Socio-Economic Setting

For the Proposed Mayo Hydro Enhancement Project (Mayo B)

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Preface

Yukon Energy is planning for the future. Electrical loads are increasing in the Yukon and Yukon Energy expects to need additional renewable power to help minimize the use of diesel to generate electricity. As such, Yukon Energy is looking at enhancements to the existing Mayo hydroelectric facility, a project referred to as Mayo B (hereafter, the Project).

In order to proceed with the Project, Yukon Energy must complete an environmental and socio-economic assessment as described by the *Yukon Environmental and Socio-Economic Assessment Act* (YESAA). An Executive Committee Screening of the project will be conducted by the Yukon Environmental and Socio-Economic Assessment Board (YESAB).

This report describes the socio-economic setting of the Project Study Region without the proposed Project and reflects the requirements of the *Proponent's Guide to Information Requirements for Executive Committee Project Proposal Submissions* (YESAB, 2005). This guide references description of the economic and social setting with focuses "…on providing background on the individuals, families, communities, businesses, and/or government potentially affected as a result of the project activities." It provides a description of the economic and social setting, including information on the following subjects:

- Traditional and domestic resource use;
- Other resource use;
- The economy; and
- The social context.

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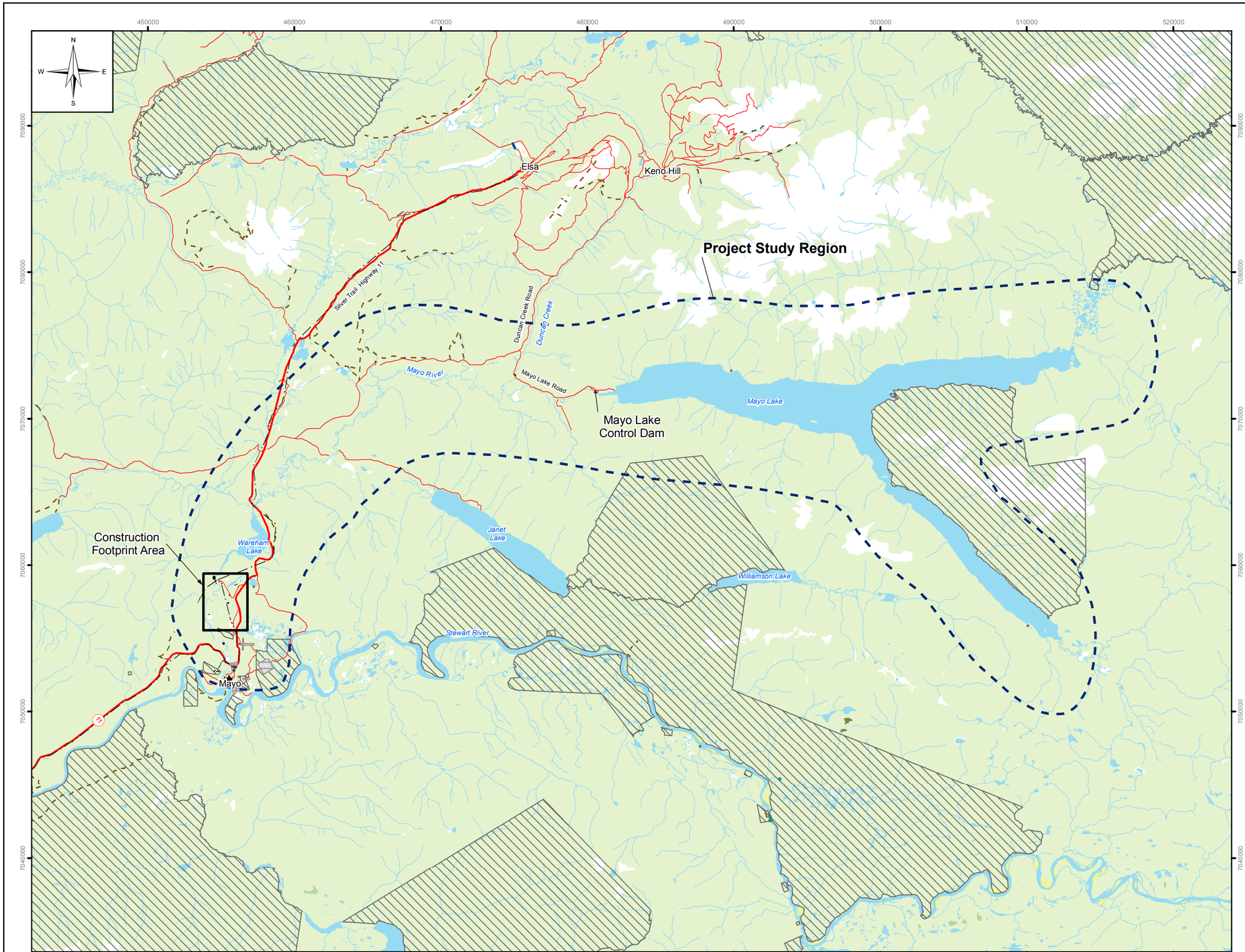
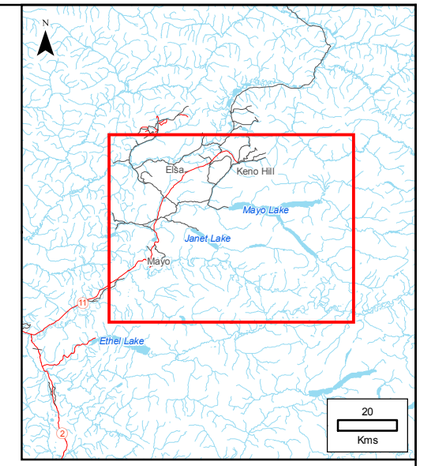
1.0 INTRODUCTION

Nestled in the heart of the Yukon, the community of Mayo and surrounding area provides the setting for the Project. It is an area with a rich culture and history, including First Nations, early prospectors and traders, gold and silver mining, and now a modern community that blends twenty-first century conveniences with time-held traditions. The area considered for describing the socio-economic setting is provided in Figure 1-1.





Legend

- Dam - Existing
- Road
- Silver Trail Highway 11
- Transmission Line
- Trail
- Runway
- Rivers
- Lakes
- Vegetation
- Interim Protected Settlement Land Parcel
- First Nation of Nacho Nyak Dun Settlement Lands
- Study Area

1:250,000 (11 x 17 Plot)

5 0 5 10
Kilometres

Note:
1- All units are metric and in metres unless otherwise specified.
2- Transverse Mercator Projection, NAD 1983, Zone 8
3- Elevations are in metres above sea level (MSL)
4- Vector data from 1:50,000 NTS Natural Resource Canada (NRCAN)
5- Topography is based on Yukon Geomatics DEM

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MAYO B PROPOSED INFRASTRUCTURE

PROJECT STUDY REGION

FEBRUARY 2009	FIGURE 1	REV: A

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The socio-economic setting describes a variety of subjects, focusing on the activities that were identified as having importance to the Project Study Region, as well as areas which may be affected by the proposed Project. The socio-economic is organized into the following sections:

- **Introduction:** provides an overview of the Project Study Region and approach taken to completing the description of socio-economic setting.
- **Traditional and Domestic Resource Use:** provides a description of resources uses in the Project Study Region for traditional and domestic purposes by both First Nation and non-First Nation community members. This includes hunting, fishing, trapping, and the collection of plants.
- **Other Resource Use:** provides a description of other resource uses that are important to the region including placer mining, tourism, outfitting and outdoor recreation, and commercial and private land use.
- **The Economy:** provides a description of the local and regional economy including labour force characteristics, local business, government fiscal flows and utility rate payers.
- **The Social Context:** provides a description of the social and cultural context of the region including population demographics, community and family life, and community infrastructure and services.

1.1 APPROACH

The *Guide to Socio-economic Effects Assessment* (YESAB, 2006) uses the term community to refer "to both place-based communities, which can be defined geographically, and interest-based communities defined by interest, activity, also sometimes referred to as a 'stakeholder' group." The socio-economic setting considers those residents and stakeholders within the Project Study Region, including the Village of Mayo, the First Nation of Nacho Nyak Dun (NND) and those residing in the surrounding area (Figure 1-1).

YESAB (2006) states that the level of effort devoted to the description of the socio-economic environment is "commensurate with the size, cost, and degree of expected effects of the proposed project". In order to describe the socio-economic setting, several methods were used including a review of relevant literature, government reports and documents, and readily available statistical publications, in combination with key person interviews. Key person interviews included conversations with community members from Mayo, government representatives from NND, the Village of Mayo, and Yukon Government departments (both in Mayo and elsewhere).

The information present herein reflects the fact that the size of the population of the Project Study Region is quite small and in many instances only limited statistical and empirical information was readily available for analysis. Where possible, gaps in information were filled with key person interviews,

although this information is at times anecdotal and based on key person's best understanding of the situation. A considerable amount of information was also derived from the public involvement activities related to the Project.

2.0 TRADITIONAL AND DOMESTIC RESOURCE USE

2.1 OVERVIEW

This section considers resource use in the Project Study Region for traditional and domestic land and resource use (hunting, fishing, trapping and collection of plants). This section addresses the socio-economic components identified in the *Proponents Guide to Information Requirements for Executive Committee Project Proposal Submissions* (YESAB, 2005) to:

> Provide information and the historic and current land use and resource use for purposes by First Nation persons, as well as commercial and recreational use by First Nations and non-First Nations persons.

Traditional and domestic land and resources use in the Project Study Region includes a wide range of activities undertaken by both First Nation and non-First Nation individuals and families. These activities not only contribute to the local economy, but in many instances help to maintain a traditional lifestyle associated with deep rooted connections to the land. Data on resource use are often not reported specifically for the Project Study Region or the Construction Footprint Area. Activities described in this section include hunting, fishing, trapping, and the collection of plants. Commercial and recreational activities are addressed in Section 3.0 – Other Resource Use.

2.1.1 Hunting

Hunting is an activity undertaken by Yukon First Nations, Yukon residents, and non-residents for a variety of reasons ranging from subsistence to sport. Traditionally, NND would travel long distances to follow food sources such as moose, caribou and mountain sheep. The Stewart River drainage system was the heart of NND's traditional territory and areas such as Ethel Lake, Reid Lakes, Minto Lake and Minto Creek, Mayo Lake, the Stewart River, and the McQuesten River were all areas of importance, along with hunting sites scattered in the Wernecke Mountains. Camps would be moved seasonally and people would gather to preserve the food to ensure that there was enough food to keep people nourished through the winter (Gotthard, 2006).

The hunting traditions of First Nation peoples in the Yukon have evolved out of their intimate relationship with the land. "Through wise use of local resources, the first people of Yukon were able to feed, cloth, and shelter themselves while developing rich communities and cultures" (Yukon Environment, 2005). While the equipment used for hunting has changed significantly over the last 200 years, the ways in which the harvest is used has remained the same. Wildlife is respected and given thanks and as much of the animal is used as possible, whether it is eaten or otherwise.

Recent land claims agreements allow First Nation members to hunt within their traditional territory with no restrictions such as bag limits or seasonal limitations. A licence and/or written permission from another First Nation is required if the activity takes place outside of one's traditional territory. Yukon residents and non-residents require a licence for hunting, and non-residents must be accompanied by a registered Yukon outfitter or resident holding a Special Guiding Licence. Additionally, written permission for non-First Nation hunters is required for hunting activities on Category A settlement lands. Hunting is not permitted within one kilometre of a residence without permission of the residents, or from a vehicle which includes a car, truck, motorcycle, aircraft, ATV, snowmobile. Hunting is permitted from a boat (Yukon Environment, 2008a).

The Yukon is divided into a series of Game Management Areas (GMAs), which are legal boundaries that define an area for the purposes of big game management (see Figure 2-1). GMAs consist of Game Management Zones and Game Management Subzones. The Project falls within Zone 4 and within Subzones 404, 405, and 406. The big game harvests for 2007-2008 in Zone 4 are summarized in Table 2-1 Each of the Subzones has licence requirements, seasonal restrictions and bag limits for all non-First Nation hunters. Although there are additional restrictions in Zone 4 (including for example voluntary no hunting requests), pertaining to the Ddhaw Ghro Habitat Protection Area, the Faro area, McQuesten Lake and for the Ethel Lake Caribou Herd, none of these restrictions directly affect the Project Study Region.

