Project Information

James Creek Highway's Maintenance Camp

Environmental Information Report

Introduction:

The Department of Transportation is continuing the operation of the James Creek Highway Maintenance Camp and Fuel Storage Facility. The purpose of the project is to deliver transportation services to the region, create safe road conditions for travellers and maintain government assets for the operation and maintenance of an inter-territorial Highway System.

SECTION A:

Physical Description of the James Creeks Area

Geology and Geography

The area surrounding James Create is classified Taiga Cordillera Ecozone. It is a mountainous with shallow rivers meandering through rock walls, broad windswept uplands dominated by alpine and arctic shrubs and flowers, plus vast wetlands and spruce-lined valleys that support many kinds of wildlife. Covering the Yukon-Northwest Territories border, this ecozone contains the northernmost arc of the Rocky Mountain chain. To the northwest are expansive wetlands and rolling hills that stretch to the Beaufort coast. Treeless arctic tundra dominates its northern reaches and gives way to a mix of alpine tundra and lowland forests farther south. "Cordillera" refers to the series of mountain ranges and valleys that form this ecozone's rugged interior. The diverse habitats, from valleys to mountain support a wide range of mammals, including two kinds of caribou and bears. The birds that nest here include a mixture of species typical of the Arctic and Subarctic, as well as eastern and western Canada. The climate is extremely cold and humid, with long, dark winters and short, cool summers. Precipitation is low to moderate, averaging from 250 to 300 mm a year across much of the ecozone. Snow and freshwater ice-cover persist for six to eight months annually.

Terrain and Soils

The Tundra Cordillera Ecozone is characterized by steep, mountainous terrain consisting of a series of sharply etched ridges and narrow valleys. Other features include rolling foothills, upland plateaus, and low-lying basins. The geological history of this region began about half a billion years ago. Rivers flowing off the protocontinent deposited sand, mud, and gravel on this platform, creating the sandstones, mudstones, and shales that make up much of the area's abundant sedimentary rocks (limestone and dolomite). Since then, these rocks have undergone slow but sure destruction by a variety of erosive forces: glacial ice sheets that engulfed much of the region several times over the last few million years; streams and rivers carved down through

the high plateaus and mountains; and the simple action of gravity, which causes mountains to gradually collapse. Some of the most unusual landscapes are, however, now near the Beaufort Sea. These areas escaped glacial scour. The cyclic freezing and thawing action of permafrost-rich soils enhances these processes of disintegration. The resulting polygon and stripe-like patterns often seen in alpine areas attest to the dynamic state of this ecosystem.

Plants

Types of plants in this ecozone and the rate of their growth are strongly influenced by their position on mountain slopes, which determines the amount of available soil moisture and sunlight. Western slopes often have more luxuriant plant cover than eastern ones, since clouds deposit most of their moisture on western slopes before continuing east. Similarly, northern and southern mountain slopes show pronounced differences in plant growth because of differences in the amount of sunlight they receive. South-facing slopes tend to be warmer and drier, conditions that favour soil nutrient release and plant growth common in more temperate climates. Plants on north-facing slopes typically include species better adapted to cold climates.

Four main vegetation zones are found in this ecozone. Extensive areas of alpine tundra occur on the upland plateaus and highest mountain slopes. Here, scattered among lichens, sedges, and mosses are species that typically possess very large flowers relative to the rest of the plant. Their function is to attract insect pollinators during the short growing season.

Further downslope is the subalpine transition zone, which is dominated by scattered Alpine Fir trees and a dense understory of Willow and Shrub Birch. White and Black Spruce replace firs in the lower parts of this zone. Below the subalpine zone on the lower flanks of the mountains is the montane zone, characterized by spruce-lichen woodlands and flat benches of Lodgepole Pine.

