

## 8 HERITAGE RESOURCES

Heritage resources are nonrenewable resources that might be located at or near the ground surface and are therefore susceptible to ground disturbance. Heritage resources are defined and managed under several legislations in the Northwest Territories, including:

- *Mackenzie Valley Resource Management Act and Land Use Regulations*
- *Territorial Land Use Regulations*
- *Northwest Territories Archaeological Sites Regulations*
- *Historical Resources Act*, which pertains only to Commissioner's lands

In Alberta, heritage resources are defined and managed under the *Alberta Historical Resources Act*.

Under the *Mackenzie Valley Resource Management Act*, heritage resources are defined as *archaeological or historic sites, burial sites, artifacts and other objects of historical, cultural or religious significance, and historical or cultural records* (Government of Canada, Department of Justice 2002). Further general information is provided in the Heritage Services Policy outlined by the Prince of Wales Northern Heritage Centre (PWNHC), which defines heritage as *any tangible or intangible product of human or natural history that has potential to have scientific, educational, aesthetic, cultural, or social meaning or value for present or future generations* (PWNHC 2002).

Under the *Alberta Historical Resources Act*, historical resources, called heritage resources in the Northwest Territories, are defined as *any work of nature or humans that is primarily of value for its palaeontological, archaeological, prehistoric, historic, cultural, natural, scientific or aesthetic interest, including but not limited to, a palaeontological, archaeological, prehistoric, historic or natural site, structure or object* (Government of Alberta 2000).

By these definitions, heritage resources, referred to as historic resources in Alberta, are either locations where events took place in the past, or all of the objects that they contain, including any contextual information that might be associated with them that will aid in their interpretation, including natural specimens and documents or verbal accounts. Heritage resources are commonly divided into different categories, such as:

- Prehistoric Period archaeological
- Historic Period archaeological
- structural and documentary
- palaeontological sites and specimens

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Palaeontological sites include those sites containing evidence of plant materials, multi-cellular invertebrate and vertebrate faunal remains that have been fossilized or otherwise preserved. These can include:

- fossils
- bone deposits
- shells
- impressions of these remains

Palaeontological sites can occur in both bedrock and unconsolidated glacial and postglacial sedimentary deposits.

Archaeological resources are defined and administered under the provisions of the *Northwest Territories Archaeological Sites Regulations* (Government of Canada 2001). An archaeological site is defined as *a site where an archaeological artifact is found* and artifacts are defined as *any tangible evidence of human activity that is more than 50 years old, in respect of which an unbroken chain of possession cannot be demonstrated*.

An archaeological resource is defined under the *Historical Resources Act* as *a work of humans that is primarily of value for its prehistoric, historic, cultural or scientific significance* (Government of Alberta 2000).

Prehistoric archaeological resources in northern North America are the archaeological sites, objects and affiliated materials representing occupation by Aboriginal peoples before the arrival of European goods, people and the historic records that characterized their culture. In the Northwest Territories, these are the locations where various types of activities took place. The remains of these activities are usually represented by stone artifacts and features, such as:

- hearths
- tent rings
- settlements

Often, any associated animal bone and other organic artifacts have been destroyed by the acid soils of the area but, in areas characterized by permafrost, preservation of artifacts and affiliated organic material can provide a rich record of this use. These archaeological resources can span a period of use exceeding 8,000 years.

Archaeological, structural and documentary resources of the Historic Period often include the sites, artifacts, structures and documents that relate to the influx of Euro-Canadians in the region, and date to the last 250 years. These include remains related to the early fur trade conducted in the region, and those relating to later economic developments, such as transportation, mining, and energy exploration and production. A large part of the regional Historic Period site base comprises artifacts and affiliated resources relating to postcontact Aboriginal

peoples' use of the landscape. These include archaeological sites and objects, such as:

- standing and collapsed cabins
- camp sites
- graves
- trails
- cultural use sites and resources
- culturally important places
- hunting and plant collecting areas
- trapping areas and associated remains
- oral traditions and various documents

Documents are usually identified through public participation procedures such as traditional knowledge studies.

## **8.1 Scope of Assessment**

### **8.1.1 Key Issues**

Based on community and regulatory input, several key issues were identified. The following key issues relating to heritage resources have been established:

- loss of heritage resources, including:
  - historical resources
  - cultural resources
  - archaeological resources
  - palaeontological resources
- damage and destruction to the physical remnants of past cultures
- disturbance to the ground surface that could alter or destroy important archaeological or other heritage sites

### **8.1.2 Valued Components**

All known and undiscovered heritage resource sites are protected under the *Northwest Territories Archaeological Sites Regulations* (Government of Canada 2001). Additional methods of protection for known and undiscovered sites on Crown Lands are contained in Sections 10 and 16 of the *Territorial Land Use Regulations*. Although these regulations demonstrate that all heritage resources are valued components, some site types are of particular interest because of their cultural, historical or research value. The significance of a heritage resource is determined by considering these three values and is often classified as being culturally or scientifically significant, or both. The significance, in combination

with the expected effect, allows a management plan to be developed. Sites that exhibit unique or high values in one or more of these three categories are considered to have high scientific significance. Sites with a high cultural value are considered to have a high cultural significance.

### **8.1.3 Culturally Sensitive Sites**

Culturally sensitive sites include heritage resources valued because of their cultural, social, religious or economic importance to a particular group or community. The types of sites identified in the project development zone are usually defined by Aboriginal communities and individuals, and can include, but would not be limited to:

- grave sites and burial areas or other locales where human remains are known or suspected
- geographic features that are important in local legend or oral history
- traditional gathering, hunting or settlement areas
- trails and travel routes traditionally used by groups or families

### **8.1.4 Heritage Resources of Particular Historic Value**

Heritage resources that contribute substantially to our understanding of local, regional, and national history and prehistory are historic valued components. They can include the:

- physical remains of activities that represent important themes in the historical development of the Northwest Territories
- records and documents that provide context for understanding and interpreting these remains

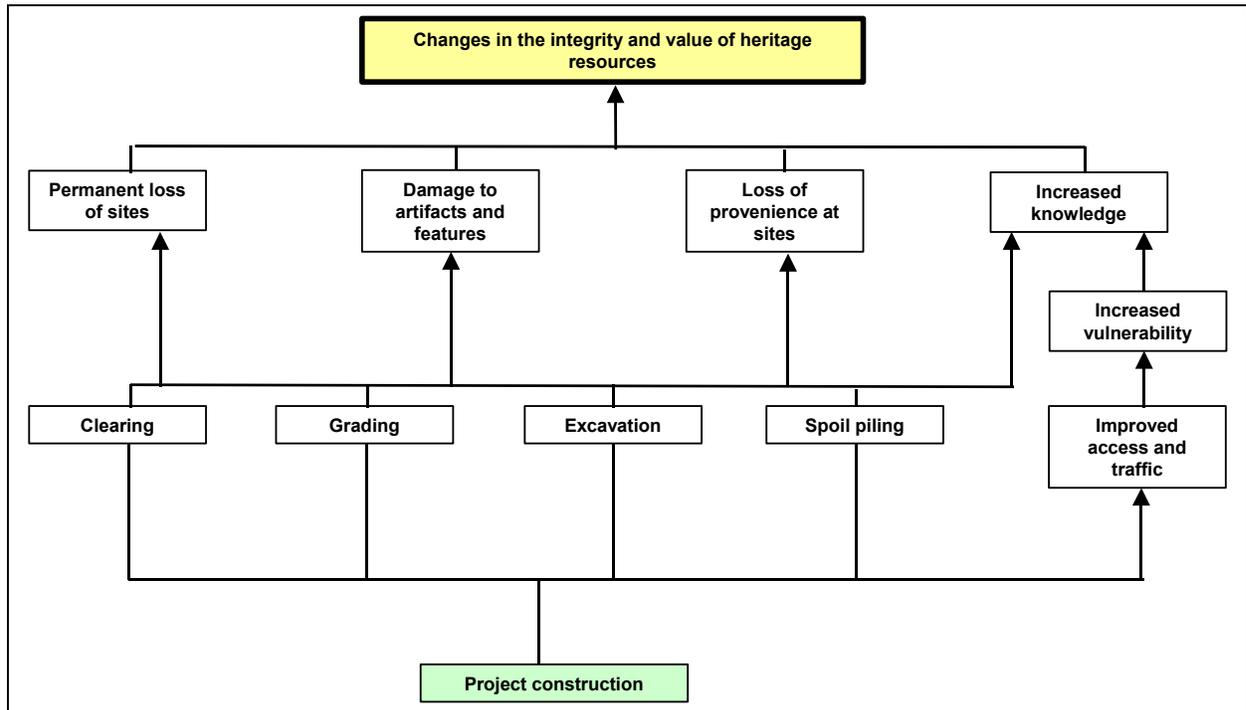
### **8.1.5 Sites of Research Value**

Heritage resources contain evidence that allows archaeologists, historians and palaeontologists to characterize and reconstruct past activities and environments, and to place these in a context that will contribute substantially to a better understanding of regional cultural and environmental history. These resources are evaluated in terms of their potential to contribute to the resolution of a range of important regional research goals, and their characteristics are measured using a variety of research criteria.

### 8.1.6 Key Question and Effect Pathway Diagram

*How will the project affect heritage resources?*

Figure 8-1 shows a linkage diagram developed to understand the mechanisms through which the project could affect heritage resources.



**Figure 8-1: Project Effects on Heritage Resources**

Heritage resources are nonrenewable resources that might be located at, or near, the ground surface and therefore are highly susceptible to any activities that result in disturbance to the ground. Consequently, the linkages between project development activities and potential effects on heritage resources focus on surface disturbances that will take place within the project footprint. They also include effects in a regional context because of potential indirect effects of the heritage resources investigation.

#### 8.1.6.1 Effect Descriptions

Effects to heritage resources are described in terms of four characteristics:

- direction
- magnitude
- geographic extent
- duration

**Direction**

The direction of predicted effects can be:

- adverse – effects that occur in association with physical disturbance or destruction of heritage resources
- positive – effects that occur when heritage resource investigations are conducted before development and valuable information not previously known becomes part of the prehistoric or historic record
- neutral – effects that result when there is no change from the previous condition and heritage resources are not discovered or threatened in any way

**Magnitude**

Alteration of the landscape can result in damage to, or complete destruction of, historical resources. These alterations might involve a range of negative effects, from displacement of artifacts resulting in loss of valuable contextual information, to destruction of artifacts and features resulting in the complete loss of important information. Because of development activities within the zone of influence, the potential direct physical effects to heritage resources vary. These potential effects are affected by the nature of the ground-disturbing activity and by the environmental conditions under which it occurs. For example, activities that occur on snow-covered, frozen ground might have less effect than under summer conditions. A further, critical determinant is the significance of the individual resources that might be affected.

Therefore, assessment of the magnitude of effects must include consideration of the significance of the resources and the nature of the predicted disturbance. For example:

- high-magnitude effects would be expected in areas of severe physical effects when resources of high value are affected
- moderate-magnitude direct effects are expected in areas of moderate or partial physical effect when high- or moderate-value resources are affected, depending on the nature of the ground disturbance
- low-magnitude direct effects could be expected in areas of minimal physical effect, or when few or low-value resources are affected, depending on the types of development proposed
- negligible-magnitude direct effects are expected to occur in areas where no physical effect takes place or no sites are developed

Indirect effects can be expected in areas outside proposed direct effect zones, but are usually less severe because they are unplanned and cannot be predicted in advance. Therefore, they can only be discussed in terms of their potential. Like direct effects, the magnitude of indirect effects depends on the significance of the resources that might be affected:

- potential accidental (indirect) effect is high where culturally or scientifically significant resources occur beside proposed development zones. The determination of site significance is further discussed in Section 8.1.2, Valued Components and Section 8.1.3, Culturally Sensitive Sites.
- the potential for indirect effects or vandalism is comparatively high where significant resources occur in nearby areas that might be subject to high levels of subsequent use
- the potential magnitude of indirect effects is expected to be low or negligible where moderate- or lower-value sites occur far from proposed developments or in areas that are not likely to see increased levels of use

High-magnitude positive effects can be expected if a unique or highly significant site is identified and information is recovered before a development effect occurs. Moderate positive effects are expected if sites similar to others in the region are found and information is recovered before a development effect occurs. Low-magnitude positive effects will take place if few, low-value, or even no sites are found.

Regional effects can be experienced at sites in the region if they are indirectly affected by increased use of the area or demand for other facilities. It is not possible to confidently predict indirect regional effects.

### **Geographic Extent**

The geographic extent of project effects can occur at both the regional and local levels. Local effects are experienced at any site situated in the zone of influence directly affected by development activities. The geographic extent of these effects is limited to actual physical effect zones within the zone of influence.

The regional study area (RSA) for heritage resources is defined as all of the Borden Blocks, archaeological site registry units that are within a 20-km buffer around all proposed developments. This area encompasses all of the potential ecological variations within which heritage resources could be expected to occur close to potential effect zones. Although direct effects would not be expected in this area, it was selected as a reference to provide context for the types of resources that could occur within development zones and the types of landforms that might contain heritage resources. It has relevance for providing a framework

within which assessment of the heritage resources effects of the project can be placed.

The potential negative effects of the project could be considerable if a unique or important resource for understanding regional history is affected. Although not expected for a project of this nature, negative effects might be experienced regionally if a project results in a substantive increase in the use of other resources in the region. Increased use of newly created access in the region, for example, might result in indirect effects to heritage resources at considerable distances from the project development zone.

The regional heritage resource base might experience positive effects because of project-related activities. Positive effects would occur at the regional level if a resource noteworthy to regional history is recorded and its information conserved as part of project-related assessment and mitigation measures. Also, the heritage resource conservation measures adopted for the project will increase the understanding of the nature and distribution of regional heritage resources, and will provide benefits that would not have accrued if planning for the project had not been undertaken.

### **Duration**

The physical effects of project development occur immediately in the construction zones, and are likely to occur throughout construction and operation as new lands are affected. These effects are permanent and irreversible, but can be offset by effective mitigation measures, such as systematic information retrieval programs, completed before scheduled land disturbance.

### **8.1.7 Study Area**

The negative effects on heritage resources will occur directly within areas scheduled for land surface disturbance, i.e., zones of influence. Most of the study area ground surface will be affected by construction of the production area and gathering system components. Most field data used for this document was gathered during the heritage resource reconnaissance program completed in 2002. At that time, little information existed regarding the location and number of infrastructure and borrow sites. The precise location of the pipeline right-of-way was also not fully defined. Therefore, the field program completed was a reconnaissance-level study rather than an impact assessment, and focused on the following:

- parts of the three anchor fields defined by the consultants group, with an emphasis on areas considered to exhibit high heritage resource potential, and including efforts to relocate and update information on known resources in those areas

- selected segments of a 1-km-wide corridor identified by the consultants group, with an emphasis on those areas exhibiting high potential to yield heritage resources, and including efforts to relocate and update information on known resources in those areas
- 67 potential locations selected for project-related infrastructure, including barge landing sites, camps, stockpiles, and their affiliated temporary and permanent access roads, with an emphasis on those where new surface effects would take place or where known heritage resources occur
- 159 potential borrow sites, for which test programs had been proposed by the consultants group, with an emphasis on those considered to have heritage resource potential or are near a known heritage resource

In 2003, additional investigations were completed at the reconnaissance and assessment levels because of changes in the pipeline route, and refinement of borrow sites and infrastructure sites. These activities resulted in additional data being collected. The field program consisted of the following:

- reconnaissance-level investigations in parts of three lease areas. Emphasis was placed on areas considered to exhibit high heritage resource potential. Efforts were also made to relocate existing sites and update existing information on known heritage resources in those areas. Nine separate locations were investigated in association with the 2003 program.
- reconnaissance-level studies in 66 segments of the 1-km-wide corridor. Emphasis was placed on those areas exhibiting high potential to yield heritage resources. Efforts were also made to relocate existing sites.
- reconnaissance- and assessment-level investigations at 110 potential infrastructure locations. These included barge landing sites, camps, sleigh camps, river crossings, stockpiles, and their affiliated temporary and permanent access roads, some overlapping the 1-km-wide corridor. Emphasis was placed on locations where new surface effects would likely take place or where known heritage resources occur.
- assessment of 72 potential geotechnical investigation locations in 2003, before completing the 2003 to 2004 winter geotechnical programs. These locations included borrow sites, frost heave sites and access trails, some of which overlapped with the 1-km-wide corridor. Assessments concentrated on areas within proposed borrow sites that exhibited high heritage resource potential and where known heritage resources had been previously recorded. Some access routes were inspected. However, because of the limited locational information at the time, this inspection was not extensive.

The previously described development elements, including the anchor fields, 1-km-wide corridor, infrastructure and geotechnical investigation locations, are distributed throughout the study area and comprise the local study area for the project. However, for this section of the environmental impact statement (EIS), five subcomponent local study areas (LSAs) were established based on the important traditional, cultural and political divisions present in the region in which the various proposed elements of the project would be situated.

The following discussion of project-specific effects is organized according to the major settlement areas or regions:

- Inuvialuit Settlement Region
- Gwich'in Settlement Area
- Sahtu Settlement Area
- Deh Cho Region
- northwestern Alberta

As indicated, the RSA established for this part of the archaeological program consisted of all of the Borden Blocks within a 20-km buffer around all proposed developments. This area encompasses the level of topographic and ecological variation that could be considered representative of regional heritage resource distributions near the proposed developments, and could be useful as a context within which to place the assessment of project effects and provide information for planning future stages of the archaeological program.

### 8.1.8 Methods

The methods employed for the project-focused field reconnaissance and heritage resources impact assessment (HRIA) are considered standard for archaeological projects of this type in the region. These procedures comply with the standards outlined in the Prince of Wales Northern Heritage Centre documents entitled *Archaeologists Permit Requirements* and *Guidelines for Developers for the Protection of Archaeological Resources in the Northwest Territories* (PWNHC 2002). They are summarized following.

It was necessary to begin field data recovery and information syntheses before a specific development footprint was available for all project components. Most pipeline projects are assessed once a right-of-way has been established to determine the nature of the effects on heritage resources within that development zone. It is likely that an environmental assessment and the EIS will be submitted before completing an HRIA for all project components. Therefore, it was determined, in consultation with the Prince of Wales Northern Heritage Centre (Andrews 2002, personal communication), that a focused reconnaissance of a corridor encompassing the most likely route would be conducted to facilitate right-of-way definition. Reconnaissance-level investigations were completed at other project components to provide guidance on heritage sensitivity. Detailed

HRIA studies are being done as the project definition is refined and the location of the development features is more completely determined.

HRIA-level investigations have been completed at select potential infrastructure and borrow source locations, and will continue to be completed as specific locational information becomes known. An application for a Class II archaeologist's permit was submitted in March 2002 and again in March 2003 to conduct the focused reconnaissance- and HRIA-level investigations. Northwest Territories Permit Numbers 2002-916 and 2003-933 were issued to complete the investigations. An additional permit was applied for in early 2004 to complete monitoring-level investigations as part of the geotechnical investigation program through the Jean Marie River area. As this was not needed, the permit was subsequently cancelled. The overall HRIA program for the project entailed several stages, including:

- prefield studies
- reconnaissance
- impact assessment
- site documentation and assessment
- reporting
- formulation of recommendations

### **Background Research**

To identify areas of potential archaeological concern, several data sources were reviewed before fieldwork began. A comprehensive literature review was completed to complement the permit application, and assist in identifying and refining the areas planned for investigation during the summer field program.

The Prince of Wales Northern Heritage Centre site database and accompanying national topographic system (NTS) map sheets were searched to determine the existence of any known heritage resource sites in the study region. The searches indicated that 407 heritage sites occur near the study area (Davis 2002, personal communication).

A review of general environmental information and previous archaeological studies for the region was also conducted to provide context for the fieldwork that followed. Research studies undertaken for the Mackenzie Valley pipeline and road in the early 1980s, and the Northern Oil and Gas Action Plan investigations of the 1980s and 1990s, were the main focuses of this review. The Mackenzie Valley pipeline and road reports were important because the two project areas and the pipeline corridor overlap at some places. The Northern Oil and Gas Action Plan material was also important because it is some of the most recent, comprehensive work conducted in the region. Additional reports completed for development projects were also reviewed, including Hanna (2002), Thomson and Stoddart (2001), and Ronaghan (1999, 2000a, 2000b).

In addition, information from published and unpublished sources pertaining to local and regional history, prehistory and ethnography were reviewed. Those of most direct relevance were summary articles on early studies by MacNeish (1964) and the syntheses provided by Morrison (1984, 1987). Also reviewed were more general regional summaries provided by Clark (1981), Cinq-Mars and Martijn (1981), and Noble (1971).

