

Project dossier



PROJECT DOSSIER

Herron Hill Reservoir Project, USA

PROJECT OVERVIEW

Herron Hill Reservoir is a secondary drinking water reservoir constructed in 1880 and located in the City of Pittsburgh, Allegheny County, Pennsylvania. A steep slope surrounds the reservoir. Upgrades to the drinking water treatment facility adjacent to the reservoir required construction of a retaining wall excavated into the base of the slope.

WHY MONITORING?

Monitoring was required to determine that threshold values for ground movement related to excavation of the slope were not exceeded. Monitoring was also to be performed post construction to assess longer term conditions of the site.

MONITORING SOLUTION

Rite Geosystems Inc., USA was entrusted to provide automated instrumentation for the project with real time monitoring results. The type of instrumentation installed at this site included an in-place inclinometer system. The IPI sensors were read by a remote, real time datalogger transmitting to the cloud and providing threshold limit alerts.

Project	Herron Hill Reservoir Project
Location	Pittsburgh, PA, USA
Owner	Pittsburgh Water & Sewer Authority (PWSA)
Client	7NT Engineering
Duration	2022 - 2024





SCOPE OF WORKS

Rite-Geosystems scope of works included:

- Supply of instrumentation
- Technical support and supervision of installation
- Training to client's team on datalogger commissioning and configuration for automatic monitoring at desired frequency
- Setting up an online web-based data management system (WDMS) with instant alerts via SMS/emails

INSTRUMENTS USED

- Wireless in-place inclinometer system

Model EAN-52M in-place inclinometer system was used to monitor sub-surface lateral movement. It was installed in a 30 ft deep borehole at the top of the slope behind the retaining wall. The IPI consisted of a chain of digital IPI sensors, with 5 ft gage length.

The data from the IPI chain/sensors was collected by model ESDL-30 compact datalogger. The datalogger transmitted the recorded data wirelessly to the cloud server via cellular network.

Prior to the installation of the IPI chain in the gage well, a baseline reading of the gage well was taken using model EAN-26 inclinometer readout system. The manual data was kept as a record for future. In case a variation was found in the IPI data at a later date and needed a cross verification, it can be checked with manual baseline data.

The IPI data was available in near real time over our web based data management software, with instant alerts via SMS and emails.

RESULTS

The online data management platform displayed the displacement profile of the slope during and after construction. Monitoring will continue for the duration of the site observation to ensure the slope behind the retaining wall is stable.



In-place inclinometer installed at site with wireless datalogger



TUNNELS



HYDROELECTRIC



CONSTRUCTION



STRUCTURAL



METRO & RAIL



BRIDGES



MINING