



# Direct Push Analytical Corp.



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Corporate 877-372-1937

# *Direct Push Analytical Corp.*

## Mission Statement

*It is the policy of Direct Push Analytical to strive for continuous improvement in the services we provide to our clients and to meet or exceed their expectations for every project. Direct Push Analytical will provide each employee with the proper materials and equipment to effectively perform their duties and maintain the highest level of professionalism, service, and quality. Direct Push Analytical staff will not succumb to pressure from any source that could adversely affect the quality of their work or their commitment to the projects and clients they serve.*

## Overview

Direct Push Analytical is a veteran owned small business entity operating out of the Chicago, Illinois and Cincinnati, Ohio areas providing onsite environmental analysis and Geoprobe® services to consultants and industries throughout the contiguous 48 states.

Direct Push Analytical's staff of professional associates has a combined experience level of over 100 years of professional experience. This experience encompasses hydrogeological investigations, fixed based and mobile laboratory operations, quality control, regulatory compliance, and emergency response planning and execution. Each person involved with Direct Push Analytical understands the time constraints and costs involved with environmental projects. In many instances, projects bring contractors together from a number of different disciplines to complete a complex task under constrained time lines and difficult conditions. Every project is different, requiring site and laboratory personnel with the ability to adapt quickly and work independently with a minimal amount of external support.

Direct Push Analytical was established in 1996 with a primary focus on providing rapid site characterization techniques and quality field sampling services to environmental professionals. Since that time Direct Push Analytical has worked on over 1,900 sites in 20 states. Projects assisted on during this time period include: RCRA/CERCLA sites, DOE/DOD facilities, state and federal Superfund sites, and State Regulatory Program sites.



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## Geoprobe® 5400 Series

The Geoprobe® 5400 series is the standard vehicle utilized by Direct Push Analytical. These probes are mounted in Ford carrier vehicles and are available in two or four wheel drive models. This probe is a versatile and rugged probing machine designed for accomplishing the majority of our probing tasks.

The 5400 Series machines are equipped with the DT21 Dual Tube Sampling system. This tooling utilizes Geoprobe® 2.125 inch OD (1.50 inch ID) probe rods as an outer casing and 1.0 inch rods for the inner rod string. A DT21 cutting shoe is threaded into the leading end of the rod string. When driven into the subsurface, the cutting shoe shears a 1.125 inch OD soil core with 4 foot pushes which is collected inside the casing in a clear PETG liner. The DT21 system has the capabilities to install up to 1 inch traditional monitoring wells in the borehole after soil core collection. The DT21 system also has the capability to install 0.5 inch or 0.75 inch prepacked monitoring wells.

### Model 5400 Features:

- Supplies 14 tons of pull and 10.5 tons of downforce
- Hydraulic lateral swing for easy offset placement of probe
- Fuel capacity for a full day of operation under normal conditions
- Compatible with most Geoprobe® Tooling and Logging Equipment



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## 66DT Series Track Mounted Geoprobe®

The 66DT Track Mounted Geoprobe is the most powerful and perhaps the most versatile probe that DPA offers. The compact size of the Model 66DT Series machines get you in to confined spaces to get the work done. Because the weight of the unit is evenly distributed over both tracks, the 66DT Series can easily maneuver through shallow water, soft sands, or muddy fields. But its convenient structure doesn't sacrifice strength... the 66DT Series is as powerful as the truck-mounted 66 series units with an astounding 17.5 tons of downforce and 23.5 tons of retraction force.



The 66DT Series can be equipped with the DT32 Dual Tube Sampling system. This tooling utilizes 3.25 inch probe rods as the outer casing and 1.25 inch rods as the inner rod string. The cutting shoe shears a 1.85 inch soil core with 5 foot pushes. The DT32 system can install 2 inch traditional wells in the borehole after soil core collection. 1.0 or 1.5 inch prepacked monitoring wells can also be installed. Should your project require the collection of **Shelby Tube samplers** or the installation of **2 inch monitoring wells**, the 66DT Series is capable of turning 8 inch OD hollow stem augers with 4.25 inch ID. Whatever your scope, whatever the site conditions, the 66DT Series can do it all.

