



Yukon Mineral Exploration Best Management Practices for Heritage Resources

April 2010

Edition 1



DISCLAIMER

Nothing in the Yukon Government Mineral Exploration Best Management Practices for Heritage Resources documents, references, etc., shall be construed as waiving compliance with regulatory requirements imposed by law. It remains the responsibility of the proponent to satisfy themselves that the measures adopted in the specific instance are appropriate to the situation and satisfy all legal requirements within the jurisdiction.

Specific best management practices for specific problems cannot be given since solutions will, of necessity, be site and issue specific. Narrative BMPs are given indicating the type of measure which may be useful.

This guide is intended to provide users with up-to-date information about best management practices for heritage resources and mineral exploration on the Yukon Landscape but these guidelines should not be considered as comprehensive. There are both known and unknown sources of data which have not yet been incorporated and topics which have not yet been treated or addressed. These topics and data will be incorporated and new versions of the documents uploaded as time and resources permit. By their very nature many specific BMPs soon become obsolete as “better” BMPs become available but the concept and the identified objectives behind the examples remain valid.

Any comments, questions, or suggestions regarding the content of this document may be directed to::

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All photos courtesy of Government of Yukon except as otherwise noted.



Remains of an elevated cache used by caribou hunters in the subalpine.



Frame of a canvas canoe on a remote lake shore.

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Alpine ice patches are extremely important sites potentially preserving thousands of years of biological, climate and human evidence.



Alpine hunting in the past often made use of semi-circular stone hunting blinds.

1. Objectives

- To protect and manage historic sites and resources, and to protect burials outside of known cemeteries.
- To provide information and assistance to the Yukon mineral exploration industry to ensure the protection of Yukon's heritage.



Alpine ice patches may preserve important biological and cultural remains.



Historic fence graves.

2. Context of Historic Resource Protection and Management

Heritage or historic resources exist throughout the Yukon landscape in all terrains including mountain tops, and even under water. Remains of built heritage in many instances are fragile due to their age and composition, which is frequently wood or other organic materials.

Archaeological remains that date to the historic period or that are thousands of years old are often buried in only a few centimetres of soil. Even minor disturbance of the ground surface can impact on archaeological sites. All heritage resources are vulnerable to looting or unauthorized collection and increased activity in a previously isolated area may see the loss of irreplaceable objects that are part of Yukon's history.

Palaeontological resources are the fossil remains of plants and animals. Because much of central and northern Yukon were unglaciated during the Ice Ages, the frozen organic rich sediments in these regions preserve some of the most important North American remains of Pleistocene species such as mammoth, horse, and bison. Yukon's bedrock also contains fossils, from dinosaur bones and footprints, to leaf impressions and trilobites.

Inventories of historic resources are lacking for many regions of the Yukon. Many remote areas have never been surveyed and the historic resources are not adequately documented. Backcountry activities and use may inadvertently impact on historic resources. Exploration crews can assist in heritage protection by becoming informed about heritage resource identification and by implementing site avoidance and buffering when heritage resources are encountered to help preserve the evidence of Yukon's history. By adopting historic resources "Best Management Practices" Yukon's mineral exploration industry can assist in the protection and appreciation of Yukon's rich heritage.

3. Legislative Context

Historic resources are protected from disturbance under the *Yukon Historic Resources Act* and Yukon Archaeological Sites Regulation. In the Yukon, the fossil remains of plants and animals are also protected under the *Historic Resources Act*. The Government of Yukon is responsible for managing historic sites on non-settlement land and outside of national parks. No one may search for, investigate, excavate, disturb or otherwise alter a historic site on Yukon lands except in accordance with a permit under the Yukon Archaeological Sites Regulation. No objects may be removed from a historic site without a permit under the Yukon Archaeological Sites Regulation. Permits are issued only to qualified researchers (usually professional archaeologists).