NTS maps and air photographs of the study area were examined to prepare for the field component of the program. Finally, some of the local Aboriginal community members were consulted regarding:

- the objectives of the project
- preparation of a permit application for review by the Prince of Wales Northern Heritage Centre
- review of general cultural concerns in the study area

Through this consultation, arrangements were made to obtain the assistance and, in some instances, the advice of an Elder of each community through participation in the field investigations.

### **Traditional Knowledge**

Published traditional knowledge sources were consulted for available information pertinent to heritage resources. Most published information consists of broad-based syntheses dealing with the traditional land use practices at a regional level. These documents were searched to:

- determine if any locations specified related to locations that might be affected by the project
- determine patterns in the regional use of areas
- identify areas with greater and lesser degrees of land use

Additional and more project-specific information will be gathered during the community-based traditional knowledge studies (see Volume 1, Section 3, Traditional Knowledge). Further land use information was identified on an ad hoc basis during the heritage resource fieldwork. Knowledgeable local people identified by the local hunters' and trappers' committees or regional resource councils and Elders were part of the heritage resource field teams and added valuable information regarding the local use of different parts of the land.

Traditional knowledge studies contain valuable information that assists with understanding spatial patterning of heritage resource sites. This relates to both intra-site patterning, the distribution of materials within a site, and inter-site

patterning, the pattern of several sites across the landscape. For example, information gathered from the SSA advises that taboos prohibited women from associating with hunting gear, thereby explaining why items such as projectile points would have been made, stored and discarded away from living areas around hearths where women commonly spent a good deal of their time (Hanks and Pokotylo 1989).

Identification of inter-site distribution patterning can also be enhanced by data in traditional land use studies. For example, the published literature indicates that except for a few days around Christmas and Easter, the Fort Good Hope trading post was deserted during the winter months while the people were in their winter camps. Summers were spent in larger groups, much of the time at Fort Good Hope (Berger 1977).

Traditional knowledge studies are an invaluable source of information regarding past and current land use practices. The information is often associated with the local use of the geography, surficial geology, renewable resources, such as plants and animals, trails and the like. In describing the traditional activities, information is often available that is very useful to archaeologists in both locating and interpreting heritage resource sites, and interpreting artifact and site patterning. This information is region-specific and is further discussed in association with culture.

### **Public Participation**

Public participation during the EIS development was an important source of information for this assessment. The senior project archaeologists participated in many of the community open houses, regional workshops and nongovernmental organization workshops, and will continue to be involved as the program progresses. The forums provided an opportunity for the archaeological team to directly address any concerns and to learn about areas of particular interest to the people.

In addition to the direct dialogue between archaeologists and stakeholders, all concerns raised by stakeholders were recorded and communicated to the archaeological team. Summaries of concerns raised are provided in Volume 1, Section 4, Public Participation, which describes the public participation program. Most of the concerns reflected the desire for the communities to continue to be informed about details of the program and the progress of the field studies. Protection of heritage resources is expected. The annual archaeological permit application process was used as one of the several mechanisms for community members to share their concerns about the program.

Throughout the archaeological studies completed for this project, local technicians from the nearest communities were employed to assist in field investigations. Although traditional knowledge issues are considered separately in

this EIS, Aboriginal participants in the field component of the heritage resources study were able to share some location-specific information that was not considered confidential. This information was considered during the field studies conducted for the present study.

Local technicians were encouraged to share information on historic or cultural uses of the study area. Information, such as place names, trap lines, ownership of cabins and camps, and past uses of the landscape, proved invaluable in completing the heritage investigations. Input from these informants was particularly valuable in enhancing the understanding of site potential in the area. This resulted in several additional heritage resource sites being identified and recorded. Formal traditional knowledge data will be collected and incorporated into the heritage investigations as it becomes available.

### **Field Methods**

As described previously, the field component of the work completed in 2002 consisted of a focused reconnaissance of the 1-km-wide pipeline corridor, anchor fields, infrastructure locations and borrow sites identified at that time. Because the width of the corridor did not allow completing a comprehensive HRIA to regulatory specifications, the archaeological assessment focused on specified locales to assist in the route selection process, and to identify some of the heritage sites that occur within the broad development zones. The objectives of this part of the program were to assist in:

- planning future research strategies, including the field component for the ongoing project
- formulating recommendations for the impact assessment part of the project

In 2003, pipeline route changes, and additional information on access, infrastructure and borrow sites were defined. This allowed additional reconnaissance activities and some assessment-level investigations. The objectives of the assessment part of the program were to:

- identify and inventory historical resources in the study area
- evaluate the significance of the sites with respect to potential effects
- interpret the results of the effect assessment within the framework of regional prehistory
- provide recommendations for effective management, mitigation, or both, of potential effects

The methods were similar for all aspects of the field components. Helicopter overflights of the pipeline corridor, anchor fields, borrow sites and infrastructure locations were conducted to refine prefield assessments of the heritage resource potential of the study area landscape. These overflights served as an orientation to the landforms of the area, and provided information useful for augmenting and refining the preliminary judgments regarding heritage resources potential formed by the prefield map and air photograph analyses. Input from local assistants was also incorporated during these overflights.

Subsequently, parts of the proposed development components illustrated on air photograph mosaics were examined for heritage resources. This was accomplished by a combination of:

- traversing the area on foot
- visually examining the proposed effect zones
- subsurface shovel testing in areas of potential that lack subsurface exposure

Visual inspection focused on landforms believed to have the potential for the presence of archaeological materials, with special attention given to natural or anthropogenic exposures.

Study areas were usually situated in environments and locations where subsurface exposures were limited. However, in specific instances, previous development activities had taken place within or near proposed development areas, including seismic cutlines and winter roads built to support recent exploration activities. Several of these occurred within investigation areas and were examined during this study. These sites typically provided excellent subsurface visibility, especially if they were recent in origin. Such sites were encountered throughout the study area, but were most numerous in the SSA and DCR. Other smaller areas of potential development zones corresponded with existing disturbances, and these areas were closely inspected whenever possible.

In addition, natural disturbances were present in the form of the eroding banks of rivers, lakes and streams. These exposures often hold high potential for heritage resources, providing a cross-section of riverbank history. Other natural disturbances included tree throws in areas south of the tree line and the occasional animal den midden.

Where existing exposures were not present, the principal means of exploring heritage resource potential was judgmental placement of shovel tests in areas considered to have potential. These tests were usually 40 to 50 cm per side and were excavated to sterile subsurface sediments. Sediments excavated in all shovel tests were thoroughly searched for the presence of cultural materials. Standard recording procedures were also used to provide information needed to assess the significance of the sites recorded during the study. These tests and surface

observation provided information on the horizontal and vertical extent of site deposits, and the density and character of the cultural materials present.

Areas selected for examination were established in prefield map analysis and modified according to the prefield helicopter overflight. Normally, they were areas near prominent lakes and rivers. Other areas identified during the prefield analyses included:

- stream and lake shores
- areas of previously identified heritage sites
- upland areas of glacial origin, such as eskers and moraines

Areas considered to have limited archaeological potential were:

- slopes greater than 10°
- low-lying, water-saturated terrain
- areas that exhibited no variation, serving as a focus for historic or prehistoric use

Because of the character of the landscape in which development is planned, these prehistoric areas comprised a substantial part of the landforms potentially affected by the project.

A local Elder or knowledgeable assistant was part of each crew during the field inspections. Some of these individuals had previous archaeological experience, whereas others did not. All of the advisors were invaluable for their knowledge of the region, and its past and present uses. Local assistants provided the following services:

- advising on the cultural significance of the area
- advising on the possible presence of sites or areas of cultural concern
- suggesting relevant land use patterns that might assist in interpreting the historic cultural use of the area
- assisting in the subsurface and surficial inspections for cultural resources

### **Analysis**

Archaeological sites identified during the field studies were assigned temporary field numbers to facilitate their description. Formal site numbers in the Borden system, i.e., a national site registry, were obtained from the Canadian Museum of Civilization. These numbers were used for the sites identified in the final report

prepared to fulfill the requirements of Northwest Territories Archaeologists Permits 2002-916 and 2003-933 issued for this project.

Artifacts recovered during the field program were bagged with reference to their locations within defined site areas and were curated according to existing permit-regulated standards. Stone tools and debitage, the remains of stone tool manufacture and use, were assigned categories commonly used in the regional archaeological literature.

The cultural, historic and research significance attributed to the sites identified during the field studies considered the following parameters:

- site type
- integrity of the site, i.e., whether it had been previously disturbed
- presumed age
- site size
- artifact density
- character of the cultural remains present
- characteristics that would be considered typical or unique in the regional historic and prehistoric record

Input from the local Elder or assistant accompanying the archaeological team was reflected in the significance interpretation. Consideration was also given to the presumed significance of these sites to local communities. Finally, in developing recommendations for management of these sites, consideration was given to the potential effects expected. It will be possible to more fully predict effects in later stages of the heritage assessment program.

### 8.1.9 Information Sources

Environmental conditions in the North and little prior archaeological research hinder development of comprehensive cultural chronologies for the Prehistoric Period. Hence, the information sources used to describe the regional cultural setting include some of those available for adjacent areas of the Mackenzie River Basin, the Canadian Arctic, and parts of northern Alberta, British Columbia and Alaska. In contrast, existing documents, records and oral testimony provide a firmer basis for understanding the Historic Period of the region. Published data was used to obtain some of the available traditional knowledge.

MacNeish was responsible for conducting the first archaeological research south of the ISR in the western Northwest Territories, with surveys in the 1940s and

1950s in the Upper Mackenzie Basin and Great Slave Lake area (MacNeish 1951, 1953, 1955). The cultural sequence developed because of these studies (MacNeish 1964) was modified by subsequent research, including Noble (1971), who surveyed in the Great Slave Lake area, Cinq-Mars (1973) and Clark (1975, 1977) in the western Great Bear Lake and Mackenzie River Basin areas, and McGhee (1970) in the Coppermine River area (see also Cinq-Mars and Martijn 1981).

Further work in the Mackenzie Basin also included investigations conducted on the potential transportation corridor in the 1970s, particularly by Fedirchuk and Millar (1981). Northern Oil and Gas Action Plan investigations of the 1980s and 1990s also included work in the Mackenzie Valley south of the ISR. Preliminary investigations conducted for the Alaska Gas Producers included fieldwork in the GSA, and desktop studies of the archaeological potential of the SSA and the DCR (Thomson and Stoddart 2001).

### **8.1.10 Regional Conditions**

The proposed project extends through many traditional territories, each of which is an amalgamation of tradition, language and heritage. The following sections on cultural background are presented from north to south, beginning with the Inuvialuit of the North, followed by more closely related Dene Athapascan speakers who inhabit much of the Boreal Forest of Canada. These groups live in the GSA, SSA and DCR. These sections explore the origins and relationships of each of these groups of people according to established administrative regions:

- Inuvialuit Settlement Region
- Gwich'in Settlement Area
- Sahtu Settlement Area
- Deh Cho Region
- northwestern Alberta

## **8.2 Heritage Resources – Inuvialuit Settlement Region**

### **8.2.1 Environmental and Cultural Contexts**

Current understanding of the historic and prehistoric past of the region is built on the premise that two relatively distinct subsistence patterns existed in the study area:

- a marine-based strategy in the northern Inuvialuit region
- a boreal and sub-boreal strategy in the more southerly Dene region

Although interaction between these groups likely occurred, this discussion has been divided into two separate chronologies, one for each region. The cultural chronology of the ISR follows broad-based syntheses compiled by Clark (2001),

LeBlanc (1991), Morrison (1987) and Park (1999), with more site-specific information such as Pilon (1994) for the Mackenzie Delta and ISR in general.

The cultural chronology of the Dene groups is a compilation of research conducted by Cinq-Mars (1973), Clark (1975, 1977), MacNeish (1951, 1953, 1955, 1964), McGhee (1970), Noble (1971) and others. These two discussions are followed by historical synopses for each of the administrative regions.

### 8.2.1.1 Environmental Context

The proposed project crosses four ecological zones in northern Canada. Most of the production area lies in the Tundra Ecological Zone (Environment Canada 1986), which consists largely of rolling lowland and plains, much of which is mantled by glacial moraines. Throughout the area lies exposed bedrock, most of which belongs to the Precambrian basement. Lakes are common.

The southern boundary of the Tundra Ecological Zone is defined by the tree line and represents a major area of vegetation transition. Most ecological zones lying to the south are treed. This ecological zone contains the major shrublands in the tundra. The size of shrubs decreases rapidly to the north, with very low and flattened plants being most characteristic of the northern and central locales. All production area components lie in the Tundra Ecological Zone. Typical shrubs include dwarf birch, willow and heath species. These are commonly mixed with various herbs, lichens, sedges and mosses. Wetlands are common in low-lying areas, mainly supporting sedge–moss covers (Environment Canada 1986).

Vegetation in the tundra regions of the study area includes sedges, cotton-grass and dwarfed shrubs. Part of the study area in the ISR is above the tree line, although some small trees and shrubs occur in the valleys, e.g., Holmes Creek and Hans Creek. The warming influence of the Mackenzie River allows tree growth along the river valley to extend north of Reindeer Station.

Floodplain vegetation in the river valley consists mostly of black spruce, northern willow, horsetail and water sedge (Gill 1971). Spruce are mostly found on the west-facing slopes and north-facing gullies. Balsam poplar and paperbark birch are found on west-facing slopes. However, the trees do not extend outside the valley onto the uplands or the pipeline corridor.

In the upland plateau, there are extensive wet and dry tundra communities, including alder heath hummocks (Beckel 1975). Some parts of the uplands feature dwarf shrub–heath vegetation types on small knolls, tussocks or hummocks, with lichens codominant in well-drained areas and birch in poorly drained areas. Cotton-grass or sedges are featured in low areas, with shrubs along drainages and around some waterbodies. Polygonal patterns can develop in surface deposits of sedge peat (Larsen 1972). Caribou lichens (*Cladonia* spp. and others) also occur in the region, often on the hilltops and upper slopes of the Mackenzie Valley.

The Mackenzie Delta is the largest Arctic delta in North America. It is about 210 km in length and 62 km wide, and encompasses an area of about 13,000 km<sup>2</sup>. It has an elevation difference of about 10 m from its highest to lowest point (Burn 2002). The delta is a complex region of interconnected lakes and channels, and has been accumulating since the last glaciation. The region has been free of ice for about 15,000 years and the beginnings of the Mackenzie River were evident by 14,000 years ago (Burn 2002). The Caribou Hills are located near the Mackenzie Delta, paralleling the East Channel of the Mackenzie River. The rolling, hilly terrain is mostly composed of glacial till.

### 8.2.1.2 Cultural Context

#### Prehistory of the Inuvialuit Settlement Region

Information relating to the prehistory of the ISR is based on a limited number of archaeological studies completed in the region. Most early archaeological investigations of the Mackenzie Delta and surrounding region were research-based. Some of the earliest studies in the region are MacNeish's investigations along the Firth River (MacNeish 1956a, 1956b, 1959, 1964). Other researchers studied site distribution, temporal span and geology of sites (Arnold 1981, Cinq-Mars and Pilon 1991, Mackay et al. 1961).

Development-based investigations began in the mid-1970s and continued through to the present. Some key examples of these include work done relative to the Polar Gas Project (Schlederman and Helmer 1980, Schledermann and Fedirchuk 1983), the Canadian Arctic Gas Study Limited (Millar 1974) and other work in the Mackenzie Delta, (Fedirchuk and Millar 1981, McGhee 1982). More recent investigations included the Northern Oil and Gas Action Plan, undertaken partly as an extension of the Berger inquiry, by the Canadian Museum of Civilization (Cinq-Mars and Pilon 1991). Preliminary investigations were also conducted for a potential pipeline proposed by a consortium of Alaska Gas Producers, assessing the feasibility of constructing a pipeline to bring Alaskan gas under the Beaufort Sea and then south along the Mackenzie Valley (Thomson and Stoddart 2001). Inuvialuit Environmental and Geotechnical Inc. (Hanna 2002) also conducted recent investigations in the Mackenzie Delta.

Systematic archaeological investigations in the ISR are limited to the small number of sites that have been found. These primarily date to the last 100 years. Hence, knowledge of the prehistoric past is limited, and any findings that can enhance what we know or postulate based on findings in similar environments are likely to be viewed as significant. To support the cultural chronology within which to interpret and evaluate archaeological sites, data from adjacent areas must be considered. The prehistoric past in the ISR is categorized under phases, traditions and cultures that represent the past 10,000 to 12,000 years:

- Flint Creek Phase (about 11,000 BP (before present))

- Palaeo-Arctic Tradition (about 10,500 to 7,000 BP)
- Arctic Small Tool Tradition (about 4,200 to 2,800 BP)
- Dorset Culture (about 2,500 to 1,000 BP)
- Thule Culture (about 1,000 to 400 BP)

The phases, traditions and cultures are poorly defined, and the transition from one to the next is not well known. Little data about the earliest occupation has been recovered in the ISR. Regionally, a terrestrial–mammal hunting adaptation is known for the earliest occupations. Although marine-based subsistence economies were likely present, few coastal sites are known, possibly because rising sea levels after the retreat of the last glaciers inundated the coastlines from the early periods.

The Arctic Small Tool Tradition is thought to relate to a separate migration of people from Siberia that developed into the subsequent Dorset Culture, known for exquisite miniature carvings (Park 1999). People of the Dorset Culture focused mostly on maritime subsistence, and occupied a huge area, perfecting winter hunting on sea ice. Thule Culture replacement of Dorset Culture is not well understood. Thule adaptation initially focused on maritime resources, but later used terrestrial resources as well. Introduction of sled dogs, still in use today, dates to the Thule Culture.

### **History of the Inuvialuit Settlement Region**

Because archaeologists are also responsible for recording Historic Period remains, a synopsis of the historic past is an important aspect of the setting.

The Inuvialuit, or *real human beings*, are the Inuit people of the western Canadian Arctic. Identified by anthropologists and historians as the *Mackenzie Inuit* or *Mackenzie Eskimo*, their lands include the Mackenzie Delta and stretch from the western edge of the Arctic islands to the Alaskan boundary. Although the Inuvialuit likely originate from the Thule Culture, which spread as far as Greenland, they have more in common with their neighbours in northern Alaska than with other peoples of Arctic Canada (Morrison 1987).

Early Inuvialuit fall into five subgroups (Smith 1981), including the:

- Kigirktarugmiut
- Kupgmiut
- Nuyorugmiut
- Kittegaryumiut
- Avvagmiut

Houses of the Inuvialuit were made of logs or planks and sod, and several families usually shared these houses. Snowhouses were used in winter when travelling or hunting. Large community structures, framed in driftwood and with

central fireplaces, were built for dances and religious activities (Morrison 1987). Summers were spent on the high ground where travel by pack dog was easier, caribou more plentiful and mosquitoes fewer (Usher 1976). This pattern shifted to include more coastal summer occupations with the advent of a more widespread ownership of larger boats in the 1900s (Usher 1976).

The Inuvialuit population was estimated as high as 2,500 in the early nineteenth century, about the same number as all other Inuit people combined in the rest of the Arctic (Smith 1981). The Mackenzie Delta, a rich environment that provided a relatively stable and prosperous existence, dominated their territory. By the time of contact, the Inuvialuit were engaged in elaborate hunting and fishing activities using advanced technology.

Beluga whale were hunted around the mouth of the Mackenzie River, and villagers from the headlands to the east harvested bowhead whale. Hunting was conducted by boat, either the single-person kayak or the larger umiak. Beluga whale were often driven into the shallows and lanced, whereas bowhead whale were hunted using heavy harpoons more than 2 m long, with detachable toggling heads (Morrison 1987). Although these hunting techniques are evident throughout the world, the Inuit developed the most complex preindustrial forms of harpoons (Arnold 1989). Seal were harpooned in open water from a kayak or on foot at breathing holes. They were also netted.

Nets made from baleen or sinew with bark floats, spears or hooks were used to catch fish, which were preserved for future use by scoring, drying and smoking (Petitot 1876). Published traditional land use information identifies also that several whaling camps are located on and around Niglintgak, which is an important nesting ground for several species of waterfowl harvested by the Inuvialuit (Community of Aklavik et al. 2000, Community of Inuvik et al. 2000, Mackenzie Delta–Beaufort Sea Regional Land Use Planning Commission 1991).

Muskrat and beaver were often hunted from kayaks, using a pronged spear and throwing board. The flesh was preserved in a manner similar to fish and the pelts were used for clothing (Stefansson 1919). Waterfowl were speared and ptarmigan netted, but bird eggs were not usually eaten (Smith 1981). Plant foods included (Petitot 1876, Stefansson 1919):

- the edible roots of willow
- knotweed
- sainfoin
- mountain sorrel
- rushes
- cranberries
- blueberries
- crowberries
- cloudberry

These plants often had medicinal values as well.

