30 First Nations Rights and Interests

30.1 Introduction

Seabridge is proposing to develop the KSM Project (the Project) located in northwestern British Columbia (BC; Figures 30.1-1 and 30.1-2). The British Columbia Environmental Assessment Office's (BC EAO) November 9, 2009 Section 11 Order, issued pursuant to the BC *Environmental Assessment Act* (EAA; 2002), specifies that Seabridge must consult with the following Aboriginal groups:

- Nisga'a Nation;
- Tahltan Central Council (on behalf of the Tahltan Nation);
- Gitanyow Nation, specifically wilp Wii'litsxw–Txawokw (alternate spelling used in this report: wilp Wii'litsxw);
- huwilp of the Gitxsan Nation (as identified by the Gitxsan Hereditary Chiefs Office); and
- Skii km Lax Ha (considered a wilp of the Gitxsan).

Nisga'a Nation's interests are discussed in Chapter 29. This chapter summarizes First Nations interests and provides the proponent's interpretation of the potential for Aboriginal rights to be impacted. This chapter was updated to provide an assessment of the Project's impact on Aboriginal rights, and customs and practises related to traditional activities (i.e., fishing, hunting, and gathering) at the request of the federal EA Working Group. Environment Canada (EC), Aboriginal Affairs and Northern Development Canada (AANDC), and the Canadian Environmental Assessment Agency (CEA Agency) provided comments during the screening review of the Application/EIS requesting this information be incorporated into the Application/EIS.

Subsequent to the issuance of the Section 11 Order, the Gitxsan Hereditary Chiefs Office advised Seabridge to consult with them and the Skii km Lax Ha only. The Skii km Lax Ha are now asserting their own traditional territory.

The BC EAO amended the Section 11 Order pursuant to Section 13 of the BC EAA (2002) on September 29, 2011 to the EAO's approach to consulting the Gitanyow huwilp (See Chapter 2, Section 2.1.3.1.1 for a full description of the September 29, 2011 changes to the Section 11 Order).

Under Order, the Proponent is assigned certain responsibilities to undertake procedural aspects of Aboriginal consultation in support of the Crown's duty to consult with potentially-affected First Nations before considering a decision on the Project. These responsibilities include collecting information about how Aboriginal rights, including title, may be impacted by the Project, and to consider ways in which First Nations rights and interests can be accommodated (BC EAO 2010).

Figure 30.1-1

KSM Project Location

SEABRIDGE GOLD
KSM PROJECT

Rescan
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PROJECT # 868-022-39 GIS No. KSM-15-307 January 18, 2013

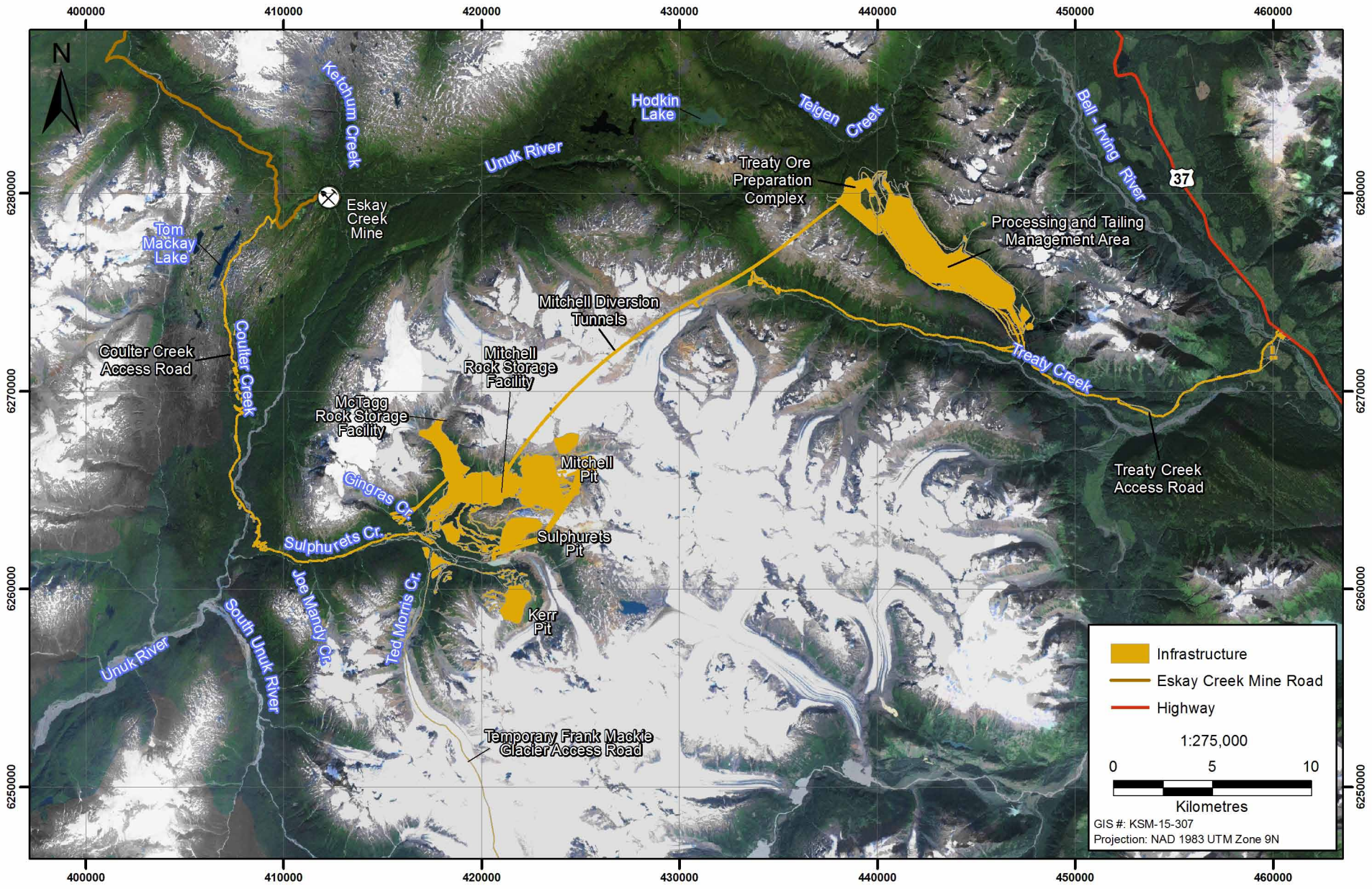

Figure 30.1-2

SEABRIDGE GOLD
KSM PROJECT

KSM Project Layout

Figure 30.1-2

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30.2 Location of the Project in Relation to Aboriginal Traditional Territories