Mineral exploration activities in the Yukon are regulated under the *Quartz Mining Act* and the Quartz Mining land Use Regulation (http://www.gov.yk.ca/legislation/regs/oic2003_064.pdf). Mineral exploration programs are divided into four (4) classes depending on the type of activities that will be undertaken. Activities that determine the classification of exploration programs include camp size and infrastructure, program duration, number and size of clearings, amount of fuel storage, length of cut lines; size and number of trenches, use of explosives and use or upgrading of access roads.

Class 2, 3 and 4 mineral exploration programs are reviewed under the *Yukon Environmental and Socioeconomic Assessment Act* (YESAA). For the review, the proponent may be required to provide adequate information to allow the evaluation of the likelihood and significance of adverse effects of the project on heritage resources, and identify proposed mitigation measures. Access road development in particular has a high likelihood of impacting areas of high heritage potential. Contact the Government of Yukon - Heritage Resources Office for assistance in determining any heritage resources impact as a result of your project.



Circular meat cache constructed from boulders on a steep hillside.



Old hunting blind made of brush laid across outcropping bedrock.

4. Potential Impacts to Heritage Resources as a Result of Mineral Exploration Activities

Brushing/Clearing and Line Cutting

Brushing or clearing of cut lines, helicopter pads or clearings may impact surface or built heritage sites such as brush camps, traps, or burial sites, or other traces of historic human presence such as snares or marked trees.



Clearing (photo courtesy of Mineral Resources Branch)



Clearing around a drill pad
(photo courtesy of Mineral Resources Branch)

Road and Access Development/Upgrading

Development of trails, access road, access upgrading are activities which substantially impact both above ground and buried (archaeological and palaeontological) heritage resources. The impacts will increase proportionally to the location of the access and extent



Access roads (photo courtesy of Mineral Resources Branch)



Winter road (photo courtesy of Mineral Resources Branch)

Trenching and Drilling

Trenching activities substantially impact the ground surface. These activities are most likely to impact buried archaeological sites and palaeontological sites, with impacts increasing proportionally to the area/ extent of the ground disturbance. Drilling results in only minor localized ground impact and is generally not of concern for impacts to heritage resources.



Trenching (photo courtesy of Mineral Resources Branch)



Drilling (photo courtesy of Mineral Resources Branch)

Camps and Infrastructure

Mineral Exploration camps and other infrastructure will likely result in subsurface ground disturbance. Ideally locate camps in existing clearings or former camp sites whenever possible. Locate camps where they can be accessed by existing transportation networks.



Wall tent camp (photo courtesy of Mineral Resources Branch)

5. Best Management Practices for Heritage Resource Protection for Mineral Exploration Potential Impacts on Heritage Resources

Potential Impacts on Heritage Resources

Activity	Recommended Actions
General and project planning	<ul style="list-style-type: none"> • Obtain information on location heritage sites (historical, archaeological and palaeontological) and grave sites in the project area from Government of Yukon and First Nations if project is on settlement lands. • Heritage sites are to be avoided and buffered from any disturbance. A minimum 30 m buffer is required. • Inform crews on laws protecting Yukon heritage resources – no disturbance is permitted of heritage sites and objects may not be removed from heritage sites. Government of Yukon publication “Handbook for the Identification of Heritage Sites and Features” can assist in identifying heritage features and sites on the land, contributing to their preservation and protection (http://www.tc.gov.yk.ca/pdf/publications_heritagehandbook.pdf). • The <i>Historic Resources Act</i> requires that newly discovered heritage sites and objects be reported to the Minister responsible for Heritage (or to the First Nation if found on settlement land). Notification of the Chief of Mining Land Use and periodic reporting may be established under Class 2 to 4 licences. • Human remains found outside of a recognized burial site must be reported first to the RCMP. Please refer to Guidelines Respecting the Discovery of Human Remains and First Nation Burial Sites in the Yukon for additional information (http://www.tc.gov.yk.ca/pdf/respecting_guidelines.pdf).

