DEFENSIBLE CHARACTERIZATION

WATERLOO^{APS}™

CASCADE

WHAT IS THE WATERLOO^{APS}?

The Waterloo Advanced Profiling System™ (Waterloo^{APS}) is the premier high resolution site characterization (HRSC) tool for measuring hydrostratigraphic data, while collecting multiple groundwater samples on a single direct push rig advancement. This system has been deployed in a broad array of environments and, while built on a direct push platform, has achieved depths of 600 feet below ground surface using hybrid drive methods. Since the groundwater samples are collected via low flow sampling procedures and analyzed by a laboratory, the Waterloo^{APS} allows for representative, defensible characterization of most groundwater contaminants.

CAPABILITIES

600’ depths

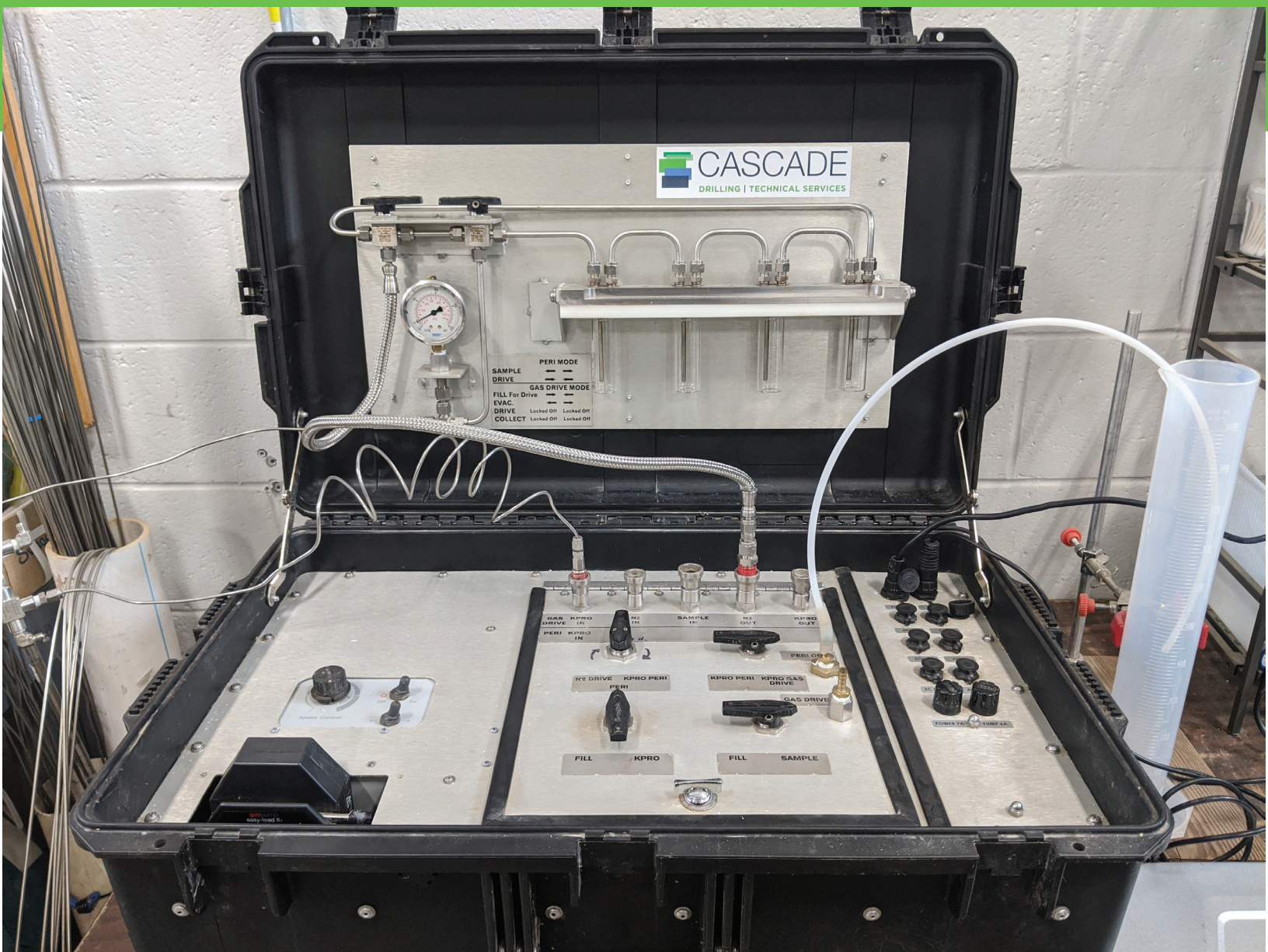
Multiple models for various hydrogeologic conditions

High resolution, discrete sampling

Can be set up in remote, restricted access, & extreme temperature areas

Not restricted by contaminant type; Analyzed for compounds at whatever detection limits are possible