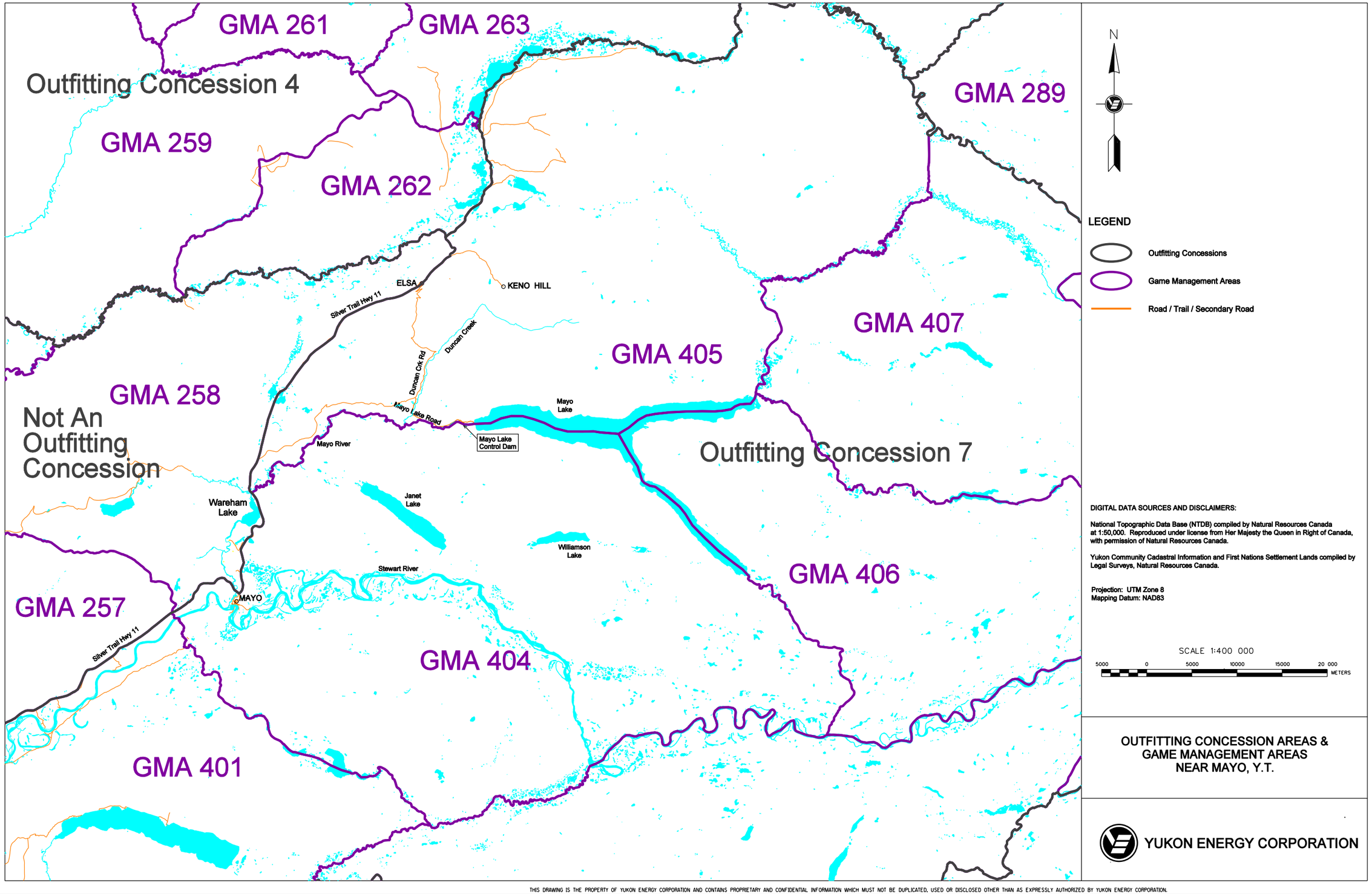


Table 2-1
2007-2008 Licensed Big Game Harvest for Zone 4

Species	Resident	Non-Resident
Moose	70	95
Caribou	19	27
Bison	0	0
Sheep	3	18
Goat	0	0
Deer	0	0
Grizzly Bear	3	6
Black Bear	15	3

Source: Yukon Environment, 2008a.

Hunting for species such as moose, beaver, porcupine, ducks, and grouse is common in the Project Study Region, and the Mayo River and Mayo Lake offer varying degrees of access to hunting areas. Moose are a species of particular importance to the community, and the *2002-2007 Community-Based Fish and Wildlife Management Plan* [1] (First Nation of Nacho Nyak Dun et al., 2003) suggests that moose densities in the Mayo area are about 200 moose per 1000 km^2, which is higher than the rest of the Yukon.

Hunting activities in the Yukon were last assessed in the *Hunter Effort Survey* (Department of Renewable Resources (now Environment) and the Yukon Bureau of Statistics, 2000). The survey asked questions to determine what species were hunted and where, how hunting was accomplished, and how much money was spent on the activity. Moose was considered as the most important species to 72% of the hunters surveyed and it was the most commonly hunted species (by 90% of hunters). During the public consultation for the Project, moose were also identified as the most common species for local hunters. The Mayo River, between Mayo Lake and Wareham Lake is the most frequented part of the Project Study Region for moose hunting. In addition, local Mayo residents reported that there has been an increase in southern Yukon residents coming into the Mayo region for moose hunting, likely due to the closure of Southern Lakes and the voluntary closure of McQuesten Lakes (personal communication, M. O'Donoghue, December 3, 2008).

The methods of hunting depend on the species sought, with almost two-thirds of respondents to the *Hunter Effort Survey* reporting that they generally used a boat to hunt. Mayo residents indicated they often put in their boat near the Mayo Lake Control Structure and travel downstream to the Minto Bridge for moose hunting (see Appendix 4C and 4E).

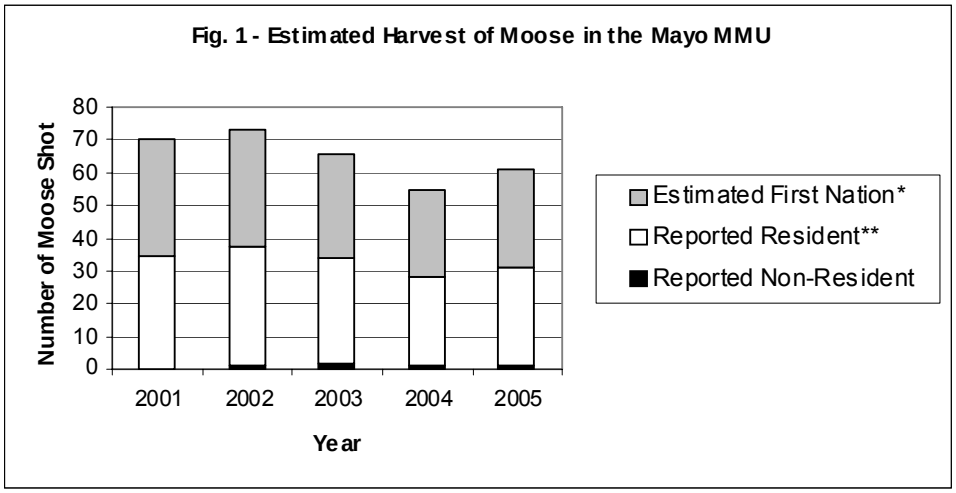
Traditional big game hunting by NND members focuses on moose as the primary species, particularly along the Mayo River between the Silver Trail Highway and Mayo Lake, and the Mayo Lake area, particularly up in the Roop Lakes area and the southern end of Nelson Arm. Some caribou hunting north

[1] The next *Community-Based Fish and Wildlife Management Plan* for the traditional territory of NND was being prepared at the time of writing this report. Personal communication with the regional biologist indicated there were no wildlife issues of concern in the next plan that were of relevance to the project area.

of Mayo Lake may occur. Limited beaver and duck hunting occur up the unnamed creek flowing into the lower Mayo River; and porcupine and grouse hunting occur north of the Mayo Lake road between Wareham and Mayo lakes. Waterfowl and duck hunting generally occur at Mayo Lake, as well as beaver which are hunted for food (see Appendix 4C).

YG Fish and Wildlife Branch conducted an early winter moose survey in the Mayo Moose Management Unit (MMU) (a 9,760 km^2 area), estimating about 1,030 moose in the area with an estimated density of about 219 moose per 1,000 km^2 of suitable moose habitat. Moose harvest was estimated for the period 2001-2005, and the data is presented in Figure 2-2. Generally, moose harvest is considered "close to the maximum recommended allowable rate" (Ward, November 2006).

Figure 2-2
Estimated Harvest of Moose in the Mayo MMU



- * Harvest by First Nation hunters estimated to be equal to that of licenced resident hunters.
- ** Includes reported harvest by licenced First Nation and special-guided hunters.
- (Mayo Moose Management Unit: Summary of Early Winter 2006 Moose Survey)

2.1.2 Fishing

Fishing is a popular activity in the Yukon and includes commercial, domestic, aboriginal and recreational fishing. Although there are no commercial fisheries in the Project Study Region, fishing for various species occurs throughout. The most common fish species caught include Chinook salmon, lake trout, lake whitefish, northern pike, Arctic grayling, and inconnu.

First Nation members fishing within their traditional territory do not require a fishing licence, although fishing outside one's traditional territory does. Separate rules apply for salmon fishing, which is dealt with separately under the Final Agreement. Non-First Nation fishers require a valid Yukon Angling Licence

(valid for a one year period), in addition to a Salmon Conservation Catch Card if they choose to fish for salmon in the Yukon (valid only eight months of the year). Some species are subject to daily catch limits as well as size limits.

Although catch and release management is supported by Yukon Environment, NND members "do not understand or agree with catch and release management, and feel that all fish that are caught should be kept and eaten" (First Nation of Nacho Nyak Dun et al., 2003). The use of barbless hooks is also suggested by Yukon Environment as per a recommendation from the Yukon Fish and Wildlife Management Board (YFWMB, 2002); however, there are still concerns among First Nations about live angling practices. Generally speaking, First Nations feel that fish that are taken should be kept and eaten.

Historically, salmon was one of the most important species to NND. Fraser Falls, on the Stewart River, was and continues to be the most popular fishing camp using nets; however, prior to the construction of the Mayo Dam, the Mayo River and Mayo Lake were also locations where Chinook salmon were caught. NND used to have a traditional fish camp in the vicinity of the Minto Bridge, however this was abandoned when the Wareham dam was constructed. Salmon fishing is an important subsistence activity and is also considered an important social event. A local survey of historical knowledge about salmon in the Mayo area (Buchan, 1993) spoke to how salmon fishing was a communal activity:

"The work of setting the nets and drying the salmon was share, and the catch was shared also. If a woman's husband died, everyone would look after her by sharing their meat and fish with her… older people still depend on fish and rely on the younger people to provide them with some every year" (p. 18).

In recent years, people have noted decreases to the salmon population in the area, and although data is not collected for the Mayo River, harvests on the Stewart River have shown significant decreases in recent years. NND reported a 27 per cent lower catch in 2007, than the average catch between 1997 and 2006 (Yukon River Joint Technical Committee, 2007).

Aside from salmon, people also fish for other species in the Project Study Region. Arctic grayling are caught at the mouth of the Mayo River in spring, at the east end of the Mayo River (near Mayo Lake), as well as in the plunge pool below the Wareham spillway in spring and sometimes fall. The plunge pool is also a location to catch inconnu. There is some recreational angling at McIntyre Park for freshwater fish (see Appendix 4C).

Historically, people fished for lake whitefish on Mayo Lake, in part as a source of food for dogs. Today more people fish for lake trout on Mayo Lake. Concerns about overfishing of lake trout have been identified by the *2002-2007 Community-Based Fish and Wildlife Management Plan: Nacho Nyak Dun Traditional Territory*, as well as in the *Yukon Fishing Regulations Summary: 2008-2009* (Yukon Environment, 2008b). The wetland habitat at the arms of Mayo Lake provides good rearing habitat for northern pike and people fish in these areas in early spring (see Appendix 4C).

Mayo Lake is not used a great deal for ice fishing since it can become windy and cold. Community members are more likely to ice fish at closer locales, such as Ethel and Janet Lakes which are more accessible. Ice fishing occurs occasionally on Wareham Lake (see Appendix 4D).

2.1.3 Trapping

Trapping is a way of life with strong cultural roots and social ties. First Nation peoples were trapping and trading long before the arrival of Europeans, and as the fur trade has evolved over the centuries, so to have practices of trapping, reflecting increased knowledge and the appreciation of conservation principles (Fur Institute of Canada, 2003). Today, trapping continues to provide a livelihood for many Yukon residents, both women and men alike.