Activity	Recommended Actions
Camps and clearings	<ul style="list-style-type: none"> • When possible, locate camps in existing clearings or former camp sites. • Locate camps where they can be accessed by existing road and trail networks. • Locate camps and associated facilities at ideally 100+ m from water bodies. A majority of heritage sites are located within 100 m of water. • Reconnoitre area of new clearings to ensure that no heritage sites or features are present. Brushing and tree clearing should avoid ground disturbance as much as possible to protect any buried heritage resources.
Access roads, trails and off-road trail use	<ul style="list-style-type: none"> • Use existing access and trails whenever possible. • If possible, utilize winter access which will have less likelihood of impacting buried heritage resources • Reconnoitre all access and trail routes to ensure surface heritage sites and features (camps, caches, graves) are not impacted. Government of Yukon publication “Handbook for the Identification of Heritage Sites and Features” can assist in identifying heritage features and sites on the land (http://www.tc.gov.yk.ca/pdf/publications_heritagehandbook.pdf) • When possible, situate roads and trails 100 m away from streams, rivers and other water bodies, and 30 – 60 m back from the edge of terraces, ridges and other elevated land forms as these are areas of high heritage potential. • If possible, stream crossings should be minimized. • Plan to undertake a heritage resource impact assessment in advance of significant access development (+ 2 km). Heritage assessment ideally should be part of route planning. Contact Yukon Government Heritage Resources for assistance in identifying areas of concern and assessment scope.

Activity	Recommended Actions
Trenching, stripping and drilling	<ul style="list-style-type: none"> • Trenching and stripping activities have the potential to disturb buried heritage resources. • If possible, trenching and stripping should avoid areas of high heritage potential (edges of terraces or ridges, for example, or other lookout settings). • Use backhoe equipment for trenching where possible to minimize ground disturbance. • Drilling has a comparatively small footprint and is unlikely to impact heritage resources. Areas cleared and levelled for drill platforms should be minimized as much as possible.
Advanced exploration and development	<ul style="list-style-type: none"> • Heritage resource assessment is a standard component of the environmental and socio-economic review under the YESAA.

6. Definitions

Historic resources as defined in legislation include historical, archaeological and palaeontological sites and resources. Historic resources are abandoned sites and objects of greater than 45 years in antiquity. Cabins, caches, graves, brush camps, and other man-made structures, features or objects are the most readily recognized historic resources. Historic human remains and burials are protected under the *Historic Resources Act* as well.

Archaeological sites and resources may be historic or may date to before European contact. Prehistoric archaeological resources may be found on or under the ground surface, and generally consist of the remains of ancient camps, hearths, stone tools and debris.

Palaeontological resources are fossil and other remains of extinct or prehistoric plants and animals. These include bones of mammoth, horse, bison and other ice age fauna as well as fossil remains and traces of plants, vertebrate and invertebrate animals.



Stone arrow point



Woolly mammoth tooth recovered in frozen Ice Age deposits at a placer mine.



Fossil leaf found in Eagle Plains sandstone along Dempster Highway



Stone spear point on ground surface in alpine setting.

7. Identifying Areas of High Heritage Potential

Based on known patterns of prehistoric and historic land use for a region, certain terrain types, localities and landscape features can be identified as likely locations for camps, travel routes or as strategic resource areas. Generally, areas in proximity to water bodies, stream courses and wetlands, prominent lookout situations on terraces, ridges and knolls and combinations of these landscape zones are considered to be of high heritage potential. Depending on the region, other high potential localities may include shorelines of pro-glacial and neo-glacial lakes, meltwater channels, ancient river terraces and abandoned drainages. In unglaciated northern Yukon, both ancient landscapes and possibly different prey species must be factored in to reconstruction of past land use patterns.

Heritage resources in high latitude and alpine and sub-alpine areas where little or no soil development has occurred are particularly vulnerable to disturbance. Traces of human activity may include stone tent rings, stone hunting blinds and meat caches, and remains of camps where stone tools and chips have remained on the ground surface for thousands of years. Disturbance of stone features and trampling of artefacts is a concern in these areas.