The proposed Project is located within the asserted traditional territories of the Tahltan Nation, and components of the Project are located within the vicinity of the asserted traditional territories of the Gitanyow First Nation and Gitxsan First Nation (as identified by the BC EAO in the Section 11 Order). The Skii km Lax Ha are now asserting their own traditional territory as described below. First Nations asserted traditional territories are described below, and potential effects on Aboriginal rights and interests are considered in Section 30.5 of the chapter.

Tahltan Nation

The Tahltan traditional territory encompasses about 93,500 km^2. The southern boundary of the territory follows the Unuk River up from the Canada-United States border, past Eskay Creek, and into the upper watershed near Unuk Lake. At that point the boundary bends southeastward and cuts across the upper drainage basin of South Teigen Creek. The boundary then follows Treaty Creek down into the Bell-Irving Valley, reaching its southernmost point near the confluence of McInnes Creek and the Bell-Irving River (Figure 30.2-1).

A segment of the Coulter Creek access road (CCAR) from its crossing of the Unuk River heading north, the eastern portion of the Mitchell-Treaty Twinned Tunnels (MTT), the Processing Plant and Tailing Management Area (PTMA), the Treaty Creek access road and transmission line all fall within the Tahltan traditional territory. Although the Tahltan traditional territory does not encompass the Mine Site, Mitchell and Sulphurets creeks both drain into the Unuk River, portions of which mark the southern boundary of the traditional territory. Tahtlan activity tends to be focused well north of the Project footprint, near the confluence of the Tahltan and Stikine rivers. Activities associated with these components have the potential to impact Tahltan interests.

Gitanyow First Nation

The Gitanyow traditional territory encompasses 6,285 km^2 extending from approximately 15 km north of Kitwanga Junction to Surveyors Creek, north of Meziadin Lake (Figure 1.3-4). All of the territory lies within the Skeena and Nass watersheds (BC EAO 2011).

No Project components are located in the Gitanyow traditional territory. The northern boundary of the territory lies approximately 36 km south of the proposed TCAR turn-off from Highway 37. The reserve community of Gitanyow along Highway 37 is located approximately 210 km south of the TCAR turn-off from Highway 37. Wilp Wii'litsxw and other Gitanyow huwilp territories are located approximately 58 km downstream of the TMF, and are bisected by highways 37 and 37A, the Project's primary transportation corridor.

The Gitanyow First Nation is concerned about the potential downstream effects of the TMF on fish and fish habitat in the Bell-Irving and Nass rivers, They are also concerned about moose vehicle interactions as Project traffic on highways 37 and 37A passes through the Gitanyow territory (Figure 30.2-2). The Gitanyow traditional territory encompasses 6,285 km^2 (MARR n.d.; BC Treaty Commission 1993; Sterrit et al. 1998; GHCO 2007, 2008).