The Inuvialuit harvested several land mammals (Nagy 2002), including:

- moose
- lynx
- muskox
- bear
- sheep
- hare
- wolf
- fox

Woodland and barren-ground caribou were, and still are, the most important and intensely harvested land animals, providing both meat for sustenance and hides for winter clothing. Caribou were hunted using spears, bows and drives in the inland areas. The Parsons Lake anchor field is part of the winter range of the bluenose caribou (Community of Aklavik et al. 2000, Community of Inuvik et al. 2000).

Traditional land use information identifies that Parsons and Yaya lakes are good fish lakes (Community of Inuvik et al. 2000).

In 1789, Alexander Mackenzie was the first European to arrive in Inuvialuit territory (Mackenzie 1801). Accompanied by Dene guides, the traditional enemies of the Inuvialuit, Mackenzie was steered away from the well-populated East channel of the river, and so never encountered the Inuvialuit (Morrison 1987). However, he did document abandoned camps and reported that the Inuvialuit were, by this time, receiving Russian trading goods, such as iron, from the Alaskan Inuit (Lamb 1970). In 1826, Lieutenant John Franklin led an expedition intended to discover a Northwest Passage. Franklin and Dr. John Richardson both encountered the Inuvialuit along the Mackenzie River on their way to the Coppermine River. The reception they received was hostile, as was the Inuvialuit reaction to the arrival of traders and missionaries to the Mackenzie Delta in the late 1840s (Smith 1981).

Inuvialuit trade with Europeans began indirectly, first with the Alaskan Inuit for Russian goods and with the Dene farther south on the Mackenzie River, who traded at Fort Good Hope with the Hudson's Bay Company (Morrison 1987). Peel's River Post, later known as Fort McPherson, was established in 1840, and by 1850 the Inuvialuit were trading directly with the Hudson's Bay Company. About 300 to 400 Inuvialuit were trading at Fort McPherson by 1860. Red and white fox pelts were exchanged for:

- metal fishhooks
- glass beads

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- metal pots
- iron knives
- tobacco

In 1861, the Hudson's Bay Company opened Fort Anderson on the Anderson River to trade more efficiently with the Inuvialuit. This post was closed five years later because of declining profit and difficulties with transporting supplies. The closure created economic disruption in the lives of many Inuvialuit who had become integrated into the fur trade, but more devastating effects of involvement with traders came in the form of disease.

Early trade with more southerly Dene groups, such as the Hare, could have introduced foreign infectious diseases to the Inuvialuit as early as the 1840s, with the arrival of the American whaling ships in 1889 exacerbating these effects (Morrison 1988). Trade goods, such as rifles, tents, clothing, boats and nontraditional foods, were introduced as several Inuvialuit were employed as whalers and suppliers of caribou meat (Morrison 1987). Measles epidemics in 1900 and 1902 led to the abandonment of large, traditional villages, and by 1905, the Inuvialuit population was reduced to 250 people. By 1910, this population was 150, less than 10% of what it had been 100 years earlier (Usher 1971). At the same time, the whale population was nearly decimated and local caribou herds experienced substantial decline. The Inuvialuit were further affected by the proliferation of missions in the 1890s, which had profound effects on the traditional belief systems of the Inuvialuit (Morrison 1987).

This period also witnessed the migration of many Alaskan Inuit, known as Nunatamuit, to the Mackenzie region. Drawn by employment in the whaling industry and feeling the effects of a collapse in the caribou population, the Nunatamuit eventually became known as the Uumarmiut, or *people of the green trees and willows*. Although early relations were characterized by resentment, the Uumarmiut and the Inuvialuit eventually intermarried and merged, although two linguistic dialects, Uumarmiutun and Siglitun, remain evident in the region (Morrison 1987).

The Inuvialuit, under an organization called the Committee for Original Peoples' Entitlement, negotiated a comprehensive land claim agreement with the Government of Canada, signed in 1984. Although the Inuvialuit have adapted to modern amenities, such as frame houses, snowmobiles and modern hunting technology, they continue to participate in terrestrial-, riverine- and marine-based economic and cultural activities that represent a traditional connection to the Mackenzie Delta and Arctic coastal plain.

## 8.2.2 Baseline Conditions

### 8.2.2.1 Niglintgak, Taglu and Parsons Lake

Two crews of three to four people completed investigations of the anchor fields in summer and fall 2002 and 2003. Areas of investigation were selected based on aerial photographs, NTS map analysis and helicopter overflight. Field investigations involved qualitatively assessing the heritage resource potential of each proposed development area and photographing the locations investigated. Because of the large area encompassed by the anchor fields, only parts of each were inspected on the ground.

At the beginning of the 2002 field season, no archaeological sites were on record inside the anchor field boundaries, although several traditional sites were known in the region through past investigations, i.e., Hanna 2002. These sites included ZAVR 19, a metal tool identified in Niglintgak. During investigations completed for the 2002 and 2003 heritage resources study, three prehistoric sites, five historic sites and one of unknown temporal affiliation were identified. The sites are summarized in Table 8-1 and the general locations of these sites are illustrated in Figure 8-2.

**Table 8-1: Heritage Resources in Potential Conflict with Niglintgak, Taglu and Parsons Lake in the Inuvialuit Settlement Region**

Heritage Resource	Type	Landform Association	Project Component
NhTv 1	Prehistoric lithic scatter	Elevated terrace above Mackenzie River	Niglintgak
NiTu 003	Prehistoric lithic scatter	Edge of small unnamed lake	Taglu
ISR 15	Historic kill site	Gravel ridge on unnamed lake shore	Parsons Lake
ISR 16	Historic trap	Parsons Lake	Parsons Lake
ZAVR 019	Historic tool	Kendall Island	Niglintgak
03MGP-ISR09	Rock cairns	Elevated gravel terrace between two unnamed lakes	Parsons Lake
03MGP-ISR13	Traditional use	Lowland bridge between Parsons Lake and an unnamed lake	Parsons Lake
03MGP-ISR10	Wood artifacts	Low flat peninsula at the end of Parsons Lake	Parsons Lake
03MGP-ISR11	Prehistoric lithic scatter	A small knoll on the floodplain of an unnamed creek	Parsons Lake

**Figure 8.2 has been removed for the purposes of reducing file size and can be viewed as a graphic separately. This document can be accessed through the link in the Table of Contents reference web page.**

### 8.2.2.2 Gathering System

Two crews of three to four people completed investigations of the gathering system in summer and fall 2002 and 2003. Areas of investigation were selected based on aerial photographs, NTS map analysis and helicopter overflights. Attempts were made to relocate and update site inventory from data for previously recorded sites within the investigation zones. Field investigations involved a qualitative assessment of the heritage resource potential in possible development areas, and photography of the locations investigated. Because of the large area of the pipeline corridor, only parts of the area were subject to ground inspection.

Sites identified in potential conflict with the gathering system included five prehistoric sites, two historic sites and one palaeontological site. These sites are summarized in Table 8-2 and their general locations are illustrated in Figure 8-2, shown previously.

**Table 8-2: Heritage Resources in Potential Conflict with the Gathering System in the Inuvialuit Settlement Region**

Heritage Resource	Type	Landform Association	Project Component
ISR 02	Historic tool	Knoll on Jimmy Lake	Gathering system
NhTt 007	Prehistoric lithic scatter	Gravel ridge near unnamed creek	Gathering system
NhTt 008	Historic camp site	Two ridges near unnamed creek	Gathering system
03MGP-ISR01	Prehistoric camp site	Terrace near the mouth of an unnamed creek	Gathering system
03MGP-ISR02	Prehistoric lithic	Low ridge near a channel of Mackenzie River	Gathering system
03MGP-ISR05	Prehistoric lithic	Shore of a small unnamed lake	Gathering system
03MGP-ISR12	Palaeontological site	Slope near draw leading to a plateau	Gathering system

### 8.2.2.3 Infrastructure

Twelve infrastructure locations were inspected in the ISR as part of the 2002 focused reconnaissance and an additional nine locations were investigated in 2003. Some assessment-level investigations were possible in 2003 because of the more refined level of locational information available. These are defined in the HRIA (Clarke et al. 2004). Two prehistoric sites and four historic sites were recorded in potential conflict with production area infrastructure. These heritage resources are summarized in Table 8-3 and the general locations of the heritage sites are illustrated in Figure 8-2, shown previously.

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**Table 8-3: Heritage Resources in Potential Conflict with Infrastructure Sites in the Inuvialuit Settlement Region**

Heritage Resource	Type	Landform Association	Project Component
NgTu 010	Historic scatter and burials	Tip of Tununuk Point on the bank of Mackenzie River	Production area infrastructure
NgTt 016	Historic burial	Terrace overlooking Mackenzie River	Production area infrastructure
NgTt 011	Prehistoric lithic scatter with eroded bone fragments	Airstrip at Tununuk Point on Mackenzie River	Production area infrastructure
03MGP-ISR06	Historic burial	Near Mackenzie River and Lucas Point	Production area infrastructure
03MGP-ISR07	Historic camp	Beach area near Lucas Point	Production area infrastructure
NgTt 012	Prehistoric burial site	Gravel ridge near Tununuk Point	Production area infrastructure

**8.2.2.4 Borrow Sites**

Seventeen borrow sites were inspected in the ISR as part of the granular resource component of the 2002 reconnaissance. In 2003, 15 borrow sites were subject to reconnaissance- and assessment-level investigations. For most of the locations, the level of investigation was typically concentrated in a limited area. Some access roads were inspected, but definitive alignments were not available for the access roads associated with the borrow sites. These were recorded in potential conflict with the borrow sites and are summarized in Table 8-4. Their general locations are illustrated in Figure 8-2, shown previously.

**Table 8-4: Heritage Resources in Potential Conflict with Borrow Sites in the Inuvialuit Settlement Region**

Heritage Resource	Type	Landform Association	Project Component
03MGP-ISR03	Carved wood	Gravel ridge on the shore of an unnamed lake	Borrow site
03MGP-ISR04	Historic sawn logs and bone elements	Gravel ridge at the end of Yaya Lake	Borrow site
03MGP-ISR08	Prehistoric lithic scatter	Elevated terrace between two unnamed lakes	Borrow site access road
03MGP-ISR09	Rock cairns	Elevated gravel terrace between two unnamed lakes	Borrow site
NeTs 004	Large rock feature and lithic scatter	High gravel ridge above an unnamed creek near Peter Lake	Borrow site
NeTs 006	Hearth feature	Lower terrace of the shore of Peter Lake	Borrow site
NeTs 007	Cabin	Terrace above an unnamed creek of Peter Lake	Borrow site

**8.2.3 Project-Specific Effects**

The archaeological team recorded archaeological sites, and revisited other previously recorded sites, in 2002 and 2003 that subsequently proved not to be

subject to impact because the boundaries of project components were redefined. The change in project boundaries occurred because of community concerns, engineering challenges, and sensitivities identified because of the environmental, social and cultural investigations. Table 8-5 shows the sites investigated that were thought to be associated with specific project components at the time of fieldwork. Some of these sites are associated with more than one project component because of the width of the corridor investigated, i.e., when a borrow site or infrastructure area is in the pipeline corridor. Those that no longer have a project component associated with them are labelled under the Project Component column as not applicable, and are documented in either or both the 2002 and 2003 annual permit reports (Clarke et al. 2003, 2004).

**Table 8-5: Heritage Resources Investigated During the 2002 and 2003 Focused Reconnaissance and Impact Assessment Program in the Inuvialuit Settlement Region**

Heritage Resource	Type	Landform Association	Project Component	Heritage Resource Site Significance
ZAVR 019	Historic tool	Kendall Island	Niglintgak	Limited
NeTq 002	Traditional trail	Terrace along Satnelly Creek	N/A	Limited
NfTr 001	Prehistoric lithic tool	Trending flat ridge top near Parsons Lake	N/A	High
NgTu 004	Historic camp site	Yaya Lake	N/A	Moderate
NgTu 005	Prehistoric stone feature	Tip of wide point on edge of Yaya Lake	N/A	High
NgTu 011	Historic camp site	Spit near winter road at the end of Yaya Lake	N/A	Moderate
ISR 14	Traditional use	Beach at Lucas Point barge landing	N/A	Limited
NgTt 016	Historic burial	Lucas Point on the side of Mackenzie River	N/A	High
ISR 05	Historic camp	Prominent hill overlooking Old Trout Lake	N/A	Moderate
ISR 28	Traditional use	Adjacent ridges on the East Channel of Mackenzie River	N/A	Limited
NeTs 008	Prehistoric lithic scatter	Upper flats of a narrow ridge into the Mackenzie River Valley	N/A	High
NeTs 009	Prehistoric lithic procurement	Deflated ridge top in the Caribou Hills	N/A	High
NeTs 010	Prehistoric lithic scatter	Prominent ridge in the Caribou Hills	N/A	High
NeTs 011	Prehistoric lithic scatter	Prominent ridge in the Caribou Hills	N/A	High
NeTs 012	Prehistoric lithic procurement	Gravel plain in the Caribou Hills	N/A	High
NeTs 013	Prehistoric lithic procurement	Sloped landing in the Caribou Hills	N/A	High
NeTs 014	Prehistoric lithic scatter	Prominent ridge in the Caribou Hills	N/A	High

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**Table 8-5: Heritage Resources Investigated During the 2002 and 2003 Focused Reconnaissance and Impact Assessment Program in the Inuvialuit Settlement Region (cont'd)**

Heritage Resource	Type	Landform Association	Project Component	Heritage Resource Site Significance
NeTs 015	Historic burial	Low knoll east of the Mackenzie Delta	N/A	High
ISR 08	Palaeontological site	Low terrace of Mackenzie River	N/A	High
NgTt 004	Historic cabin	Low terrace of Mackenzie River	N/A	High
NgTt 009	Historic burial	Low terrace of Mackenzie River	N/A	High
NgTt 013	Historic tower	Low terrace of Mackenzie River	N/A	Moderate
NgTt 014	Historic tool	Low terrace of Mackenzie River	N/A	Limited
NgTt 015	Historic cabin	Low terrace of Mackenzie River	N/A	High
ISR 02	Historic tool	Knoll on Jimmy Lake	Gathering system	Limited
ISR 15	Historic kill site	Gravel Ridge on unnamed lake shore	Parsons Lake	Limited
ISR 16	Historic trap	Parsons Lake	Parsons Lake	Limited
03MGP-ISR01	Prehistoric camp site	Terrace near the mouth of an unnamed creek	Gathering system	High
03MGP-ISR02	Prehistoric lithic	Low ridge near a channel of Mackenzie River	Gathering system	High
03MGP-ISR03	Carved wood	Gravel ridge on shore of an unnamed lake	Borrow site	Moderate
03MGP-ISR04	Historic sawn logs and bone elements	Gravel ridge at the end of Yaya Lake	Borrow site	Limited
03MGP-ISR05	Prehistoric lithic	Shore of a small unnamed lake	Gathering system	High
03MGP-ISR06	Historic burial	Near Mackenzie River and Lucas Point	Gathering system	High
03MGP-ISR07	Historic camp	Beach area near Lucas Point	Gathering system	Limited
03MGP-ISR08	Prehistoric lithic scatter	Elevated terrace between two unnamed lakes	Borrow site access road	High
03MGP -ISR09	Rock cairns	Elevated gravel terrace between two unnamed lakes	Parsons Lake, borrow site	High
03MGP -ISR10	Wood artifacts	Low flat peninsula at the end of Parsons Lake	Parsons Lake	Moderate
03MGP-ISR11	Prehistoric lithic scatter	Small knoll on the floodplain of an unnamed creek	Parsons Lake	High
03MGP-ISR12	Palaeontological site	Slope near a draw leading to a plateau	Gathering system	High
03MGP-ISR13	Traditional use	Lowland bridge between Parsons Lake and an unnamed lake	Parsons Lake	Limited
NhTv 001	Prehistoric lithic scatter	Elevated terrace above Mackenzie River	Niglintgak	High
NiTu 003	Prehistoric lithic scatter	Edge of a small lake	Taglu	Moderate
NhTt 007	Prehistoric lithic scatter	Gravel ridge near an unnamed creek	Gathering system	High

**Table 8-5: Heritage Resources Investigated During the 2002 and 2003 Focused Reconnaissance and Impact Assessment Program in the Inuvialuit Settlement Region (cont'd)**

Heritage Resource	Type	Landform Association	Project Component	Heritage Resource Site Significance
NhTt 008	Historic camp site	Two ridges near unnamed creek	Gathering system	Moderate
NgTu 010	Historic scatter and burials	Tip of Tununuk Point on the bank of Mackenzie River	Production area infrastructure	High
NgTt 016	Historic burial	Terrace overlooking Mackenzie River	Production area infrastructure	High
NeTs 004	Large rock feature and lithic scatter	High gravel ridge above an unnamed creek near Peter Lake	Borrow site	High
NeTs 006	Hearth feature	Lower terrace of shore on Peter Lake	Borrow site	Limited
NeTs 007	Modern cabin	Terrace above an unnamed creek of Peter Lake	Borrow site	Moderate
NgTt 011	Prehistoric lithic scatter with eroded bone fragments	Airstrip at Tununuk Point on Mackenzie River	Production area infrastructure	High
NgTt 012	Prehistoric burial site	Gravel ridge near Tununuk Point	Production area infrastructure	High
NOTE: N/A = not applicable				

### 8.3 Heritage Resources – Gwich'in Settlement Area

#### 8.3.1 Environmental and Cultural Contexts

##### 8.3.1.1 Environmental Context

In the GSA, the pipeline corridor spans the Transition Forest Ecological Zone and a small part of the North Taiga Plains Ecological Zone. The Transition Forest Ecological Zone runs from Inuvik and the boundary between the ISR and GSA to the Travaillant River. At this point, the North Taiga Plains Ecological Zone begins, and extends into the SSA.

The northern part of the Transition Forest Ecological Zone is a mixture of tundra vegetation and scattered, stunted spruce forest. The uplands are laced with dense black spruce, tamarack and ground birch growing in the many shallow drainage channels that drain slopes. The southern part of the Transition Forest Ecological Zone is primarily vegetated with scattered to open spruce and birch mixedwood forest. Poorly drained mid- and lower slopes support shrub communities, shrub fens, bogs and riparian white spruce or willow communities.

The North Taiga Plains Ecological Zone consists of stands of stunted trees that extend south from the Travaillant River to the Great Bear River.

Baseline ecological conditions are described in detail in Volume 3, Biophysical Baseline Assessment.

### 8.3.1.2 Cultural Context

#### Prehistory

The Prehistoric Period ranged from 11,000 to 220 BP.

More systematic archaeological research has been conducted and more archaeological sites have been recorded in the Mackenzie Valley than in the delta and coastal areas to the north. Therefore, considerably more is known about the prehistoric occupation of the Mackenzie Valley. However, many questions remain, such as:

- specific dates
- transition in the complexes and phases that represent the major periods
- changes in technology
- site distribution patterns
- resource exploitation

For additional details, see the archaeological permit report prepared for the 2002 and 2003 studies (Clarke et al. 2003, 2004).

Canadian Boreal Forest prehistory is divided into three major periods:

- Early Prehistoric Period (about 11,000 to 7,000 BP)
- Middle Prehistoric Period (about 7,000 to 2,500 BP)
- Late Prehistoric Period (about 2,500 to 220 BP)

These correspond to periods of cultural development marked by changes in the weapon systems used, and reflect complex cultural evolutionary processes that include major technological advances. The prehistory of the Mackenzie River Basin, especially in the northern parts, is intermixed with coastal cultural expansions and is less well defined than areas farther south. However, the general sequence applies throughout most parts of the northwestern boreal forest.

The Mackenzie Valley, in its present form, did not exist in this area until after 9,900 BP, so occupation would not have been likely before this time (Smith 1994). Although the earliest human occupation of the Mackenzie Valley is unknown, it is thought that it might have been associated with populations moving south from a Beringian refugium. Sites from the oldest part of the Early Prehistoric Period are not expected, particularly not in the area from Fort Simpson to Fort Good Hope. The earliest evidence of prehistoric occupation of the Mackenzie Basin comes from south of the study area near Fort Liard. The attributes of the artifacts recovered in this region are similar to assemblages

recovered elsewhere that dated between 9,000 and 6,000 BP (Millar 1981). Near the study area, a site on Chick Lake near the Donnelly River crossing is dated to about 7,000 BP (Millar and Fedirchuk 1974). Sites dating up to the Protohistoric Period have been recovered in the area.

### **Protohistoric to Historic Period**

The Protohistoric to the Historic Period ranges from about 250 BP to the present.

Perhaps as early as the mid-eighteenth century, the Slavey of the Mackenzie Valley were introduced to a few European trade items, such as knives and hatchets, by Cree or Chipewyan intermediaries. Initial contact with Europeans occurred with Alexander Mackenzie's expedition in 1789. The first post in Slavey territory was Livingston's Fort, established by the North West Company in about 1796, on the Mackenzie River downstream of Great Slave Lake (Asch 1981). With establishment of the North West Company fur trade posts on the Mackenzie River, the Dene were afforded direct access to Euro-Canadian goods (Innis 1962). Between 1800 and 1810, five short-lived posts were established along the Mackenzie and Liard rivers. By 1879, with establishment of Wrigley, the posts operating along the lower Mackenzie included Fort Norman, now Tulita, Wrigley, Fort Simpson and Fort Good Hope. Fort McPherson on the Peel River was also in operation.