The Yukon is home to 14 furbearing mammals that are trapped for their pelts including beaver, coyote, fisher, coloured fox, Arctic fox, lynx, marten, mink, muskrat, otter, squirrel, weasel, wolf and wolverine. First Nation and non-First Nation trappers must adhere to the regulations set by Yukon Environment. Trappers are required to report their catch to the government and provide information about how it was used; however this does not occur consistently. Given that many trappers do not keep catch information, it is difficult to find complete data sets on trapping activities.

The Project Study Region intersects several Registered Trapping Concessions (RTCs) (see Figure 2-20.)These are areas that are assigned to an individual who is given exclusive rights to harvest furbearing mammals in their concession. A trapline holder may also have trapline assistants, who are required to have an Assistant Trapper Licence. The RTCs in the Project Study Region include RTC numbers 74, 84, 85, 86, 89 and 407, which is a community trapping concession surrounding the Village of Mayo (see Figure 2-3). The Project Construction Footprint falls in RTC 407. Table 2-2 provides a list of trapline concessions and their holders.

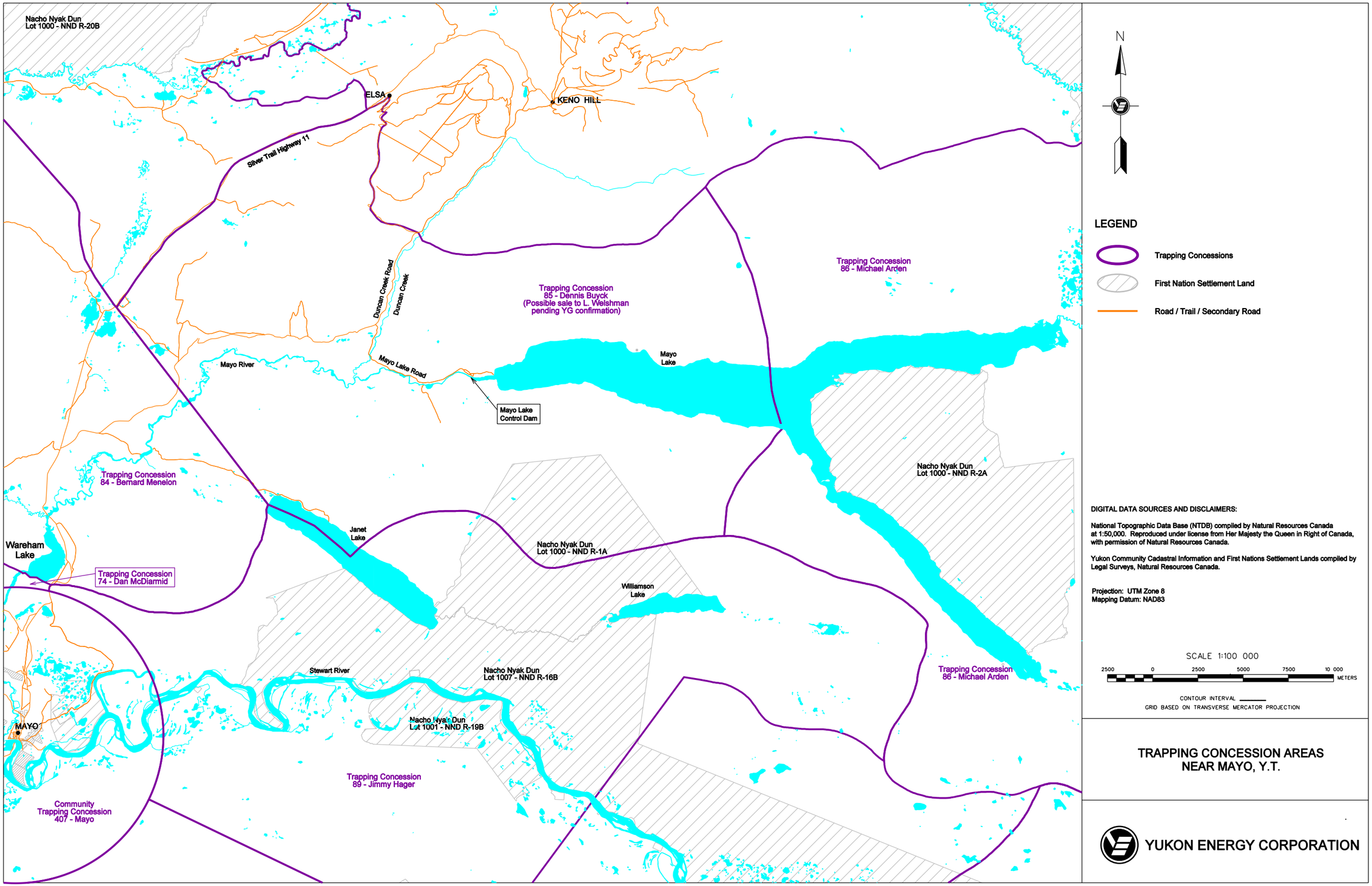


Table 2-2
Registered Trapline Concessions

Trapline #	Trapline Holder
74	Dan McDiarmid
84	Bernard Menelon
85	Lolita Welchman (previously Dennis Buyck)
86	Michael Arden
89	Jimmy Hager (NND Category 1 TL)
407	Community Trapline

Just over half of the traplines in the NND traditional territory are held by First Nations people, and the First Nation is working towards 70 per cent ownership. The First Nation has demonstrated concern that outfitters and other parties have been acquiring trapping concessions, making the purchase of traplines cost-prohibitive for local residents. (First Nation of Nacho Nyak Dun et al., 2003).

Table 2-3 presents rolled up trapping statistics from 1993-2007. To protect the confidentiality of trapping information, Yukon Environment only releases trapping data for blocks of ten RTCs. In the case of the Project Study Region, data was provided for 11 concessions since the community concession is not used in the same way as other concessions are utilized.

Table 2-3
Consolidated Trapping Statistics for the Mayo Area

	Beaver	Coyote	Red Fox	Arctic Fox	Lynx	Marten	Mink	Muskrat	Otter	Squirrel	Weasel	Wolf	Wolv-erine
1993-94	2	0	0	0	1	160	0	0	0	0	0	0	1
1994-95	1	0	1	0	0	51	0	0	0	0	0	6	4
1995-96	0	0	0	0	0	162	0	0	0	0	0	0	1
1996-97	80	0	0	0	4	257	5	66	2	39	2	0	0
1997-98	0	0	5	0	5	228	0	0	0	0	0	6	3
1998-99	1	0	1	0	27	56	0	3	0	8	0	2	4
1999-00	0	0	12	0	8	205	3	0	0	6	1	2	1
2000-01	24	2	5	1	0	194	0	8	0	12	8	0	0
2001-02	20	0	0	0	0	34	0	0	1	2	1	0	0
2002-03	0	0	0	0	0	15	1	0	0	0	0	0	0
2003-04	3	1	5	0	0	51	0	0	0	0	0	0	0
2004-05	2	0	2	0	18	139	3	0	0	2	0	5	0
2005-06	14	0	7	0	71	183	6	0	0	66	4	14	6
2006-07	2	1	0	0	43	43	2	0	0	34	2	4	1
Trapping data for RTCs 73, 74, 84, 85, 86, 87, 89, 90, 92, 95, 407													

Trapping occurs primarily in the winter months with open season for each species varying slightly. Each trapper has their own preference for travel in the winter, with some working their trails by foot or by snowshoe, and others using snowmobiles. Trapping in the Project Study Region is often sometimes dependent on freeze-thaw cycles as access is based on water bodies such as Mayo Lake and Mayo River. Trapping can be an important source of revenue during the winter, however, harvest depends on a number of factors including weather, fluctuating furbearer populations, the market for furs, the price of fuel and outfitting oneself for a trapping season. Approximately 95% of trapping in the area is for commercial purposes, although people do keep their furs if so desired.

Key species for trapping are: marten, lynx, wolf and wolverine. Other species trapped include mink and fox. Beaver are caught for food. The pricing of pelts has affected trapping as a whole; as well as lack of active trappers in the Project Study Region. Access is generally by truck along the road and then snowmobile on the lake (see Appendix 4C).

RTC 407 is a community trapping concession that surrounds the Village of Mayo. It consists of a five kilometre radius that is controlled by Yukon Environment. Elders use this area as it is close to the community, it is safe, and provides them the opportunity to continue trapping. It also provides elders and students an opportunity to go out on the land, and experience and/or learn about trapping. Assistant trapping licences for the concession are issued by the local Conservation Officer, with about five licences being granted every year (with one or two of these licences for the Five Mile Lake area) (personal communication, K. Johnstone, December 2008).

2.1.4 Plant Collection

In the past, collection of various plants and berries was an important component to the subsistence lifestyle led in the Project Study Region. Among the plants still collected and consumed today are largely berries such as low-bush cranberries, blueberries, black currents, raspberries, stone berries, and high bush cranberries. There are several berry picking areas along the Mayo Lake Road, in areas at the west end of Mayo Lake and to the south of Mayo Lake, as well as around Janet Lake (see Appendix 4C).

Some plants were traditionally collected for medicinal purposes by NND. These plants included yarrow, spruce, pine, balsam, Labrador tea, caribou horn (lichen), and puffballs (fungi) (Mayo Renewable Resources Council, 2000). Most of the medicinal plants used in the area are commonly found throughout the boreal forest. Much of the information related to the subject today is held as traditional knowledge by First Nation members.

3.0 OTHER RESOURCE USE

3.1 OVERVIEW

This section focuses on the commercial and recreational resource uses in the Project Study Region including placer mining, tourism, outfitting and outdoor recreation, and private and commercial land use. These resources also contribute to the local economy which is described in Section 4.2.

3.2 PLACER MINING

The Yukon may be famous for the Klondike gold rush near Dawson City, but it was gold that brought prospectors to the Mayo region years before that occurred. "Gold was first discovered in the bars of the Stewart River in 1883 by Richard Poplin, Charles McCoskey, Benjamin Beach, and George Marck, who hiked over the divide from Juneau. "In 1885 there were 40 men working the Stewart River bars, and by 1895 there were about 75 miners on the river" (Bleiler, 2006, p. 105). Despite the fact that the area has survived over a century of extraction, placer gold production continues to be an important resource use in the area. "The majority of Mayo area placer mines continue to be family-run with deep commitments to the land and the industry" (Bleiler, 2006, p. 109).

According to Energy, Mines and Resources' *Minerals Management Yearly Activity Report* between April 2007 and March 2008, there were 1257 active Placer dispositions in the Mayo Mining district with a combined revenue of $15,824.98. Judging the profitability of placer mining operations in the Project Study Region can be difficult. Only gold which leaves the Yukon Territory is subject to a royalty. The royalty is either 2.5% the price of gold, or a lower rate fixed by the Commissioner-in-Council (Yukon Energy, Mines, Resources, 2008).

Concentrated mineral deposits in the Mayo region are the result of intrusion, the rising and hardening of molten magma into granite masses, which occurred 93 to 110 million years ago. The granite masses caused acidic groundwater in surrounding rock to heat and circulate, which separated metals within the rock. Silver solidified into veins, and gold collected at the tips of some of the silver veins. Erosion continues to deposit gold along streambeds. Keno Hill, Mt. Hinton and Galena Hill, west of the Roop Lakes Granite, are rich in silver, lead, zinc, quartz and gold (Roots, 2006)).

Placer mining operations in the Mayo Region capitalize on the gold that has been deposited in and along creek beds. 'Placers' are banks or mountain sides along a watercourse conventionally classified into three strata: overburden, paystreak and bedrock. Using bulldozers and loaders, the placer miner removes overburden and moves shovelfuls of paystreak into a hopper and rotating trommel feeding a sluice box (Erl, 2007). The gold is separated from the gravel and sediment in the paystreak, with water which is diverted from the nearby watercourse through a pipeline, often using a pump and an in-stream or out-of-stream reservoir. A dam may also be erected to divert water and to produce electricity for the operation.

Fuel transported to the placer mine in drums is a more common means of powering placer operations (Schiman, 2005). Placer activity at claims increases when the price of gold goes up. Activity level also depends on the amount of work required to recover gold within the placer.

In the Project Study Region, there are approximately eleven active placer mining operations with Class 4 land use permits and Type B water licenses, one placer application, three placer operations undertaking exploration under Class 3 land use permits, and three placer mining operations which may be the site of lower impact Class 1 land use, as they do not have active Type B water licenses. Maintaining claims active while not applying for a Class 3 Land Use permit or a Type B water license can indicate diamond drilling or camp use at the claims (personal communication, S. Baird, January 2009). Ledge Creek was once the location of a large mining operation, but has been scaled back, and some equipment moved to Owl Creek (C. Burn, personal communication, February 2009). Most placer mines in the Project Study Region have camps for 2 to 6 people, while the Aurora Mines operation at Anderson Creek has the capacity to accommodate the most personnel with a camp for 16 people.