Birds

Some of the characteristic birds of prey are gyrfalcon, golden eagle, bald eagle, osprey, northern goshawk, boreal owl, short-eared owl, red-tailed hawk, northern harrier, American kestrel, and merlin. Shorebirds and seabirds that are found here include spotted sandpiper, common snipe, wandering tattler, herring gull, and mew gull. The songbirds of the Taiga cordillera include common redpoll, rusty blackbird, gray-cheeked thrush, tree swallow, dark-eyed junco, varied thrush, raven, white-winged crossbill, Lincoln's sparrow, Townsend's solitaire, water pipit, violet-green swallow, and gray jay. Waterfowl such as Canada geese, northern pintail, mallard, canvasback, and arctic loon are found here. Ruffed grouse, spruce grouse, northern flicker, willow ptarmigan, rock ptarmigan, and white-tailed ptarmigan are some of the birds of the forest.

Amphibians and Reptiles

The Taiga Cordillera is too far north for amphibians and reptiles.

Fish

Predators such as the northern pike feed on species including lake whitefish and lake chub. Chinook salmon and chum salmon come in from the ocean to spawn.

Mollucscs

Two of the mollusc species found in this ecozone are the muskeg stagnicola and arctic-alpine fingernail clam.

Mammals

Because of its diversity of habitats, from dense spruce forests to arctic tundra, from alpine mountain peaks to marshy flats, the Taiga Cordillera Ecozone includes a wide array of wildlife species representative of both arctic and temperate climates. Mammals most common in alpine terrain include the American Pika, Hoary Marmot, Grizzly Bear, and Dall's Sheep. Mountain Goats, which are not really goats at all but members of the antelope family, are found on mountains in southern regions. During the spring and summer, alpine habitats are populated with several tundra-adapted birds, such as the White-tailed Ptarmigan, Horned Lark, and Water Pipit. Woodland Caribou, Lynx, Marten, and Black Bear are common mammals of the lower forested habitats. Common birds in this zone include the White-winged Crossbill, Varied Thrush, and Gray Jay. River and wetland habitats support several waterfowl species, including Canvasback, Common Golden-eye, Mallard, and the rare Trumpeter Swan. The Yukon's Old Crow Flats represent only a small part of this ecozone, yet it is a large and notable wetland that has received international recognition. Swans, Canada Geese, and other species nest or stage here each year in the tens of thousands. Another wildlife spectacle is the annual migration of the Porcupine Barren-ground Caribou, a herd of more than 150 000 animals that winters in the northwestern woodlands.

Evidence of this ecozone's wild and unspoiled character is Canada's largest concentration of Wolverines, a species that has been called a true wilderness creature. Like other members of the weasel family, this solitary nomad is curious, bold, and strong. It will fiercely defend its food against the attack of animals many times its size. Renowned for evading traps and robbing the most carefully protected caches of food, the Wolverine plays a leading role in the camp-fire tales of this region. About fifty species of mammals in total are found here.

Species at Risk

The Department of Environment and Natural Resources, Government of the Northwest Territories identifies a number of species that are either threatened or of special concern with ranges within which the proposed bridge construction project is located. Table 2, below, lists these species and their classification as described in the 2010 Edition of *Species at Risk in the Northwest Territories*.

Table 2: Species at Risk

Status in NWT		Gwich'in Region		Status in Canada	
		SARC Assessment	**NWT List of Species at Risk**	**COSEWIC Assessment**	**Federal *Species at Risk Act* list**
MAMMALS	Collared Pika	N/A	No Status	Special Concern	No status
	Grizzly Bear (Western population)	N/A	No Status	Special Concern	No status
	Wolverine (Western population)	N/A	No Status	Special Concern	No status
	Woodland Caribou (Boreal population)	Threatened	No Status	Threatened	Threatened
	Woodland Caribou (Northern Mountain population)	N/A	No Status	Special Concern	Special Concern
BIRDS	Horned Grebe (Western population)	N/A	No Status	Special Concern	No status
	Olive-sided Flycatcher	N/A	No Status	Threatened	Threatened
	Peregrine Falcon anatum-tundrius complex**	N/A	No Status	Special Concern	No status
	Peregrine Falcon subspecies anatum**	N/A	No Status	Threatened	Threatened
	Rusty Blackbird	N/A	No Status	Special Concern	Special Concern
	Short-eared Owl	N/A	No Status	Special Concern	Schedule 3
FISHES	Dolly Varden (Western Arctic Population)	N/A	No Status	Special Concern	No Status

