COMPANY PROFILE

Boreas Heritage is a dynamic cultural resource management firm. We are the Atlantic Canadian leader in applying GIS and advanced technology to heritage consultation, archaeological assessments and research.

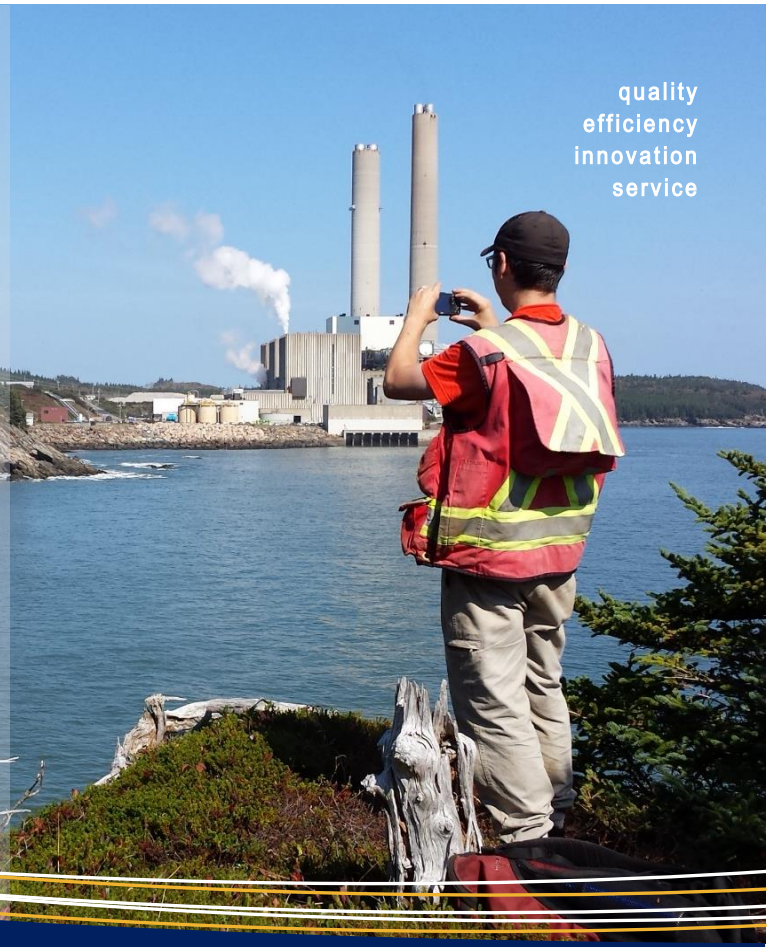
This progressive approach combines non-intrusive methods with traditional investigations to offer responsive and efficient solutions to heritage management concerns.

COMPANY VALUES

Boreas Heritage is committed to building strong, positive relationships with First Nations (businesses and communities), government agencies, commercial clients and the public.

Our dependable team of professionals has earned a reputation for maintaining high standards of quality, efficiency and client services, while finding practical solutions to heritage management situations.

Boreas has the diversified experience and capabilities to accommodate any project, large or small, and our cooperative relationship with Saint Mary's University gives us the capacity and resources to offer superior service to our clients.



BENEFITS OF NON-INTRUSIVE INVESTIGATIONS

- **Save Money** – Early detection avoids unexpected construction delays
- **Clarity** – know the extent, location, depth and dimensions of buried features, including modern infrastructure
- **Accuracy** - find cultural features without disturbing them
- **Monitoring** - Excellent evaluation tool, measure integrity and change (i.e. coastal erosion, structural decay)
- **Engaging Results** – 3-D simulation, multimedia for promotion and interpretation

BOREAS HERITAGE

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SAINT MARY'S UNIVERSITY SINCE 1802