### Model 66DT Features:

- Switches from direct push tooling to hollow stem augers in a matter of minutes
- 66-inch probe cylinder stroke allows use of 5-foot probe rods
- **21 ton pulling capacity** for today's larger sampling tools and deeper depths
- Equipped with the powerful GH60 Soil Probing Hammer with **17.5 tons of downforce**
- Wireless remote control for easy and safe and precise maneuvering
- Built-in rotary spindle for concrete drilling, augering, and anchoring
- Independently driven rubber tracks and hydraulic movement in all three axes allows easy probe alignment with tool string
- Compatible with Geoprobe® brand Logging Equipment including MIP and EC probes
- Rig Specs: Weight-5,000 lbs, 48" to 60" wide, 121" long, 156" tall (unfolded)  
48" to 60" wide, 92" long, 74" tall (folded)



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## GH42 Handcart Prototype (2<sup>nd</sup> Generation)



Figure 2: GH42 Handcart

A remote power supply (Figure 2) is used to power this unit for reduced noise, emissions, and space requirement. The hand cart is connected to this hydraulic pump via two sets of 65-foot hoses. These hoses can be interconnected in order to give our probes a total of 130-feet of hose length inside buildings. Direct Push Analytical can install up to 1" monitoring wells through the Dual Tube sample rods upon completion of the boring. Depending upon available overhead clearance when inside buildings, 5- or 10-foot lengths of PVC well materials can be used.

This probe (Figure 1) started its life as a standard, truck mounted Geoprobe. The unit was removed from the vehicle and modified in order to be able to conduct work in areas where access is severely limited. With an overall footprint of approximately 33" by 36", this probe takes on challenging areas with ease. The probe anchors to concrete surfaces for stable and deep probing. The concrete anchors provide the necessary resistance required to advance the tooling to your projects' required depth. Four concrete anchors are utilized at each of the sampling locations to anchor the brackets that wrap over the "foot" of the hand cart. Depending upon the soil types encountered and the quality of the concrete floor, the hand cart has been able to collect soil samples to depths of 30 feet below the concrete surface.

The probe is mounted on two rubber, inflatable tires and can easily pass through any opening measuring at least 33" wide and 60" high. The probe height fully extended is a minimal 97", leaving plenty of room in even the most confined spaces. Maneuvering this probe around the interiors of buildings takes just one person (two persons required to load and unload). The probe pushes 36" rods and utilizes the technologically advanced Dual Tube sampling system for continuous, discrete sampling to depth with no slough or cave-in.



Figure 1: Handcart Hydraulic Pump



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## Dual Tube Sampling Systems

Geoprobe® brand Dual Tube Sampling Systems are efficient methods of collecting continuous soil cores with the added benefit of a cased hole. Dual tube sampling uses two sets of probe rods to collect continuous soil cores. One set of rods is driven into the ground as an outer casing. These rods receive the driving force from the hammer and provide a sealed hole from which soil samples may be recovered without the threat of cross contamination. The second, smaller set of rods, are placed inside the outer casing. The smaller rods hold a sample liner in place as the outer casing is driven one sampling interval. The small rods are then retracted to retrieve the filled liner.

Geoprobe® Dual Tube Sampling Benefits Include:

- **Continuous Coring** for faster sampling as compared to MacroCore.
- **Continuous Discrete Sampling** in both saturated and unsaturated zones.
- **Cased Hole** eliminates cross contamination.
- Perform bottom-up pressure grouting while retracting outer casing.
- **Set Monitoring Wells** through outer casing after collection of soil core.

### Dual Tube 21 Sampling System

The DT21 system uses Geoprobe® 2.125 inch OD (1.50 inch ID) probe rods as an outer casing and 1.0 inch rods for the inner rod string. A DT21 cutting shoe is threaded into the leading end of the rod string. When driven into the subsurface, the cutting shoe shears a 1.125 inch OD soil core with 4 foot pushes which is collected inside the casing in a clear PETG liner. The DT21 system has the capabilities to install up to 1 inch traditional monitoring wells in the borehole after soil core collection. The DT21 system also has the capability to install 0.5 inch or 0.75 inch prepacked monitoring wells.