Table 1: Species Risk Assessment for selected species listed in the NWT SAR Table for the Gwich'in Region

Species/Ranking	Extreme	High	Moderate	Low
Collared Pika			X	
Caribou (Boreal)				X
Bear (Grizzly)			X	
Wolverine				X
Snowshoe Hare				X
Raptors				X
Ptarmigan				X
Songbirds				X
Waterfowl				X
Shorebirds				X

Description of the Undertakings:

Timeframe

This continued operation will take place indefinitely. As the land use permit period is a maximum of seven years (five years with a two year extension), the default duration is August 2013 to August 2020

Vegetation Removal

Vegetation will not be removed.

Mobilization

All required equipment is onsite and mobilization will not be necessary, nor will existing operation exceed the current footprint. Should mobilization be required to expand the existing developed area the GLWB will be notified and in the case of a scope change and the proper amendments/ permits will be acquired prior to development.

Sedimentation Monitoring

A developed laydown and equipment pad has been in place for decades and as such the area has shown no signs of sedimentation, sediment monitoring was deemed to be unnecessary.

SECTION B: PHYSICAL / CHEMICAL EFFECTS

Ground Water

Mitigations for impacts to ground water include a Fuel Transfer Best Management Practice document and an updated Fuel Spill Contingency Plan

Impacts to Surface Water Quality

The O&M work is will not to have an impact on water flow and surface water quality. Potential negative impacts should be minimal if management is consistent with fuel transfer protocols and spill contingencies. The streambed of natural stones won't be disturbed. There will be no long direct term effects on water quality, stream flow, and/or fish habitat since the operation does not involve in-stream works.

Fuel Spills and Leak Assessments

The work will involve heavy equipment; therefore there is always a chance that spills can occur. Diesel fuel and other combustible fluids will be used on the job site during the operation of heavy machinery. Fuel will be transported by truck from a local fuel station to the site. Whenever fuel is used there is a risk of spill during refueling and transportation of petroleum products. Fuel Spills could occur at the following times:

a. *Transfer of the fuel from the fuel truck to the machinery*
b. *As a result of leakage from working machinery*
c. *As a result of an accident (e.g. fuel truck en route to or from the work site)*

A BMP for fuel transfer and management and spill contingency plan will include an assessment for these potential incidents, formalize an appropriate response and offer mitigation procedures for facility inspections.

Direct Spill Impact Mitigations

Fuel will be stored away from the site; 100m outside of the ordinary high water mark. Vehicles will be refueled in a designated area, at least 100 meters beyond the high water mark. Drip trays will be used where there is potential for small leaks and spills during extended vehicle

storage periods. Fuel and hazardous materials will be subject to the Spill Contingency Plan. All contractors will be briefed on the Spill Contingency Plan. A copy of the plan will be on the work site at all times.

Storage of materials

Construction Materials, Heavy Equipment and Camp related materials will be stored on site

Mitigations

All materials will be stored safely on-site, and will be 100m away from the ordinary high water mark. A fuel transfer best practices plan will form part of the operations and a fuel spill contingency plan is in place. Existing monitoring wells will be sampled twice annually (Freshet and Prior to Freeze up) and follow testing parameters established under the previous land use permit

Noise

Construction activity will generate a medium amount of noise during the project due to the use of Heavy Equipment and on-site power generation.

Land

The land is held and controlled by the Department of Transportation - Northwest Territories through the Transfer of Inter-Territorial Roads Program form the Government of Canada to the Government of Northwest Territories (represented in the agreement by the Department of Transportation.