By the end of the nineteenth century, Christian missionaries had contacted most of the people in the Mackenzie Valley. Euro-Canadian activities in the Mackenzie Valley encouraged regional concentrations of formerly highly dispersed populations, centred on trading posts and missions (Savishinsky and Hara 1981). These centres drew people from several ethnic or dialectic groups, making communities more sedentary and redefining their identity in association with specific posts, therefore creating *bands* with which treaties could be signed.

The Canadian government did little to assert its presence in Slavey and Hare territory until its first treaty negotiations at Fort Resolution and Fort Vermilion brought segments of the Slavey into Treaty 8 in 1900. The Fort Nelson Slavey were added to Treaty 8 in 1911. Under the advisement of Bishop Breynat, the Gwich'in signed Treaty 11 in July 1921 (Heine et al. 2001). A treaty with the rest of the Slavey and the Hare was not signed until 1922 in Fort Liard (Asch 1981). The terms of this treaty are still in dispute.

Initially, competition between companies, followed by mergers, resulted in fur trade posts closing and then new ones opening. However, by the 1930s, exploitation of mineral resources in the region replaced the fur trade as the principal industry in the Northwest Territories. The period of World War II was pivotal, with development of the oil reserves at Norman Wells and construction of the CANOL pipeline. Many Dene found temporary and permanent wage

employment with these industrial developments, which further served to concentrate populations in established communities.

Through the first half of the twentieth century, the life of the Dene changed only gradually because of the influx of southern goods and influences. Subsistence still depended on traditional pursuits, self-reliance and mobility (Asch 1981). During the early and middle parts of the century, the high price of furs persuaded many Slavey to become involved in trapping and the market economy of the dominant culture. This, and an increasing reliance on government services, has resulted in a more sedentary existence. With the recent collapse in the market for furs, the supplementary income formerly provided by these activities had to be replaced with wage work, where it could be found.

Published traditional knowledge reports provide additional insight for this period.

### **Cultural Groups**

The Gwich'in, the most northerly Dene culture in North America, live just south of the Inuvialuit. They have traditionally occupied a large part of the Alaska and Yukon interiors, extending eastward to the Mackenzie Valley. The Gwich'in families who used the land along the Mackenzie River were known as the Nagwichoonjik, the *Mackenzie River people* (Heine et al. 2001). Summers were spent at fish camps usually located at the mouths of creeks. The Mackenzie River represented an important travel route for the Gwich'in during all seasons, whereas the Mackenzie Delta was well known for summer fishing and the spring muskrat harvest.

Previous traditional land use studies have identified a high concentration of land use and occupancy in the area around Khaii luk, or Travaillant Lake, and Vidi chu', or Trout Lake (Heine et al. 2001). This area has abundant resources, and many lakes and streams where fish can be caught all year. Travaillant Lake, in particular, is important for fishing. People wintered in the Travaillant Lake area in houses that were much more permanent than others in the GSA and were not meant to be transported (Heine et al. 2001).

People in the Khaii luk area sometimes left their boats at Travaillant Creek and travelled with their pack dogs on overland trails. This is valuable information for archaeologists, as it reinforces the importance of overland routes on which heritage resources might be expected. The pipeline corridor runs between Khaii luk and Vidi chu', confirming the need for archaeologists to investigate the area for camps and trails. Some of the other areas mentioned in the Heine et al. (2001) study coincide with potential project facilities. For example, Travaillant Creek, a potential location for a barge landing and stockpile site, is considered a good fish camp (Heine et al. 2001). Traditional activities extended to Gull Lake (Campbell Lake), where a potential camp and winter roads are located (Heine et al. 2001).

The traditional dog sled trail was located on the east side of the lake (Kritsch 1994), on the side of the lake opposite that of the proposed camp.

Caribou were of central importance to the Gwich'in. Other large mammals were also harvested for food, such as:

- moose
- Dall's sheep
- grizzly bear
- black bear

Small- to medium-sized mammals were important for subsistence, making clothing and intertribal trade (Slobodin 1981a), such as:

- muskrat
- beaver
- marten
- wolf
- hare
- weasel
- wolverine
- fox
- lynx

Much day-to-day subsistence depended on fishing with spears, weirs, fish traps and nets. Fish and migratory birds were also consumed.

Tools included a wide range of:

- long bows
- stone and bone axes
- chisels
- mauls
- knives
- awls
- scrapers
- fleshers

Copper was acquired through trade with people of the Pacific coast (Slobodin 1981a). Hunting and travelling was done using snowshoes, birchbark canoes and moose skin boats (Heine et al. 2001, McClellan and Denniston 1981). Before the use of dogs, sleighs were made of moose leg skins (Heine et al. 2001). Later, pack dogs and dog teams improved the ability for long-distance travel.

The Gwich'in did not have permanent settlements until after contact with Europeans, but tended to revisit distinct areas over the years, such as caribou hunting or fishing locales. Dwellings included moss and sod structures, semi-subterranean framed structures, caribou skin tents, willow lean-tos and snow houses (Heine et al. 2001, Pilon 1992).

The first documented European contact with the Gwich'in was with Alexander Mackenzie in 1789. However, according to archaeological evidence, indirect contact with Russian traders had taken place before this time (Nolin 1993). Around 1806, the North West Company established Fort Good Hope at the margin of Gwich'in territory. A permanent post within Gwich'in lands was not established until Fort McPherson (Peel's River House) was founded in 1840 (Krech 1979). The Gwich'in participated in fur trading to acquire trade goods to make their lives more comfortable, although subsistence and traditional activities continued to play a primary role (Heine et al. 2001).

The discovery of oil at Norman Wells in 1920 provided the impetus for treaty negotiations between the Gwich'in and the Canadian government. Under the advisement of Bishop Breynat, the Gwich'in signed Treaty 11 in July 1921 (Heine et al. 2001). Treaty 11 was designed to extinguish Gwich'in title to the land in return for obligations of cash and annuities, and also hunting, trapping and fishing equipment. The Gwich'in interpreted this treaty as a friendship treaty, and expected protection of their traditional lifestyles and lands (Heine et al. 2001). The large-scale oil exploration in the Mackenzie region in the 1970s provided an opportunity for an enhanced co-management role for the Gwich'in based on their recognized Aboriginal rights to the land. Intergovernmental negotiations culminated in signing of the Gwich'in Comprehensive Land Claim Agreement in 1992.

### 8.3.2 Baseline Conditions

Areas investigated in the GSA included:

- the pipeline corridor
- borrow sites
- infrastructure locations

The sites investigated indicated a variety of past and current land use. The primary type of site identified during the 2002 and 2003 field seasons related to the traditional uses of the land, i.e., hunting and trapping. The sites investigated included prehistoric sites, such as lithic scatters, and historic sites, such as trappers' cabins, trap lines and trails. Investigations in the GSA in 2002 and 2003 mostly focused on areas typically considered to have a high potential for heritage resources. These included creek and river crossings, lakeshores and elevated landforms. Areas of low-lying terrain were also examined where there was potential for trails or other evidence of past cultural activities. Several trails and

trap lines were identified in these areas, which would have been overlooked if commonly accepted parameters for determining heritage resource potential had been used. Many such features would not have been found had it not been for the guidance of the local crewmembers.

### **8.3.2.1 Pipeline Corridor and Associated Facilities**

Areas examined during the 2002 and 2003 field reconnaissance included a variety of landforms in the pipeline corridor. No previously recorded sites were identified in the prefield research inside the 1-km-wide corridor. Areas considered to exhibit high potential for heritage resources, based on map analyses, included drainage crossings and several upland areas. Areas identified by local crewmembers were also inspected. These zones were sometimes associated with areas typically considered by archaeologists to be of low or moderate potential for heritage resources. Although often located in low-lying and sometimes water-saturated terrain, sites were typically identified in these zones. These included trails and other features associated with trapping and travelling on the land. The materials comprising artifacts and features were mostly wooden, and therefore poor candidates for long-term preservation in the natural environment.

Thirteen prehistoric, historic and traditional use sites were identified during the reconnaissance-level investigations conducted in 2002 and 2003. Geotechnical investigation sites and infrastructure sites located in the pipeline corridor affect two of these traditional sites, MITm 1 and MITm 2. The sites are summarized in Table 8-6, and the general locations of these sites are illustrated in Figure 8-3.

### **8.3.2.2 Infrastructure**

Six infrastructure locations were inspected in the GSA as part of the 2002 focused reconnaissance-level investigations and 15 additional locations were subject to assessment-level investigations in 2003. Four historic and traditional sites were recorded that are in potential conflict with the infrastructure locations. The sites are summarized in Table 8-7 and the general locations of these sites are illustrated in Figure 8-3, cited previously.

### **8.3.2.3 Borrow Sites**

Twenty-five potential borrow sites were subject to reconnaissance-level investigations in 2002. An additional 23 were investigated in 2003. The level of investigation was concentrated on a limited area for most of these locations. Because of scheduling issues, definitive alignments were not available for the access roads associated with the borrow site locations. Therefore, few routes were inspected. Nineteen archaeological sites were identified in potential conflict with the proposed borrow sites. The sites are mostly historic and traditional, but five prehistoric lithic scatters have also been identified. The sites are summarized in Table 8-8 and their locations are illustrated in Figure 8-3, cited previously.

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**Table 8-6: Heritage Resources in Potential Conflict with the Pipeline Corridor and Associated Facilities in the Gwich'in Settlement Area**

Heritage Resource	Type	Landform Association	Project Component
MITm 001	Traditional trap line, trail	Wood Bridge Lake, Fish Trap Lake	Pipeline corridor
MITm 002	Historic cabin	Wood Bridge Lake	Pipeline corridor
GSA 10	Historic camp site	Shore of an unnamed lake	Pipeline corridor
03MGP-GSA20	Traditional trap line, trail with traps and a small cabin	Between two unnamed lakes near Travaillant Lake	Pipeline corridor
03MGP-GSA08	Historic camp	Shore of a small unnamed lake	Pipeline corridor
03MGP-GSA10	Historic trap	Edge of the channel between small and medium-sized unnamed lakes	Pipeline corridor
03MGP-GSA11	Traditional trap line, trail with traps	Low ridge between high hills at end of unnamed lake	Pipeline corridor
03MGP-GSA12	Fire broken rock	Elevated terrace above an unnamed creek	Pipeline corridor
03MGP-GSA14	Cut stumps	Ridge and associated slope	Pipeline corridor
03MGP-GSA16	Prehistoric lithic scatter	Trending ridge above Thunder River	Pipeline corridor
03MGP-GSA17	Prehistoric lithic scatter	Elevated terrace above Thunder River valley	Pipeline corridor
03MGP-GSA18	Prehistoric lithic scatter	Low lying, level area near unnamed lake	Pipeline corridor
03MGP-GSA21	Historic hunting camp	Near Hill Lake	Pipeline corridor

**Table 8-7: Heritage Resources in Potential Conflict with Infrastructure Sites in the Gwich'in Settlement Area**

Heritage Resource	Type	Landform Association	Project Component
MjTk 001	Historic camp site, cabin	Abandoned airfield near Travaillant Lake	Infrastructure
MiTk 002	Historic camp site, burial	Slumping slope near the confluence of the Mackenzie and Travaillant rivers	Infrastructure
03MGP-GSA01	Trap	Edge of an unnamed creek terrace	Infrastructure
MiTk 004	Historic cabin	Near the confluence of the Mackenzie and Travaillant rivers	Infrastructure

**Figure 8.3 has been removed for the purposes of reducing file size and can be viewed as a graphic separately. This document can be accessed through the link in the Table of Contents reference web page.**

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**Table 8-8: Heritage Resources in Potential Conflict with Borrow Sites in the Gwich'in Settlement Area**

Heritage Resource	Type	Landform Association	Project Component
MkTI 001	Traditional trail	Mackenzie River, Travaillant Lake, Trout Lake	Borrow site access road
MkTI 002	Traditional trap	Small creek bed drains into Travaillant Lake	Borrow site access road
MkTI 003	Historic camp site	Near cutline and Crossing Creek Lake	Borrow site access road
MkTI 004	Traditional trap	Clearing near Canadian National transmission line	Borrow site access road
MkTI 005	Traditional trap line, trail	Unnamed tributary of Travaillant River	Borrow site access road
NbTp 001	Prehistoric lithic find	Base of escarpment	Borrow site
NbTp 002	Prehistoric lithic find	Base of escarpment	Borrow site
NbTp 003	Prehistoric lithic find	Unnamed lake	Borrow site
03MGP-GSA19	Historic axe-cut logs	Side slope above an unnamed creek	Borrow site
03MGP-GSA02	Historic cabin	Near Campbell Lake	Borrow site access road
03MGP-GSA03	Historic camp and trail	Between a small lake and a small creek from Campbell Lake	Borrow site access road
03MGP-GSA04	Traditional trail	Between two larger lakes near Campbell Lake	Borrow site access road
03MGP-GSA05	Historic camp	Shore of small unnamed lake near Campbell Lake	Borrow site access road
03MGP-GSA06	Prehistoric lithic artifact	Small flat on upper slope above a small pond	Borrow site
03MGP-GSA08	Historic camp	Shore of a small unnamed lake	Borrow site access road
03MGP-GSA10	Historic trap	Edge of channel between small and medium-sized unnamed lakes	Borrow site
03MGP-GSA13	Historic trail with cut stumps	Travaillant Creek and a small unnamed lake	Borrow site access road
03MGP-GSA14	Cut stumps	Ridge and associated slope	Borrow site
03MGP-GSA17	Prehistoric lithic scatter	Elevated terrace above Thunder River Valley	Borrow site

**8.3.3 Project-Specific Effects**

Heritage resource reconnaissance- and assessment-level investigations conducted in the GSA resulted in recording 37 sites in potential conflict with proposed developments. All sites are documented in the annual permit reports (Clarke et al. 2003, 2004). The heritage resources recorded in the GSA and their assessed significance are summarized in Table 8-9 and illustrated in Figure 8-3, shown previously. Those that are no longer affiliated with a project component are identified as not applicable.

**Table 8-9: Heritage Resources Investigated During the 2002 and 2003 Focused Reconnaissance and Impact Assessment Program in the Gwich'in Settlement Area**

Heritage Resource	Type	Landform Association	Project Component	Significance
MkTm 016	Traditional trap	Lower terrace of David Lake	N/A	Limited
MITm 003	Historic camp	River terrace near David Lake	N/A	Moderate
MiTk 003	Historic burial	Upper terrace of Mackenzie River	N/A	High
MiTk 005	Historic trading post	Terrace above the Mackenzie and Travaillant rivers	N/A	High
MiTk 006	Historic burial	Top of high hill above Mackenzie River	N/A	High
MkTI 001	Traditional trail	Mackenzie River, Travaillant Lake, Trout Lake	Borrow site access road	High
MkTI 002	Traditional trap	Small creek bed drains into Travaillant Lake	Borrow site access road	Limited
MkTI 003	Historic camp site	Near cut line and Crossing Creek Lake	Borrow site access road	Moderate
MkTI 004	Traditional trap	Clearing near Canadian National transmission line	Borrow site access road	Limited
MkTI 005	Traditional trap line, trail	Unnamed tributary of Travaillant River	Borrow site access road	Moderate
MITm 001	Traditional trap line, trail	Wood Bridge Lake, Fish Trap Lake	Pipeline corridor	Moderate
MITm 002	Historic cabin	Wood Bridge Lake	Pipeline corridor	High
MiTk 002	Historic camp site, burial	Slumping slope near the confluence of the Mackenzie and Travaillant rivers	Infrastructure	High
MiTk 004	Historic cabin	Near the confluence of the Mackenzie and Travaillant rivers	Infrastructure	High
NbTp 001	Prehistoric lithic find	Base of escarpment	Borrow site	Limited
NbTp 002	Prehistoric lithic find	Base of escarpment	Borrow site	Limited
NbTp 003	Prehistoric lithic find	Unnamed lake	Borrow site	Limited
MjTk 001	Historic camp site, cabin	Travaillant Lake	Infrastructure	High
GSA 10	Historic camp site	Shore of an unnamed lake	Pipeline corridor	Limited
03MGP-GSA01	Trap	Edge of an unnamed creek terrace	Infrastructure	Limited
03MGP-GSA02	Historic cabin	Near Campbell Lake	Pipeline corridor, borrow site	Moderate
03MGP-GSA03	Historic camp and trail	Between a small lake and a small creek from Campbell Lake	Borrow site access road	High
03MGP-GSA04	Traditional trail	Between two larger lakes near Campbell Lake	Borrow site access road	Moderate
03MGP-GSA05	Historic camp	Shore of a small unnamed lake near Campbell Lake	Borrow site access road	Limited
03MGP-GSA06	Prehistoric lithic artifact	Small flat on an upper slope above a small pond	Borrow site	Moderate
03MGP-GSA08	Historic camp	Shore of a small unnamed lake	Pipeline corridor, borrow site	Limited

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**Table 8-9: Heritage Resources Investigated During the 2002 and 2003 Focused Reconnaissance and Impact Assessment Program in the Gwich'in Settlement Area (cont'd)**

Heritage Resource	Type	Landform Association	Project Component	Significance
03MGP-GSA10	Historic trap	Edge of a channel between small and medium-sized unnamed lakes	Pipeline corridor, borrow site	Moderate
03MGP-GSA11	Traditional trap line, trail with traps	Low ridge between high hills at the end of an unnamed lake	Pipeline corridor	Moderate
03MGP-GSA12	Fire-broken rock	Elevated terrace above an unnamed creek	Pipeline corridor	Moderate
03MGP-GSA13	Historic trail with cut stumps	Travaillant Creek and a small unnamed lake	Borrow site access road	Moderate
03MGP-GSA14	Cut stumps	Ridge and associated slope	Pipeline corridor, borrow site	Limited
03MGP-GSA16	Prehistoric lithic scatter	Trending Ridge above Thunder River	Pipeline corridor	High
03MGP-GSA17	Prehistoric lithic scatter	Elevated terrace above Thunder River Valley	Pipeline corridor, borrow site	High
03MGP-GSA18	Prehistoric lithic scatter	Low-lying level area near an unnamed lake	Pipeline corridor	High
03MGP-GSA19	Historic axe-cut logs	Side slope above an unnamed creek	Borrow site	Limited
03MGP-GSA20	Traditional trap line, trail with traps and a small cabin	Between two unnamed lakes near Travaillant Lake	Pipeline corridor	Moderate
03MGP-GSA21	Historic hunting camp	Near Hill Lake	Pipeline corridor	Limited
NOTE: N/A = not applicable				

## 8.4 Heritage Resources – Sahtu Settlement Area

### 8.4.1 Environmental and Cultural Contexts

#### 8.4.1.1 Environmental Context

Environmental conditions in the SSA have been discussed in detail in other sections of this EIS. The SSA falls in the North and South Taiga Plains Ecological Zones, which is dominated by the Mackenzie River and its tributaries, and consists of a series of low-lying plains with a diverse array of fauna and flora. It represents the transitional zone between the boreal coniferous forest to the south and tundra to the north.

### 8.4.1.2 Cultural Context

#### Prehistory

The sequence of prehistoric (11,000 to 220 BP) occupation of the SSA is not well defined, in part because of the sparse number of sites recorded in the region and because little evidence is available to assign age to any of these sites. Consequently, the sequence of occupation outlined previously for the GSA also applies to the SSA.

#### Cultural Groups

South of the Gwich'in and Inuvialuit are the traditional lands of the Athapaskan-speaking Dene people that make up the SSA. These lands comprise the Mackenzie Valley lowlands between the Blackwater and Travaillant rivers, from the Mackenzie Mountains and Foothills in the Yukon to the Anderson Plain west of Great Bear Lake.

Before contact with Europeans, the Aboriginal people of this region were similar in terms of technology and language, and were geographically mobile. These designations might appear to reflect administration and ethnographic convenience rather than self-identification. However, they were considered distinct enough by their neighbours to be designated as separate peoples when the first fur traders and explorers arrived in the region (Savishinsky and Hara 1981).