Figure 3: DT21 liner and liner holder



Figure 4: DT32 liner



### Dual Tube 32 Sampling System

The DT32 system uses the speed and ease of the proven dual tube principle and adds the durability of a metal sampler sheath. The addition of a liner sheath has made the DT32 the dual tube system of choice when using direct push machines.

The DT32 system uses 3.25 inch probe rods as the outer casing and 1.25 inch rods as the inner rod string. The cutting shoe shears a 1.85 inch soil core with 5 foot pushes. The DT32 system can install 2 inch traditional wells in the borehole after soil core collection. 1.0 or 1.5 inch prepacked monitoring wells can also be installed.

Both the DT21 and DT32 dual tube systems meet or exceed ASTM D6282-98(2005) Standard Guide for Direct Push Soil Sampling for Environmental Site Characterizations.



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## Grouting and Injection Services

### Grout/Injection Machine

Geoprobe® Systems manufactured the first grouting/injection system designed specifically for Direct Push applications. With a powerful reciprocating (piston) pump, the Geoprobe® Grout Machine can easily deliver standard ASTM **grout or remediation** materials through 1.25-inch diameter Geoprobe® probe rods or through 3/8-inch (1/4-inch inside diameter) polyethylene tubing.



Figure 5: GS1000 Grout/Injection Pump

No more pouring bentonite chips down the probe hole and hoping for the best! The Geoprobe® Grout Machine assures you that the hole is sealed completely from the bottom up! This allows operators to meet state requirements for bottom-up sealing of boreholes.

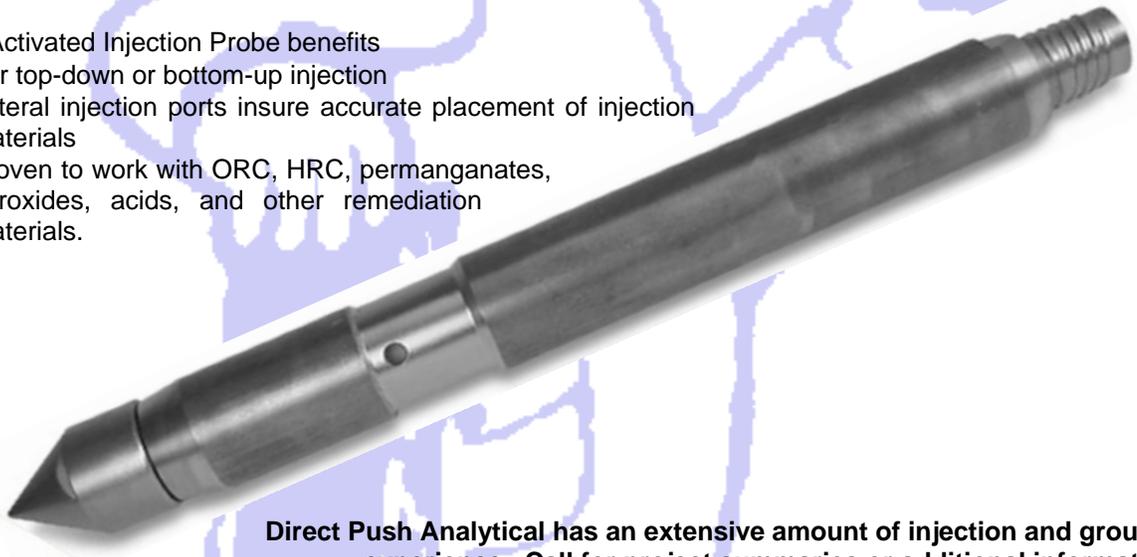
Our pump utilizes a hydraulically-driven piston pump capable of providing operating pressures up to 1000 psi. The pump uses a self contained power source and delivers between 0.9 and 2.3 gallons per minute. Additionally, the pump has a 9.5 gallon hopper and weighs only 225 pounds (when empty).