Premier HRSC tool for PFAS and 1,4-dioxane investigations



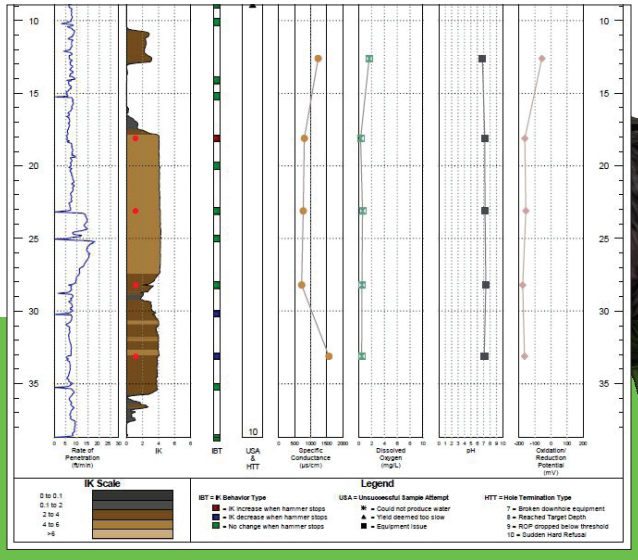
HOW IT WORKS

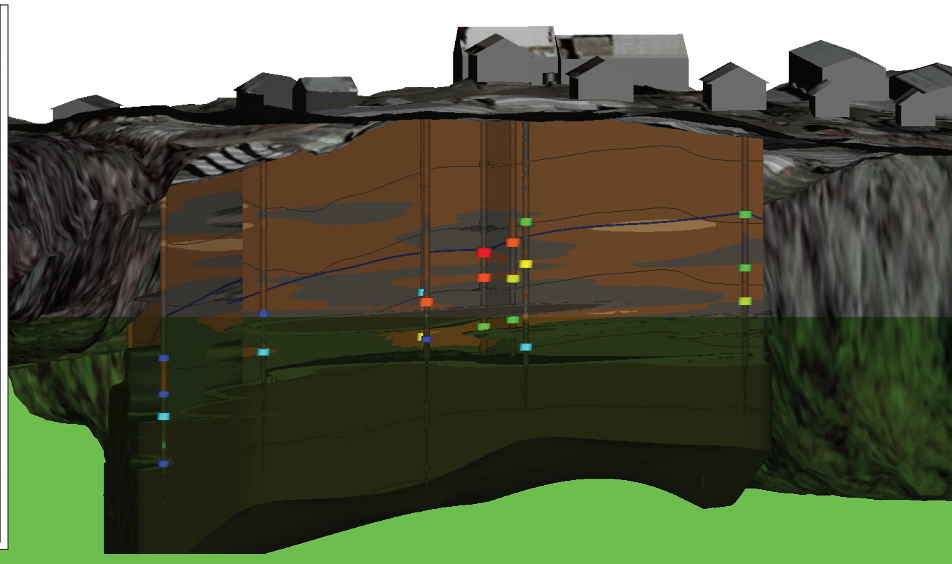
As the tool is advanced, clean water is injected into the formation through the stainless-steel tubing and tip, while depth, pressure, and flow rate are monitored.

From these data, a real-time continuous log of the relative permeability, called the Index of Hydraulic Conductivity (I_K), is calculated and used to determine the best depths for groundwater sample collection. While the I_K log is comparable to the "estimated K" log generated by the HPT tool, the Waterloo^{APS} utilizes a constant pressure with a fluctuating rate of flow. Conversely, the HPT performs this injection logging technique by holding the flow constant and allowing the pressure to increase. In low permeability soils, the Waterloo^{APS} method reduces the amount of water injected into the subsurface and virtually eliminates the potential for the HPT to fracture the formation.

The real-time I_K log is used to identify the exact point at which groundwater should be sampled. At an interval selected for groundwater sampling, the advancement of the Waterloo^{APS} probe is stopped, and flow through the tip is reversed by use of either a peristaltic or gas-drive pump. Water is purged through a flow-through cell and a water quality instrument is used to monitor stabilization criteria following whichever Standard Operating Procedure for low-flow or low-stress sampling is applicable.

These groundwater samples are collected directly from an in-line sampling jig located before the pump and flow-through cell, thus providing an extra measure of quality for VOCs samples, which are never exposed to ambient air. Other types of laboratory sample bottles and glassware can be filled using an adaptor.





Real-time hydrostratigraphic profiling with discrete depth sampling, without withdrawing the tool between samples, allows for efficient high-resolution groundwater investigation. In the example report log on the left, the IK allowed the field technician to identify and sample a sand unit between two clay units that served as a major contaminant transport pathway. On the right is an example of a cross section modeling a Waterloo^{APS} data set.

Ready to get results with the Waterloo^{APS}?
We're ready to help.
Call or email us to get started.

CASCADE

Casey Moore
Site Characterization

908-246-5853

cmoore@cascade-env.com