



Real-time Water Quality Monitoring in the Ohio River Basin

Hydrolab MS5 Multiparameter Sonde

Using Hydrolab MS5's to monitor for contaminants from hydraulic fracturing drill sites in natural water bodies



Background

- RAIN (the River Alert Information Network) was established to provide water quality data for early warning systems and source water protection to communities within the Ohio River Basin in Southwestern Pennsylvania and Northern West Virginia.
- An estimated 2 million residents within the Ohio River Basin rely on the Allegheny, Monongahela, Youghiogheny, Shenango, Beaver, and Ohio rivers as their source of drinking water. These rivers also provide the means for the region's industrial and manufacturing strength, as well as the nation's largest inland port.
- Currently, RAIN monitors water quality at twenty-nine sites within the Ohio River Basin along the Monongahela, Allegheny, Shenango, Beaver, and Ohio Rivers.
- Due to the industrialized and urbanized nature of these waterways, numerous and frequent spills and runoff have been documented in these rivers.

- Hydraulic fracturing is a common activity in the area for extracting natural gas from deep below the earth's surface in the Marcellus Shale
- Citizens and authorities are concerned that hydraulic fracturing has potentially negative effects on surface water and groundwater quality within the basin. This is one of the reasons RAIN was established and a primary driver for network expansion.

Task

- Provide real-time water quality data from monitoring stations strategically located within the Ohio River Basin.
- Watch for contaminants from municipal and industrial waste, acid mine draining, storm events, hydrocarbon spills, dissolved organic matter, and algal blooms.
- Supply data to water treatment plants within the network for early warning systems that allow process modifications to address changes in incoming water quality.

Monitoring Solution

- Four continuous real time monitoring stations were established on tributaries of the Monongahela with Hydrolab MS5 multiparameter sondes
- The Hydrolab MS5's are equipped with pH, ORP, conductivity, temperature, and depth sensors.
- Water quality data is collected every 15 minutes in a data logger outfitted with telemetry that transmits data to a remote server every hour.
- Stations are set up to allow alarms that identify issues as soon as they are identified.

The Advantages

- Water authorities will be notified automatically about the presence of contaminants and will be able to ensure faster implementation of actions to protect the public from contaminated drinking water.
- Hydrolab multiparameter instruments provide critical water quality parameters real-time in a compact, robust, low power, and low maintenance package.
- Hydrolab MS5's are easily integrated into new or existing systems for collecting and transmitting water quality data. The platform can easily accommodate additional sensors such as dissolved oxygen, ammonium, nitrate, and more.



Hydrolab MS5 Multiparameter Sonde

Summary

- The River Alert Information Network (RAIN) is a regional Source Water Protection (SWP) program that continuously monitors water quality in near real-time to better ensure the protection of public health and drinking water across the region.
- With the help of Hydrolab MS5 sondes, alerts of contaminant discharges are reported in real-time, resulting in overall water quality and environmental improvement within the river basin.

Find more information on products and solutions at www.hachhydromet.com

Technology

Hydrolab MS5 multiparameter sonde for real-time unattended water quality data

Map of RAIN network locations within the Ohio River Basin