Although these regional groups had many cultural similarities, they recognized homeland use areas attributed to distinct local bands (Sahtu Heritage Places and Sites Joint Working Group 2000), including the:

- Sahtu Dene group of the Great Bear Lake area
- K'ahsho Got'ine of the Fort Good Hope–Colville Lake area
- Shuta Got'ine of the area west of the Mackenzie River and south of Norman Wells
- K'aalo Got'ine between Mackenzie River and Great Bear Lake

However, all groups had access to, and use of, the entire traditional lands of the Sahtu. Today, the SSA is divided into three administrative districts:

- K'ahsho Got'ine
- Déline
- Tulita

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The ways in which these people view and understand the land are preserved and passed on through oral tradition. Subject matter includes:

- knowledge of the environment
- animal behaviour
- cultural values
- making tools and equipment
- interacting with family members and neighbours

The land is where this knowledge is passed on, and special places become aids for recalling stories and related knowledge (Sahtu Heritage Places and Sites Joint Working Group 2000). Special places might include:

- burial sites, which are considered sacred
- landmarks that identify travel routes
- landscape features that figure prominently in Sahtu Dene stories

These stories and other traditional land use information sources often include information on modes of travel and transportation. In particular, trails are important to archaeologists because many have key sites along them, including burials, and many are still used. Therefore, their heritage value is significant. The Sihoniline ?ehtene, or Loon River, to Fort Anderson Trail is one example. It was one of the main routes to the barrenlands, used to access areas for summer and fall caribou hunting. Roderick MacFarlane, a Hudson's Bay Company trader, also used this trail to travel to Anderson River to choose a location for Fort Anderson (Sahtu Heritage Places and Sites Joint Working Group 2000). Locational details about the trail, said to have many key sites located along it, will aid in locating the trail that crosses the pipeline corridor.

Traditional knowledge studies also contain valuable information that assists in understanding artifact and feature distribution within a heritage resource site. For example, information gathered from the SSA advises that taboos prohibited women from associating with hunting gear, thereby explaining why items such as projectile points would have been made, stored and discarded away from living areas or around hearths where women commonly spent a good deal of their time (Hanks and Pokotylo 1989). Tulita Elders provide advice on the types of hearths that archaeologists might find. Sunken or pit hearths relate to hide smoking. Hearths at ground level relate to drying meat or fish. Hearths elevated on a boulder might reflect a winter occupation where a packed snow and spruce bough floor surrounded the fire (Hanks and Pokotylo 1989).

The settlement patterning data in traditional land use studies is also invaluable for archaeologists. For example, the published literature indicates that except for a few days around Christmas and Easter, the Good Hope trading post was deserted during the winter months, while the people were in their winter camps. Winter

and spring were for working because travel into the interior was easier. Summers at Fort Good Hope were a bit of a holiday (Berger 1977).

Currently, five regional cultural groups make up the Sahtu:

- Hare
- Slavey
- Sahtu Dene (Bear Lake)
- Mountain Dene
- Métis

The Hare live primarily in Fort Good Hope and Colville Lake, the Mountain Dene and Slavey in Tulita, and the Sahtu Dene in Déline. The Métis live throughout the region (Sahtu Heritage Places and Sites Joint Working Group 2000). The following is a brief overview of each of the groups that occupy the SSA.

### ***Hare***

The Hare, so named because of their reliance on the hare for food and clothing, are also called the K'ahsho Got'ine, or *big willow people* (Osgood 1932). They traditionally occupied an area from the Yukon, across the Mackenzie River, to the area west and northwest of Great Bear Lake (Savishinsky and Hara 1981). This diverse territory included mountains, taiga and tundra, and supported a population of about 700 to 800 at the time of contact (Mooney 1928).

In many areas of the Hare's land base, the reliance on the hare for food led to periodic food shortages that coincided with the natural cycle of hare populations, and harvesting of caribou, moose and fish was often not enough to prevent starvation (Sue 1964). Groups that used the Mackenzie Valley had more plentiful resources, such as moose. Those near Great Bear Lake and to the north had easy access to barren-ground caribou herds that were hunted using bows, arrows, spears, snares, pounds and deadfalls (Rowe 1972). Fish and edible plants supplemented the diet.

Clothing was primarily of hare skins, although the skins of moose, caribou and other furbearers were also used, and decorated with porcupine quills and moose hair (Savishinsky and Hara 1981). Facial tattooing was also practiced (Sue 1964). Canoes provided transportation in the warmer months, whereas snowshoes and toboggans were used in the winter. Other examples of material culture during this time included tools made from stone, bone, antler, wood, bark and beaver teeth, and caribou sinew snares and lacing. Housing consisted of conical tipi-like structures covered with hides, moss and boughs (Savishinsky and Hara 1981).

Trade goods probably reached the Hare by the late 1700s, and the posts established at Fort Franklin, now called Déline, and Fort Good Hope attracted the Hare, and also the Mountain Dene, Gwich'in and Inuvialuit (Sue 1964). Fort

Good Hope also became a centre for missionaries, and a meeting place where baptisms, marriages and religious holidays were celebrated (Savishinsky and Hara 1981). The interaction between non-Aboriginal fur trade employees and Aboriginal populations resulted in the birth of the Métis culture in the region, now recognized as the Sahtu Métis (Sahtu Heritage Places and Sites Joint Working Group 2000). The influence of the church, fur trade and 1898 gold rush resulted in the Hare splitting into three main groups (Sue 1964):

- those hunting and trapping west of Mackenzie River
- those along Mackenzie River
- groups in the lake district northeast of Fort Good Hope

The first half of the twentieth century witnessed a dramatic change for the Hare. A treaty was signed with the Canadian government in 1921 and children began attending a residential school in Aklavik. Disease became rampant and, by 1928, underground burials were instituted to replace the Hare's traditional scaffold burials in an effort to contain the spread of disease (Sue 1964).

Participation in the wage economy increased with the introduction of oil exploration in the region, resulting in increased use of western technologies and a division in the time spent between settlements and on the land. As government services became centralized and trapping decreased because of low fur prices after World War II, more time was spent in settlements than in the bush (Savishinsky and Hara 1981). Development of a road to Colville Lake and establishment of a community by 1962, allowed the Hare to migrate from Fort Good Hope and pursue a more traditional way of life based on hunting, trapping and fishing.

### ***Slavey***

The traditional lands of the Slavey extend from the Mackenzie Valley to Great Bear River, and from the Liard River to Hay River. The Slavey now occupy the southern extent of the SSA and live primarily in Tulita. As the Slavey represent the major cultural group of the DCR, their cultural and historical background is discussed in Section 8.5.1, Environmental and Cultural Context.

### ***Sahtu Dene***

The Bear Lake people, or Sahtu Dene, are a postcontact cultural group. They are the descendants of Dogrib, Hare and Slavey people who came together at the fur trading posts on or near Great Bear Lake. Therefore, their precontact lifestyles are discussed in other sections of this document.

Great Bear Lake is the largest lake completely within Canada's boundaries, and its shores are home to the Sahtu Dene. The lake is located in the transition zone of the boreal forest, characterized by muskeg and rock outcroppings with stunted

spruce, poplar and birch (Rowe 1972). A North West Company trading post located at a fishery site on Great Bear Lake was in use from 1799 to 1815, and traders documented the presence of Hare, Slavey and Dogrib bands (Stager 1962). When the Hudson's Bay Company established Fort Norman, now Tulita, on the Mackenzie River, it became the trading post of choice until the mid-twentieth century. Only temporary posts existed from time to time on Great Bear Lake (Gillespie 1981). As previously mentioned, the intermarriage of the Dogrib, Hare, Slavey and some Mountain Dene that traded at Fort Norman resulted in the Sahtu Dene, who self-identified as a distinct group (Osgood 1932). The re-establishment of Fort Franklin, on the site of the old North West Company post, in 1950 saw a shift of trade to that area, centralization of services, and settlement of many Sahtu Dene in that community.

### ***Mountain Dene***

The Mountain Dene, or Shuta Got'ine, historically used the area west of Mackenzie River and east of the Mackenzie Mountains. Although several bands, known by anthropologists as *Mountain Indians*, were associated with this region, the Shuta Got'ine were likely part of a larger group associated with the Nahanni or Kaska Dene (Gillespie 1981). Relatively little is known of the lifestyle of the Mountain Dene in the Mackenzie Mountains before 1957, when the first documentation by non-Aboriginal people occurred. What is known is gathered from annual cycles of trade visits and periods of residence at Fort Norman. Trading patterns, starvation, disease and intermarriage with the Hare and Slavey influenced the shifts of these people within their traditional lands (Gillespie 1981). The Shuta Got'ine represent those bands that have traded in Fort Norman, now known as Tulita, or *where the waters meet*, since the early 1800s.

The rugged terrain the Mountain Dene inhabited included alpine tundra, fast-moving rivers and valleys with an intermittent cover of spruce with some birch and aspen. Game animals included moose, woodland caribou and Dall's sheep. Fish, hare and squirrel were also frequently harvested (Gillespie 1981). Meat was often cached for winter, when it was more difficult to hunt. In the fall, families would travel to Tulita, where they would trade dry meat, fish and trap in the region until January, and then return to the mountains to hunt caribou.

Toboggans and dogs were not used for winter travel until the mid-1800s. Although canoes were made from spruce bark, the moose skin boat remained the most distinctive trait in Mountain Dene culture and was the favoured method of transport from the mountains to the Tulita area. Other cultural aspects of the Mountain Dene did not differ greatly from other Athapaskan groups in the region. Lodges were constructed in a simple lean-to style or with caribou hide, and sheltered two to four families (Gillespie 1968). Caribou, sheep and moose hides, and squirrel skins were used for clothing.

### ***Métis***

The Métis are the descendants of non-Aboriginal and Aboriginal parents, usually with Dene maternal and Euro-Canadian paternal ancestry. Since about 1850, the Métis in the SSA have participated in traditional subsistence activities, and worked as interpreters, trappers, provisioners and at trading posts. The Métis were most recognized for their role in transporting goods via canoe, York boats and steamboat (Slobodin 1981b). Today, the Métis live throughout the Mackenzie region in many communities, although they have a collective identity based on a shared heritage.

During the Berger Inquiry (Berger 1977) into the Mackenzie Valley pipeline, the Dene and Métis insisted that outstanding land claim issues be resolved before further development was planned for the Mackenzie Valley. Negotiations to settle these claims began in October 1991, and the final agreement was signed in 1994 (Simpson 2002).

#### **8.4.2 Baseline Conditions**

Baseline conditions and investigations in the SSA are similar to those described in Section 8.3.2, Baseline Conditions, for the GSA.

##### **8.4.2.1 Pipeline Corridor and Associated Facilities**

Areas examined during the 2002 and 2003 field reconnaissance included a variety of landforms in the pipeline corridor. Several previously recorded sites were identified in the prefield research as being associated with the pipeline corridor. These sites, and those recorded as part of the project, are variable in type and age. They include:

- palaeontological finds
- historic camps
- burials
- prehistoric sites
- traditional use sites

The 18 heritage resources identified in potential conflict with the pipeline corridor and associated facilities are summarized in Table 8-10, and their general locations are illustrated in Figure 8-4.

**Figure 8.4 has been removed for the purposes of reducing file size and can be viewed as a graphic separately. This document can be accessed through the link in the Table of Contents reference web page.**

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**Table 8-10: Heritage Resources in Potential Conflict with the Pipeline Corridor and Associated Facilities in the Sahtu Settlement Area**

Heritage Resource	Type	Landform Association	Project Component
MbTb 007	Historic camp	Near unnamed creek and Hare Indian River	Pipeline corridor
MbTb 008	Historic sled	Beside cut line near unnamed lake	Pipeline corridor
SSA 06	Potential fish trap location	Mio Creek at confluence with Big Smith Creek	Pipeline corridor
SSA 08	Construction camp	Small knoll	Pipeline corridor
MeTd 001	Palaeontological site	Tieda River crossing	Pipeline corridor
MdTc 001	Palaeontological site	Shore of Loon River	Pipeline corridor
SSA 11	Modern camp	Slight slope at the terminus of a high ridge near Chick Lake	Pipeline corridor
LkRx 003	Prehistoric lithic scatter	Low ridge in Gibson's Gap	Pipeline corridor
LITa 001	Prehistoric hearth and lithic scatter, modern camp	Confluence of Chick Lake and Donnelly River	Pipeline corridor
03MGP-SSA11	Traditional trail	Confluence of Chick Lake and Donnelly River	Pipeline corridor
LbRn 008	Indigenous historic burial	Terrace near the mouth of Saline River	Pipeline corridor
03MGP-SSA05	Worked wood	Side slope below Hare Indian River terrace	Pipeline corridor
03MGP-SSA06	Prehistoric lithic scatter	Beach on Hare Indian River	Pipeline corridor
03MGP-SSA07	Traditional trap line, trap	Elevated terrace above Hare Indian River, straddling a cut line	Pipeline corridor
03MGP-SSA11	Trap	Elevated terrace above Donnelly River and the outflow of Chick Lake	Pipeline corridor
03MGP-SSA12	Historic woodworking	Slope of a low terrace on the shore of Chick Lake	Pipeline corridor
03MGP-SSA16	Historic cabin	Elevated terrace near Saline River	Pipeline corridor
03MGP-SSA17	Traditional trail	Lower terrace of Heleva Creek Valley	Pipeline corridor

**8.4.2.2 Infrastructure**

Twenty infrastructure locations were inspected in the SSA as part of the 2002 focused reconnaissance, and 33 were inspected in 2003. Definitive alignments were not usually available for the access roads associated with the infrastructure locations. Therefore, few access routes were inspected.

Three historic sites and one prehistoric site are in potential conflict with the proposed infrastructure locations. These sites are summarized in Table 8-11. Their general locations are illustrated in Figure 8-4, shown previously.

**Table 8-11: Heritage Resources in Potential Conflict with Infrastructure Sites in the Sahtu Settlement Area**

Heritage Resource	Type	Landform Association	Project Component
03MGP-SSA01	Historic burials	Knoll	Infrastructure
03MGP-SSA10	Historic campground	Fort Good Hope	Infrastructure
LcRo 003	Historic cabins	Elevated terrace above Mackenzie River	Infrastructure
LcRo 006	Prehistoric lithic scatter	Shore of Mackenzie River	Infrastructure

**8.4.2.3 Borrow Sites**

Fifty-eight borrow sites were inspected in the SSA as part of the granular resource component of the 2002 reconnaissance, and an additional 18 were inspected in 2003. Investigation concentrated on a limited area for most of these locations. Because of scheduling issues, definitive alignments were not available for the access roads associated with the borrow site locations. Therefore, few access routes were inspected. The potential borrow sites were primarily elevated, well-drained landforms, including moraines and other glacial features.

Sixteen sites were identified in potential conflict with the proposed borrow sites. These are primarily historic sites, such as camps, cabins and a burial ground. Traditional use and prehistoric sites were also recorded. The sites are summarized in Table 8-12 and their general locations are illustrated in Figure 8-4, shown previously.

**8.4.3 Project-Specific Effects**

During the 2002 and 2003 field seasons, the archaeological team recorded previously unknown heritage resource sites, and also revisited previously recorded heritage resource sites, which were subsequently found to be outside of any proposed impact areas because of changes in the configuration of project components. Although 50 heritage resources were investigated and recorded in the SSA, 16 of these are currently not considered to be in danger of impact. All of the heritage resources recorded in the SSA and their assessed significance are summarized in Table 8-13. The sites are documented in the annual permit reports (Clarke et al. 2003, 2004).

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**Table 8-12: Heritage Resources in Potential Conflict with Borrow Sites in the Sahtu Settlement Area**

Heritage Resource	Type	Landform Association	Project Component
SSA 009	Recent refuse site	Cutline and cleared area near unnamed lake	Borrow site
MaTb 002	Historic camp	Terrace above Bluefish Creek	Borrow site
LkRx 003	Prehistoric lithic scatter	Low ridge in Gibson's Gap	Borrow site access road
MbTb 008	Historic sled	Beside cut line near unnamed lake	Borrow site
03MGP-SSA02	Historic burial	Terrace along the confluence of the Mackenzie and Tieda rivers	Borrow site access road
03MGP-SSA03	Historic cabin	Elevated terrace along the confluence of the Mackenzie and Tieda rivers	Borrow site access road
03MGP-SSA04	Traditional trail	Trending ridge on a flat plain	Borrow site
03MGP-SSA08	Timber harvest site	Low ridge	Borrow site
03MGP-SSA09	Historic sled and wood harvesting site	On a cut line and near a small unnamed lake	Borrow site access road
03MGP-SSA15	Historic cabin	Elevated terrace near an unnamed creek	Borrow site access road
03MGP-SSA16	Historic cabin	Elevated terrace near Saline River	Borrow site access road
MbTb 007	Historic camp	Near an unnamed creek and Hare Indian River	Borrow site access road
LfRp 007	Historic camp	Unnamed lake	Borrow site
LfRq 010	Traditional trail	Near Great Bear River and airstrip	Borrow site
LeRo 004	Traditional cabins	Small unnamed lake	Borrow site
MgTf 004	Prehistoric lithic scatter	Elevated terrace	Borrow site

**Table 8-13: Heritage Resources Investigated During the 2002 and 2003 Focused Reconnaissance Program in the Sahtu Settlement Area**

Heritage Resource	Type	Landform Association	Project Component	Significance
MbTb 002	Prehistoric lithic scatter	Top of a small flat ridge of the Fort Good Hope esker	N/A	High
KIRm 002	Historic cabin	Terrace above Blackwater River	N/A	Limited
KIRm 010	Historic cabin	Terrace above Blackwater River	N/A	Limited
MbTb 007	Historic camp	Near an unnamed creek and Hare Indian River	Pipeline corridor, borrow site access road	Moderate
MbTb 008	Historic sled	Beside a cut line near an unnamed lake	Pipeline corridor, borrow site	Moderate
MaTb 002	Historic camp	Terrace above Bluefish Creek	Borrow site	Moderate
LbRn 008	Indigenous historic burial	Terrace near the mouth of Saline River	Pipeline corridor	High
LITa 001	Prehistoric hearth and lithic scatter, modern camp	Confluence of Chick Lake and Donnelly River	Pipeline corridor	Moderate
03MGP-SSA11	Traditional trail	Confluence of Chick Lake and Donnelly River	Pipeline corridor	Limited

**Table 8-13: Heritage Resources Investigated During the 2002 and 2003 Focused Reconnaissance Program in the Sahtu Settlement Area (cont'd)**

Heritage Resource	Type	Landform Association	Project Component	Significance
LkRx 003	Prehistoric lithic scatter	Low ridge in Gibson's Gap	Pipeline corridor, borrow site access road	Moderate
LfRp 007	Historic camp	Unnamed lake	Borrow site	Moderate
MeTd 001	Palaeontological site	Tieda River crossing	Pipeline corridor	Limited
MdTc 001	Palaeontological site	Shore of Loon River	Pipeline corridor	Limited
LfRq 010	Traditional trail	Near Great Bear River and airstrip	Borrow site	Moderate
LeRo 004	Traditional cabins	Small unnamed lake	Borrow site	Moderate to high
SSA 06	Potential fish trap location	Mio Creek at confluence with Big Smith Creek	Pipeline corridor	Limited
SSA 08	Construction camp	Small knoll	Pipeline corridor	Limited
SSA 09	Recent refuse site	Cutline and cleared area near unnamed lake	Borrow site	Limited
SSA 11	Modern camp	Slight slope at terminus of high ridge near Chick Lake	Pipeline corridor	Limited
03MGP-SSA01	Historic burials	Knoll	Infrastructure	High
03MGP-SSA02	Historic burial	Terrace along the confluence of the Mackenzie and Tieda rivers	Borrow site access road	High
03MGP-SSA03	Historic cabin	Elevated terrace along the confluence of the Mackenzie and Tieda rivers	Borrow site access road	Moderate
03MGP-SSA05	Worked wood	Side slope below the Hare Indian River Terrace	Pipeline corridor	Limited
03MGP-SSA06	Prehistoric lithic scatter	Beach on Hare Indian River	Pipeline corridor	High
03MGP-SSA07	Traditional trap line, trap	Elevated terrace above Hare Indian River, straddling the cut line	Pipeline corridor	Moderate
03MGP-SSA11	Trap	Elevated terrace above Donnelly River and the outflow of Chick Lake	Pipeline corridor	Limited
03MGP-SSA12	Historic woodworking	Slope of a low terrace on the shore of Chick Lake	Pipeline corridor	Limited
03MGP-SSA15	Historic cabin	Elevated terrace near an unnamed creek	Borrow site access road	Limited
03MGP-SSA16	Historic cabin	Elevated terrace near Saline River	Pipeline corridor, borrow site access road	Limited
03MGP-SSA17	Traditional trail	Lower terrace of the Heleva Creek Valley	Pipeline corridor, borrow site access road	Moderate

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Table 8-13: Heritage Resources Investigated During the 2002 and 2003 Focused Reconnaissance Program in the Sahtu Settlement Area (cont'd)

Heritage Resource	Type	Landform Association	Project Component	Significance
03MGP-SSA09	Historic sled and wood harvesting site	On the cut line and near a small unnamed lake	Borrow site access road	Limited
03MGP-SSA10	Historic campground	Fort Good Hope	Infrastructure	Limited
LcRo 003	Historic cabins	Elevated terrace above Mackenzie River	Infrastructure	High
MgTf 004	Prehistoric lithic scatter	Elevated terrace	Borrow site	High
LcRo 006	Prehistoric lithic scatter	Shore of Mackenzie River	Infrastructure	High
03MGP-SSA04	Traditional trail	Trending ridge on flat plain	Borrow site	Moderate
03MGP-SAA08	Timber harvest site	Low ridge	Borrow site	Limited
MaTd 002	Historic camp	Narrow terrace on the bank of Mackenzie River	N/A	Moderate
SSA 12	Recent camp	High, well drained terrace terminating into a steep embankment above Mackenzie River	N/A	Limited
LhRt 002	Modern cabin	Terrace at the head of the alluvial fan deposit	N/A	Limited
SSA 10	Potential trail	Small hill on the side of small unnamed lake at the headwaters of Jungle Ridge Creek	N/A	Limited
LgRs 002	Communications	Bank of Prohibition Creek	N/A	Limited
LfRr 001	Recent fishing camp	Shore of Trout Lake	N/A	Limited
LfRr 005	Traditional trail	Trout Lake	N/A	Limited
LhRt 003	Palaeontological site	Cobble bar in Canyon Creek channel	N/A	High
LhRu 001	Recent trailers	Trail on Bosworth Creek	N/A	Limited
LiRv 001	Palaeontological site	Talus slope of the Norman Range of Franklin Mountains	N/A	High
LiRw 003	Palaeontological site	Bank of Oscar Creek	N/A	High
LiRw 004	Traditional trail	Parallels Oscar Creek to a large open area	N/A	Limited
SSA 28	Recent camp	Terrace above Four Mile Creek at an intersection with a cut line	N/A	Limited
NOTE: N/A = not applicable				

## 8.5 Heritage Resources – Deh Cho Region

### 8.5.1 Environmental and Cultural Contexts

#### 8.5.1.1 Environmental Context

The DCR is situated in the South Taiga Plains Ecological Zone, which is dominated by the Mackenzie River and its tributaries, and consists of a series of low-lying plains with a diverse array of fauna and flora. It represents the transitional zone between the boreal coniferous forest to the south and tundra to the north. Environmental conditions in this ecological zone were discussed in detail in previous sections of this EIS and are not repeated here.