The major drainage basins of unglaciated northern and central Yukon preserve exceptional evidence of Ice Age animals and environments. As modern rivers cut down through the sediments, the frozen silts containing bone and plant materials are exposed. Fossil bones that wash out of the silt bluffs along the rivers of the region may be found redeposited on point bars on rivers. Fossils of invertebrate animals (e.g. shells, trilobites), vertebrates (e.g. fish) and plant impressions may be discovered in bedrock throughout the Yukon, especially in alpine areas with abundant outcrops.



Landforms with high heritage resource potential may include ridges or ancient terraces, and elevated, well drained ground such as knolls and benches. Exposures in alpine or high latitude setting may reveal evidence of human activity dating back thousands of years, still lying on the ground surface.

8. Obtaining Information about Archaeological, Palaeontological and Historic Sites

Information on the location of known heritage sites and resources can be obtained from the Government of Yukon Heritage Resources Unit and from First Nation heritage offices. Coordinates provided for many sites may not be precise, however, as information may have been gathered over several decades and coordinates were obtained prior to precision GPS. Coordinates for any given site might vary by up to 200 metres. Site locations are provided as point data, usually marked at the centre of a site. Sites vary in extent and size however, and information regarding this is located in the site record. You should pay particular attention to this if you are planning any activities in the vicinity of an heritage site. Development activities are not permitted within 30 metres of a known archaeological or historic site or a burial site.



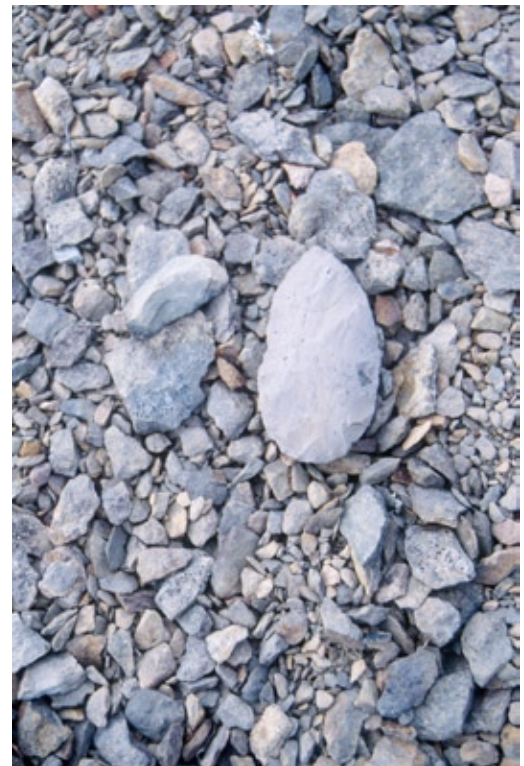
Semi-subterranean house pit (R. Le Blanc photo)



Aerial view of stone hunting blinds in the alpine.



This locality preserves evidence of human habitation and use dating back to the end of the last Ice Age. On the right, a stone tools lie on the ground surface where they were abandoned thousands of years ago.



9. Reporting

Historic and Archaeological Sites

If a historic or archaeological site or resource is discovered, work at this location must be halted and the site marked or flagged and buffered from any further disturbance by at least 30 m.

For Mining Land Use Class 2 notification or Class 3 or 4 approval, the section on historic objects and burial sites in the Mining Land Use Regulation and permits from Mining Land Use will detail the manner of reporting.

Generally, for newly discovered sites and resources, the following information is recorded:

- GPS location: latitude/longitude or UTM coordinates and NAD (27 or 83).
- Estimate of site or feature extent (area)
- Brief description of setting and access to assist others in locating the site.
- Brief description of site features (e.g., cabin with collapsed cache and scatter of household goods).
- Photographs.