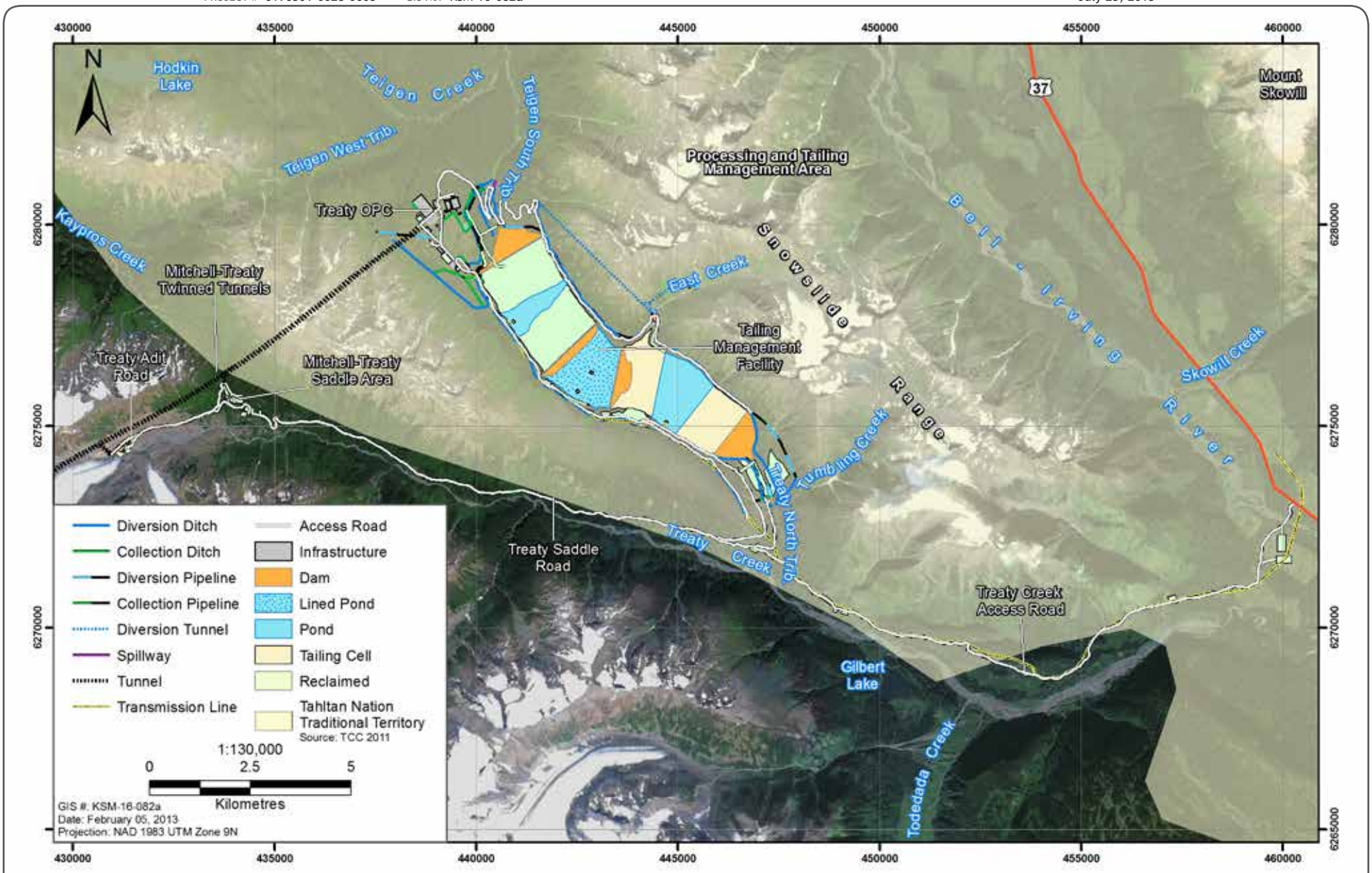

Figure 30.2-1

SEABRIDGE GOLD
KSM PROJECT

Tahltan Nation Traditional Territory in relation to the KSM Project

Figure 30.2-1

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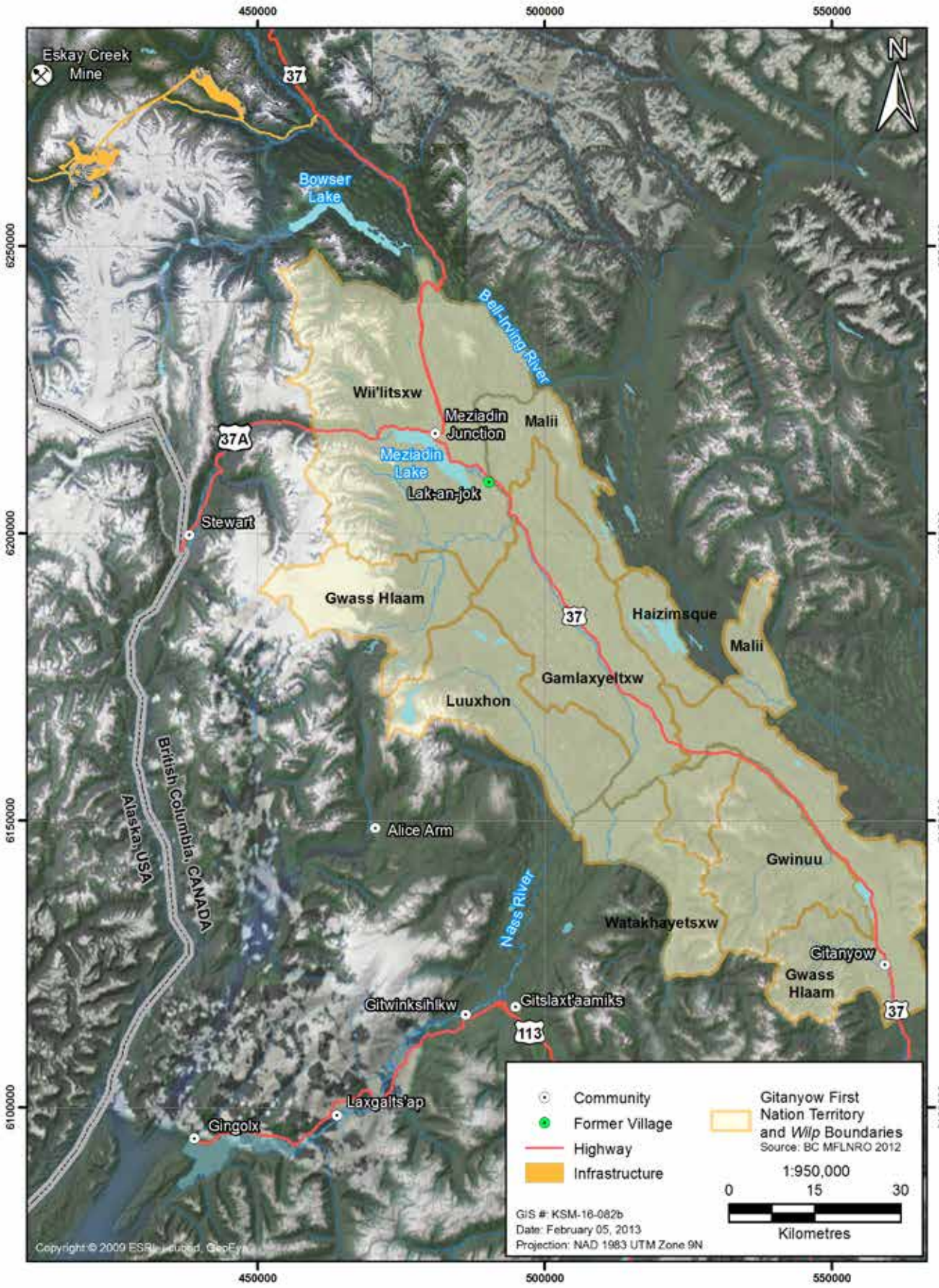

Figure 30.2-2

Gitanyow First Nation Traditional Territory in relation to the KSM Project

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KSM PROJECT

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Gitxsan Nation

The Gitxsan traditional territory encompasses approximately 33,000 km^2 in northwestern BC spanning from the mid-Skeena just north of Terrace to the upper reaches of both the Nass and Skeena rivers in the north, and from the Nechako Plateau in the east to the Bell-Irving River in the West (Figure 30.1-5). No Project components are located in the Gitxsan traditional territory, although the Skii km Lax Ha have stated that the proposed Project lies within their asserted territory.

The Bell-Irving River, a tributary of the Nass River, is located downstream of the Project. It flows through portions of the Gitxsan territory from the unincorporated settlement of Bell II to its confluence with the Nass River.