#### 8.5.1.2 Cultural Context

##### Prehistory

The sequence of prehistoric (11,000 to 220 BP) occupation of the DCR is reasonably well defined because of archaeological studies conducted in the Fisherman Lake area by MacNeish (1954), Millar (1968) and Fedirchuk and Millar (1981). The sequence of occupation outlined previously for the GSA is mostly based on this work, and also applies to the DCR.

##### Cultural Groups

Member communities of the Deh Cho First Nation include:

- Acho Dene Koe in Fort Liard
- Deh Gah Got'ie First Nation in Fort Providence
- K'atlodeeche First Nation in Hay River
- Liidlii Kue First Nation in Fort Simpson
- N'ah adehe First Nation in Nahanni Butte
- Pehdzeh Ki First Nation in Wrigley
- Sambaa K'e First Nation in Trout Lake
- Ts'uehda First Nation in West Point
- Tthe'K'ehdeli First Nation in Jean Marie River

The Métis members include the Fort Liard, Fort Providence and Fort Simpson Métis Nations (Deh Cho First Nation 2002).

Anthropologists identified the territory of the Slavey at the time of contact, extending from the western edge of Great Slave Lake along the Mackenzie River to the current site of Fort Norman (Osgood 1936). This area sustained a population of about 1,250 at the time of contact (Kroeber 1939). Small lakes and rivers in low-lying plains with tree cover of jack pine, white spruce and birch characterized the area. This environment was a rich source of fish (Asch 1981).

Moose, woodland and barren-ground caribou, black bear, beaver, marten, waterfowl, and hare provided much of the livelihood for the Slavey, as did edible plants (Asch 1981). However, because the area was not particularly ecologically diverse, the Slavey likely stayed in small groups for most of the year, gathering once a year at a central meeting place (Asch 1981).

The material culture of the Slavey included snares, bows and arrows or spears used to take large and small game, and nets and weirs for harvesting fish. Clothing was usually from moose hide, with personal adornment in the form of tattooing, wood and bone jewellery, and nose piercings. Housing was usually of two types:

- a tepee-like structure of bark or moose hide (Lamb 1970)
- log-style cabins chinked with moss and covered with spruce boughs (Mason 1946)

Like other cultural groups in the region, travel was by snowshoe and toboggans in winter, and by foot or bark canoe in the snow-free months.

The Chipewyan or Cree likely introduced trade goods in the mid-eighteenth century. Certain trade goods were found to be useful to the Slavey, including metal goods, guns, tea, flour, rice and tobacco (Asch 1981). The fur trade disrupted traditional land use patterns, including travel routes and settlement areas, and the Cree began to move northward in response to trade rivalries (Lamb 1970). After Alexander Mackenzie's initial contact with the Slavey in 1789, trade expansion saw establishment of posts throughout the region. By the late 1800s, the Slavey traded at seven posts (Asch 1981):

- Fort Norman, now Tulita
- Wrigley
- Fort Simpson
- Fort Providence
- Hay River
- Fort Nelson
- Fort Liard

The South Slavey name for Wrigley is Pehdzeh Ki, which means *clay place* (PWNHC 2002). The first site of this community, about 30 km north of the present location, was called Old Fort Island. Dene people settled there after the North West Company's closure of Fort Alexander, its post at Willowlake River. When famine and tuberculosis killed nearly one third of the residents of Old Fort Island, the families established a new site for the community near a landform known as Roche-qui-trempe-a-l'eau, *the rock that plunges into water*. The site is now known as Old Fort Wrigley, as the community was moved to its present location on higher ground in the 1970s (Northern News 2002). To the south is

Trout Lake. Fort Simpson is located at the confluence of the Mackenzie and Liard rivers, and is the oldest continuously occupied trading post on the Mackenzie River (Northern News 2002). Jean Marie River began as an outpost camp in 1935 as part of a traditionalist movement. Wrigley became a base for Slavey people after 1905, where they continued their traditional lifestyle (GNWT 2003).

The nineteenth and twentieth centuries witnessed rapid change for the Deh Cho. The influx of fur traders and missionaries was followed by the Klondike gold rush to the west, and arrival of the Northwest Mounted Police and steam-powered boats along the river. Airplanes, the Mackenzie Highway and a pipeline to support war efforts also dramatically changed the face of the region. Treaty 8 was negotiated in the southern reaches of Slavey territory in 1900 at Fort Resolution and Fort Vermillion, and at Fort Nelson in 1911. Treaty 11 was not signed until 1921, with the Slavey residing north of the Great Slave Lake and Mackenzie Valley. Disputes surrounding Treaty 11 have continued since that time and came to a head during the proposed Berger Inquiry in 1977. Negotiations regarding a land claim in the DCR continue to the present day.

## **8.5.2 Baseline Conditions**

Baseline conditions and investigations in the DCR are similar to those described in Section 8.3.2, Baseline Conditions, for the GSA.

### **8.5.2.1 Pipeline Corridor and Associated Facilities**

Areas examined during the 2002 and 2003 field reconnaissance included a variety of landforms in the corridor. Several previously recorded sites were identified inside the pipeline corridor during prefield research. Some of these areas were specifically targeted for inspection. Work in these zones of inspection often concentrated on relocating, identifying and updating information associated with the known sites. As previously recorded sites had been identified in the area, the heritage resource potential was high for these zones. Consequently, the surrounding terrain was also inspected. This often led to discovery of additional cultural resources.

Eleven heritage resources were identified in potential conflict with developments along the pipeline corridor. These are all historic or cultural sites. They are summarized in Table 8-14 and their general locations are illustrated in Figure 8-5.

**Figure 8.5 has been removed for the purposes of reducing file size and can be viewed as a graphic separately. This document can be accessed through the link in the Table of Contents reference web page.**

**Table 8-14: Heritage Resources in Potential Conflict with the Pipeline Corridor and Associated Facilities in the Deh Cho Region**

Heritage Resource	Type	Landform Association	Project Component
JIRi 008	Historic camp	Flat plains near converging cut lines	Pipeline corridor
JfRd 002	Traditional trap line, trail	Shore of Trout River	Pipeline corridor
DCR 004	Recent camp	Jean-Marie Creek	Pipeline corridor
KIRm 002	Historic cabin	Edge of Mackenzie River	Pipeline corridor
KIRm 010	Historic cabin	Mackenzie River	Pipeline corridor
KeRj 024	Historic camp	Bank of Willowlake River	Pipeline corridor
JIRh 006	Historic camp and trail	Clearing on the bank of Harris River	Pipeline corridor
JIRh 007	Traditional trap line	Low terrace above Nadia Creek	Pipeline corridor
03MGP-DCR02	Historic hunting camp	Elevated terrace above a Hodgson Creek tributary	Pipeline corridor
03MGP-DCR06	Potential trail	Edge of a small unnamed drainage	Pipeline corridor
03MGP-DCR05	Traditional trap line, traps	Bank of Willowlake River	Pipeline corridor

### 8.5.2.2 Infrastructure

Twenty-eight infrastructure locations were inspected in the DCR as part of the 2002 focused reconnaissance and an additional 18 locations were inspected in 2003. Definitive alignments were not typically available for the access roads associated with the infrastructure locations, so few routes were inspected. Four historic and traditional heritage resources were identified during the reconnaissance- and assessment-level investigations at the proposed infrastructure locations. These sites are summarized in Table 8-15 and their general locations are illustrated in Figure 8-5, shown previously.

**Table 8-15: Heritage Resources in Potential Conflict with Infrastructure Sites in the Deh Cho Region**

Heritage Resource	Type	Landform Association	Project Component
KiRI 008	Historic cabin	Confluence of the Mackenzie and Ochre rivers	Infrastructure
03MGP-DCR01	Trap	Low terrace above the confluence of the Mackenzie and Ochre rivers	Infrastructure
03MGP-DCR04	Historic hunting camp	Low terrace above Mackenzie River	Infrastructure
03MGP-DCR06	Potential trail	Edge of a small unnamed drainage	Infrastructure

### 8.5.2.3 Borrow Sites

During the 2002 reconnaissance, 59 borrow sites were inspected in the DCR and an additional 18 borrow sites were inspected in 2003. As for the borrow sites located in other regions, the investigations were typically concentrated in a limited area. The locations of proposed access roads were not well enough defined to be subject to more than a cursory reconnaissance. The potential borrow

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sites were mostly elevated, well-drained landforms, including moraines and other glacial features.

Seven heritage resources were identified in potential conflict with the proposed borrow sites. One of these is a prehistoric site, and the remainder are historic and traditional sites. The general locations of the seven sites are summarized in Table 8-16 and illustrated in Figure 8-5, shown previously.

**Table 8-16: Heritage Resources in Potential Conflict with Borrow Sites in the Deh Cho Region**

Heritage Resource	Type	Landform Association	Project Component
JIRh 006	Historic camp and trail	Clearing on the bank of Harris River	Borrow site access road
JIRh 007	Traditional trap line	Low terrace above Nadia Creek	Borrow site access road
JIRi 008	Historic camp	Flat plains near converging cut lines	Borrow site
KbRh 001	Prehistoric lithic scatter	Small knoll	Borrow site access road
KbRh 002	Traditional trap line, trail	Small unnamed lake	Borrow site access road
JfRd 002	Historic camp	Elevated terrace above Mackenzie River and a small unnamed creek	Borrow site
KaRf 001	Historic cabins	Shore of Mackenzie River	Borrow site

**8.5.3 Project-Specific Effects**

As in the other areas, the archaeological team recorded heritage resources and revisited previously recorded sites during the reconnaissance- and assessment-level activities conducted in 2002 and 2003. However, these sites proved not to be subject to impact because of the evolving project design. Table 8-17 documents the sites investigated as they were thought to be associated with specific project components when the fieldwork was completed. Some were affiliated with more than one project component because of the width of the corridor. Those designated not applicable are not in conflict with the current project design. All sites are discussed in the 2002 or 2003 annual permit reports (Clarke et al. 2003, 2004). These reports were completed under Northwest Territories Archaeologist Permits (Class 2) 2002-916 and 2003-933.

**Table 8-17: Heritage Resources Investigated During the 2002 and 2003 Focused Reconnaissance Program in the Deh Cho Region**

Heritage Resource	Type	Landform Association	Project Component	Significance
DCR 18	Recent cross marker	Liard River ferry crossing	N/A	High
JfRd 001	Historic camp	Narrow ridgetop	N/A	Moderate
KIRm 018	Lithic scatter	Bank of Mackenzie River and an existing barge landing	N/A	High

**Table 8-17: Heritage Resources Investigated During the 2002 and 2003 Focused Reconnaissance Program in the Deh Cho Region (cont'd)**

Heritage Resource	Type	Landform Association	Project Component	Significance
DCR 006	Recent camp site	Clearing along Willowlake River	N/A	Limited
JIRi 008	Historic camp	Flat plains near converging cut lines	Pipeline corridor, borrow site	Moderate
JfRd 002	Traditional trap line, trail	Shore of Trout River	Pipeline corridor	Moderate
DCR 04	Recent camp	Jean-Marie Creek	Pipeline corridor	Limited
KIRm 002	Historic cabin	Edge of Mackenzie River	Pipeline corridor	Moderate
KIRm 010	Historic cabin	Mackenzie River	Pipeline corridor	Moderate
KeRj 024	Historic camp	Bank of Willowlake River	Pipeline corridor	Moderate
KbRh 001	Prehistoric lithic scatter	Small knoll	Borrow site	Moderate
KbRh 002	Traditional trap line, trail	Small unnamed lake	Borrow site	Moderate
KaRf 001	Historic cabins	Shore of Mackenzie River	Borrow site	Moderate
JIRh 006	Historic camp and trail	Clearing on the bank of Harris River	Pipeline corridor, borrow site	Limited
JIRh 007	Traditional trap line	Low terrace above Nadia Creek	Pipeline corridor, borrow site	Moderate
JkRh 001	Traditional trail	Tributary of Manners Creek	Borrow site	Limited
JkRh 002	Traditional trail	Manners Creek terrace	Borrow site	Limited
03MGP-DCR01	Trap	Low terrace above the confluence of Mackenzie and Ochre rivers	Infrastructure	Limited
03MGP-DCR02	Historic hunting camp	Elevated terrace above the Hodgson Creek tributary	Pipeline corridor	Limited
03MGP-DCR03	Historic camp	Elevated terrace above Mackenzie River and a small unnamed creek	Borrow site	Limited
03MGP-DCR05	Traditional trap line, traps	Bank of Willowlake River	Pipeline corridor	Moderate
03MGP-DCR06	Potential trail	Edge of small unnamed drainage	Pipeline corridor, infrastructure	Limited
03MGP-DCR04	Historic hunting camp	Low terrace above Mackenzie River	Infrastructure	Limited
JIRh 008	Historic cabin concentration	Mouth of Nadia Creek	N/A	High
KaRg 009	Traditional trap line and trail	Bank of Trail Creek	N/A	Limited
KaRg 010	Traditional trail	Near Trail Creek	N/A	Limited
KeRj 002	Historic fort	Bank of Willowlake River	N/A	High
KeRj 035	Historic camp	Along Willowlake River	N/A	Limited
KeRj 036	Historic camp	Along Willowlake River	N/A	Limited
JkRh 001	Traditional trail	Tributary of Manners Creek	N/A	Limited
KiRI 008	Historic cabin	Confluence of Mackenzie and Ochre rivers	Infrastructure	Limited
NOTE: N/A = not applicable				

## 8.6 Heritage Resources – Northwestern Alberta

### 8.6.1 Environmental and Cultural Contexts

Although very little information is available on prehistoric use in northwestern Alberta, culturally the people in this region practiced a boreal and sub-boreal strategy of land use.

#### 8.6.1.1 Environmental Context

The northwestern Alberta part of the project is in the South Taiga Plains Ecological Zone. Dominant vegetation in the three habitat types includes:

- peat plateaus:
  - black spruce
  - Labrador tea
  - cloudberry
- upland mineral soil:
  - jack pine
  - soapberry
  - mountain cranberry
- lowlands:
  - black spruce
  - ground birch
  - red bearberry

Forty-five mammal and two amphibian species are known or expected to occur in the South Taiga Plains Ecological Zone. Winter mammal use is primarily concentrated in tree and shrub communities, which provide thermal and escape cover, and foraging opportunities. Although moose are the favoured food prey and can be found in a wide range of habitats, woodland caribou are also present and occupy the extensive muskeg habitats of this zone. During the summer, mammal use tends to be dispersed over a wider variety of vegetation types. This region is also noted for its wide range of fish and avian species.

#### 8.6.1.2 Cultural Context

The Slavey people also extend into northern Alberta, where they are known as the Acha'ottine, or *woodland people*. These Athapaskan-speaking people refer to themselves as the Dene Tha'. Although culturally and linguistically similar to the Slavey of the Northwest Territories, they are geographically located in northwestern Alberta.

The traditional lands of the Dene Tha' extend from northwestern Alberta into northeastern British Columbia and into the southern regions of the Northwest Territories (Ross 2001). Although the DTFN adhered to Treaty 8 in 1900, their reserves were not surveyed until 1946. Concentrated settlement was part of a larger plan by the government to facilitate assimilation of Aboriginal peoples into non-Aboriginal society (Royal Commission on Aboriginal Peoples 1996). Construction of a residential school in Assumption, now Chateh, by the Catholic Church also encouraged settlement, as families wanted to live near their children. What resulted was development of three communities in northwestern Alberta where most of the DTFN population lives, including:

- Chateh
- Bushe River
- Meander River

The DTFN traditionally followed a nomadic lifestyle. Small family groups would travel together, following seasonally available game and furbearing animals (DTFN 1997). Seasonal migration routes centred on lakes and river systems throughout the DTFN territory. Furbearing animals of importance are (Asch 1981):

- beaver
- muskrat
- lynx
- marten
- fox

Before modern traps were introduced, the DTFN used deadfall traps (DTFN 1997). Big game animals hunted included (Asch 1981, DTFN 1997):

- moose
- black bear
- some grizzly bear

The DTFN also depend on (DTFN 1997):

- crowberries
- strawberries
- ground cranberries
- chokecherries
- Saskatoons
- raspberries
- Canadian buffaloberry
- bunchberries
- wild onions

Since the turn of the last century, the DTFN have pursued a more semi-permanent lifestyle. This was partly because trading posts were established in the region, which led to construction of small, family-based cabins near the trading posts that were used seasonally (DTFN 1997). Industrial development in their territory reduced the number of animals available for trapping and hunting, and led to a more sedentary lifestyle. However, many of the Elders still maintain trap lines and live a semi-permanent life (DTFN 1997).

### **Prehistory**

The sequence of prehistoric (11,000 to 220 BP) occupation of the DTFN is almost completely unknown, because of the virtual absence of previously recorded historical resources in the area. A survey of Bistcho Lake conducted by Wood (1978) did not identify any historical resources. Similarly, assessments of the Norman Wells to Zama Lake pipeline did not result in identification of any new historical resources. The prehistoric sequence outlined for the lower Liard River Basin, as revealed through the archaeological studies conducted in the Fisherman Lake area by MacNeish (1954), Millar (1968) and Fedirchuk and Millar (1981), applies to the part of northwestern Alberta through which the pipeline facilities will pass. The sequence of occupation outlined previously for the GSA is mostly based on this work, and also applies to the northwestern Alberta Aboriginal peoples.

#### **8.6.2 Pipeline Corridor and Associated Facilities**

No archaeological field studies were conducted in Alberta during the 2002 and 2003 heritage resources program. However, a preliminary search of the site file records at Alberta Community Development revealed that no previously recorded historical resources are situated near project development areas. Until studies specific to the NOVA Gas Transmission Ltd. (NGTL) facilities have been conducted, the northwestern Alberta part of the project is not considered to have any effect on historical resources. However, it is expected that sites relating to traditional use of the landscape by local Aboriginal groups and individuals would be encountered during historical resources assessment studies. Potential for the occurrence of prehistoric sites is likely to occur in association with specific landforms intersected by the proposed alignment.

### **8.7 Baseline Summary**

#### **8.7.1 Inuvialuit Settlement Region**

The 2002 and 2003 focused reconnaissance- and assessment-level programs resulted in investigating 51 heritage resources in the ISR. These included prehistoric sites (see Table 8-5, shown previously), such as:

- lithic scatters
- stone feature sites

- a prehistoric burial site
- isolated finds

Historic and traditional use sites, such as camps, trails, burials and tools were recorded. Two palaeontological sites were found and are included in the sample of heritage resources recorded in the ISR. Currently, 31 of these are in potential conflict with the project.