Report heritage sites and features to:

Heritage Resources - Department of Tourism and Culture
Government of Yukon Box 2703,
Whitehorse, Yukon Y1A 2C6
Phone: (867) 667-5983 or toll-free 1-800-661-0408
Email: ruth.gotthardt@gov.yk.ca

Chief of Mining Land Use
Government of Yukon
Box 2703 (K-9)
Whitehorse, Yukon Y1A 2C6
Phone: (867) 456-3822
Fax: (867) 456-3899



Burned and fractured rock mark the site of an old camp fire.

Palaeontological Resources

Palaeontological resources present a special case for mining land use activities – particularly those activities impacting the frozen muck deposits in unglaciated regions of central and northern These remains can be found in abundance in some areas, and for some specimens, preservation may be exceptional in the form of frozen, mummified remains.

In the event that fossil bone and tusk is uncovered, collect as much of the animal as can be located and preserved try to verify whether it is a single intact skeleton or whether multiple animals are represented.



Woolly mammoth tusk recovered at a placer mine of Last Chance Creek.



Ichthyosaur fossil vertebra from Triassic Toad formation recovered along the Beaver River



Fossil leaf impressions from the Bonnet Plume Formation on the Peel River



Dinosaur footprint from the Tantalus Formation exposed in a roadcut near Ross River

In the event that a single intact skeleton is found, or mummified remains which preserve the hide of the animal, avoid further disturbance as these finds are of considerable scientific importance. Protect or remove the remains (with intact surrounding sediments) to the best of your ability until they can be collected and conserved by the Yukon Paleontology office.

Report palaeontological resources to:
Yukon Palaeontology
Department of Tourism and Culture
Government of Yukon
Box 2703,
Whitehorse, Yukon Y1A 2C6
Phone: (867) 667-8089
or toll-free 1-800-661-0408
Email: grant.zazula@gov.yk.ca

Or: Chief of Mining Land Use who will contact
Yukon Palaeontology



Articulated remains of juvenile mammoth found at Gold Run Creek (Ross Mining), dating to 17,000 years ago.



Hide and foreleg of mummified Ice Age horse dating to 26,000 years ago found at Last Chance Placer Mine.

10. References: Legislation, Policy and Standards for Historic Site Conservation and Management

Yukon Government Links

Heritage Resources Unit – Archaeology Program
<http://www.tc.gov.yk.ca/76.html>

Heritage Resources Unit – Palaeontology Program
<http://www.tc.gov.yk.ca/81.html>

Historic Sites Unit
<http://www.tc.gov.yk.ca/historicsites.html>

Policy and Guidelines

Guidelines Respecting the Discovery of Human Remains and First Nation Burial Sites in the Yukon:
http://www.tc.gov.yk.ca/pdf/respecting_guidelines.pdf

Operational Policy for Heritage Resources Management on Yukon Lands:
http://www.tc.gov.yk.ca/pdf/Heritage_Resources_Operational_Policy.pdf

Handbook for the identification of Heritage Sites and Features
http://www.tc.gov.yk.ca/pdf/publications_heritagehandbook.pdf

Parks Canada - Standards and Guidelines for the Conservation of Historic Places in Canada http://www.historicplaces.ca/nor-sta/pdf/sgnld_e.pdf

Government of British Columbia Archaeological Impact Assessment Guidelines
http://www.tsa.gov.bc.ca/archaeology/docs/impact_assessment_guidelines/index.htm

Legislation

Yukon Historic Resources Act
http://www.tc.gov.yk.ca/pdf/historic_resources_act.pdf

Yukon Archaeological Sites Regulation
http://www.tc.gov.yk.ca/pdf/oic2003_073.pdf

Yukon Environment and Socioeconomic Assessment Act
<http://www.yesab.ca/>

Quartz Mining Land Use Regulation
http://www.gov.yk.ca/legislation/regs/oic2003_064.pdf



Gwich'in elder Walter Alexie from Fort MacPherson is photographed here.



Hunting blinds.