### Pressure Activated Injection Probe

The Geoprobe Pressure Activated Injection Probe Assembly threads to the leading probe rod for the injection of **remediation materials**, allowing materials to be injected laterally into the subsurface. This probe incorporates an internal check valve to keep soil out during driving/retraction, eliminating material “backflow” through the tool string and keeping the tool string from clogging while probing to depth.

Pressure Activated Injection Probe benefits

- For top-down or bottom-up injection
- Lateral injection ports insure accurate placement of injection materials
- Proven to work with ORC, HRC, permanganates, peroxides, acids, and other remediation materials.



Direct Push Analytical has an extensive amount of injection and grouting experience. Call for project summaries or additional information.



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## Vacuum Excavation System-Soft Dig Technology



The vacuum excavation system, or air knife. This unit is used for potholing, daylighting, or otherwise making a hole in the ground in the safest, most time efficient way possible.

This unit has been used effectively at gas stations, where health and safety concerns often require its use. This unit consists of the equipment that is pictured to the left, a truck, and a trailer mounted air compressor, making it one of, if not the most, compact vacuum excavation systems available on the market today. The unit is equipped with 5, 7, and 9 foot lances and is capable of making a hole up to 9 feet deep. The equipment pictured is supplied by up to 100 feet of air supply line, making indoor work, if necessary, a breeze where traditional units would have great difficulty working. Another advantage of this unit is that the spoils are kept adjacent to the hole. The diagram below compares this unit with traditional Vacuum Truck units, which have a much larger footprint. Call today for a free price quote!

Figure 6: Vacuum Excavation System

	<b>Our System</b>	<b>Truck Vac Unit</b>	<b>Trailer Mud Unit</b>
<b>Size</b>	Small. Small enough to fit in narrow alleys, on roadway medians, and other tight spots. Footprint is roughly 2' x 5'.	Large. Typical platform is a one ton or larger truck. Footprint is roughly 8' x 22'.	Medium to Large. Usually needs a one ton truck or larger to transport. Footprint (including truck) is 8' x 37'.
<b>Weight</b>	<b>Under 160 lbs.</b> , fully assembled including hoses.	20,000 lbs or more. Requires special vehicle and operator licensing.	2,500 lbs or more.
<b>Portability</b>	Excellent. Easily handled by one person.	Poor. Must stay on paved or highly compacted surfaces, and may cause site damage. Profile (height and width) limits access to tight spots.	Poor. Same restrictions as Truck Vac Unit. Trailers are difficult to maneuver.
<b>Applications</b>	Dry soil, wet soil, water, mud and aggregate.	Dry soil, wet soil, water, mud and aggregate.	Water and mud.
<b>Performance</b>	850 cfm vacuum flow. 22" Hg vacuum lift (25' water lift)	700 - 850 cfm vacuum flow. 14" - 16" Hg vacuum lift (16' - 18' water lift), 4" vacuum inlet	175-400 cfm vacuum flow. 14" - 20" Hg vacuum lift (16' - 22' water lift), 2" or 3" vacuum inlet
<b>Reach</b>	Up to 1000 feet from the air compressor. As a bonus, the spoils stay close to the excavation.	Less than 20 feet from the hopper. Also, spoils usually wind up away from the excavation, making backfilling cumbersome.	50 to 100 feet from collection tank. Also, spoils usually wind up away from the excavation, making backfilling cumbersome.



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One of the most practical services available to environmental projects with time constraints or a high number of samples to be analyzed is Mobile-laboratory service. On-site gas chromatography analyses for volatile and semi-volatile organic analytes is available through Direct Push



Analytical's mobile laboratory associates with NELAC accreditation, the "gold standard" in laboratory certification.