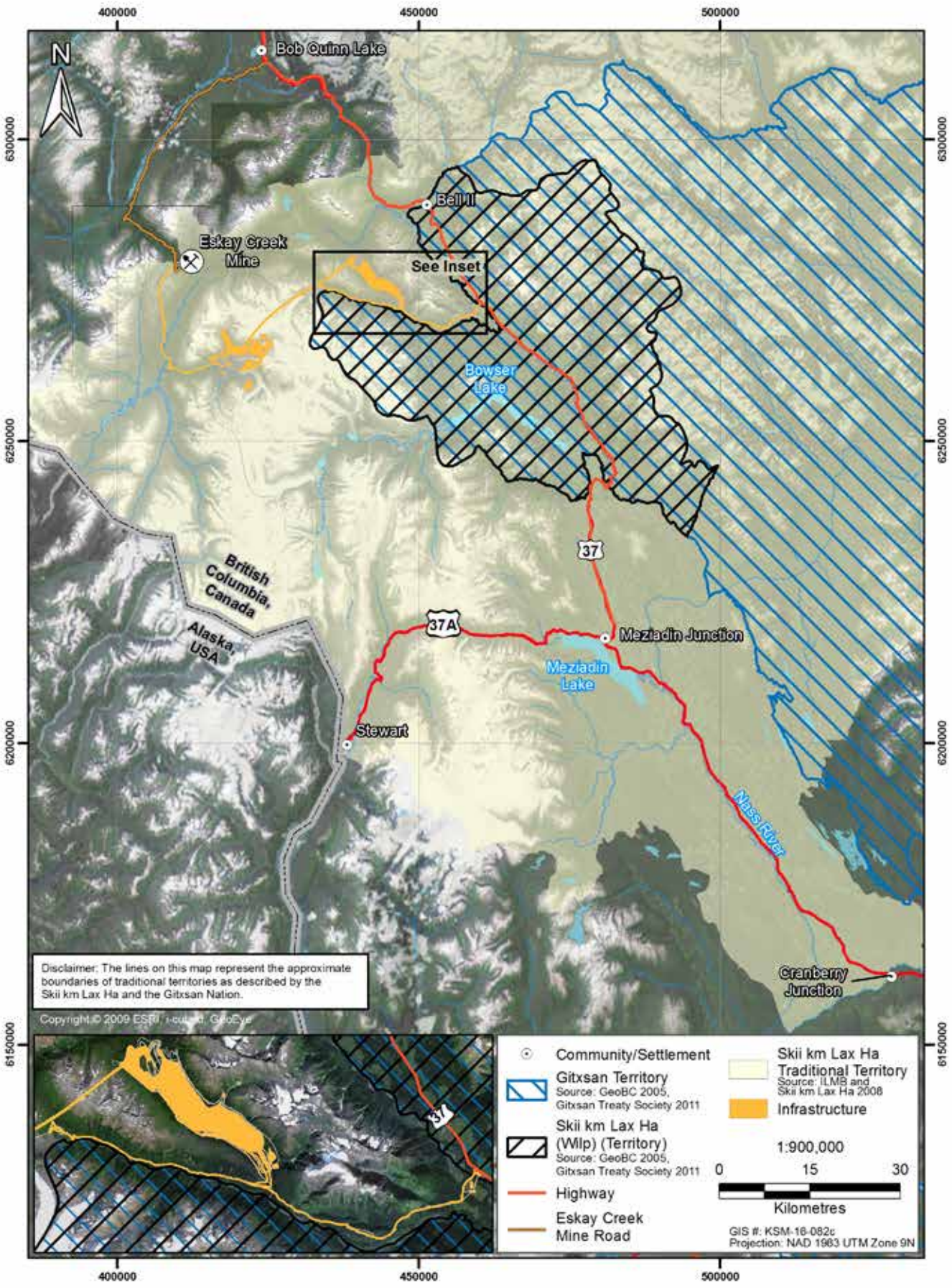
Skii km Lax Ha

The Skii km Lax Ha asserted traditional territory extends from the north side of the Cranberry River to Ningunsaw Pass, encompassing large portions of the Nass and Bell-Irving river basins (Figure 30.2-3). Much of the Skii km lax Ha territory lies on the eastern side of the Bell-Irving River, and is upstream of the Project. Approximately 40% of the territory is located west of the Bell-Irving, extending from the White River and Meziadin Lake area to the Unuk River, and is within the sphere of potential influence of the Project. The Mine Site, PTMA and related infrastructure fall within this asserted territory. These Project components have the potential to impact Skii km Lax Ha interests,

A temporary access road across the Frank Mackie Glacier will traverse a portion of the traditional territory asserted by the Skii km Lax Ha (Figure 30.2-3). The road will be used during winter to support the initial years of construction activity at the Mine Site and along the Coulter Creek access road (CCAR). The Temporary Frank Mackie Glacier route will cease to be used as soon as the CCAR is established. No significant residual effects along this temporary route are anticipated, and it is not considered further in this chapter.

30.3 Métis Interests

As part of the environmental assessment (EA), the Canadian Environmental Assessment Agency (CEA Agency) will determine whether or not the proposed Project will affect Métis interests, including Section 35 Aboriginal rights. To assist the CEA Agency in the identification of Métis interests, in the vicinity of the Project, a brief review of Métis history and contemporary Métis presence in northwest BC. Métis land use practices and activities in the vicinity of the Project were reviewed by considering information from the British Columbia Métis Mapping Research Project (BC MMRP; Appendix 30-E). The BC MMRP includes an inventory of Métis harvest activity (wildlife, birds, fish, and non-timber forest products) on a watershed-by-watershed basis. The inventory includes both historical and contemporary uses. The available information suggests that Métis harvesters have hunted large game in both the Unuk and Bell-Irving watersheds. Small game, birds, fish, and non-timber forest products appear only to have been harvested in the Bell-Irving watershed. No anticipated impacts on Métis rights based on the information provided in the Métis Interests Report appended in Appendix 30-E.



