Massachusetts

83 Nickerson Rd, Unit 1B
Ashland, MA 01721
Tel: 763.424.4803
Cell: 443.534.3878

Charleston, South Carolina

1303 Rockfish Court
Mt. Pleasant, SC 29466
Tel: 843.789.9095

Virginia Beach, Virginia

Tel: 763.424.4803
Fax: 763.424.9452
Cell: 434.962.3812

Fargo, ND



Minneapolis, MN



Kansas City, MO



Morris, MN



Atlanta, GA

Columbus, OH



Boston, MA



Charleston, SC



Virginia Beach, VA