## **On-Site Analytical Services**

- EPA Method 8260 (VOCs, VPH, and GRO)
- EPA Method 8270 (PNAs, BNAs, EPH, and DRO)
- EPA Method 8082 (PCBs)
- EPA Method 8081 (Pesticides)
- EPA Method 8095 (Explosives)
- EPA Method 7473 (Mercury)
- EPA Method 6020/6010 (Metals)



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Mobile-laboratory service provides projects with the service and quality of a fixed-base laboratory, but without the associated time delays. Direct Push Analytical and its mobile-laboratory associates can provide “real-time” analysis of air, water, soil, and hazardous waste samples. Within just a few hours of arriving on-site, chemists can be producing screening data in support of site investigations or fully defensible data packages suitable for site closure, dependent on client needs.

Because chemists are on-site when you are, they are there to discuss the analytical results, provide technical assistance, and supply the information needed to make the critical decisions that can mean the difference between the success and failure of a project.

Direct Push Analytical and its associates rely on the industry-proven line of Hewlett Packard and Tekmar analytical instrumentation to support Mobile-laboratory projects. Experience has shown that using industry proven equipment in Mobile-laboratory environments pays off through decreased instrument down time and increased client satisfaction. Each GC, HPLC, or GC/MS system is equipped with a fully integrated data system. Only instruments and equipment capable of meeting or exceeding the Data Quality Objectives of the project are used to support clients.



Whenever feasible, Mobile-laboratory instrumentation is also equipped with automated sample introduction systems. Over the years, we have found that automation combined with an experienced staff are two essential elements necessary for project success and client peace of mind. Automation allows the chemists to provide a



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high level of sample throughput while on-site and adds the additional capability of unattended operation during off-hours thereby reducing the overall cost per sample for the project.

In addition to adding sample capacity, automation minimizes analyst variation and provides a greater degree of consistency to data produced in the Mobile-laboratory. Split and Quality Control samples sent to fixed-base laboratories for confirmational analysis typically show a better than 90% agreement with data produced in the Mobile-laboratory.

Each mobile laboratory job is tailored specifically for the needs of the project and the client. Direct Push and its associates provide site-specific analytical techniques consistent with current SW- 846 methodologies for each project. Whether the analysis is TPH (GRO/DRO) by Method 8015M, VOCs by 8260b, PCBs by 8082, SVOCs by 8270c, explosives by 8095 etc., or combinations of procedures, Direct Push Analytical's team has the ability and knowledge to service your needs. Furthermore, with sufficient advanced notice, site-specific analytical procedures for target compounds in addition to the standard, more typical analytical procedures can be generated.

Another core competency of Direct Push Analytical and its associates is performing membrane interface probe (MIP) and onsite analytical services. These services are very beneficial on projects with limited data and projects where delineation is time dependent. The mobile lab has been used the greatest extent during excavation activities to assess the limit of excavation, as well as guide consultants during soil sampling and groundwater sampling efforts. The MIP system has been used primarily to limit the number of samples required, and allow the consultant to achieve more data in less time.

Should you have a job which looks like a good candidate for mobile lab (i.e., a large volume of samples or fast turnaround required) call us with a list of the contaminants of concern and detection limits you need to achieve, and we can discuss the viability of the project.

For technical information, a quote, or to discuss project feasibility, please contact Bryan Kinzer at (630)-365-2071 or email [Bryan@directpushonline.com](mailto:Bryan@directpushonline.com). Our goal is to provide the highest quality data and service in the business.



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## Membrane Interface Probe

The MIP system is the only commercially available tool capable of logging both chlorinated and non-chlorinated volatile contaminants in the soil. The MIP uses a heater block on the lead rod to volatilize VOCs, which are diffused across a small membrane and carried to the surface on a stream of inert gas. The volatilized contaminants can be passed through a FID, PID, and/or ECD detector for real time data, or trapped on site for speciation with our mobile lab. The MIP system can tell us not only where the contaminant is encountered (and absent) at depth, but also how the concentration of contaminants at this location compares to the concentration at other locations and where the contaminant occurs in relation to the lithology.