Activities on placer claim typically begin in April, when maintenance of equipment and ground preparation occurs. The bulk of the placer mining itself takes place between the last two weeks of May and the third week of October, depending on accessibility. At this point in time, activities shift to focus on shutting down operations for winter.

Placer miners on the northwest bank of Mayo Lake have access to their claims from the Keystone Creek access road and the miners on Davidson and Duncan Creeks also have access roads. There is a cat track running along the south western bank of Mayo Lake from the lake mouth. Some claim sites, such as Owl Creek and Dirksen Creek also have helicopter landing pads. Others use barges as their main means of access.

Several miners on Mayo Lake haul equipment and fuel into their claims by barge from landings situated on properties they lease or own at the western mouth of Mayo Lake. The public boat launch constructed by Yukon Highways and Public works, located near the Mayo lake control structure, is also a launch point. Barging into claims along the lake can occur approximately three or four times a season, or as many as ten times a season if the barge is shared. Lake levels have to be high enough for barges to operate. The first trip tends to be in mid-June before the lake level peaks, and the last trip in mid-October prior to freeze-up. A preliminary trip on a boat may take place prior to the first barge haul. Barge sizes vary, the miners at No Name Creek have a barge about ten feet wide and 30 feet long which can carry 15 tons, and has an average loaded draft of 24 inches. Owl Creek is a central barge landing for work conducted at Steep Creek and Edmonton Creek. The barge running at Owl Creek is 30 feet by 60 feet and has a loaded draft of 50 inches while carrying 100 tons.

Table 3-1 describes infrastructure and water use at placer mining operations within the Project Study Region. A list of the water licenses can be found in Chapter 2. Table 3-2 describes placer exploration activity in the Project Study Region.

Table 3-1
Placer Mining Operations in Project Study Region

Claims Holder Watercourse Mining Land Use Class	Approx. dates of use	Water Use	Camp Facilities	Access/ Water crossing	Water Reservoirs L/W/D	Settling Ponds L/W/D/ Tailings	Drainage System W/D Effluent Discharge
Manfred Wozniak No Name Creek IV	May 1 - Nov 30	5000 m^3 /day	4 person camp 16X10ft log frame old time cabin.	Cat trail upgraded/Barge for hauling and resupply of equipment and fuel across Mayo Lake 10-45 gallon drums.	2 out-of-stream reservoirs at 5m/5m/2m fed via ditch with gravity.	2 out-of-stream settling ponds at 10m/10m/1m. Tailings piles within 50m of Creek.	Settling ponds 6m apart, final one 50m from watercourse drain 1m/1m Effluent into No Name Creek.
Raymond Brasseuk Anderson Creek IV	June 1st- - Nov 1st-	8400 m^3 /day	16 person camp 6 ATCO trailers 10x44.	Private barge to haul fuel and equipment from dock at end of Mayo Lake to dock at Anderson Creek. Use of two double wall 1000 gallon tanks.	1 in-stream reservoir 50m/20m/5m. May need to be moved in future. Has an intake pump with a screen over it.	4 out-of-stream settling ponds. 3 at 30m/10m/5m. 1 at 30m/25m/5m. Tailings piles within 10-15m of Creek.	Settling ponds 5m apart, drain 2m/1.3m Effluent into Anderson Creek.

Claims Holder Watercourse Mining Land Use Class	Approx. dates of use	Water Use	Camp Facilities	Access/ Water crossing	Water Reservoirs L/W/D	Settling Ponds L/W/D/ Tailings	Drainage System W/D Effluent Discharge
W. Joris Brinkerhoff Dirksen Creek IV	Late June-Sept-	190 m^3/day	Permanent log structure on lake small hydro plant – cross valley dam.	Airport near lake mouth helicopter pad near claims. Access road along bench to mining area on Keystone Creek. Road crosses creek over culvert.	1 in-stream reservoir 30m/35m/1.5m Water taken from reservoir from tee in penstock to feed washing plant.	2 out-of-stream settling ponds. 1 at 10m/10m/2m. 1 at 20m/20m/4m. Tailings piles about 80m from creek.	Settling ponds 10 m apart Effluent will percolate into the ground.
Silke Wissner-Kris Pavlovich PingPong Creek IV	May-Oc	1100 m^3/day	3 - 4 person camp.	Keystone Creek access road. Old timbered bridge. Equipment ford upstream of bridge.		1 out-of-stream settling ponds at 35m/10m/2m. More as mining progresses. Tailings spread in vicinity of pond, washed tailings used to re-build stream channel. Tailings 5m from channel.	Low relief settling pond 5m from watercourse. Drain 2m/1m. Effluent discharge into Ping Pong Creek.

Claims Holder Watercourse Mining Land Use Class	**Approx. dates of use**	**Water Use**	**Camp Facilities**	**Access/ Water crossing**	**Water Reservoirs L/W/D**	**Settling Ponds L/W/D/ Tailings**	**Drainage System W/D Effluent Discharge**
Frank Taylor/ Duncan Creek and Duncan Creek Bench IV		33,120 m^3/day			Numerous out-of-stream and in-stream reservoirs/pump ponds, 25m/5m/2m. Using berms, weirs, dams, dug-outs, ramping of stream channel gravel.	Numerous out-of-stream settling ponds 20-200m/10-100m/3-6m Tailing used to backfill previous mining cuts. Tailings become side of stream channel.	Settling ponds 3-10m apart, final settling pond 10m from stream, drain 2-5 m /66-3 m Effluent discharge into Duncan Creek.
Melvin Lee Zeiler Duncan Creek and Williams Creek IV		8183 m^3/day	Permanent cabin, camp for 2 people.	Access route up Duncan Creek from Silver Trail Hwy, crosses Williams Creek.	Out-of-stream dugout reservoir 20m/8m/3.5m, could be moved as mining progresses.	Out-of-stream settling ponds on 8 claims 200m/20m/5m, with overflow structures, more to be built as mining progresses. Tailings distributed about 10m from watercourse.	Settling ponds 5m apart, last one 200m from watercourse, drain 5m/5m. Effluent Discharge into Duncan and Williams Creeks.
Richard Rivest/ Davidson Creek IV	April 15-October 15	8200 m^3/day	4-6 person camp, ATCO trailers.	Note: Application Schedule 4 on YESAB site missing various pages describing infrastructure.		Effluent into Davidson Creek.	

Claims Holder Watercourse Mining Land Use Class	Approx. dates of use	Water Use	Camp Facilities	Access/ Water crossing	Water Reservoirs L/W/D	Settling Ponds L/W/D/ Tailings	Drainage System W/D Effluent Discharge
J.P. Rivest/ Davidson Creek IV	April-November 30	8200 m^3/day Sluicing at 2 plants , both 3054m^3 /day	2-3 person camp.	Access road and on right side of creek for all claims. Bulldozer can cross easily as creek is shallow.	Moveable, in-stream pump pond for 6" pump intake 2m/2m/2m. No reservoirs.	4 out-of-stream settling ponds, more as mining progresses. Pond 1: 60m/12m/3m/, Ponds 2-4: 75m/20m/3m Tailings from plant spread out above high water mark.	Settling ponds 10-30 meters apart, 10m from watercourse. Drain 4m/2m into watercourse Effluent discharge into Davidson Creek.
Frank Plut Curly Creek IV		1476m^3 /day	Old cabin located on Hazel 1-2.	Ford or ice crossing Davidson Creek and Curly Creek. Course material put down to prevent erosion.	In-Stream reservoirs on most claims between Hazel 3-11 due to low flow 7.5m/3.5m/3m Dam included.	Two in-stream settling ponds to be moved as mining progresses uphill About 20m/10m/3m and 20m/10m/2.5m. Material removed by excavator and put on uphill side away from water, let dry one year and re-spread as top dressing.	Setting ponds 3-10m apart, Spillway 1.5m/0.6-1.0m. Watercourse used as drain, as it is an in-stream system.

Claims Holder Watercourse Mining Land Use Class	**Approx. dates of use**	**Water Use**	**Camp Facilities**	**Access/ Water crossing**	**Water Reservoirs L/W/D**	**Settling Ponds L/W/D/ Tailings**	**Drainage System W/D Effluent Discharge**
Ralph Barchen Owl Creek IV	May 1 - Oct 30	21,600 m^3/day	3 person camp, 1 ATCO trailer.	No water crossings. Alluvial fan at creek mouth. Location of central barge landing and helicopter pad. New roads between P2139 and P2147.	Small out-of-stream reservoirs needed on several claims for pump intake.	Various out-of-stream settling ponds, constructed as needed. Dimensions given for four at 400m/100m/5m each. Tailings spread in mined-out areas.	Final settling pond 50m from creek, drain 4m/1m. Effluent Discharge into Owl Creek.
Berthold Liske Ledge Creek	No Renewal Applications submitted since 1990's. Renewals have occurred by transferring excess credits or from work done on other claims grouped with these claims. Possibly undertaking Class 1 work*.						
Kerry Minor/ Cascade Creek	No Renewal Applications submitted since 1990's. Renewals have occurred by transferring excess credits or from work done on other claims grouped with these claims. Possibly undertaking Class 1 work*.						
Jason Maxfield Nelson Arm Mayo Lake	Application stage- no posting in YESAB registry on date of search- January 20, 2009.						
Neil Vickers Regimbald Dawn Gulch	Missing: Application and water license not obtained from Water Board or YESAB registry.						
Kim Klippert Mayo River Discovery Claim	P 47893 expired in 2005*						

Claims Holder Watercourse Mining Land Use Class	Approx. dates of use	Water Use	Camp Facilities	Access/ Water crossing	Water Reservoirs L/W/D	Settling Ponds L/W/D/ Tailings	Drainage System W/D Effluent Discharge
Gabriele Wirfler Bench Claim Ledge Creek	Missing: Application and water license not obtained from Water Board or YESAB registry, possibly expired or in early application stage.						
Helmut Wirfler Ledge Creek	Missing: Application and water license not obtained from Water Board or YESAB registry, possibly expired or in early application stage.						

*(N.Selvin, personal communication January 2009)

Table 3-2
Placer Exploration in the Project Study Region

Permit holder Watercourse Land Use Class	**Proposed Timeline**	**Activities**	**Camp**	**Claims**	**Access**
Ralph Barchen Edmonton Creek III	2008-2011	Stripping 500m^2 5 Trenches at 800m^3	Use existing camp at Owl Creek	1	Barge from the Mayo Dam boat launch to landing at Edmonton Creek. 1km access road to claim.
Ralph Barchen Steep Creek III	2008-2011	Stripping 7500m^2 Trenching 6000m^3	Use existing camp at Owl Creek	3	Barge from the Mayo Dam boat launch to landing at Steep Creek.
Frank Taylor Keystone Creek III	May - December 2008-2013	Drill holes-20 About 50 Trenches-30,000m^3 to 40,000m^3 Stripping- 1500m^2 New Trails- 2km Cutline-2m /700m Ditch/Drains-30,000m^3 Creek crossing Cat track upgrade Panning Seismic testing for bedrock.	5 person camp	55	Using Keystone Creek access roads 11km. Trapper's cabin near P2256. Cat roads were constructed between 1976 and early 1980's. Road branches in two directions near claim P2241, to access lower and upper claims. Roads on Discovery claim P42540 and P42783. Numerous other cat roads and fords on Keystone claims, as well as helicopter landing site.

Land Use Classifications, Water Licenses and Claim Renewal

There are four different classes of land use permit for Placer mining, outlined in the *Placer Mining Act Regulations*, respectively. Class 2 Placer Mining Land Use permits require a Notification, while Classes 3 and 4 require submission of an Application for Approval of an Operating Plan (Yukon Placer Implementation Steering Committee, 2005)). Approval of Class 4 Mining Land Use Operating Plans has been delegated to the Yukon Water Board. The other types of land use permit have been delegated to Energy, Mines and Resources for approval (Water Board, 2009). Notably, placer mining projects requiring a water license also require approval by YESAB.