The scientific significance assigned to these resources, based on evaluation of their physical characteristics, ranges from limited to high. High-value resources include:

- prehistoric lithic scatters
- a cairn and camp site
- a burial site
- a composite stone feature site

Resources of limited value include finds such as single isolated artifacts. The remainder of the sites are considered moderate-value resources. The relatively high level of scientific value placed on these resources is attributed to their character, and because so few prehistoric sites have been previously recorded in this region. Those sites identified are considered to represent important sources of information for establishing prehistoric land use patterns in the Mackenzie Delta.

Historic and traditional use sites identified during the 2002 and 2003 investigations include:

- camp sites
- burial sites
- cabin sites
- isolated artifacts
- traditional use areas
- trails
- isolated tools and traps
- a kill site
- a hearth
- a communication tower

Most of these sites represent use of the land and its resources by Aboriginal people, and reflect continuation of longstanding patterns that likely date back to prehistoric times.

The significance of these resources has been ranked mostly in scientific terms, but also includes some impressions of the cultural value of these resources gained through experience and through information provided by members of local

Aboriginal communities that participated in the program. Additional information on the cultural value of resources identified will be obtained in consultation with Aboriginal communities in subsequent stages of the archaeological studies conducted for the project.

Significance rankings range from limited to high. High-value sites include the burial sites and some of the cabin sites. Moderate scientific significance has been assigned to:

- three camp sites
- a cabin
- a trail
- a communication tower
- wood artifacts
- a carved kayak paddle

Limited values have been assigned to the remainder of the sites.

Identified site distribution patterns demonstrate that sites are often associated with:

- terraces and shorelines of the Mackenzie River and Delta channels, e.g., lower terrace sites and deltaic sites are likely deeply buried
- main travel routes across the delta and into the tundra
- larger fish-bearing lakes and connecting watercourses
- elevated, well-drained glacial remnant features, such as moraines

### **8.7.2 Gwich'in Settlement Area**

The 2002 and 2003 focused reconnaissance- and assessment-level programs resulted in identifying 37 heritage resources in the GSA. This includes prehistoric lithic finds and scatters (see Table 8-9, shown previously). The remainder of the sites are of historic or traditional use character, such as:

- camp sites
- trap lines or trails
- cabins
- burials
- traps
- a trading post
- composite sites

Thirty-two heritage resources are in potential conflict with the project.

Limited scientific significance has been assigned to the prehistoric isolated finds, and some of the more minor historic and traditional use sites. Evaluation of the significance of the other resources is mostly based on their scientific significance, but includes information provided by Aboriginal community participants in the 2002 and 2003 heritage resources study.

High-value resources include:

- prehistoric lithic scatters
- a composite camp site and burial
- two additional burials
- a trading post
- composite cabin sites
- a trail

Moderate-value resources include some of the trap lines and trails, camp sites, and one of the cabin sites. The remaining camp sites and the traps are classified as resources of little value.

Identified site distribution patterns demonstrate that sites are often associated with:

- terraces and shorelines of the Mackenzie River, e.g., lower terrace sites are likely deeply buried, and other major creeks and rivers
- shores of moderate- to large-sized lakes
- trails and trap lines, often crossing through areas of low-lying, water-saturated terrain connecting larger lakes and rivers

### **8.7.3 Sahtu Settlement Area**

The 2002 and 2003 focused reconnaissance and impact assessment program resulted in identifying 50 heritage resources in the SSA (see Table 8-13, shown previously). These include:

- prehistoric lithic scatters
- a composite site consisting of:
  - a hearth
  - a lithic scatter
  - a modern cultural camp

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A variety of resource types classified as historic or traditional use sites were also recovered, including:

- camp sites
- trails
- cabins
- burials
- traps
- one refuse deposit
- a fishing camp
- sleds
- two industrial camps
- remains of a communications line

Five palaeontological resources were identified during the heritage resource studies completed in the 2002 season. Thirty-four of the heritage resources are in potential conflict with the current project design.

The scientific significance assigned to the prehistoric resources based on evaluation of their physical characteristics ranges from moderate to high. Most of the lithic scatter sites are ranked as having high significance because of their potential size and the variation in forms found. The other prehistoric sites are considered to possess moderate scientific significance.

The significance assigned to historic or cultural resources is mostly based on their scientific significance, but includes information provided by Aboriginal community participants in the heritage resources program. High-value resources include:

- burials
- one camp site
- one industrial camp site
- two cabin sites

Moderate-value resources are assigned to sites, such as:

- some camp sites
- trails
- a cabin
- a single fish camp

The remaining historic or cultural sites are resources of limited value. One of the palaeontological sites exhibits high potential, but the others are considered to have limited potential scientific significance because of the unremarkable nature of the fossils identified.

Identified site distribution patterns demonstrate that sites are often associated with:

- terraces and shorelines of the Mackenzie River, i.e., lower terrace sites are likely deeply buried, and other major creeks and rivers
- shores of moderate- to large-sized lakes
- trails and trap lines which often cross through areas of low-lying, water-saturated terrain connecting larger lakes and rivers

#### 8.7.4 Deh Cho Region

The 2002 and 2003 focused reconnaissance- and assessment-level programs resulted in identifying 31 heritage resources in the DCR. These include two prehistoric sites, one lithic scatter and one artifact find (see Table 8-17, shown previously). Historic or traditional use sites include a variety of site types, such as:

- camp sites, reflecting both recent and past cultural activities
- trap lines and trails
- one composite camp site and trail
- cabin sites
- one trading post
- one settlement occupied by regional Aboriginal families
- one memorial site

Twenty-one of these sites are in potential conflict with the project.

The scientific significance assigned to the prehistoric resources, based on evaluation of their physical characteristics, ranges from moderate to limited. The lithic scatter is considered to be of moderate significance and the artifact find is considered to have limited significance.

The significance assigned to historic and cultural resources is mostly based on their scientific significance, but includes information provided by Aboriginal community participants in the 2002 and 2003 heritage resources program. Highly significant resources include:

- the settlement area, i.e., cabin concentration
- the trading post
- the memorial site

Moderate significance has been assigned to some of the camp sites, cabins, trap lines and trails. The remaining historic and cultural sites are resources of limited significance.

Identified site distribution patterns demonstrate that sites are often associated with:

- terraces and shorelines of the Mackenzie River, e.g., lower terrace sites are likely deeply buried, and other major creeks and rivers
- shores of moderate- to large-sized lakes
- trails and trap lines which often cross through areas of low-lying, water-saturated terrain connecting larger lakes and rivers

### **8.7.5 Northwestern Alberta**

No historical resources were identified in northwestern Alberta during the preliminary records search of Alberta Community Development's inventory files. No field studies were conducted during the 2002 historical resources program.

### **8.7.6 General Project Summary**

The results of this study provide an increase in the number of heritage resources known near the proposed development. Before this investigation, 407 heritage resources had been identified in the RSA. Most had been documented during surveys of the Mackenzie River (Millar and Fedirchuk 1975) or previous highway and pipeline investigations (Millar and Fedirchuk 1974, Losey 1973, Ronaghan 2000a, Thomson and Stoddart 2001). Research-oriented surveys have also greatly added to the number of sites recorded in the region. Studies such as the Northern Oil and Gas Action Plan surveys (Cinq-Mars and Pilon 1991) have added to the understanding of the region's history. The 2002 heritage resource studies completed for the project resulted in identification and initial assessment of about 80 previously unrecorded heritage resources. The 2003 investigations resulted in the identification of over 50 new sites.

The most numerous type of site encountered was historic sites relating to traditional cultural use of trails and trap lines. Although recorded as historic sites, most sites likely follow routes that have been in use for hundreds or thousands of years. Other site types that were numerous included cabins and camps. Both of these site types also relate to traditional cultural use of the land and might occupy locations used in precontact periods. Larger-scale occupations represented by camps and cabin sites suggest longer-term use of one location rather than the transient use of a linear site. Cabin sites are sites at which a complete structure had been constructed for permanent or semi-permanent occupation. Camps are typically represented by tent frames or lean-tos and associated cultural materials surrounding the structures. These sites are often thought to represent a slightly less intense use of a location than cabin sites, because the effort to construct a permanent structure was not made. Some of the tent camps investigated had tent-frame foundations and were used annually.

Fur trading posts, such as Fort Alexander (KeRj 2), also represent long-term use of a geographically limited area. These sites are rare and often have dense artifact concentrations because of the intense and complex activities conducted. Other ancillary camps of the people who came to trade are also often found nearby.

The burials are another important site type identified during the investigations. The locations of these sites should be identified early in the planning stages of the project, so that proper steps can be taken to avoid them. Burial sites are, in some instances, single interments, whereas other sites have multiple graves. The integrity of these sites is important and steps must be taken to avoid any effect on them.

The primary Prehistoric Period site type consists of scatters of lithic materials observed on the surface or recovered in shovel-testing programs. These might represent the remains of short-term camps associated with brief stops by small family or task groups during which stone tools were prepared or used in some fashion. The remains at the sites might have been associated with camps that had temporary shelters, or used materials that have deteriorated over time. However, no evidence of these perishable materials was encountered. Isolated finds of a single discarded artifact were not a common site type encountered during the field programs. Like scatters, these sites likely represent single activity episodes for which there is little evidence. Only one prehistoric, e.g., lithic, and two historic isolated find locations were recorded. All three of these sites represent the wide-ranging use that groups have made, and still make, of the landscape.

Several sites were identified that relate directly to hunting practices. These sites are all cultural use sites dating in the last 20 years. These sites relate to big game hunting in addition to trapping.

Of the six palaeontological sites observed, five consisted of small- to medium-sized molluscs and other marine invertebrates, and one was the location of a mammoth tooth find. All of the invertebrate sites were in creek and riverbeds, where the water had cut into the strata containing the fossils. For the most part, these locations were not isolated pockets of exposed materials, but representative examples of the materials in the river channel at the point where the corridor intersects the watercourse.

Several other sites were also recorded during these investigations. These sites represent a series of less commonly occurring activities:

- two sites relate to prior pipeline construction in the SSA
- one could relate to early geographic mapping in the ISR
- two are related to early communications in the North

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- one is a prehistoric stone feature site
- one is a wooden sled and some associated domestic materials, such as food cans

Thirty-four sites have been classified as having a prehistoric component. These sites were principally classified based on the presence of lithic materials in the assemblage, although this is not entirely indicative of only the prehistoric period. Nolin and Pilon (1994) completed an overview of the results of archaeological surveys in the Lower Mackenzie Valley to determine archaeological potential. By considering the locational characteristics and categories of archaeological sites, it was determined that sites occur in a broad variety of contexts. No distinct correlation between the age and elevation of a site could be determined (Nolin and Pilon 1994). Inhabitants of all sites, regardless of age, appear to have exploited the variety of resources in, and near, the Mackenzie Valley. In an effort to further expand the preliminary findings of Nolin and Pilon (1994) to an area wider than the valley itself, the prehistoric sites from the 2002 investigations were similarly analyzed .

Distribution of the prehistoric resources reflects use of a wide variety of topography throughout the landscape. The sites identified in the 2002 and 2003 investigations also include associations with waterbodies other than the Mackenzie River. Sites are located close to lakes, creeks and other rivers. The sample of sites in this assessment is too small and the information regarding the types of activities conducted at the sites is insufficient to identify any patterns that might relate to an association between functional types and specific landforms. However, the data shows that the sites present in the region can be identified across much of the landscape. It is likely that with a larger sample, patterns will emerge, allowing quantitative distribution analyses to take place.

Although quantitative analyses are not possible, some qualitative interpretations can be suggested to help focus further work associated with this project. As previously mentioned by others (Nolin and Pilon 1994), sedimentation along the Mackenzie River is extremely high in places. Cultural materials excavated from Tsiigehtchic were recovered to a depth of 1.4 m, and the oldest radiocarbon dates are less than 1,500 years old (Nolin and Pilon 1994). It is likely that older archaeological materials might be present in other sections of the valley, but could be deeply buried. Other areas, such as lakes, smaller rivers and creeks that have less sediment load, might be more accessible to search for older cultural components. Excavations at Chick Lake (LITa 2), for example, demonstrated that older materials occur in contexts that are much closer to the surface (Noble 1971).

The cultural sequence of the area is based on very few sites, some of which are far from the study region itself. Identification of dateable materials, through radiometric or typological analysis, should remain one of the key goals of any archaeological investigation in the region.

## 8.8 Potential Project Effects

Because of the location-specific nature of heritage resources, it is necessary to know the specific location of both the heritage resources and the development footprint proposed to ascertain the full extent of project effects. Until a final design and location for the various project elements is available, the precise areas that would be subject to ground disturbance cannot be specified. Consequently, the effects on heritage resources that might occur near these disturbed areas cannot be defined with precision. The heritage resources program designed for the project recognizes these uncertainties and has adopted a staged approach that will provide increasing levels of precision for assessment of the heritage resource effects of the project.

The studies currently completed have focused on key resources and landforms within zones that might be developed for the project, with the intent of assisting in planning future research strategies and formulating recommendations for the impact assessment part of the project. The sites and materials identified in these initial stages of the program are examples of the range of heritage resources that would typically be considered for the region in which the project is proposed. Should these fall within finalized development effect zones, assessments of the types of project-induced effects can be made. However, these predictions can only be phrased in broadly generalized terms.

Sites identified and revisited during the heritage resource study were mapped and information about their locations provided to the engineering team. This information was used in route refinement and selection to decrease the effects to archaeological sites in the region. Wherever possible, archaeological sites will be avoided to reduce effects. Other mitigation measures will be in place to further decrease any effect the project might have on sites that cannot be avoided. As stated previously, the exact location of some of the development features has not been finalized and the effects discussed in the remainder of this section are done in a theoretical framework. The effects of the project on all known sites will be fully determined before construction.

Structural and nonstructural historic period resources, such as cabins, trails, cultural camp sites and traps, typically occur on or above the current land surface. They also often consist of organic materials, such as wood, that are comparatively fragile. Effects are predicted to be severe if such resources are intersected by any type of development activity that alters the existing landscape. These effects will encompass all of the activities proposed for the project, including forest clearance under winter conditions involving frozen ground and snow cover. Although burials usually occur below the surface, often the above-ground markers and structures mark their location and act as integral parts of the burial ground. Such features will be damaged by any activities associated with project development.

Prehistoric resources typically occur at or near the surface of the current mineral soil horizons. These sites can be severely affected by activities that disturb these horizons, such as grading and site preparation, excavations for the pipeline trench and facility construction. In specific sedimentary circumstances in the Mackenzie River Basin, river and creek banks can have deep accretional sedimentary sequences because of annual flooding. These situations can result in deep burial of prehistoric and relatively old historic period occupations. Therefore, heritage resources can be preserved at considerable depth and might not be severely affected by project-related development activities. Similarly, if winter forest clearing occurred over a recorded prehistoric site in surface or near-surface context, limited negative effects might be expected because of the buffering effects of frozen ground and packed snow cover.

However, it can be expected that the direct effects of project-related activities will be negative and in most cases permanent because of the nonrenewable nature of heritage resources. The effects of a specific development feature on an archaeological site can only be determined when the development footprint has been finalized and a full HRIA completed.

Counterbalancing these negative effects is a series of benefits that result because of the heritage resources assessments and mitigations completed before development of a project of this nature. Without the required heritage resources programs that precede development in the Northwest Territories, there would be little or no reason to conduct heritage resource investigations and little or no information known about regional history and prehistory.

As indicated previously, before investigations were conducted for the Mackenzie Valley Winter Road and the Enbridge pipeline, little was known about heritage resource character or distribution in the Mackenzie Valley. The results of the 2002 and 2003 heritage resources program provide a substantial increase in the number of heritage resources known in the study area. Information collected for these sites contributes to an improved understanding of the nature of the regional heritage resource base. Recording site locations will result in effective management of these resources in subsequent stages of the current program and in any future development circumstance that could affect them. In addition, the information will assist in improving the accuracy of follow-up studies.

## 8.9 Potential Mitigations

When complete information on current resources and expected effects can be provided, mitigation programs can and will be implemented to offset or reduce predicted negative effects. Without the information that will be available as the project is approved, mitigation can only be discussed in generalized terms. Mitigation strategies are usually devised when full information on effects is known, and are made in consultation with the regulatory agency responsible for heritage resource management in the Northwest Territories, the Prince of Wales

Northern Heritage Centre. These strategies are outlined as requirements for development approval. For further information on proposed project management plans for heritage resources, see Section 8.9.1, Heritage Resource Management Plan.

Because every heritage resource is unique, mitigation strategies are based on case-by-case recommendations provided during the assessment stage of a heritage resources management program, considering the significance of the resource and the severity of the predicted effect. In most cases, the preferred strategy for mitigating negative effects on significant resources is avoidance through project redesign. This is often possible when there is design flexibility in development, such as an access road, well pad location or small-diameter pipeline. However, it might be possible to avoid a site when developments lack design flexibility if, for example, placement of fill over a significant resource would offset the effect of a road or drilling under a heritage resource, avoiding the negative effects of a pipeline. Potentially, no physical development-related effects would result on the resource.

In other cases, development effects might be unavoidable. The most common mitigation in these circumstances is information recovery and preservation. For prehistoric and palaeontological sites that are typically concealed in bedrock or mineral soil horizons, these procedures include excavation to recover samples of information and materials before an effect occurs. The required analysis and interpretation of recovered information and submission for permanent conservation is intended as compensation for the negative effects of development activities. These procedures usually result in recovery of a representative sample of information from a particular resource, with all or some of the remainder being consumed by the approved development. These losses are considered acceptable by the regulatory agency responsible for management of the resource.

In cases where a resource of limited significance is predicted to be affected, the information and materials obtained at the assessment stage might be considered sufficient to offset the loss of this resource during development. This limited level of mitigation is usually applied in situations where resources of a similar character occur commonly throughout a region and their distribution is considered as or more important than their content.

Other less typically applied forms of mitigation could include public interpretation programs. These are developed to provide benefits to local and regional communities to help offset the loss of resources during development. Alternatively, types of specialized analyses can be conducted to augment interpretation of a particular resource in a scientific framework. These types of procedures usually accompany more standard forms of mitigation and will be designed on a case-by-case basis, depending on the character of the resource in question.

## 8.9.1 Heritage Resource Management Plan

### 8.9.1.1 Introduction

The objective of the heritage resource investigations conducted in association with the project is to identify, assess and, if necessary, apply mitigation measures to all archaeological sites before construction. Impact assessments will be completed before construction in:

- the gathering system rights-of-way
- development footprints within the anchor fields and pipeline right-of-way
- infrastructure facility footprints
- borrow pits
- other development-related impact zones

It is not possible to guarantee that the impact assessment procedures will record every site, because of the following characteristics of heritage resources:

- they are typically buried
- they might contain only a few recognizable artifacts
- they can have a diffuse distribution throughout the site

Input from local people, in the regions affected by the project, will be sought, and each assessment crew will have representation from the local communities. However, as archaeologists are dealing with thousands of years of prehistory, it is unlikely that local assistants will know of all the heritage resource locations in their areas. Therefore, a management plan will be provided for field personnel not formally trained in archaeology, including monitors and inspectors, to assist them in archaeological site recognition, and to serve as a guideline for site protection in the event of a discovery. This plan is not meant to be used as a replacement for trained staff, but as a supplement, to protect northern heritage resources.

Archaeological investigations of the proposed pipeline and related facilities will be conducted when sufficient location details become available. Issues raised during the community consultation and regional workshop sessions, and the traditional knowledge programs will also guide the field program. The current status of these investigations and an assessment of potential effects were presented previously.

The procedures outlined in this plan are synopses of a more detailed guide that will be provided to project contractors, outlining a course of action to be followed should any unexpected archaeological remains be identified during the course of the project. The guide will facilitate monitoring of construction activities in conjunction with such finds. Cultural resource monitoring is not to be conducted instead of heritage or historical resource impact assessments, which are required by territorial or provincial regulatory agencies. This approach to managing

unexpected heritage resource finds will be adopted to ensure protection of archaeological resources that could be adversely affected by the project.

### 8.9.1.2 Regulatory Compliance

These procedures result from the principles outlined in the *Northwest Territories Archaeological Sites Regulations* (Government of Canada 2001) and the *Alberta Historical Resources Act* (Government of Alberta 2000). In addition, they have been adapted from the guidelines for archaeological permits in both jurisdictions. The authority responsible for managing and protecting archaeological resources in the Northwest Territories is the Prince of Wales Northern Heritage Centre, and in Alberta it is Alberta Community Development, Cultural Facilities and Historical Resources Division. Regional and district authorities also have responsibility for heritage resources and will be contacted when necessary.

