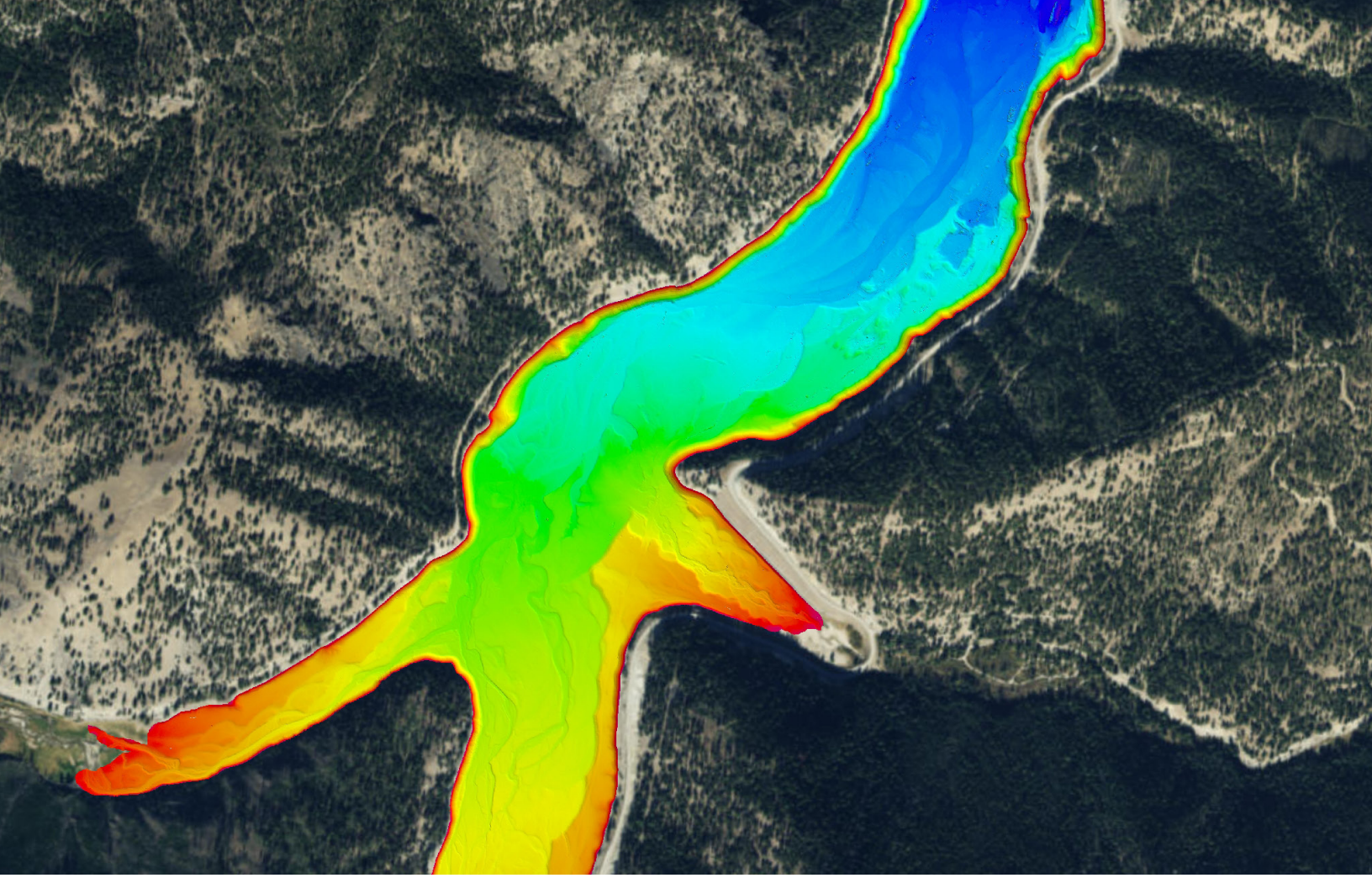

Marine Capabilities

Woolpert's Maritime Solutions is an innovative and agile group of certified hydrographers, professional land surveyors, GIS professionals and technologists. With extensive experience in hydrography and surveying, we have the qualifications and real-world understanding to provide high-quality geospatial and mapping services to a diverse range of industries in both the public and private sectors. We specialize in project planning, data acquisition, processing, mapping and analysis using multiple technologies.