The *Waters Act*, Yukon Regulations Schedule 6, outlines the licensing categories which apply to water at a placer mining operation, with the exception of that which is stored in a reservoir with no natural inflow. Direct use of 300 m^3/day or more water requires a Type B water license, as does the construction of crossings, including bridges, roads and pipelines, and any or all watercourse diversions, watercourse training, alteration of flow or storage with dams or dykes, flood control, or deposit of non chemical waste. Placer operations which deposit chemical waste from mineral processing either directly or indirectly into surface water course require a Type A water license. (*Waters Act* , *Yukon Regulations*, *Schedule* 6). Direct use of less than 300 m^3/day does not require a license, but placer miners are obligated to fill out a *Schedule 3 Notice of Water Use* and submit it to the Water Board. (S. Baird, personal communication, January 2009)

Most of the claims along the tributaries and creeks in the Project Study Region are held by an individual who has applied to group a number of the claims together, so that the mining work and infrastructure needed to extract minerals can be applied to all the claims in the group. Applications to renew grants for grouped placer claims occur at the same time providing that the miner has paid a fee to group the claims. To be eligible to renew a claim, a placer claim holder must show that they have completed two hundred dollars worth of work on the claim within the period of time that they hold the grant for. The work is defined as “having a direct bearing on the exploration, mine development and recovery of placer gold and other precious minerals or stones… The work must show clearly that it is being performed in support of mining the claim, or the systematic mining of a group of claims” (Yukon Energy, Mines and Resources, 2003) The value of work is calculated using rates outlined in the Schedule of Representation Work and Placer Grouping Guidelines*, Placer Mining Act*, Sections 41 and 52. The applicant seeking claim renewals must then submit an affidavit declaring the amount of work they have completed to the Mining Recorder.

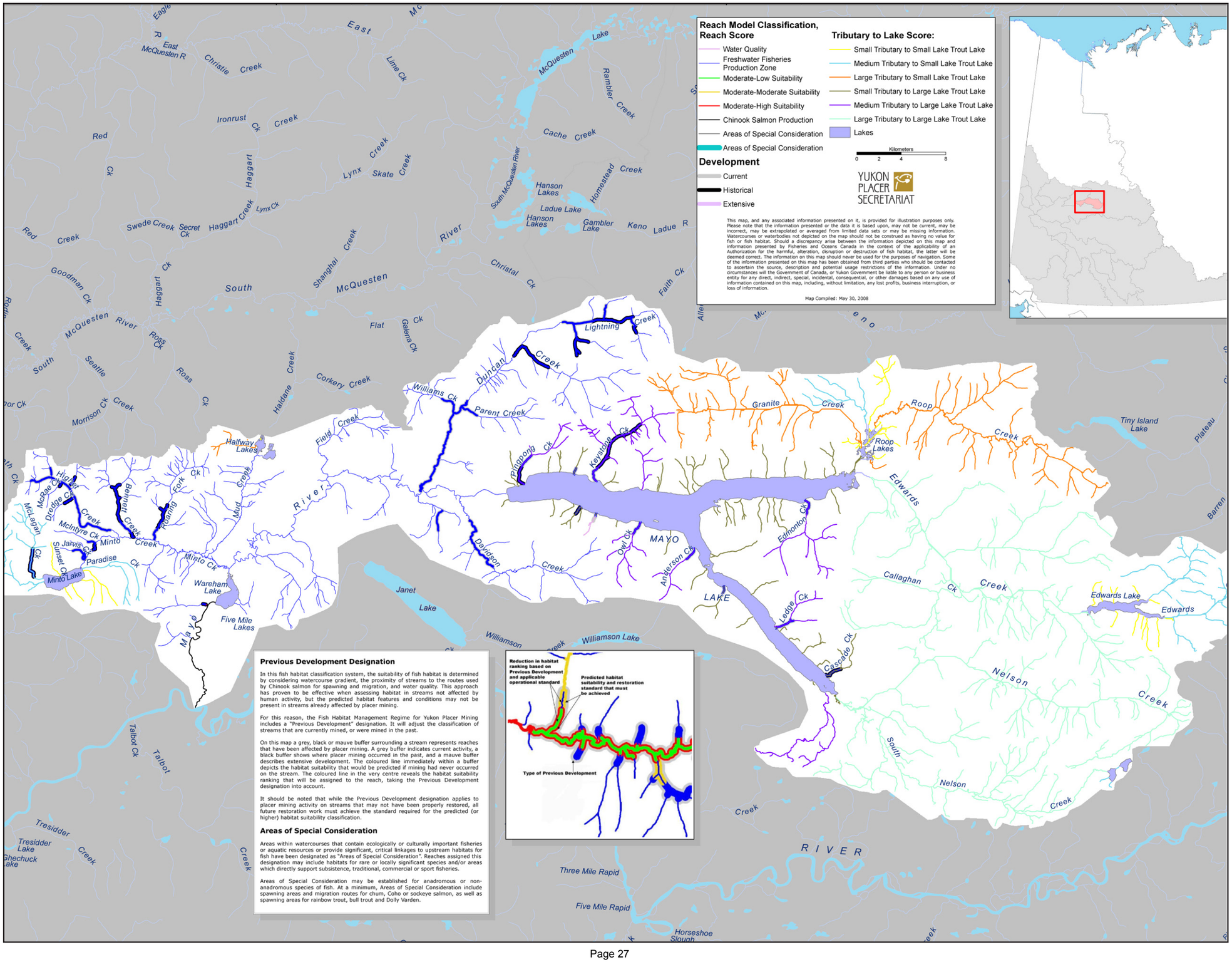
Integrated Regulation for Placer Mining

Establishment of an integrated management framework for placer mining is underway in Yukon. “Placer mining is unique among mining activities. It does not use chemicals, but rather employs only gravity and water to separate and concentrate gold. Gold placers occur naturally. They do not normally contain other elements (e.g., toxic metals) that can have significant adverse environmental effects” (Yukon Placer Implementation Steering Committee and the Yukon Placer Working Committee, 2005a). A Placer mining operation, however, can result in sediment discharge, stream diversion, in-stream works, and acquisition

of water from a watercourse (Yukon Placer Implementation Steering Committee and the Yukon Placer Working Committee,2005) causing fish to have irregular, absent, or less successful reproduction, smaller size, change in body condition, and decreased survival rate (Yukon Placer Secretariat, 2009) A Risk-management decision making framework employing biological and physical data, as well as traditional knowledge, is used by the Department of Fisheries and Oceans (DFO) to determine how a project proposal should be managed based on the risks involved (Yukon Placer Secretariat, 2009).

Under the new integrated management framework, a placer miner makes an application to the Yukon Water Board (YWB) for a Type B water use license and mining land use approval. The YWB enables a public review of the miner's application, as well as a review by DFO and Environment Canada. DFO and Environment Canada may submit formal interventions to the YWB. YWB may also schedule a public hearing, if requested by an intervener, or by the applicant (Yukon Placer Secretariat, 2008).

In preparing their submission for a water license, placer miners first determine the watershed sensitivity classification, and fish-habitat suitability classification of the watercourse on which their claim or group of claims is located using the Fish Habitat Suitability Classification maps provided by the Yukon Placer Secretariat (see Figure 3-1). The Mayo Watershed is considered a Category B Watershed. Streams are classified into eight different types based on sensitivity and ecological significance.


Reach Model Classification, Reach Score
Water Quality
Freshwater Fisheries Production Zone
Moderate-Low Suitability
Moderate-Moderate Suitability
Moderate-High Suitability
Chinook Salmon Production
Areas of Special Consideration
Areas of Special Consideration
Development
Current
Historical
Extensive
Tributary to Lake Score:
Small Tributary to Small Lake Trout Lake
Medium Tributary to Small Lake Trout Lake
Large Tributary to Small Lake Trout Lake
Small Tributary to Large Lake Trout Lake
Medium Tributary to Large Lake Trout Lake
Large Tributary to Large Lake Trout Lake
Lakes
Kilometers
0 2 4 8
YUKON PLACER SECRETARIAT
This map, and any associated information presented on it, is provided for illustration purposes only. Please note that the information presented or the data it is based upon, may not be current, may be incorrect, may be extrapolated or averaged from limited data sets or may be missing information. Watercourses or waterbodies not depicted on the map should not be construed as having no value for fish or fish habitat. Should a discrepancy arise between the information depicted on this map and information presented by Fisheries and Oceans Canada in the context of the applicability of an Authorization for the harmful, alteration, disruption or destruction of fish habitat, the latter will be deemed correct. The information on this map should never be used for the purposes of navigation. Some of the information presented on this map has been obtained from third parties who should be contacted to ascertain the source, description and potential usage restrictions of the information. Under no circumstances will the Government of Canada, or Yukon Government be liable to any person or business entity for any direct, indirect, special, incidental, consequential, or other damages based on any use of information contained on this map, including, without limitation, any lost profits, business interruption, or loss of information.
Map Compiled: May 30, 2008
East McQuesten R
Christie Creek
Lime Ck
McQuesten Lake
Rambler Creek
Ironrust Ck
Creek
Red Ck
Haggart Ck
Lynx Creek
Skate Creek
Cache Creek
South McQuesten River
Hanson Lakes
Homestead Creek
Ladue Lake
Gambler Lake
Keno
Ladue R
Swede Creek
Secret Ck
Haggart Creek
Lynx Ck
Red Creek
Goodman Ck
Shanghai Creek
River
Christal Ck
Faith Ck
South McQuesten River
Flat
Galena Ck
Ross Ck
Seattle Creek
Haldane Creek
Corkery Creek
Morrison Ck
Creek
Lightning Creek
Duncan Creek
Williams Ck
Parent Creek
Field Creek
Halfway Lakes
Granite Creek
Roop Lakes
Roop Creek
Tiny Island Lake
Plateau
Barren
Ringgong Ck
Keystone Ck
Edwards
Edmonton Ck
Owl Ck
Anderson Ck
MAYO
LAKE
Ledge Ck
Cascade Ck
Callaghan Ck
Creek
Edwards Lake
Edwards
Nelson Creek
South Nelson Creek
McRae Ck
Dredge Ck
McIntyre Ck
Creek
Jarvis Ck
Minto Creek
Paradise Ck
Sunset Ck
Minto Lake
Roaring Fork Ck
Mud Creek
Minto Ck
Wareham Lake
Five Mile Lakes
Mayo River
Janet Lake
Williamson Creek
Williamson Lake
Davidson Creek
Talbot Ck
Talbot
Tresidder Lake
Tresidder Creek
Shechuck Lake
Creek
RIVER
Three Mile Rapid
Five Mile Rapid
Horseshoe Slough
Previous Development Designation
In this fish habitat classification system, the suitability of fish habitat is determined by considering watercourse gradient, the proximity of streams to the routes used by Chinook salmon for spawning and migration, and water quality. This approach has proven to be effective when assessing habitat in streams not affected by human activity, but the predicted habitat features and conditions may not be present in streams already affected by placer mining.
For this reason, the Fish Habitat Management Regime for Yukon Placer Mining includes a "Previous Development" designation. It will adjust the classification of streams that are currently mined, or were mined in the past.
On this map a grey, black or mauve buffer surrounding a stream represents reaches that have been affected by placer mining. A grey buffer indicates current activity, a black buffer shows where placer mining occurred in the past, and a mauve buffer describes extensive development. The coloured line immediately within a buffer depicts the habitat suitability that would be predicted if mining had never occurred on the stream. The coloured line in the very centre reveals the habitat suitability ranking that will be assigned to the reach, taking the Previous Development designation into account.
It should be noted that while the Previous Development designation applies to placer mining activity on streams that may not have been properly restored, all future restoration work must achieve the standard required for the predicted (or higher) habitat suitability classification.
Areas of Special Consideration
Areas within watercourses that contain ecologically or culturally important fisheries or aquatic resources or provide significant, critical linkages to upstream habitats for fish have been designated as "Areas of Special Consideration". Reaches assigned this designation may include habitats for rare or locally significant species and/or areas which directly support subsistence, traditional, commercial or sport fisheries.
Areas of Special Consideration may be established for anadromous or non-anadromous species of fish. At a minimum, Areas of Special Consideration include spawning areas and migration routes for chum, Coho or sockeye salmon, as well as spawning areas for rainbow trout, bull trout and Dolly Varden.
Reduction in habitat ranking based on Previous Development and applicable operational standard
Predicted habitat suitability and restoration standard that must be achieved
Type of Previous Development

Placer miners use the *Fish Habitat Design, Operation and Reclamation Workbook and Worksheets for Placer Mining in the Yukon Territory* to assess the watercourse and then develop a Fish Habitat Compensation/Restoration Plan for all affected water bodies at their mining site using the Yukon Placer Secretariat's *Guidebook of Mitigation Measures for Placer Mining in the Yukon*. Given the approval of the miner's plan by DFO and the water license granted by the YWB, the plan becomes the enforceable terms and conditions of the license. Activities which cause residual effects, or effects which are harmful and cannot be eliminated, must be authorized under the Fisheries Act sec. 35(2). Residual effects include acquiring water for sluices, discharging sediment from the sluice, diverting streams to get at the pay streak, and other in-stream works (Yukon Placer Secretariat, 2007).