Non-Intrusive Investigation Capabilities

BOREAS HERITAGE

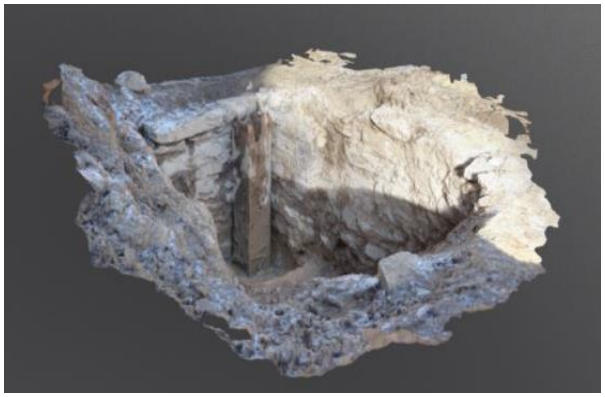
Non-Intrusive Investigative Techniques

VALUABLE CULTURAL RESOURCE MANAGEMENT TOOLS

PHOTOGRAMMETRY

Photogrammetry has become a powerful and portable technique for recording, analysing and virtually reproducing the world around us. It uses digital images from multiple, overlapping perspectives to measure objects and topographic landscapes. The inclusion of scale-bars, or objects of known dimension, allows software to precisely calibrate these images into a 3-D representation for digital modelling and mapping. This is a valuable tool, aiding in the assessment, monitoring and interpretation of cultural resources.

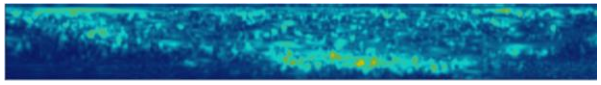
Terrestrial photogrammetry uses close-range photography to produce 3-D models of objects and features, such as artifacts, petroglyphs, excavation units and architectural features. Aerial photogrammetry is applied using cameras mounted on aircraft or drones to produce 3-D models of terrain features and topography. Boreas Heritage uses a DJI Phantom 3 Professional drone for conducting aerial photogrammetry surveys. It can be easily programmed with a specific flight route to capture aerial images of a feature or site.



GROUND PENETRATING RADAR (GPR)

GPR's can identify patterns and anomalies in the subsoil to reveal a complete 3-D picture of what lies below the surface. This includes accurate details of the alignment, depth and dimensions of buried features (i.e. ditches, unmarked graves and modern infrastructure). GPR units are typically mounted on carts and pushed at a slow, steady pace across the target area in a series of parallel and perpendicular transects. A transmitter sends rapid pulses of radio waves into the soil, while an antenna records the timing and amplitude of the reflected waves.

Boreas Heritage operates a Noggin 500 by Sensors & Software. It uses 500 MHz pulses to effectively produce 3-D mapping of the first 1-2 m of the soil column (depending on soil conditions). It is best used on flat ground or while traversing modertate to gentle slopes of a consistent grade. These units are effective in target areas free of obstacles such as hummocks, thick vegetation, boulders and abrupt terracing, which restrict the flow of survey transects and interrupt the collection of subsurface data.



ELECTROMAGNETIC IMAGRY (EMI)

EMI surveys measure how electromagnetic fields react with the subsoil in a target area to assess Ground Conductivity and Magnetic Susceptibility. Depth of resonance varies with different instruments, but the EM-38B can readily map the upper metre of the soil column. During an EMI survey, the operator walks a series of parallel transects across the target area with the EMI unit suspended just above the ground. EMI surveys can therefore be conducted rapidly over less-forgiving terrain than GPR surveys.

Ground conductivity measures how easily electrical current can be transmitted through the ground. This analysis can identify soil anomalies, such as changes in sediment type, moisture content or salinity, which may represent buried features associated with cultural activity (i.e. old ditches, silted-in fortifications and abandoned water courses). Magnetic susceptibility is how easily the ground can be magnetized. Archaeological sites can be highly magnetized, making them easily recognizable following an EMI survey. Soil magnetism may be increased by concentrations of buried stone, introduced material (i.e. metal artifacts, iron slag), or isolated events of intense burning.