Gitxsan Nation, including Wilp Skii km Lax Ha, and Skii km Lax Ha Traditional Territories in relation to the KSM Project

Figure 30.2-3

SEABRIDGE GOLD
KSM PROJECT

Rescan
Engineers & Scientists

30.4 Incorporation of Aboriginal Traditional Knowledge

Seabridge has followed the direction provided in the January 2011 Application Information Requirements (AIR) with respect to incorporating TK/TU information into the Application/EIS by:

- providing maps of First Nations' traditional territories to scientists and researchers involved in the EA.
- holding a workshop with Application/EIS chapter authors in July 2010 to review the TU information (e.g., wildlife and plant species important to First Nations), comments provided by First Nations at working group meetings and raised in correspondence, and from other exchanges with First Nations.

Traditional knowledge/traditional reports for each First Nation are provided in Appendices 30-A through 30-D. The reports are desk-based and have been compiled from secondary information sources including:

- publically available TK/TU studies from EAs of other projects in the region;
- reference documents provided by First Nations (e.g., Gitanyow Policy Manual for Management of Cultural Heritage Resources [GHCO 2009]);
- First Nation websites; and
- ethnographic monographs and academic papers.

The TU reports include information on a First Nation's traditional territory, customs and practices, governance, language, traditional economy, historic and current land use.

In addition to mailing the draft TK/TU reports to First Nations for review and comment, Seabridge met with First Nations to discuss the reports as follows:

- Met with the Gitxsan Chiefs' Office on April 11, 2011. No comments were provided on the report; however, the Gitxsan provided feedback on maps identifying watersheds and Gitxsan boundaries. This information was incorporated into the Gitxsan TU report (Appendix 30-D).
- Met with the wilp Wii'litsxw on April 13, 2011. Comments provided at the meeting have been considered in preparing the TK/TU report (Appendix 30-C).
- Met with the Tahltan Heritage Resources Environmental Assessment Team (THREAT) on August 28, 2012. No comments were provided on the report. (Appendix 30-A). At the meeting, there was a general discussion about integrating TK information into the EA. The Tahltan did not provide specific information related to their use of the Project area at the meeting.
- Met with the Skii km Lax Ha on May 27, 2013 to discuss country foods consumption; use of registered trapline territories; Skii km Lax Ha observations on changes to traditional use patterns; Skii km Lax Ha observations on environmental changes in their

harvest areas; navigation; and issues and concerns regarding the Project's potential impact on the exercise of their traditional activities. Subsequent to the meeting, in June 2013, the Skii km Lax Ha provided mapping information. The information provided at the May 2013 meeting and subsequent to the meeting, has been incorporated into the TK/TU report (Appendix 30-B).

Seabridge provided funding to the TCC in 2010 to undertake a TK/TU study. The completed study was provided to Seabridge; however, due to concerns about confidentiality, the Tahltan requested that the information from the study not be integrated into the Application/EIS.

Traditional use/traditional knowledge has helped guide the scoping the project and assessment including providing input on valued components, and collection of baseline studies. TK/TU information, where available, has also been considered in Project design, including assessing options for siting the Tailing Management Facility (TMF; Appendix 33-B).

In response to Tahltan comments at the August 2012 meeting, ice-patch archaeology fieldwork was undertaken to enable assessment of the potential effects of the Project on the use of glaciers and ice fields. Forty-three snow and ice patches were inspected by pedestrian survey during maximum snow melt. No evidence of prehistoric or historic use of the patches was located based on the August 2012 survey (see Appendix 21-B).

During the formal review of the Application/EIS, First Nations will have an opportunity to evaluate the potential effects of the Project, conclusions related to potential residual effects, residual cumulative effects, and significance determinations, and proposed mitigation, management plans and follow-up programs.

30.5 Background Information on First Nations Settings

This section describes First Nations' social, cultural, heritage, and economic settings, health and community well-being, and current use of land and resources for traditional purposes. The information in this section is taken from Chapter 20 (Economic), Chapter 21 (Heritage), Chapter 22 (Social), and Chapter 23 (Land Use) and baseline study reports in chapter appendices.

30.5.1 Tahltan Nation

In the early historical period, Tahltan life was organized around the cycles of seasonally available food resources, in particular the five species of salmon. Many Tahltan lived along the banks of the Stikine River during the summer months, harvesting and drying fish. Salmon cannot proceed past the Stikine Canyon upstream from Telegraph Creek, and as a result, the Stikine/Tahltan confluence was a focal point of the Tahltan seasonal round. Following a September trading visit by the Tlingit, Tahltan families would disperse to the highlands to hunt and trap a variety of game and gather plant resources. Winters were spent at established camps, usually situated within sheltered valleys (Albright 1982, 1984).

Historically, the Tahltan exploited marmots in early fall, from mid-August to mid-September. As many as 200 to 300 marmots were split and dried for storage during a fall hunt. Marten, fisher,

wolverine, and fox were captured for their fur only (Albright 1984). Lynx, hare and porcupine were trapped and eaten for their food as well as used for their pelts/quills (Albright 1984).

Traditional hunting ranges include the watersheds of the Tuya and Tahltan rivers, and the Dease Lake basin, all in the general vicinity of the communities of Dease Lake and Telegraph Creek. To the east, traditional harvesting regions encompass parts of the Spatsizi Plateau and adjacent headwaters of the Skeena, Nass, Spatsizi, and Klappan rivers. Bisecting these areas and extending into the southern portion of the traditional territory is the Iskut River system, also used by the Tahltan for hunting and other traditional activities (MacLachlan 1981; TCC 2010a)

30.5.1.1 Social, Cultural and Heritage Setting

The Tahltan population is estimated by the Tahltan Central Council (TCC) to be approximately 5,000 people, of which an estimated 1,000 people live within the Tahltan traditional territory(TCC and IISD 2004; TCC 2010a). Although the majority of the Tahltan Nation members are spread out across various parts of BC and the Yukon (TCC and IISD 2004), Tahltan members reside principally on Dease Lake 9, Telegraph Creek (Telegraph 6, Telegraph 6A and Guhthe Tah 12), and Iskut (Iskut 6). Tahltan members also live in the unincorporated community of Dease Lake. Dease Lake 9 is situated less than six kilometres north of Dease Lake along Highway 37.