Non-Renewable Resources

There will be no impact on non-renewable resources.

Air/Climate/Atmosphere

There will be localized, low level, transient impacts from equipment operation (exhaust) during the project but are not a regulatory concern and do not require additional authorizations.

Deposition of Waste

All construction waste will be transported away from the site and disposed of in the local landfill consistent with normal Department of Transportation operations.

SECTION C: BIOLOGICAL ENVIRONMENT

Wildlife Habitat

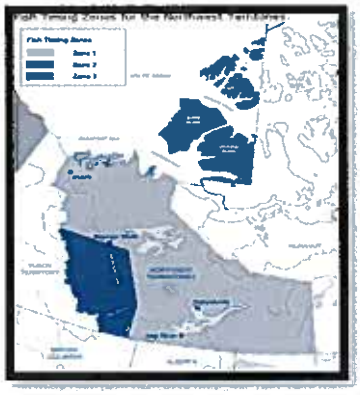
No long-term or permanent impacts on the habitat and wildlife population communities in the area are anticipated.

Vegetation

The area around the project site is completely vegetated (mosses and lichens) with the exception of the areas cleared for the road allowance and laydown areas in use. The taiga cordillera surrounds the project area and short shrubbery, weeds, and grasses are prevalent in and around the banks of James Creek.

Fishery and Fish Habitat

Currently local fishermen are not known to set nets on James Creek at this location. The creek is shallow and low energy for much of the year. Although the creek has a road access to the edge of the stream, no fording of James Creek will take place during this project incidental use of the stream for dust suppression happens periodically but water volumes are significantly less than what requires a water licence. All Department of Fisheries and Oceans Water withdrawl operational statement protocols are observed. The Department of Fisheries and Oceans lists Zone 1 "timing windows" for fisheries affected in ZONE 1 (largest zone of the NWT identified by DFO). However, no in-water work will take place in open water conditions without direct authorization from Department of Fisheries and Oceans.