Compliance and enforcement at individual placer operations is undertaken by Energy, Mines and Resources Resource Officers authorized under the *Fisheries Act*, and in compliance with the *Fisheries Act*, the *Waters Act*, the *Placer Mining Act*, and the *Environment Act*. Inspections ensure that the placer miner is complying with the terms and conditions of their water license and applicable watershed authorizations, as well as evaluating the effectiveness of settling facilities and the reclamation and mitigation measures the miner is using, as per their license *(Yukon Placer Secretariat, 2007)*.

3.3 TOURISM, OUTFITTING & RECREATION

Much of the other resource use is based on the natural surroundings of Mayo. Tourism, outfitting and outdoor recreation all use Mayo as stopping/starting points for activities.

Mayo is part of the Silver Trail – a scenic drive that features not only the mining history of the region, but also offers views of the Stewart River and local wildlife. Beginning at Stewart Crossing, the Silver Trail winds its way along the Stewart River, where it branches off from paved highway and continues on maintained gravel roads to Elsa and Keno. The total number of tourists to the Silver Trail region has increased over the last two decades (from 7,290 visitors stopping or staying overnight in 1994, to 20,581 in 2004); however, the overall proportion of visitors to the Yukon who stop/stay along the Silver Trail remains small (about four per cent) (Yukon Tourism and Culture, 2005).

Mayo offers a full range of visitor services including a restaurant, accommodations, service stations (gas and diesel), air charter services, and historical/visitor services. The options for accommodation are summarized in Table 3-3 The Binet House Interpretive Centre is a focal point for tourists, and provides information on the natural and cultural history of the area.

Table 3-3
Accommodation in the Project Study Region[2]

Name	Features
Bedrock Motel	• Continental breakfast provided • 3 fully service RV sites • 3 RV sites with electricity only
North Star Motel	• Centrally located • All rooms have kitchenettes
Silver Trail Inn	• Bed and breakfast
McIntyre Park and Campground	• Nine un-serviced campsites • Fire pits and wood provided
Five Mile Lake Campground	• 20 campsites • Day use area
Golden Heart Acres Bed & Breakfast	• Bed and breakfast

Mayo is also a jumping off point for activities such as wilderness canoeing in the Peel River watershed. Depending on the year, between six and 12 tour operators offer guided canoe trips that use Mayo as a staging point. In addition, four companies provide canoe rentals and shuttle services for independent paddlers in the area. Commercial trips stage at the float base on the Stewart River (approximately one kilometre upstream from Mayo) and fly into the Peel watershed. Commercial trips do not typically use the hotels or campgrounds in the Project Study Region, as they typically arrive and fly-out on the same day. Trips typically last between ten days to two weeks.

Aside from canoeing, there isn't a considerable amount of wilderness tourism in the area. The Mayo River get used sporadically and infrequently by independent whitewater canoe and kayakers, but only a short stretch is suitable for paddling. The occasional group will paddle down the Stewart River to Mayo although no commercial operators using this route. There is very little in the way of backcountry hiking trails or camping areas.

Outdoor recreation activities are popular among residents of Mayo, and sometimes attract residents from other parts of the Yukon. The area between Mayo and Wareham Lake is often used for picnicking, day-hiking, and in winter cross-country skiing. McIntyre Park and Five Mile Lake Park both provide day use, although there is also camping done at each location. In winter snowmobiling is a popular activity.

The Project is located in Rogue River Outfitters' outfitting concession. Outfitting Concessions are granted under the Wildlife Act and consist of an area in which the concession holder has a limited right to provide guiding services. There are also five other outfitters who use the Mayo float base to head into the Peel

[2] There are other known accommodation options in the Mayo area, however, none are registered as such in readily available sources of information.

and the Upper Stewart drainage systems. Outfitters typically cater clients from other parts Canada and aboard.

Rogue River Outfitting specializes in moose, although hunters may also take grizzly, Dall sheep, mountain caribou, wolverine, black bear, and wolf tags on a moose hunting expedition, providing the outfitter still has a quota for those animals. The hunting is accomplished on foot, boat, and/or Argo (all-terrain vehicle). Outfitting activities do not use the Mayo River or Mayo Lake, although Mayo is used as a staging area. Base camps tend to be located on lakes or rivers well outside of the Project Study Region and the hunters are accommodated in pop-up tents or wall tents. Spot and stock hunts using Argos take place between August 10th and October 4th in the higher elevation basins. The hunt between September 1st and October 4th takes place around lakeshores during the rut, and is accomplished by boat, or on foot.

3.4 FORESTRY AND AGRICULTURE

3.4.1 Timber harvesting

The majority of merchantable forests in the Yukon are located south of the 61st parallel (i.e., well south of the Project Study Region) as most of the soils of forested land north of this line are influenced by cold coils, poor drainage and aggressive fire regimes (Energy, Mines and Resources, 2006). There are no commercial timber permits in the Project Study Region.

Personal use timber permits allow an individual to cut 25 cords of wood for personal use. Typical harvest methods for personal use involve a chainsaw and a pick-up truck. The Yukon Forest Management Branch identified two areas in proximity to the proposed Project that are used for timber harvesting. There are gated access roads near the Wareham Lake Road (11 km north of Mayo) and the Duncan Creek access road (23 km north of Mayo) that provided access to fire killed timber.

There is one parcel of land used for agricultural purposes in the Project Study Region, the Mease Farm, just south of the Minto Bridge. The products of this farm have changes over the years and have included vegetables, poultry, eggs, and other livestock. Many residents in the Mayo area purchase products from the farm.

3.4.2 Agriculture

Less than two per cent of the Yukon's total area is suitable for agricultural development due to limitations presented by geography, soils and climate. Soil-based agriculture is largely limited to major river valleys such as the Yukon, Pelly and Stewart Rivers. Yukon soils tend to be low in organic material content as well as deficient in nitrogen and phosphorus. The sub-arctic, continental climate limits the number of frost-free days; however long daylight hours in the summer help to promote rapid summer growth and compensate for the shorter growing season and cooler temperatures (Yukon Agriculture, 2004).

3.5 PRIVATE AND COMMERCIAL LAND USE

Commercial land uses in the Project Study Region include the use of gravel pits, a clay and silt quarry, a land treatment facility, residential lands, recreational leases, as well as fee simple and privately owned lots.

There are five gravel and aggregate pits under the authority of Yukon Highways and Public Works. Gravel pits are identified and set aside on a 50 year basis to ensure that gravel is available for road and airport maintenance, as well as construction projects. Table 3-4 summarizes these gravel pits.

Table 3-4
Highways and Public Works Gravel and Other Pits

Pit Identifier and Use Code	Status	Pit Term	Silver Trail Hwy KM	Latitude/Longitude
105-M-10 N/A	Closed	Closed	53.0	63 39/135 52.5
105-M-03 Gravel	Active	Long term (50yr)	49.0	63 37/135 53
105-M-01 Gravel	Not active	Long term (50yr)	42.1	63 36/136 00
105-M-52 Other- Dump/Camp	Active	Long term (50yr)	51.7	63 36.5/135 52.5
105-M-02 N/A	Closed	Closed	49.0	63 36/135 58

The pit at km 51.7 is a Yukon Highways and Public works maintenance yard in the industrial subdivision on the south side of the airport where sanding gravel is stored, as well as surfacing material. The pit at km 42.1 was used as a disposal site for debris from the recently replaced Mayo School, but is not currently active. The active gravel pit at km 49 of the Silver Trail Highway is situated at Reservation# 105M12-049 and Reservation# 105M12-001 is the location of Pit identifier# 105-M-10 at km 53 (personal communication, W. Hidinger, Dec 12, 2008).

In addition, three other pits have been identified in the Project Study Region that are not under the jurisdiction of Highways and Public works and do not appear to be dispositions under any Yukon legislation. One of these is on NND Lot 1082, C-48B, and material from the area is used by local contractors for bulk fill and pit run gravel (personal communication Dec 12, W. Hidinger, 2008), another is situated at within Yukon Energy's Lot 91, near Five Mile Lake, and another is near the Wareham Dam, and also situated within lot 91. Wilf Tuck obtained a land use permit to undertake testing for gravel along the Silver Trail Hwy at 63.60 73N and 135.98 23W, west of Mayo, in July of 2007. Providing positive test results, Tuck was to excavate gravel.

A clay and silt quarry is operated by Wilf Tuck on the Janet Lake Road, 5 km from Mayo at 63.6476N and 135.8607W which includes drilling and testing for silt and clay and quarrying materials to be used as a liner for a nearby commercial land treatment facility. The commercial land treatment facility (LTF) near Five Mile Lakes is under application for renewal, and is also owned by Wilf Tuck under the name Al's Environmental Cleanup Ltd. The LTF is for soils with hydrocarbon contamination and is situated on lease #105M12-050223. Containment strategies include using a compacted silt liner, berms and a perimeter trench. Mr. Tuck employs three to four employees on a regular basis, and a crew of truck drivers, excavator operators, loader operators, grader operators and cat operators on a more seasonal basis.

Quartz claim CI&1 is listed as active is situated northwest of the Village of Mayo, along the Silver Trail highway, near the Mayo River. Adjacent to the quartz claim is lot 1102, a commercial lot which is for sale by Dick Ewing.

The mouth of Mayo Lake is the site of several commercial and private land uses. There are two commercial leases at the mouth of Mayo Lake, a fee simple lot, two residential leases, and one recreational lease, as well as fee simple lots owned by Yukon Energy. There is also a recreational lease on Peggy's Island and a residential application where Dirksen Creek flows into Mayo Lake. At the confluence of Davidson Creek and the Mayo River, sits a very small fee simple, privately owned parcel, lot 1004. At the mouth of Wareham Lake, there are two large lots owned in fee simple which are largely used for agricultural purposes. At the south end of Wareham Lake there is a fee simple lot owned by the Canadian Broadcasting Corporation, and smaller residential application on the north eastern bank of Wareham Lake. Within the Construction Footprint Area, there are two privately owned lots, as well as Yukon Energy lots outlined in Chapter 2, Table 2-1. Close to the southern border of the Construction Footprint Area is privately owned, fee simple Lot 88 and NND Settlement Parcel C-48B. See Appendix 2A for a list of land parcels in the Project Study Region.

4.0 ECONOMY

4.1 OVERVIEW

This section considers the economic components of activities in the Project Study Region including local education, training and employment, and local business (Section 4.2) as well as regional considerations on government fiscal flows and utility ratepayers (Section 4.3). It addresses the socio-economic components set out in the *Guide to Socio-Economic Effects Assessment* (YESAB, 2006), which states:

> To characterize the relevant economic baseline, the assessor should describe the current economic setting in the project area from the perspectives of a) individuals, b) businesses, and c) government, and in the context of the selected VESECS and socio-economic variables.

The sources of information relied upon include a review of existing data sources and key person interviews.

4.2 LOCAL ECONOMY

The statistics presented in the following sections are derived primarily from two sources: the Yukon Bureau of Statistics and Statistics Canada. It is important to note that these two organizations use different sampling techniques, and report different population totals for the community of Mayo. The Yukon Department of Health & Social Services and Yukon Bureau of Statistics (2008) reports that the population of Mayo is 466 people, while Statistics Canada (2007) reports 248. Although the Yukon Bureau of Statistics totals are believed to be more accurate, the labour related data available for the community of Mayo is otherwise limited. As such, Statistics Canada data is drawn upon to provide some insight on the local economy.

4.2.1 Labour Force Characteristics

Key labour force[3] characteristics in from Statistics Canada's *2006 Census of Canada* are summarized below for the Project Study Region:

- **Unemployment rate[4]:** averaged 16.7% in Mayo, slightly less than double the Yukon average of 9.4%.

[3] The labour force as defined by Statistics Canada Refers to persons who were either employed or unemployed during the week (Sunday to Saturday) prior to Census Day (May 16, 2006).

[4] The unemployment rate refers to the unemployed as expressed as a percentage of the labour force in the week (Sunday to Saturday).

- **Employment rate[5]:** averaged 64.1%, slightly less than the Yukon rate of 70.7%
- **Participation rate[6]:** was 76.9% compared to the Yukon rate of 78.1%.

The Yukon Bureau of Statistics reports (2008b) that the unemployment in 2007 averaged 5.2%, which is up slightly from the 2006 figure of 4.5%. This discrepancy may be explained partly by the fact that the Yukon Bureau of Statistics seasonally adjusts its monthly and quarterly figures to remove the influence of seasonal changes. Little work in Mayo is available full-time and year round, reflecting the importance of seasonal work to the economy (Yukon Community Profiles, 2004).