Telegraph Creek and Iskut are roughly equidistant from the Project, which lies approximately 140 km (straight-line distance) to the south. Travelling north by road on Highway 37 from the TCAR turn-off, the distance to Iskut is approximately 181 km, to Dease Lake, a further 83 km, and to Telegraph Creek, another 108 km by road southwest from Dease Lake.

Tahltan community populations have fluctuated over the past decade, although it is difficult to compare the population between Census years due to boundary changes and other factors. The median age in Telegraph Creek is 33 years, and just under 26 in Iskut, substantially younger than the provincial average of 41 years. The TCC (TCC n.d.) reports that 40% of its population is under the age of 25.

Tahltan social organization is kinship-based, characterized by matrilineal descent and divided into two moieties: the Raven and the Wolf (Albright 1984). Each moiety consists of three clans named after the geographical areas in which they claim hunting rights (MacLachlan 1981).

Historically, clans were headed by a single, hereditary leader responsible for settling disputes and overseeing the organization and allocation of the hunting and fishing territories and rights of each family (MacLachlan 1981; Albright 1984). Disease epidemics, an outcome of European contact in the nineteenth and early twentieth centuries, led to a sharp drop in the Tahltan population and the amalgamation of clans under a single leader (MacLachlan 1981).

Contemporary Tahltan governance is administered through the band system under the federal *Indian Act* (1985b), with an elected chief and council who oversee the daily social and economic affairs of the community. The Tahltan Nation is comprised of two Bands, the Iskut First Nation (in Iskut), and the Tahltan Band (based at Telegraph Creek and Dease Lake; BC MARR 2008). The TCC represents the two bands, and is governed by an Executive Committee and a Board of

Directors comprised of family representatives, with an Elders Advisory Council providing guidance.

Over half of the housing stock in the Tahltan communities is relatively new (post-1986), although many houses need major repair, and overcrowding is a problem, in some cases double the provincial rate (Statistics Canada 2007; See Appendix 22-A). The Tahltan communities are provided with water, electricity, landfill, telephone, and high speed internet, and have limited recreational facilities. Sewage disposal is by means of septic tanks.

K-12 schooling is available. High school non-completion rates in Tahltan communities are higher than, and the percentage of individuals with college and other non-university diplomas lower than, the provincial averages.

Social services in Telegraph Creek and Dease Lake are provided by the Tahltan Health and Social Services Authority (THSSA), a non-profit organization. It provides National Native Alcohol and Drug Abuse Program services, mental health services, organize patient travel, provide victims services and access to home and community care and a crisis line, as well as the Ku We Gahan justice program (Province of BC 2011). The Headstart program in Telegraph Creek, run by the THSSA, provides group childcare and preschool (Healthspace n.d.).

In Iskut, social services are coordinated through the Iskut Valley Health Services including preschool and childcare programs such as Headstart.

The traditional language of the Tahltan is Athapaskan (Krauss and Golla 1981). A language needs assessment conducted in 2010 surveyed 2,212 Tahltan and found that fewer than 25% of respondents had any understanding of the Tahltan language, although the Nation is taking steps to revitalize its use (TCC 2010b).

The Tahltan have identified archaeological issues, including ice patch and glacier sites, cave and rock shelter sites, cairns, trails, and regional archaeology as being important to them (Asp 2006; THREAT 2011). The one-hectare Treaty Rock site is of special cultural and historic significance to the Tahltan. It surrounds a large outcrop along the bank of Treaty Creek, and is a designated heritage site (Borden number HdTj-1) that marks the location of a peace treaty reached between the Tahltan and Nisga'a, concluded in the late 19th century.

30.5.1.2 Economic Setting

Tahltan communities rely primarily on the public sector and natural resource industries for economic opportunities. The Tahltan territory is rich in mineral resources. Industrial development in the area in the past has focused on mineral exploration and mining, which continue to provide employment (Rescan 2009c). Local businesses within the Tahltan communities tend to be small-scale in nature. Dease Lake is a key regional centre, offering some provincial government services. Its economy is based on a combination of mining, guide-outfitting and wilderness tourism. There are signs of a shift among Tahltan workers to higher skill levels in these sectors.

The Tahltan Nation Development Corporation (TNDC) is an important local and regional employer, involved in mining, road construction, hydroelectric power generation, forestry, catering, custodial work, heavy construction, road development and transportation (TNDC 2007; ATCO Group 2011).

Tahltan communities generally experience high unemployment, substantial seasonal fluctuations in income and employment, and lower-than-average incomes, and continue to rely on both traditional resource harvesting and government transfers to support household livelihoods. Subsistence activities, such as hunting, fishing, and plant harvesting are important to the daily life and heritage of many Tahltan members. Plant harvesting and fishing are the most common traditional harvesting activities, followed by hunting. The 2007 Tahltan Census noted that 83% of Tahltan respondents participated in traditional harvesting activities (GMG Consulting 2009). Approximately 75% of Tahltan households rely on country foods for at least some of their weekly diet.

30.5.1.3 Health and Community Well-being

Iskut and Telegraph Creek are located in the Telegraph Creek Local Health Area (LHA) (No. 94), while Dease Lake is a part of the Stikine LHA (No. 87), with health service delivery managed by the Northern Health Authority. First Nation residents receive health care services and/or funding. Dease Lake is the primary regional health centre, while Iskut and Telegraph Creek offer local primary health care services, with patients transferred to larger centres as circumstances require. Basic nursing services are available in all three Tahltan communities, and both Tahltan bands deliver social and mental health services to their memberships.

The RCMP, based in Dease Lake, polices all three Tahltan communities. Telegraph Creek and Dease Lake have volunteer fire departments, while Iskut's fire services are provided out of Dease Lake. BC Ambulance serves all three communities from Dease Lake.