As a class of heritage resources, in Northwest Territories terminology, or historical resources, in Alberta terminology, archaeological sites are managed according to legislation. In the Northwest Territories, legislation includes the:

- *Northwest Territories Archaeological Sites Regulations* (Government of Canada 2001)
- *Mackenzie Valley Land Use Regulations* (Government of Canada 1998a)
- *Mackenzie Valley Resources Management Act* (Government of Canada 1998b)
- *Inuvialuit Lands Administration Rules and Procedures* (Inuvialuit Land Administration 1986)
- *Territorial Land Use Regulations* (Government of Canada 2003b)
- *Canada Oil and Gas Geophysical Operations Regulations* (Government of Canada 1996)
- *Historical Resources Act* (GNWT 1997)

Information about the location of heritage resources can be protected under the *Access to Information and Protection of Privacy Act* (GNWT 1994). In Alberta, the *Alberta Historical Resources Act* (Government of Alberta 2000) empowers the Minister of Alberta Community Development to designate and protect historical resources. In both jurisdictions, when activities are likely to result in the damage, alteration or destruction of heritage or historical resources, developers are required to conduct an HRIA and any necessary mitigation measures. Even when all of the reconnaissance- and impact assessment-level investigations have been done, additional heritage resources might be found.

The heritage legislation in both jurisdictions confers automatic protection to archaeological sites, regardless of whether they have been previously identified and recorded. In the Northwest Territories, overlapping legislation, as referenced previously, protects heritage resources. For example, Section 16 of the *Northwest Territories Archaeological Sites Regulations* (Government of Canada 2001) states:

*Where, in the course of a land use operation, a suspected archaeological site or burial ground is unearthed or otherwise discovered, the permittee shall immediately,*

- a) *Suspend the land use operation on the site*
- b) *Notify the Engineer or an inspector of the location of the site and the nature of any unearthed materials, structures or artifacts*

Section 31 of the *Alberta Historical Resources Act* requires:

*a person who discovers an historic resource in the course of making an excavation for a purpose other than the purpose of seeking historic resources shall forthwith notify the Minister of the discovery.*

Section 49 of the *Historical Resources Act* provides for a temporary stop order (not to exceed 15 days) if:

*a person is engaged in an activity that the Minister considers likely to result in damage to or destruction of an historic resource...*

Penalties for violation of the provisions of the Act include a fine of up to \$50,000 or a term of imprisonment up to one year, or both, or the cost of restoring, or compensation for the alteration or destruction of an historic resource.

Project personnel will be notified that personnel cannot wilfully disturb or remove archaeological or historic artifacts or materials from sites unless they have a permit under the *Alberta Historical Resources Act* or the *Northwest Territories Archaeological Sites Regulations*. Collection of such artifacts is strictly forbidden. Failure to comply might result in prosecution and fines.

### 8.9.1.3 Types of Heritage Resource Sites

Although not consistently outlined in the legislation, an important heritage resource category includes the remains of sites that reflect traditional use by Aboriginal people. Traditional use sites are often locations that do not fit into the legislated definition of archaeological sites, but can contain important resource information regarding the traditional land use practices of the local people. Unlike people in some parts of North America, the people of the North are still very much linked to the land. These sites often blend with past land use occupancy

practices, as the use of the land changes through time. Understanding current land use is integral to the correct interpretation of the past. Traditional use sites might be:

- in excess of 50 years old but have an unbroken chain of possession
- traditional hunting or camping locations, but it cannot be established that their age is sufficient to be considered an archaeological site

The following are examples of some heritage resource site types:

- camp sites – a common site type in all environments. They can be associated with fishing, hunting and quarrying.
- stone feature sites – tent rings, caches and cairns often occur in Arctic and sub-Arctic environments.
- artifact scatters – perhaps the most common site type, these comprise a concentration of archaeological materials often including stone tools or thin, sharp chips, observed on the surface or in association with buried surfaces. Visibility of surface materials depends on several factors, including vegetation cover, density and distribution of the archaeological or historic materials and pre-existing disturbances. Artifact scatters can indicate more extensive cultural occupations requiring detailed assessment.
- isolated artifacts – single artifact finds that are often interpreted as lost or discarded tools. Typical isolated finds include flaked stone knives, arrows or spear points (projectile points), adze blades, net-sinker stones, hand mauls and hammer stones, and also unshaped fragments of flaked stone. In areas of good preservation, wooden and bone artifacts might also be identified. Such tools reflect hunting and fishing, gathering plant resources, and traditional forest use.

Three principal types of historic archaeological remains can be expected:

- structural remains – standing or ruined historic structures. Traditional use structures can include cabins or their collapsed remains, smoke houses, meat-drying or hide-stretching racks and cemeteries or isolated graves.
- historic refuse – the historic equivalent of a Prehistoric Period midden, which can be associated with non-Aboriginal habitation or Aboriginal traditional use, represented by materials, such as:
  - bottles and windowpane glass
  - tin cans
  - fragments of ceramic dishes and crockery

- cartridge casings and bullets
- ash and charcoal
  
- isolated artifacts – single artifacts, such as tools and bottles, or larger objects, such as boats.

#### 8.9.1.4 Recognizing Archaeological Remains

##### **Burial Places**

Burial places often have negligible surface visibility and can be encountered in many locations. Human bones, in an archaeological context, are normally light brown to dark brown, and are often easily distinguishable from surrounding sediments. In contrast to most of the animal bones that would be present in a midden deposit, human bones are usually intact. However, many human burials can be incomplete or contain scattered, partially decayed bones that fragment easily. All burial sites will be reported immediately and avoided.

##### **Archaeological Deposits**

Typical soils in these areas are acidic and contain dissolved organic residues that help to identify archaeological deposits in other regions. However, archaeological deposits can be darker than surrounding sediments and can be distinguished from natural soils by the following attributes, individually or in combination:

- black soil
- patches of reddish brown or yellow-brown fire-stained (oxidized) sediments
- scatters or concentrations of fire-altered rock
- complex soil stratigraphy

#### 8.9.1.5 Archaeological Specifications

##### **Preconstruction Planning**

Before construction of the gathering system, pipeline and associated facilities, a preconstruction HRIA will have been completed and, subsequent to any requirements for mitigation, approval to proceed with construction will have been granted. However, realignment of the pipeline or changes in locations of facilities might be necessary. If this occurs, plans will be shown to the archaeological consultant for advice about the need to communicate with Prince of Wales Northern Heritage Centre or Alberta Community Development to obtain any necessary approvals required to proceed.

##### **Construction Monitoring and Archaeological Assessment**

Subsurface excavations in selected areas will be subject to inspection and monitoring by the archaeological consultant. If the contractor or its employees

encounter actual or suspected archaeological remains during any part of the project, the archaeological consultant will be contacted to assess the archaeological remains and identify suitable procedures. The contractor should discontinue work in that area until the archaeological consultant and a local community member are able to assess the remains and identify suitable procedures for site mitigation.

If, at any time, the archaeological consultant determines that archaeological remains occur, the contractor and environmental inspector will be notified immediately and suitable management procedures will be identified. The contractor must cease work immediately in that particular location on instruction from the archaeological consultant, and move on to other work until:

- the required archaeological studies are complete
- the contractor has been advised by the project proponents to resume work

The contractor will ensure that supervisory personnel, subcontractors and employees are aware that:

- archaeological remains might be encountered
- work in a location suspected to contain such remains will immediately cease until the site is inspected by the archaeological consultant and the required studies are completed

The contractor will ensure that supervisory personnel, subcontractors and employees are instructed not to collect archaeological remains, including artifacts of traditional Aboriginal or industrial, Euro-Canadian origin. The contractor will ensure that the original location of any archaeological find is accurately recorded on suitably scaled maps and forwarded to the archaeological consultant.

### **Effect Management Procedures**

If suspected archaeological remains are found, the find location must not be disturbed until it is first inspected and documented by the archaeological consultant. The *Mackenzie Valley Land Use Regulations* (updated to April 2003) and the *Territorial Land Use Regulations* state that no one shall conduct a land use operation within 30 m of a known monument or a known or suspected historical, archaeological site or burial ground. A specific distance is not defined in Alberta. It is proposed, for the purpose of this management plan, that the *affected location* be defined as an area no less than the area encompassed by a 30-m buffer around the outermost known site dimensions. A professional archaeologist must determine the actual site dimensions. Therefore, further disturbance to the site area will be prevented by implementing a 120-m no-work zone surrounding the affected location until it is assessed by an archaeologist accompanied by a community member.

If archaeological remains are encountered, the procedures to be adopted are described, as follows.

### ***Human Remains***

Human remains must be accorded full dignity and respect. Under no circumstances should burial places be disturbed. However, unmarked graves could be inadvertently unearthed during construction activities. The archaeological consultant will be contacted immediately to inspect the location. As required, the archaeological consultant will contact the applicable government agencies, which include the Royal Canadian Mounted Police (RCMP) and the Prince of Wales Northern Heritage Centre or Alberta Community Development, to receive instructions. If required by the Prince of Wales Northern Heritage Centre or Alberta Community Development, the archaeological consultant will design a recovery protocol in consultation with applicable Aboriginal communities that meets with full Prince of Wales Northern Heritage Centre or Alberta Community Development approval.

The following procedures must be followed if suspected human remains are found:

1. Cease work in the affected location immediately.
2. Contact will be made with the archaeological consultant.

If the affected location is busy or has high public visibility:

3. Assign an employee to stand watch until the archaeological consultant arrives.
4. Stake or flag off the affected location to prevent further disturbance.
5. Cover any exposed bones with plastic sheeting, tarpaulin, blanket or other clean covering, not backfill, until the archaeological consultant is present.

If excavated fill has been loaded into a truck:

6. Empty the excavated fill at a nearby secure location for the archaeological consultant to inspect.

The contractor will only resume work in that area once:

- the archaeological study is complete
- clearance has been granted by the appropriate regulatory agency
- the project proponents have advised that work can continue

### ***Archaeological Deposits***

Archaeological deposits include items such as buried archaeological components, camp sites, scatters of artifacts or fire-broken rocks. Such sites can be extensive or localized. The archaeological consultant should be contacted to inspect the area. If feasible, the archaeological consultant will devise a plan to avoid such deposits through project redesign or capping them with clean, suitable fill. If avoidance strategies are not feasible, it might be necessary to conduct archaeological excavations, i.e., systematic data recovery, on threatened sites. The probability of encountering an undiscovered, large site is considered to be low because an HRIA will have been conducted by the time construction is initiated.

The following procedures are to be adopted when unexpected archaeological deposits are encountered:

1. Cease work in the affected location immediately.
2. Stake or flag off the affected location to prevent additional disturbances.
3. Contact will be made with the archaeological consultant.

If excavated fill has been loaded into a truck:

4. Empty the fill at a nearby secure location for the archaeological consultant to inspect.

The contractor will only resume work once the archaeological study, including all necessary discussion with the appropriate regulatory agencies, is complete and the archaeological consultant has advised the contractor that work can resume.

### ***Isolated Artifact Finds***

Single artifact finds can be as important as large sites for understanding Precontact land use, as they emphasize that Aboriginal people were widespread throughout the landscape. Artifacts should be readily identifiable by nonarchaeologists. Size, shape and colour, which often contrasts with the surrounding matrix, are some key indicators of artifacts. If an isolated artifact is observed, the following procedures should be adopted.

If the artifact is in imminent danger of being destroyed or damaged:

1. Collect the artifact and mark its location with a stake or flag.
2. Leave the artifact on the ground where it was found, whenever possible, and mark the location with a stake or flag.
3. Notification will be provided to the archaeological consultant that the location might require an archaeological inspection.

The contractor will:

4. Ensure that other workers in the vicinity are aware that the affected location is to be avoided until inspected by the archaeological consultant.

The archaeological consultant will:

5. Inspect the affected location and conduct all necessary investigations and regulatory interaction.
6. Advise the contractor that construction can proceed.

### ***Historical Remains***

All types of historical archaeological materials are included in this category, including deposits of household refuse, i.e., glass, metal and ceramics, ruined structures, abandoned cabins and isolated historical artifacts. Historical remains are easy to recognize as artifacts, but determining their historical importance is more difficult. Such appraisals can sometimes be made on the basis of verbal reports, but field inspections might be required for some finds.

When historical remains or suspected historical archaeological remains cover an extensive area or appear to be quite deep, such as a refuse dump, the following procedures will be adopted:

1. Stop work in the affected location.
2. Stake or flag off the affected location to prevent additional disturbances.
3. Contact will be made with the archaeological consultant.

The archaeological consultant will:

4. Determine if the found materials are of historical significance.

The contractor will resume work once the archaeological study and regulatory interaction are complete and the project proponents have advised the contractor that work can begin.

### ***Historic Artifacts***

If suspected historic archaeological artifacts are observed, the following procedures should be followed.

If the artifact is in imminent danger of being destroyed or damaged:

1. Collect it and mark its location with a stake or flag.
2. Leave the artifact on the ground where it was found, whenever possible.
3. Notify the archaeological consultant.

The archaeological consultant, in consultation with the appropriate regulatory agency, will:

4. Determine if an inspection and study is required.

The archaeological consultant will:

5. Advise the contractor when construction can continue.

### ***Emergency Contacts***

Before construction, complete details will be provided about the names of archaeological consultants and regulatory agencies that can assist with unexpected finds.

## **8.10 Prediction Confidence**

As indicated in previous sections, the effects of the project on heritage resources cannot be positively determined at this time for several reasons. The degree of uncertainty present in the ability to predict the heritage resource effects of the project requires that confidence be discussed in broad qualitative rather than quantitative terms.

Because precise footprints for all project-related disturbance zones could not be identified, high-quality information relating to potential effects was not consistently available for assessment during the 2002 and 2003 parts of the heritage resources study. However, the quality of the information on the resources investigated during the work completed for the program is reasonably high. Wherever possible, known archaeological sites will be avoided by the development.

Because it was not possible to conduct a full assessment of the effects of the project, the investigations completed in 2002 and 2003 did not provide sufficient information for defining the full range of variability in heritage resources that might be affected by the project. Consequently, although the significance of those resources investigated can be made with a reasonable level of confidence, predictions on the precise effects of the project must await completion of a full HRIA. Predictions would be subject to a high degree of potential error if they were based on the information currently available. For example, the effect of tree clearing and using a location for storing machinery or stockpiling pipe will have a very low-magnitude effect on a small buried site that comprises stone artifacts. However, that same site and location could suffer significant effects if grading or excavation were to occur.

The results of the 2002 and 2003 heritage resources study provide a basis for a general understanding of the character and distribution of heritage resources near the proposed development zones. These results could be used as a foundation for

structuring subsequent stages of project heritage resource studies. However, the information available does not allow accurate predictions about the precise effects of the project, such that specific mitigation could be designed to offset any negative effects.

By implementing a comprehensive series of mitigation measures involving project design modification or information recovery programs, or both, potential negative project-related effects could be offset for the resources investigated during the 2002 and 2003 heritage resource program. However, until a full assessment of development zones and the resources that might occur close to them has been completed, it is uncertain if mitigation measures would be successful in reducing all of the heritage resource effects of the project.

### 8.11 Future Study Considerations

Observations made relative to heritage resource characteristics and distributions during the 2002 and 2003 heritage resources program tend to confirm many of the principles typically employed in assigning archaeological potential throughout the region, and support their use in future parts of the HRIA. These include recognition of the:

- importance of the Mackenzie River, and its value as a travel corridor and a source of resources
- significance of fish-bearing lakes
- potential of well-elevated terrain in the delta as travel corridors for people and animals

Areas such as these that occur close to, or are intercepted by, elements of the project should continue to be a focus of future assessment strategies.

Distribution of prehistoric resources continues to reflect use of, and association with, flowing and standing waterbodies. It is recommended that future assessment strategies employ closeness to water as one of the major factors in selecting areas for examination. This factor is less important in the Mackenzie Delta because of the common occurrence of water and the temporary nature of flow regimes.

However, the considerable distances from potable water observed at several sites identified in this program indicate that closeness to water should not be an exclusive determinant of landscape potential in future studies. Major terrain breaks also represent areas that should be examined in future stages of the program.

Important observations about site distribution made in the 2002 and 2003 program relate to those of historic or cultural character. A wide range of significant sites of

cultural character was recorded in landscapes that would not normally be considered to have high potential for archaeological resources. These sites can reflect important land use patterns that have ancient origins or analogues, the remnants of which might not be easily discoverable by archaeologists because of their nonrepetitive nature, wide distribution and use of perishable materials.

It is difficult to predict the locations of some sites using standard terrain analysis. Many sites identified during the current study were because of advice and information shared by the Aboriginal coparticipants in this project. Therefore, it is considered vital that future parts of this study continue and enhance the mutual sharing of information between knowledgeable Aboriginal community members and archaeologists, and particularly through results of ongoing traditional knowledge studies and the public participation program. Effective information sharing will be the best way of ensuring effective heritage resource management in conjunction with the project.

### 8.12 Determination of Significance

Table 8-18 summarizes the residual effect categories considered with regard to the heritage resource effects of the project. The indefinite nature with respect to the specific location of some project components makes the determination of significance difficult for heritage resources. Until project locations can be cross-referenced with site locations, this assessment remains largely hypothetical. Consequently, the following discussion cannot provide a ranked determination of the significance of project-related effects.

**Table 8-18: Heritage Resources – Project Effect Attributes**

Component	Effect Attribute			Significant	
	Direction	Magnitude	Geographic Extent		
Heritage resources	Positive and adverse	Unknown	Local	Short term to long term	–

NOTE:  
 – = not available (cannot be determined) at this time

Factors contributing to this assessment include the following:

- the direction of effects is likely to be both positive and adverse
- studies completed to date have identified some heritage resources likely to be affected by the project. These consist largely of trails that traverse the full width of the development corridor for the project.
- other sites might be affected depending on the final configuration of project facilities

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- because of the locational inflexibility of some elements of the project, such as infrastructural facilities, borrow sites and the large-diameter pipe that comprises the main delivery system, it can be predicted that a range of heritage resources will be affected by land surface disturbance associated with development
- although avoidance might be possible in some instances, it is likely that mitigation measures will be required to offset adverse development effects when resources of scientific or cultural significance are encountered

Positive effects of development-related investigations have already been realized. Knowledge of the character and distribution of regional heritage resources was increased because of the 2002 and 2003 heritage resource studies. These benefits will increase as further studies take place. Additional heritage resources will be identified and will be subject to management procedures. When implemented, mitigation measures will substantially increase the detailed information available for the regional heritage resource base, and the information and materials conserved because of completing these programs will remain as sources of potentially productive scientific research for generations. The information recovered regarding the use of the landscape by Aboriginal peoples will serve as a valuable record of past and ongoing cultural practices, and assist in reinforcing the unique character of these cultures.

The magnitude of project-related effects cannot be predicted with confidence until development zones can be specified and a full heritage resource impact assessment can be conducted. Considering the wide distribution of prehistoric and historic or cultural resources in the region and the extent of the proposed development area, it is expected that future stages of the heritage resource study will identify many heritage resources that will be affected by the project. In addition, it is expected that continued consultation with local communities will result in identifying historic period remains relating to past cultural use of the project development zone. Depending on the significance of these resources, it is expected that most resources will require management.

Based on the findings to date, it is expected that most of the adverse effects could be managed by mitigation measures implemented before development as outlined in Section 8.9.1, Heritage Resource Protection Plan.

The geographic extent of the effects of project-related developments on heritage resources is likely to be mostly localized because heritage resources are static resources that will be subject to adverse effects primarily within actual development zones. Unless a unique and highly significant heritage resource is identified in a situation where an effect cannot be avoided, most of the heritage resources expected to be in potential conflict with development are likely to reflect highly localized use patterns and have a high probability of occurring in similar contexts in the surrounding regions.

However, in situations where a highly significant resource that has bearing on regional history or prehistory is directly affected by project development activities, the effects of loss of this resource could have regional implications. It is assumed, that effective mitigation programs will be implemented to offset this loss through conservation of materials and information, and an increase in understanding and appreciation for the past of the Mackenzie Delta and Valley.

In addition, positive effects are currently accumulating regionally because of the heritage resource studies. Improved understanding of regional heritage resource character and distribution might assist in improved management of adjacent areas relative to future developments, and could result in mostly positive consequences both locally and regionally.

Any adverse effects resulting from project-related developments will occur immediately, with landscape disturbance during construction. Consequently, duration is evaluated as having a negligible environmental consequence for assessing the effect on heritage resources.

Frequency of effect is not relevant for heritage resources.

In summary, although considerable information has been collected during the 2002 and 2003 heritage resource study, the uncertainties of the precise effects of the project preclude providing a complete assessment of these effects. Future studies and consultation with regional communities will refine the information available and will result in a more comprehensive assessment for which an effective mitigation program can be designed. The project proponents are committed to completing a thorough heritage resource assessment that will discuss the effects of the project, and will abide by any regulatory requirements established by the GNWT and Alberta Community Development relative to heritage resources.

To determine the significance of the effects that various elements of the project might have on heritage resources, many uncertainties must be resolved. These include:

- precise locations and nature of development disturbance
- numbers and significance of the heritage resources that might be affected
- effectiveness of mitigation strategies that can be devised to offset negative effects

Until resolution of these uncertainties is achieved, the significance of the heritage effects of the project cannot be effectively assessed.