4.2.2 Education and Training

Education level is a factor that influences an individual's participation in the labour force. According to Statistics Canada (2007), the education levels of the residents of Mayo are lower than the rest of the Yukon, as summarized in Table 4-1 The exception to this is that there are a slightly higher proportion of residents with a college or other non-university certificate or diploma (23.1% compared to 20.7% Yukon-wide), and a slightly higher proportion or residents with a university certificate or diploma below the bachelor level (5.1% compared to 3.4% Yukon-wide). The reason for which residents complete college and university certificates and diplomas below the bachelor level, may be attributed to a satellite campus of Yukon College operated in Mayo.

Table 4-1
Education Levels in Mayo Compared to the Yukon

	Mayo	Yukon
Total population 15 years and over	195	24,490
No certificate; diploma or degree	35.9%	22.7%
High school certificate or equivalent	15.4%	23.7%
Apprenticeship or trades certificate or diploma	10.3%	11.8%
College; CEGEP or other non-university certificate or diploma	23.1%	20.7%
University certificate or diploma below the bachelor level	5.1%	3.4%
University certificate; diploma or degree	12.8%	17.8%
Note: Totals may not equal 100% as Statistics Canada rounds its data to ensure the confidentiality of respondents.		

(Statistics Canada, 2007)

[5] The employment rate refers to the numbers of persons employed in the week (Sunday to Saturday) and is expressed as a percentage of the population 15 years of age and older.

[6] The participation rate refers to the labour force available in the week (Sunday to Saturday) and is expressed as a percentage of the population 15 years of age and older.

There were 76 students enrolled at J.V. Clarke School for the 2008/2009 academic year (Yukon Bureau of Statistics, 2008c). Residents of Mayo and members of NND are both enrolled in the school, and over the last five years have resulted in an equal proportion of graduates. Since 2004, eleven students have graduated from Grade 12, while three other students on the graduation track failed to complete their studies[7]. There is one student on the graduation track for the 2008/2009 academic year who plans on pursuing post-secondary education upon completing high school. Many of the members of NND how have graduated have gone on to pursue post-secondary programs or to work for NND administration (Personal communication, B. McGregor, February 18, 2009).

4.2.3 Local Business

In 2008 the Yukon Bureau of Statistics conducted a survey of 3,000 businesses across the Yukon (2008a). Of the Yukon businesses reporting, 18.7% reported they were "seasonal" businesses, with the majority operating between May and September. Of the non-home-based businesses, almost 40% indicated they had vacancies, and of those businesses, 73.3% indicated they had difficult filling those positions.

A similar situation was reported in 2007, where approximately two-thirds of businesses and half of the home-based businesses surveyed indicated they experienced difficulties recruiting employees from the Yukon. Of the businesses reporting difficulties in recruiting, 94% indicated that finding skilled or experienced staff was a challenge. Difficulties associated with the recruitment of skilled and experienced workers included the fact that with the large number of jobs available, skilled workers have their pick of jobs, the small population base in the Yukon, the lack of training available, and workers retiring. Similarly, about half the businesses experienced difficulties in recruiting unskilled labour for similar reasons (Yukon Bureau of Statistics, 2007).

Mayo had 44 businesses reporting with a total of 79 employees (Yukon Bureau of Statistics, 2008a). Most businesses in Yukon were sole proprietorships, followed by partnerships. NND reported on nine citizens being employed by either a sole proprietor or partnership. NND Development Corporation has owned the Mayo Bigway Foods store for the past nine years – a grocery and hardware store. The store employs four full-time and several part-time community members (personal communication, T. Lie, Feb. 12, 2009).

In Mayo, business, finance and administration along with positions in the social sciences, education, religion and government services account for one third of occupations, as described in Table 4-2. Another quarter of the population is employed in trades (transport and equipment operators and related occupations) and occupations unique to the primary industry (e.g., mining, quarrying, etc). Sales and service occupations account for another fifth of employment, with many of those positions catering to tourism related activities.

[7] These totals are based on students taking graduation track courses. Sometimes, students fail to complete the math requirement, but are not counted as "failed graduates".

Table 4-2
Occupation Types in Mayo

Occupation	Mayo
Total experienced labour force 15 years and over	150
Management occupations	15
Business; finance and administration occupations	35
Natural and applied sciences and related occupations	10
Health occupations	0
Occupations in social science; education; government service and religion	20
Occupations in art; culture; recreation and sport	0
Sales and service occupations	30
Trades; transport and equipment operators and related occupations	20
Occupations unique to primary industry	20
Occupations unique to processing; manufacturing and utilities	0

(Statistics Canada, 2007).

Key person interviews with the businesses providing the majority of employment related to trades and the primary industry in Mayo suggest that labour of all kinds in scarce in the community. Generally speaking, people who want to work in Mayo are already actively engaged in the labour force. There is also considerable overlap in the skill sets of individuals, and as such the data presented in Table 4-3 represents the skill base in Mayo, not the total number of job filled. Local contractors often rely on employment agencies outside of the community (i.e., Whitehorse) to fill the positions they have, often bringing in labour from other part of the Yukon and Canada.

Table 4-3
Estimated Skill Base for Trades, the Primary Industry, and Related Positions for Mayo

Category	Job	Estimated Number of People with Skill
Support	Clerical	2-3
	Caterers	1
	Cleaners	None trained
	Security	0
	General Labour	10
Non-Designated Trades	Drillers/Blasters	0
	Equipment Operators Excavators Bulldozers Skidders	30 8 7 3
	Long haul truck drivers Experience on primitive roads Experience operating hiabs and handling poles Experience placing materials for installation crews	2 2 2 2
	Teamsters	10
	Cement Masons	4
Designated Trades	Mechanic Gas Diesel Small Engine	3 (overlap) (overlap) (overlap)
	Carpenter	10-12
	Millright	0
	Ironworker	1
	Sheet metal worker	2
	Plumber	1
	Pipefitter	3
	Rebar Worker	1
	Welder	0
	Electricians	0
	Drywaller & mudder	3
	Painter	1
Transmission Related	Powerline Technicians	2
	Powerline Technician Apprentice	2

(Personal Communication, W. Tuck, February 17, 2009)

Although Mayo historically acted as a service centre for mining in the region, today it is no longer a mineral-based economy. The community has recognized that diversification is necessary, and is promoting options such as tourism to strengthen local activity. Accommodation, food services, guiding and outfitting, and retail services provide work for local residents. Placer mining and mineral exploration also continue to be part of the local economy (Yukon Community Profiles, 2004).

Businesses and services offered in Mayo include:

- Bedrock Motel
- Binet House Interpretive Centre
- Duncan Creek Gold Dusters
- Ewing Transport Ltd.
- Golden Heart Acres Bed & Breakfast
- Heartland Services
- K.P. Auto
- Kris' Small Repairs
- Mayo Bigway Foods
- Mayo Chinese Restaurant
- Mayo Laundromat
- Mayo Petroleum
- Mayo Taxi and Bus Service
- Mount Joy Wilderness Adventures
- North Star Motel
- Rick's Enterprises
- Silver Trail Inn / Halfway Lakes
- Wind River Adventures
- Wilf's Contracting
- Winterchild Jewellery
- Yukon Gold Mining
- Yukon Energy Corporation
- Yukon Liquor Store

(Village of Mayo, 2008. Canadian Phone Directories Inc., 2006)

4.3 REGIONAL ECONOMY

4.3.1 Government Fiscal Flows

Scoping for potential government-related economic effects from the Project focuses on Yukon government and federal government activities and objectives and local government activities (including revenues and expenditures).

In the short-term, the federal government may contribute to Project funding. The Federal government also derives tax revenues from labour income tax and the purchase of goods and services in the Project Study Region.

In the short-term, the Yukon government may contribute to Project funding. Long-term Yukon Government interests relate to developing electric grid infrastructure to support ongoing industrial and other economic development in the Project Study Region and to enhance overall WAF and MD system reliability, economic efficiency and flexibility in power supply resource use. The Project will also serve to reduce diesel generation emissions and related ongoing economic leakages from Yukon related to purchase of diesel fuel from outside Yukon, thereby facilitating overall Yukon Government environmental and economic objectives.

Mayo was incorporated as a village in 1984 and is governed by a Mayor and Council. It is home to many of the members of the First Nation of Nacho Nyak Dun (NNDFN) who are represented by the Chief and Council based in Mayo. NNDFN has settlement lands in the area. The First Nation was very active in the Land Claims movement and was the first to sign an agreement in 1993. Under the agreement, the First Nation owns over 2,900 square kilometres and will receive $14,554,654 over 15 years. The First Nation has been actively involved in the affairs of the Mayo community, attempting to promote a better, healthier lifestyle for community members (Council of Yukon First Nations, 2006)

4.3.2 Utility Ratepayers

As the major generator and transmitter of electrical power in the Yukon region, Yukon Energy plans for the electrical capacity and energy needs of all Yukoners, particularly those supplied on the WAF and MD grids. Under regulations applicable to utility rates for both Yukon Energy and Yukon Electrical (YECL), costs and benefits related to new generation and transmission facilities are in principle passed on to ratepayers (rather than absorbed by the utility shareholder) through regulated rates designed to collect sufficient revenues to cover a utility's annual revenue requirement as approved by the Yukon Utilities Board. Costs and benefits are shared by all residential, general service and industrial ratepayers served by Yukon Energy and YECL throughout Yukon.

YECL purchases wholesale power supplies from Yukon Energy and provides electric utility distribution services in Whitehorse, Carmacks, Stewart Crossing, Keno and various other WAF and MD communities.

Firm electricity rates (i.e., rates for service not normally subject to interruption) for residential and general service customers are categorized by government or non-government customers, and hydro grid or diesel sourced generation.

The Yukon Utilities Board regulates the sales electricity in Yukon. In 1995 the YUB directed by OIC 1995/90 to the setting of non-government firm retail first block energy rates equal throughout Yukon within each of the residential and general service customer classes without variation between Yukon Energy and YECL customers. This direction is subject to a further direction to set a run off rate block for

each of these customer classes for all consumption in excess of a specified level per billing period, such specified level per customer not to be less than 1,000 kW.h/month for residential non-government customers and 2,000 kWh/month for general service non-government customers (these levels of use are typically referred to as first rate block use for each class). The YUB is directed to set run-off rates on the basis of rate design principle to promote economy and efficiency, and separate run-off rates may be allowed for customers in different communities or rate zones.

In addition to the firm rate schedules and subsidies, a rate schedule for interruptible Secondary Energy is available to industrial or general service customers on WAF and MD, based on the availability of surplus hydro on these grids. The rate is available (when surplus hydro generation is available) for space or process heating in areas where surplus distribution system capacity exists at the time the customer is connected and where the customer has an alternative fuel source capable of providing the same quantity of space heating in the event of an interruption to secondary energy supply. Secondary energy sales would be interrupted if and when new industrial loads, or other factors, remove the current hydroelectric energy surplus. Conversely, to the extent that secondary energy remain available, new industrial loads may also elect to use this service to reduce fuel purchases for heating loads.

The overall level of rates (or utility revenue requirement) as well as the rate design for firm and secondary energy customers are currently being reviewed as part of YEC's 2008-2009 General Rate Application.

5.0 SOCIAL CONTEXT

5.1 OVERVIEW

This section describes the social context of the Project Study Region and includes baseline information on people's personal, family, and community life. It addresses the requirements set for in the *Proponent's Guide to Information Requirements for Executive Committee Project Proposal Submissions* (YESAB, 2005), which states:

"Information should focus on providing a background on individuals, families, communities… potentially affected as a result of project area activities".

The social context of the Project Study Region is shaped by many factors that contribute to the quality of people's lives and experiences. The social context described the following:

- Population;
- Community and Family Life;
- Community Infrastructure and Services;
- Traffic; and
- Worker Health and Safety.

5.2 POPULATION

As of December 2008, the population of Mayo was estimated at 466 residents (Yukon Department of Health & Social Services and Yukon Bureau of Statistics, 2008). According to Statistics Canada (2007), approximately 52% of the population is of Aboriginal identity (self-reported), which is twice as high as the Yukon average of 25% Aboriginal. The First Nation of Nacho Nyak Dun has a registered population of 471 members (INAC, 2009), although many of these members live outside of Mayo in communities such as Stewart Crossing and Whitehorse.

Table 5-1
Population Distribution for Mayo

Age	Population
0 to 4 years	21
5 to 9 years	20
10 to 14 years	29
15 to 19 years	34
20 to 24 years	36
25 to 29 years	36
30 to 34 years	18
35 to 39 years	26
40 to 44 years	40
45 to 49 years	44
50 to 54 years	52
55 to 59 years	27
60 to 64 years	24
65 to 69 years	20
70 to 74 years	14
75+	25
TOTAL	466

(Yukon Department of Health & Social Services and Yukon Bureau of Statistics, 2008)

The Yukon Bureau of Statistics (2008d) has calculated several population growth scenarios for the territory to 2018. Similar growth projections are not available for the project area.

