

Ground Water Sampling and Well Development

Capabilities of the Site Investigation Field Unit (SIFU)

Overview

SIFU uses a variety of ground water equipment for sampling and developing many different types of water wells. Two portable bladder pumps and peristaltic pumps provide the capability of low-flow sampling for wells as small as $\frac{3}{4}$ inch in diameter. Disposable sampling equipment (tubing and bladders) is used to minimize cross contamination between wells.

Well Sampling

Sampling is conducted using low flow techniques in order to draw in a representative ground water sample at the pump level. The ground water is pumped through a flow-through cell containing a measuring sonde which measures ground water stabilization parameters such as pH, conductivity, temperature, dissolved oxygen, ORP and turbidity. Sampling is conducted when parameter readings and ground water levels are stable. This ensures that fresh formation water from the aquifer and not water from the well casing is being sampled.

Other available ground water sampling equipment includes bailers and submersible pumps.



Bladder pumps with control box.



Compressor and controller for sampling with the bladder pump.

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Photos of assorted ground water sampling equipment.



Peristaltic pump.



Water Quality Meter and Flow-through cell.



Turbidity Meter.



Collecting a volatile sample.

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Developing a monitoring well

Well Development

A Waterra Hydrolift II inertial lift pump is used to develop monitoring wells up to 4 inches in diameter. It uses mechanized pumping action along with surge block techniques to purge and/or surge the water column in order to remove suspended solids. This process ensures that fresh ground water flows through the well screen. Wells can potentially be developed to turbidity levels of less than 10 nephelometric turbidity units (NTUs) in many formations.

Other Resources

Note that in addition to ground water sampling and well development using pumps and bailers, SIFU is also able to:

- Install small diameter (3/4") **Geoprobe®** epa.ohio.gov/Portals/30/ersis/sifu/docs/SIFU%20Geoprobe%20Services%20FACT%20SHEET.pdf monitoring wells and collect grab ground water samples using the Geoprobe®



Purging a Geoprobe temporary ground water sample location with a peristaltic pump

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- Screen ground water samples using a mobile laboratory equipped with a gas chromatograph.
- Inspect monitoring wells prior to sampling or identify optimal sampling intervals (pump depths) using the *Well-Vu downhole camera* <epa.ohio.gov/Portals/30/ersis/sifu/docs/SIFU%20Downhole%20Camera%20FACT%20SH EET.pdf>.
- Survey monitoring well elevations and produce ground water flow maps.



Gas Chromatograph in Ohio EPA's mobile lab. Shown analyzing a soil gas sample.