SECTION D: Interacting Environment

Social and Economic

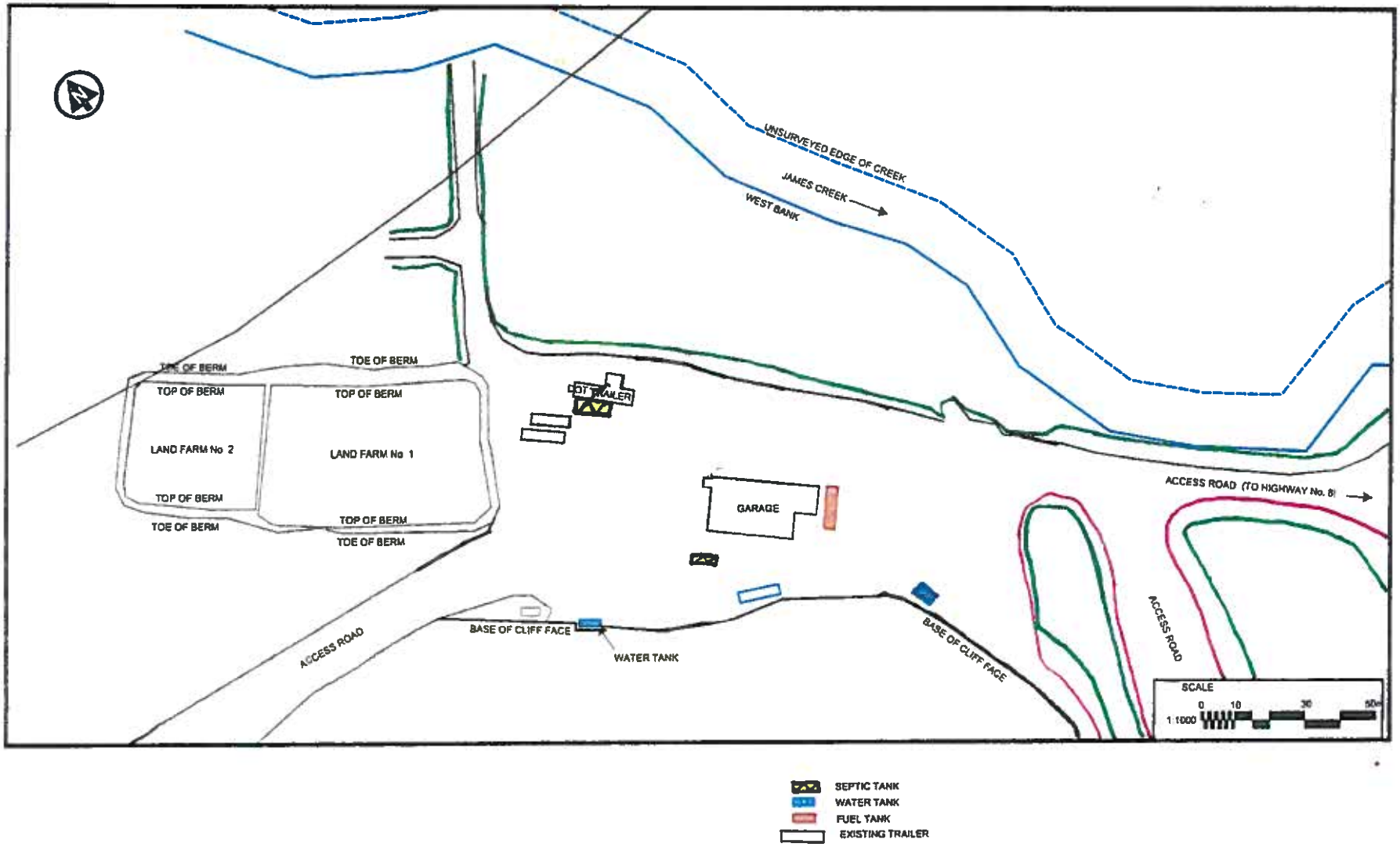
The site has been used for decades and has demonstrated little potential to disrupt traditional aboriginal use or occupancy. James Creek Highway's Maintenance Camp has provided steady employment and contract work for residents of Ft. McPherson where the population is predominantly Gwich'in and employment for other residents from the region who travel to James Creek from as far away as Inuvik (seasonal).