- The low growth scenario (fertility decrease of 10%, constant mortality rates, net migration of -300 each year) would suggest that the non-Aboriginal population in the Yukon will decreased by 5.3%, and the Aboriginal population would decrease by 2.4%.

- The medium growth scenario (fertility rates are constant, mortality rates are constant, net migration is zero) would suggest that the non-Aboriginal population in the Yukon will increase by 6.1%, and the Aboriginal population would increase by 3.5%.

- The high growth scenario (fertility rates increase 10%, mortality rates decrease 10%, net migration is +300 each year) would suggest that the non-Aboriginal population in the Yukon will increase by 18.2%, and the Aboriginal population would increase by 9.1%.

5.3 COMMUNITY AND FAMILY LIFE

Traditionally, the Northern Tutchone society organized itself on a number of levels. Regional groups of five to ten nuclear families sharing close kinship ties and occupying a certain geographic area would share a comment chief. Although not living together throughout the year, these groups would stay in close contact, meeting for social and economic functions. Within the great society, people divided themselves into moieties (or clans) called the *Tsehk'i* of *Handay* for the Crow moiety and *Egay* or *Egunde* for the Wolf moiety. Moieties defined how people married, where they could hunt and fish, who they could trade with, and who they could go to for in times of need (McClelland, 1975).

NND "ancestors lived on the land, maintaining a balance between the environment, the animals, and (the) people… People would travel long distances to follow food sources such a moose, caribou, mountain sheep, salmon, lake fish and beavers, and to find berries… There was a spiritual relationship with the animal that was honoured by certain traditions that need to be observed in order for that relationship to remain strong" (Peter and Hogan, 2008, pg. 86).

The First Nation culture has evolved over time, in particular with the arrival of explorers, traders, and miners to the Mayo area. NND members continue to learn and to practice elements of their traditional culture such as food gathering and preserving, and knowledge of the land and resources, with Elders seen as important source of information and knowledge. "Traditional knowledge and skills continue to be passes on through stories, art, and day-to-day living as well as the modern self-government processes. The Na-cho Nyäk Dun people have remained spiritually strong and still hold strong beliefs. (They) are taking steps to ensure that wildlife, the land, the water, (the) culture and people, as well as (their) prayers and protocols, will be maintained and that the importance of the interconnections between these will not be forgotten by future generations of Na-Cho Nyäk Dun" (Peter and Hogan, 2006, p. 92). NND also recognizes "the importance of balancing the need to maintain the resources of the land with the modern requirement for economic development and jobs" (ibid, p. 92).

Today, the Chief and Council of NND often work in close cooperation with the Village of Mayo Mayor and Council. The two governments hold joint council meetings on a regular basis to "discuss issues of mutual importance" (Cooper and Lecki, 2006, pg. 130). The two councils collaborated to establish a local youth centre, which is among the many services that the two communities share.

Mayo is described as "a blend of modern conveniences and time-held tradition. Homes with high-speed internet have smoke houses intact in the backyard. Children walk to school at minus 40°C in the ice fog and take chemistry courses on-line… (Residents) incorporate past and present in their very breaths. Despite access to twenty-first century technology, the necessity of neighbourly dependence is still very real, given the distance to major services sand the general isolation of the roads" (Cooper and Lecki, 2006, p. 130).

Family structure in Mayo is somewhat different than the rest of the Yukon. There are a higher proportion of common-law couples (38.5%) and lower proportion of married-couples (38.5%) compared to the Yukon proportions of 52.5% and 22.3% respectively. There are slightly more lone-parent families in

Mayo, and a higher proportion of single-male lone parents (Statistics Canada, 2007). The extended family plays in important role for First Nation communities and the responsibility of caring and nurturing is often extended over a large network of grandparents, aunts, uncles and cousins (Brant Castellano, 2002).

Personal security can be considered by looking at crime statistics for the area. The most recent crime statistics for the Yukon are summarized in Table 5-2. Generally speaking, over the five year period between 1999 and 2003, crime rates per 100 residents were slightly higher in Mayo than the remainder of the Yukon. The exception to this is in drug related incidents, where Mayo consistently reported the same or fewer incidents per 100 residents.

Table 5-2
Reported Crime Incidents in Mayo and the Yukon

(Reported per 100 Residents)

Reported Incidents	**Location**	**1999**	**2000**	**2001**	**2002**	**2003**
Violent Incidents	Mayo	1.0	3.5	6.9	6.0	6.6
	Yukon	3.3	3.6	3.9	3.9	4.1
Property Incidents	Mayo	5.2	6.5	7.5	15.3	6.1
	Yukon	7.8	8.6	7.5	7.8	8.2
Traffic Incidents	Mayo	0.8	1.7	1.8	2.6	1.5
	Yukon	1.7	1.7	1.6	1.8	1.8
Drug Incidents	Mayo	0.2	0.2	0.6	0.2	0.2
	Yukon	0.5	0.5	0.6	0.8	0.6
Other reported incidents	Mayo	17.5	18.0	19.2	24.9	22.4
	Yukon	11.2	14.1	15.9	17.7	17.6

(Yukon Bureau of Statistics, 2003).

Incidents related to alcohol are not distinguished by Yukon crime statistics, and may go unreported. Liquor sales are recorded by the Yukon Liquor Corporation. In between April 1, 2007 and March 31, 2008, 4,690,700 litres of alcohol were sold in the Yukon (3,888,300 litres of beer and cider, 518,700 litres of wine, and 283,700 litres of spirits). In Mayo, the volume of liquor sales increased by 6.0%, from 92,600 litres in 2006/07 to 98,200 litres in 2007/08 (Yukon Bureau of Statistics, 2008e). Liquor sales in the Yukon peak during the summer months, likely as a result of the large influx of travellers and seasonal workers who arrive during this time.

5.4 COMMUNITY INFRASTRUCTURE AND SERVICES

Community infrastructure and services are owned, operated, and provided by a combination of the Yukon Government, Village of Mayo, and NND. In many instances, responsibilities are shared among these different levels of government to ensure service provision to residents of the area.

5.4.1 Education

J.V. Clark School recently re-opened its doors after major infrastructural improvements, including academic classrooms, a First Nations craft room, library, and gym/fitness complex that is used by the entire community. The school offers kindergarten through Grade 12, and for the 2008/2009 academic year had 76 students enrolled (Yukon Bureau of Statistics, 2008).

Yukon College's Mayo campus is located with J.V. Clark School and offers a range of academic upgrading, programs, courses and workshops. Many of the programs offered are labour related, such as regularly offered safety and first aid programs. It is more difficult to offer programs that move residents beyond labour positions, as there is a need for on-the-job training that is not necessarily easy to find in the community. For example, while heavy equipment operation would likely garner interest for several residents, a company (e.g., mining company) would have to assume the risk of allowing students to run the machinery. The challenge would be similar for training more local electricians or mechanics.

5.4.2 Recreation Services

The Village of Mayo provides recreation services to residents of the area, largely free of charge. Among the facilities provided are an arena, curling rink (two sheets), swimming pool, youth centre, fitness room, and small playgrounds around the village. The new Village of Mayo offices house the village offices, multi-use auditorium with a stage, commercial kitchen facilities that are shared between the auditorium and the curing rink, and acts as a community centre for the area. The school gym is also frequently used for recreational programming.

5.4.3 Health Services and Emergency Response

The Mayo Health Centre offers primary health care, and other activities such as pre-natal classes, post-natal care, immunization clinic, and school health clinic. It is staffed by three public health nurses, and a doctor who divides his time between Mayo, Pelly Crossing, and Carmacks. The clinic holds regular hours on Monday through Friday as well as after hour emergency services. The community has an ambulance owned and operated by the Yukon Government. Since it is the only community in the area with an active airstrip, Mayo acts as the medical evacuation point from Pelly Crossing to Elsa.

There is a volunteer fire department, with a full volunteer squad of 15 residents. There are two fire trucks, one owned by the Village of Mayo and the other by YTG.

Policing is provided by the RCMP, with a detachment staff of one corporal and two constables.

5.4.4 Water and Waste Management

The Village of Mayo has a shallow source (6.1 meters) water well which is chlorinated for drinking. The municipal well water has always met drinking water standards. The Village contracts water hauling and septic services from NND, which has a water tanker and two 2 septic trucks.

The solid waste facility, a.k.a., the Mayo Dump, was built in the early 1980's and has been operated by the Village of Mayo since the community was incorporated n 1984. The dump is also used by residents living outside of municipal boundaries, members of NND, businesses along the Silver Trail Highway, Yukon government departments operating in the area, as well as by mining and exploration companies. The facility has an anticipated lifespan of at least 20 years and a dump reserve has been established to the west of the current site for future expansion. The community has a *Solid Waste Management Plan* for 2003-2013, as per the Yukon *Environment Act* and the *Solid Waste Regulations*. Residents are responsible for hauling their own waste, although NND does offer pick-up services for some of its members.

The Village of Mayo owns and operated the Recycling Centre and Free Store. Recyclables such as beverage containers, paper, cardboard, glass, tin, and plastics are collected and sent to Raven Recycling in Whitehorse. Batteries are collected and picked up as a part of the Yukon government's special waste collection. The Free Store is well-used and accepts items such as clothing, books, household appliances and furniture.

5.5 TRAFFIC

Traffic volumes are measured by the Yukon Transportation Engineering Branch, although the locations and frequency of counts is often incomplete. Table 5-3 presents the summary of available data for traffic counts at two points on the Silver Trail Highway between 1997 and 2007. The traffic counts suggest that traffic between Stewart Crossing and Mayo increases during the summer months, which is likely due to tourists and seasonal workers coming into the area. North of Mayo, at the Minto bridge, traffic counts suggest more consistency between seasons, which could reflect more local use of the highway past the community.

Table 5-3
Traffic Counts 1997 – 2007
Silver Trail Highway

	Silver Trail km 0 East		Silver Trail km 63.4 Minto Bridge	
Year	**Average Daily Summer Traffic[1]**	**Average Daily Traffic**	**Average Daily Summer Traffic**	**Average Daily Traffic**
1997	*[2]	71	*	100 (70)
1998	*	98 (273)	*	112 (140)
1999	*	*	*	123 (105)
2000	143 (89)	128 (109)	100(70)	100 (70)
2001	231	150 (362)	99 (149)	99 (149)
2002	390	231	*	117 (117)
2003	386	225 (289)	124 (84)	124 (84)
2004	*	*	*	*
2005	*	*	*	*
2006	382	262	*	*
2007	*	*	*	90 (80)

1. Average daily traffic volumes are measured under the convention that traffic must be measured daily. If traffic is not counted, the number of days data is collected is provided in brackets.
2. * denotes years in which counts were not taken.

Yukon Transportation Engineering Branch (2007)

Discussions with the YTG Highways and Public Works suggest that according to the American Association of State Highway and Transportation Officials (AASHTO) standards, traffic on the Silver Trail Highway (#11) is about 10% of its capacity and that traffic on the Klondike Highway (#2) is less than 20% of its capacity (personal communication, W. Hidinger, February 23, 2009).

5.6 WORKER HEALTH AND SAFETY

Yukon Energy recognizes the responsibilities for health and safety are shared and accepts the responsibility of leadership of the health and safety program, for its effectiveness and improvement and for providing the safeguards required to ensure safe operations. In fulfilling this commitment to protect both people and property, management will provide and maintain a safe and healthy work environment in accordance with industry standards and in compliance with legislative requirements. Yukon Energy will strive to eliminate any foreseeable hazards that may result in property damage, accidents, and/or personal injury/illness.

On every project, all workers are given the necessary instruction and training to complete the tasks. Workers are adequately supervised while taking into account the nature of the work and the abilities of the workers.

The Corporation's internal responsibility system for health and safety is naturally extended to contractors and consultants. Yukon Energy expects contractors and consultants to accept their responsibility to ensure that project work is performed in a safe manner, and that it is in compliance with the Yukon's *Occupational Health and Safety Act*, the Yukon's *Health and Safety Regulations* and any other applicable territorial and/or federal laws or any other industry-specific requirements that may apply.

Pre-Contract controls include the requirement for contractors to submit a copy of their health and safety program and a letter confirming they are in good standing with the Yukon Workers' Compensation Health and Safety Board. Post-contract controls include a requirement for contractor employees to undergo orientation to Yukon Energy Health, Safety, and Environmental policies, programs, and procedures, as well as any special orientation required for special projects (e.g., familiarization with project permits, licences, and special considerations).

Workplace safety is not only the responsibility of Yukon Energy management or safety department personnel; all workers and contractors are responsible for their own safety and the safety of others in the work area.

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