

PFAS and Sinusoidal Slug Testing

Sinusoidal Slug testing using the Limax equipment is relevant to PFAS investigation because it helps characterize groundwater flow, which is crucial for understanding and mitigating PFAS contamination.

What is a Sinusoidal Slug Test?

- A Sinusoidal Slug test is a field method used to determine the hydraulic conductivity (K) storativity (S) and transmissivity (T) of an aquifer, which describes , among other characteristics, how easily water flows through the subsurface.
- A Limax sinusoidal test allows measuring aquifer pressure responses in the production well and two observation wells simultaneously. The observations are made, displayed, and recorded in real time.
- Periodic oscillations of a solid cylindrical slug in a production well create water level fluctuations as a series of sinusoidal waves that propagate to nearby observation wells. Pressure sensors in all wells during testing provide time-based measurements over a wireless network at user-specified sample intervals and are automatically recorded by the test equipment.

Why is Sinusoidal Slug Testing Relevant to PFAS Investigations?

- **Understanding Groundwater Flow:** PFAS are persistent and can travel through groundwater, making it crucial to understand groundwater flow patterns.
- **Contamination Assessment:** Sinusoidal Slug tests help determine the direction and speed of groundwater flow, which is essential for assessing the potential for PFAS contamination to spread.
- **Remediation Planning:** Understanding groundwater flow is vital for designing effective remediation strategies, such as containment or extraction systems, to address PFAS contamination.
- **No water is produced or relocated, which could have the unwanted side effect of spreading the contaminated water to other areas.**
- **Hydraulic conductivity (K) is a parameter that describes the ease with which water flows in the subsurface, which is widely regarded as one of the most important hydrogeologic parameters for environmental site investigations.**

How Sinusoidal Slug Tests Can Be Used in PFAS Investigations:

- **Identifying Contaminant Plumes:**

Sinusoidal Slug tests can help map the extent and direction of PFAS plumes in groundwater.

- **Determining Groundwater Velocity:**

By measuring hydraulic conductivity, sinusoidal slug tests can help estimate the velocity at which groundwater, and potentially PFAS, is moving.

- **Evaluating Remediation Effectiveness:**

Sinusoidal Slug tests can be used to monitor the effectiveness of remediation efforts by assessing changes in groundwater flow patterns.

- **Optimizing Remediation Design:**

The data collected from sinusoidal slug tests can be used to optimize the design and placement of remediation systems, such as extraction wells or soil treatment systems.

- **Point sources with contaminants, such as chlorinated solvents, per- and polyfluoroalkyl substances (PFAS), or pesticides, are often located in low-permeability aquitards, where they can act as long-term sources and threaten underlying groundwater resources.**

For further information go to:

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