Our goal is to be trusted advisors to our partners by providing expert service and superior quality products that meet project requirements, deadlines and budgets.

We own and operate a full suite of the latest-generation equipment allowing for fast mobilizations and dependable operations. Our survey platforms include in-house designed remotely or autonomous portable craft, custom 21-foot to 24-foot aluminum boats located in the U.S. and Canada, as well as commercial survey platforms from trusted providers and locally sourced vessels of opportunity.

Our core areas of expertise:

- Multibeam bathymetry, snippets and backscatter
- Side scan sonar
- Single-beam sonar
- Scanning sonar imagery and point clouds
- Vessel-based mobile lidar
- Tidal datum determination
- GNSS and conventional control surveys
- Acoustic Doppler Current Profiler surveys

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Reservoir and River Surveys

Woolpert provides hydrographic and topographic surveying services to support water resource management needs, including reservoir area and capacity as well as sediment transport and monitoring. We have considerable experience in very challenging environments from both an environmental and geodetic perspective. This depth of knowledge allows us to select the proper equipment and methodology for every project to be successful.

Structure Condition Surveys and Inspection

Using high-resolution sonar, detailed point clouds can be developed of underwater structures, such as bridge piers, and a combination of multibeam and scanning sonar can collect data on vertical or undercut features. These two data types are then fused and properly georeferenced to project control. Woolpert has the experience to accurately map and model the point clouds to assess scour, deformation and condition.

Cable and Pipeline Route Surveys

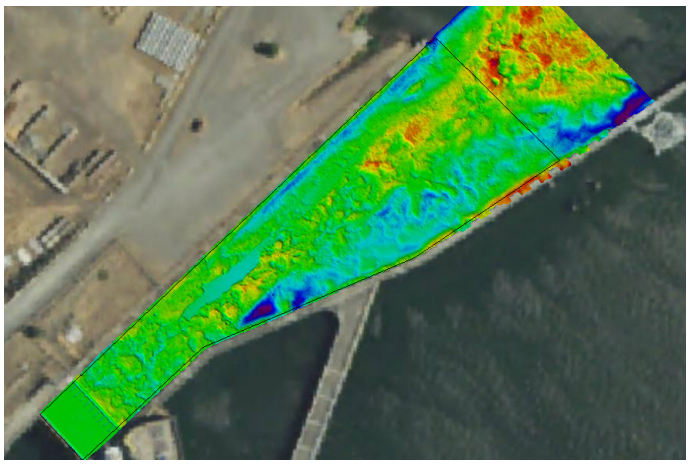
Our hydrographers have been all over the world providing client representation, vessel mobilization, data acquisition and processing services for route survey support to the telecommunications industry and oil and gas sector. Nearshore and offshore, these projects integrate multibeam, side scan, subbottom and magnetometer data simultaneously. Woolpert also provides complete charting services for final deliverables using AutoChart and AutoCAD.

Tidal and River Current Surveys

Woolpert uses a variety of instruments, including Acoustic Doppler Current Profilers (ADCP), to provide stationary point or profile water velocities, as well as full transect data. We have experience in both ocean and river environments and can couple these measurements with additional parameters, such as water level and directional wave information.

Dredging and Marine Construction Support

Woolpert provides hydrographic surveying services to support dredging, pier and breakwater construction, as well as channel and berth monitoring for navigation clearance. We tailor our services to meet specific marine construction project needs and budgets. With a full suite of equipment and vessels at our disposal, we can respond quickly and efficiently.



Tidal Datum Determination

Many of our projects are in remote areas where tidal datums have not been established. Woolpert is experienced in developing datum relationships in remote locations, or for other needs, such as riparian boundary determination or ellipsoid separation modeling. Woolpert uses several types of gauges, including submerged pressure sensors, that have no visible evidence to microwave sensors, with cellular or satellite telemetry for real-time updates. Data are processed to develop the required tidal datum such as Lowest Astronomical Tide (LAT) or Mean Lower Low Water (MLLW).

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