### Features of the MIP system:

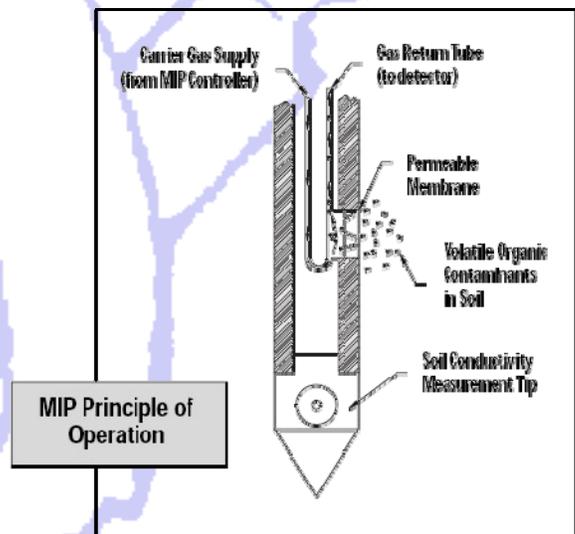
- Operates in saturated or unsaturated materials.
- Detects volatile compounds in gaseous, sorbed, dissolved, or free phases.
- Applicable to both chlorinated and non-chlorinated species
- Provides simultaneous log of soil electrical conductivity



### Why use the MIP?

- Determining depths at which to place monitoring wells
- What depth to collect samples from
- Determine the interval for injection of remediation materials
- Tracking contamination plumes in areas where extensive excavation and development has taken place

**Call Direct Push Analytical today for more information and to find out if MIP can work for you on your next project!**



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## **Prepacked Screen Monitoring Wells**

Prepacked screens consist of a standard, slotted PVC well screen pipe surrounded by a stainless steel mesh. Sand is packed between the slotted PVC and the stainless steel mesh. Since the sand is packed around the slotted PVC before the well screen is installed, using prepacks guarantees that sand will be located directly around the well screen. This makes well installation quicker and more efficient than traditional methods.

Prepack well screens are available in two outside diameters... 1.4 inches OD (0.5 in. or 0.75 in. ID) and 2.5 inches OD (1.0 in. or 1.5 in. ID). To install a monitoring well with these prepacks, probe rods are first driven to depth with a direct push probing machine. The well assembly is then lowered into the probe rod string with threaded PVC riser pipe. The small diameter prepack well screen assembly uses 0.5-inch Schedule 80 PVC riser pipe and is installed with 2.125-inch OD probe rods. The larger diameter prepack well assembly uses 1.0-inch Schedule 40 PVC riser pipe and is installed with 3.25-inch OD probe rods.

Once the well assembly is lowered to the bottom of the probe rod string, the probe rods are retracted to a point above the screen. A sand barrier, installed directly above the well screen, prevents grout from entering the screens. This barrier can be created either by natural formation collapse (occurring during the initial probe rod retraction) or by gravity installation of fine-grade sand through the rod annulus. With the barrier in place, granular bentonite or bentonite slurry is then installed in the annulus to form a well seal.

### **Geoprobe® Small Diameter Monitoring Well Benefits include:**

- Quick and simple installation.
- Prepacked Screen designed with 20/40 grade environmental sand.
- No cuttings generated during installation.
- Meets all requirements of a RCRA well with exception of the smaller diameter.
- Permanent monitoring well installation with a Geoprobe® Machine.
- Well seal and grouting meet EPA and ASTM D-5092 method requirements.
- Minimal disturbance of natural formation conditions.
- Can be developed, purged, and sampled using inexpensive tubing check valve system.
- Minimal development and purge water generated for sampling reducing time requirements and disposal costs.
- Uses standard above-ground or flush-mount well protectors.

### **Regulatory Compliance**

Many state regulatory agencies have approved the use of prepacked screen wells installed by direct push methods, and more states are joining this movement on an almost daily basis. Likewise, many federal agencies have specified the installation of direct push prepacked screen wells for their permanent groundwater monitoring needs.

The U.S. Environmental Protection Agency has recommended the use of prepacked screens in their guidance document, "Expedited Site Assessment Tools for Underground Storage Tank Site," (EPA, 1997). Geoprobe® brand prepacks meet the requirements of ASTM Standards for the installation of prepacked screen monitoring wells (ASTM D6725-01).



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