Field Services

Values

Accurate field data is needed to support robust analysis and design. By their very nature, aquatic environments present physical challenges that require specific tools, training, and expertise in order to conduct field measurements safely and efficiently. NHC has invested in its people to provide proper training and equipment in order to overcome these challenges and meet the data collection objectives. We have also adopted innovative approaches, such as real-time automated data collection capability, to complement our more traditional site-specific measurements of channel morphology, discharge, and sediment characteristics. We take pride in our capacity to work effectively in challenging conditions with the most up-to-date tools.

Services

NHC offers field services to collect data in virtually any river environment or climatic region found on the planet, from very large rivers to small, steep mountain streams, and from the tropics to the far north.

OUR SERVICES INCLUDE:

- **Bathymetric and topographic surveys using RTK-GPS, ground-based LiDAR, total station, sounders, and sonar**
- **Installing and maintaining real-time loggers and early-warning systems to monitor water level, turbidity, water quality, temperature, precipitation, wind, waves, and flow velocities**
- **Measuring flow discharge and velocity using acoustic Doppler current profilers (ADCPs) in challenging environments including moving bottoms, salt wedges, and rough conditions**

- **Sampling sediment for hydraulic modeling, sediment budget, Pb^{210}/Cs^{137} dating, and interpretive geomorphic analysis**
- **Ice measurements, including airborne LiDAR, sub-ice flow measurements, and ice strength testing**

Technical Approach and Capabilities

Making accurate measurements in rivers that are turbid, fast-flowing, and obscured by vegetation or ice can be extremely challenging. However, our field staff has thousands of hours of experience and has been specifically trained to collect accurate and reliable field data, in a safe manner, under demanding conditions. This ensures correct and efficient collection of critical data to describe the hydraulics of study sites and to support further analysis, planning, and design.

Experience

Field data collection in challenging environments and conditions has been a cornerstone of our professional services for over 40 years. NHC experts are leaders in developing new and innovative approaches for monitoring field conditions using the newest technology.

Flow Velocity and Discharge Measurements

Determining river discharge is central to many studies, and stage-discharge gaging techniques typically provide the necessary data for the discharge estimation. NHC develops and verifies the discharge relationship using ADCP, ADV, and/or salt dilution field measurements. We have also applied surface velocimetry techniques to measure velocity distributions where conventional instruments cannot be deployed. Our Aquarius Database is used to provide up-to-date flow predictions and ongoing validation of discharge rating curves for real-time applications.

Isokinetic suspended sediment sampling during flood conditions Sacramento River, CA

Topographic survey at proposed hydroelectric intake McLymont Creek, BC

Quantitative and Qualitative Field Surveys

We routinely acquire topographic and bathymetric data to support water resources analysis, modeling, design, and construction. Surveys are completed to quantify topographic conditions, as well as vegetation and sediment characteristics. Surveys are also obtained on hydraulic structures for developing hydraulic designs for spillway or fish passage modifications. We merge bathymetric surveys with LiDAR, and other photogrammetric datasets, for hydraulic modeling and development of flood mitigation or riparian restoration designs.

ADCP measurements in California Aqueduct to verify discharge rating curve Lancaster, CA

Measuring and Monitoring Sediment

NHC monitors sediment transport and conducts sedimentation studies in rivers, estuaries, and coastlines. We utilize a wide range of sediment sampling equipment, including turbidity sensors, bed load and bed material samplers, isokinetic suspended sediment samplers, and sediment corers.

Topographic survey of hydropower diversion site Battle Creek, CA

Benefits

We integrate in-house field data collection with our other professional services to ensure that the right information is collected accurately, efficiently, and safely. This ensures that our hydrologic and hydraulic planning and design services are based on the most reliable information possible and that our clients' needs are fully achieved in a timely manner.

Contacts

Vancouver	Seattle
Andre Zimmermann	**Erik Rowland**
604.980.6011	206.241.6000
azimmermann@nhcweb.com	erowland@nhcweb.com

nhc
northwest hydraulic consultants

NHC provides specialized scientific and engineering services to protect, manage, and develop water resources

*For a comprehensive overview of our services and office locations, please visit **www.nhcweb.com***