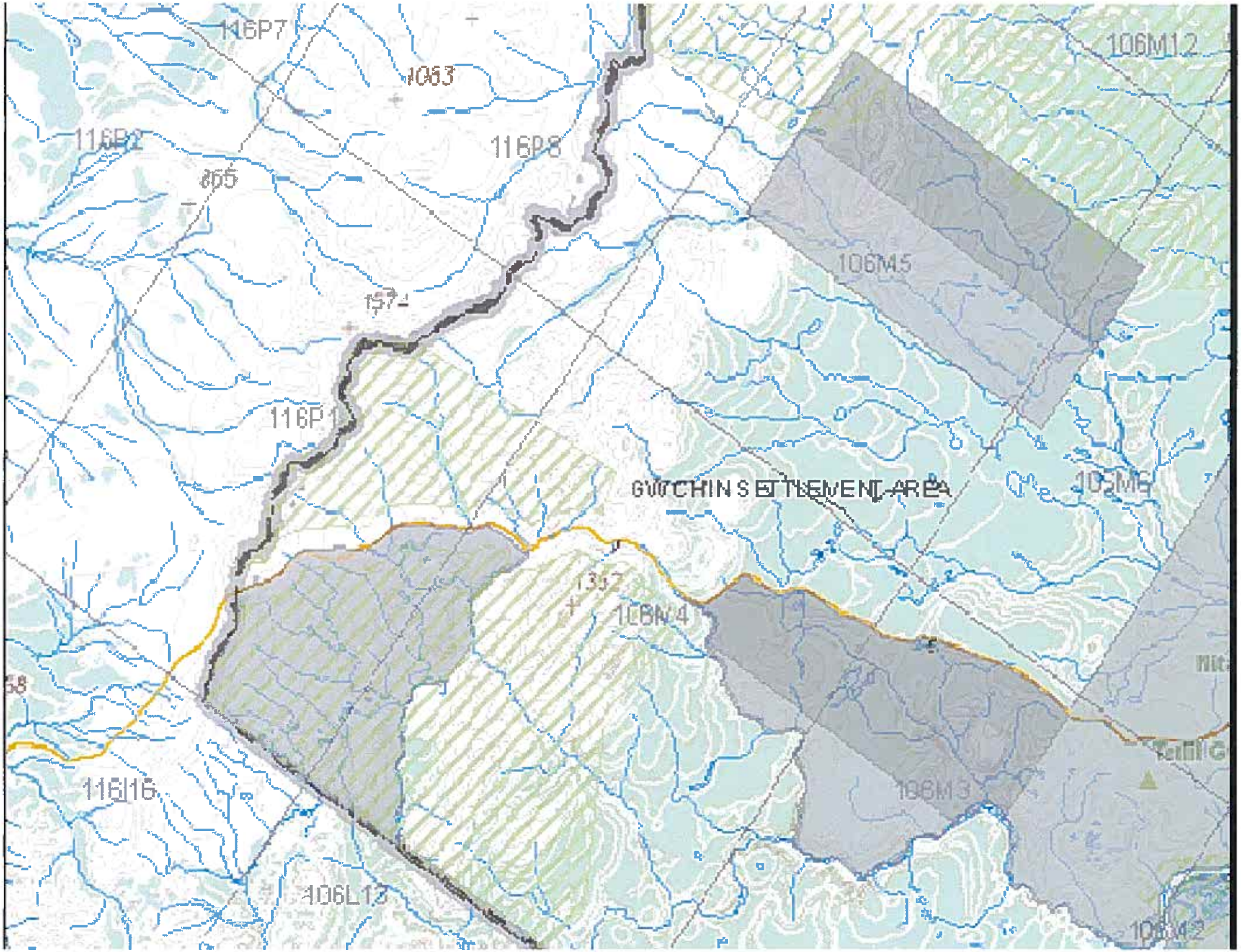
Cultural and Heritage

The area has been historically used as a water source by the Tetlit Gwich'in First Nation.

SECTION E: SUMMARY AND CONCLUSIONS

While there is some small potential for very minor sedimentation of James Creek after the spring melt, this is not expected to affect Fish or Fish Habitat, Wildlife, Water Quality or Soil destabilization. The soil is course to rocky and the physiography is Glacio-fluvial, therefore erosion caused by the Land Use is of low concern. Existing residual contamination beneath the garage is not a threat to James Creek since the hydrocarbon is isolated and not impacting the waterway (Oxy Technologies, March 28 2013 Final Remediation Pre-Treatment Assessment Report – Executive Summary and Hydrogeological/ Hydrological Assessment Attachment)


UNSURVEYED EDGE OF CREEK
JAMES CREEK
WEST BANK
TOE OF BERM
TOP OF BERM
TOP OF BERM
LAND FARM No 2
LAND FARM No 1
TOP OF BERM
TOE OF BERM
TOP OF BERM
TOE OF BERM
DOT TRAILER
GARAGE
ACCESS ROAD (TO HIGHWAY No. 8)
ACCESS ROAD
BASE OF CLIFF FACE
WATER TANK
BASE OF CLIFF FACE
ACCESS ROAD
SCALE
1:1000
0
10
20
50m
SEPTIC TANK
WATER TANK
FUEL TANK
EXISTING TRAILER


116P7
1063
106M12
116P2
116P8
1057
106M5
116P1
GWITCHIN SETTLEMENT AREA
106M6
1357
106N4
116J16
106M3
106L12
106M2