As with many Aboriginal communities, diabetes is an issue of increasing concern. Within Iskut, the number of people diagnosed with diabetes continues to increase. IVHS provides counselling and nutrition education to diabetes patients, with regular visits to the community by a nutritionist (IVHS 2006). Sexually Transmitted Infection (STI) prevalence has seen a notable decrease in the past few years (with zero incidences in 2005/06; IVHS 2006). Suicide is a noted concern in the community, and the nursing staff report threats or suicide attempts on a regular basis (IVHS 2006). Similarly, cause-of-death records for the Northwest Health Service Delivery Area indicate significantly more incidences of "risky" behaviours among First Nations residents than their non-Aboriginal peers (Bridges and Robinson 2005).

30.5.1.4 Current Use of Land and Resources for Traditional Purposes

The Tahltan collectively hold rights to hunt, fish, trap and harvest berries and other food and medicinal plants throughout their asserted territory. The harvesting of fish, wildlife and plants sustains the non-wage economy and is an important food source for most households.

The harvesting of plants and berries continues to be an important traditional Tahltan activity. Plants are used for medicinal and subsistence purposes. The Tahltan harvest approximately

25 species of berries and numerous wild green vegetables, roots and plants are used to treat a variety of minor ailments (Albright 1984; School District 87 2000). Soapberries and blueberries are commonly eaten (GMG Consulting 2009). Several species of edible mushrooms are found within the Tahltan traditional territory. Pine mushroom gathering is economically important, especially for Iskut Band members.

Salmon feature prominently in Tahltan cultural identity and practice, with numerous fish-bearing river systems running through the Tahltan traditional territory. The traditional summer fisheries are currently located in the mid-Stikine, upper-Nass and upper-Skeena basins(THREAT 2009). Sixty-four percent of the Tahltan eat salmon at least once a week, and 22% of the Tahltan eat other fish at least once a week.

Wildlife species of importance to the Tahltan include mountain goat, moose, grizzly bear, black bear, wolves, marten, fisher, lynx, river otter, snowshoe hare, porcupine, red and flying squirrels, mink and wolverine, all of which have cultural and livelihood importance as a source of food and/or materials for traditional implements. Wolf, mink, and wolverine in particular were traditionally held in high regard for their fur. Moose have effectively replaced caribou as a game species for the Tahltan, as they have for other Aboriginal groups in the region. Mountain goat is culturally important for Tahltan for both its meat and hair.

Moose are a primary food source in the Tahltan diet. According to a recent survey, three quarters of the Tahltan eat moose meat at least once a week, Mountain goat, traditionally prized for its hair as well as meat, are not as prominent in Tahltan livelihoods as it once was. Within the wildlife Regional Study Area (RSA), the Teigen-Snowbank-Ningunsaw corridor was identified as important to the Tahltan for its wildlife values. Trapping for fur-bearing mammals continues to provide a nominal source of income for individuals and families who hold traplines. The Tahltan Census from 2007 (GMG Consulting 2009) provides no information on the percentage of Tahltan people who trap versus those who do not. However, among the traditional foods that are still eaten include rabbit, beaver, gopher, groundhog, and porcupine. These species could be hunted and/or trapped.

To date, the Tahltan have not provided any information on the use of land and resources in or near the Project area. Available information identifies the majority of fishing, hunting, trapping, and gathering activity to be occurring in more northerly areas of their territory, for example near Telegraph Creek (Appendix 30-A).

30.5.2 Gitanyow First Nation

Each Gitanyow wilp (house) holds a portion of the traditional territory. The wilp Wii'litsxw territory extends from south of Bowser Lake to just south of Meziadin Lake, and includes sections of the Bell-Irving River between Bowser Lake and the Nass River, and the watersheds of Hanna and Tintina Creeks, a culturally and ecologically important area for Gitanyow fishing and hunting. Wilp Wii'litsxw territory is also the closest Gitanyow territory to the Project footprint, Highway 37 traverses the Hanna-Tintina area, where a co-managed protected area is proposed.

30.5.2.1 Social, Cultural and Heritage Setting

The primary Gitanyow reserve is located on Highway 37, approximately 140 km northeast of Terrace. The three Gitanyow reserves in total occupy about 850 hectares (MARR 2012). Aboriginal Affairs and Northern Development Canada (AANDC) currently reports 802 registered Gitanyow First Nation members, although the GHCO reports a larger membership, since memebreis based on association with a wilp, rather than band registration indicate that the number may be closer to 1,200 members including both on- and off-reserve populations (AANDC 2012b). Almost half registered members live in the reserve community of Gitanyow.

The Gitanyow society is divided among eight huwilp, and each wilp belongs to one of three matrilineal clans (Duff 1959; GHCO 2007).[1] The wilp or "house" is the primary unit of Gitanyow governance, decision-making, and jurisdiction over land and resources, and is headed by a hereditary chief. Wilp territories are generally defined by a specific watershed or group of watersheds (Rescan 2009c).

Gitanyow 1 (the main reserve) is administered by a chief councillor and a seven-member council, who are primarily responsible for the day to day affairs of the community. The GHCO is the governing body with respect to Gitanyow traditional territory and the assertion of Gitanyow rights. The GHCO includes eight house leaders representing each Gitanyow wilp. The Gitanyow wilp tenure system is one of the most important aspects of Gitanyow culture and social organization. Members of the wilp have use of, and responsibility for, the lands and resources in their particular house territory. The GHCO uphold Gitanyow *ayookxw* law and regulate access to the resources within each wilp's respective territory (Gitxsan Chiefs' Office 2010).

The Gitanyow language is Gitwangak, a dialect of *Gitxsanimaax*, part of the Tsimshian family of languages. Gitxsanimaax is also spoken by the Gitxsan Nation (Gitxsan Chiefs' Office 2010).

According to the *Gitanyow Wilp-Based Socio-Cultural Needs Assessment* (Marsden 2010), 25% of Gitanyow wilp members speak Gitxsanimaax fluently. Just over half (52%) have a partial ability to speak or understand the language, and 23% have no working knowledge. Approximately 45% of Gitanyow youth do not speak the language, but many of them (55%) know some words and phrases, and 25% are taught Gitxsanimaax in school. Some of the children are learning parts of the language through songs, drumming, and singing and dancing groups. Eighty percent of youth surveyed said they would like to learn their language.

The Gitanyow have a Cultural Heritage Resource Management Policy (GHCO 2009), which identifies how cultural resources are to be protected and preserved in order to maintain the identity, integrity, and well-being of Gitanyow huwilp members. No known Gitanyow archaeological or heritage sites are expected to be affected by the Project.

[1] The eight wilp are: Luuxhon, Malii, Haizimsque, Wii'litsxw, Watakhayetsxw, Gamlaxyeltxw, Gwass Hlaam and Gwinuu.

Many Gitanyow houses are in need of major repair, and overcrowding is a problem. Gitanyow water supply and distribution system is ground-water based, and does not use disinfection. Telephone and high-speed Internet services are available, although there is no cell coverage. Recreational facilities in the community of Gitanyow include a baseball diamond and soccer field adjacent to the Gitanyow Independent School, and a few playgrounds.

K-7 schooling is available, while high school student commute to Hazelton, 75 km away. The high school completion rate is low and the high school drop-out rate, high, although the proportion of the Gitanyow population that has obtained trades certificates exceeds the provincial average (Statistics Canada 2007). The Northwest Community College campus in Hazelton offers a range of programs, including a variety of skill training for the mining industry.

The Gitxsan Child and Family Services Society (GCFSS) provides a variety of social and community services. The Gitksan Wet'suwet'en Education Society (GWES) is involved in the delivery of, programs and services aimed at college preparation and adult basic education, cultural education for youth, community healthcare training, trades and technology, and early childhood education.

30.5.2.2 Economic Setting

The Gitanyow economy has relied mainly on primary resource-based industries in the recent past. Forestry was the community's mainstay from the 1960s, until the closure of the Kitwanga sawmill in 2008, resulting in widespread employment in Gitanyow and Gitxsan communities (GHCO 2006; Terrace Standard News 2011). The high recent levels of unemployment are attributed to lack of education, training and skills, dependency on social assistance, lack of incentive, lack of job opportunities and a weak local economic base. The community is struggling to overcome its former dependence on the forestry sector in recent decades.

BC Hydro and the Gitanyow First Nation have negotiated an agreement for employment, contracting, and other economic opportunities related to the construction of the NTL (BC Hydro 2012). The Gitanyow Band Office, GHCO, and Gitanyow Health Service, based in Gitanyow, provide an important source of local employment, and there are also a small number of locally-based forestry and fishing businesses (Rescan 2012). Currently, most Gitanyow workers are employed in the public sector, the main employers being the Gitanyow Independent School, the health clinic and the Band office (Derrick pers. comm.). Forestry employs about 25% of the workforce, while fisheries and tourism employ only 2%, and forestry and mining, 13% of the Gitanyow workforce (Marsden 2010). Annual full-time median Gitanyow earnings are well below provincial averages, and government transfers represent almost 30% of income.

30.5.2.3 Health and Community Well-being

The Gitanyow First Nation delivers a range of health services in Gitanyow. The community relies on Wrinch Memorial Hospital in Hazelton for major services, including ambulance, doctor, dentist, and pharmacy services. BC Air Ambulance serves Gitanyow from Kitwanga. The RCMP provides policing from New Hazelton. Gitanyow has its own volunteer fire department, with additional fire services available from Kitwanga.

The AANDC community well-being index (CWBI) score for Gitanyow in 2006 was 54 (INAC 2010), three points lower than the average score across Canada for Aboriginal communities, and 23 points lower than the CWBI score for non-Aboriginal communities. This is attributed to factors such as poor housing conditions, low incomes and poverty, and poor individual health.

30.5.2.4 Current Use of Land and Resources for Traditional Purposes

The Gitanyow collectively hold rights to hunt, fish, trap and harvest berries and other food and medicinal plants throughout their asserted territory. Traditional subsistence activities such as hunting, fishing, and plant gathering remain important in the daily life of Gitanyow. Huwilp continue to actively hunt within their traditional house (wilp) territories. Fisheries located along the Kitwanga and Nass rivers, as well as in the Gitanyow and Meziadin Lakes areas, are important for seasonal salmon harvests (GFA 2010; Skeena Fisheries Commission N.d.)[2]. The Gitanyow place a very high priority on preserving water quality and quantity and ensuring fisheries survival in the Bell-Irving River and the Hanna-Tintina watershed, the Oweegee and Bowser Lake areas, and the Meziadin Lake area, which includes the confluence of the Meziadin and Nass Rivers.

Gitanyow members typically consume country foods gathered from their territories, including fish, moose meat and berries (Marsden 2010). Ninety percent of Gitanyow adult wilp members possess at least some of the skills necessary to harvest, preserve, and prepare wild foods and medicines, and consumption of traditional foods is widespread. One-quarter of Gitanyow wilp members consume traditional foods on a daily basis, and over 50% consume traditional foods once or twice a week. Twenty percent of Gitanyow wilp members have cabins or smokehouses in their house territories. More than two-thirds of those who did not have cabins or smokehouses said they would build one if they had the financial means and/or the support of the hereditary chief (Marsden 2010).

Among the most significant areas for Gitanyow traditional land use are the watersheds of the Hanna and Tintina creeks (south of the Boswer River), and the confluence of the Meziadin basin and Nass River. Both areas are highly valued for salmon spawning and the harvesting Nass River sockeye salmon (GHCO 2008; Gitanyow Nation and Province of BC 2012). High value grizzly bear habitat is found in the Hanna and Tintina drainages, and to the north along the Bell-Irving River towards Surveyors Creek.

Along the Bell-Irving watershed, Bowser and Oweegee lakes also high fisheries value (M. Cleveland and G. Rush, pers. comm. 2008; T. Martin, pers. comm. 2010b). Gitanyow consider that streams located in close proximity to swamps, wetlands, and high-water tables function as high value fish spawning habitat (GHCO 2008). The protection of salmon spawning habitat is of particular importance to Gitanyow huwilp.

[2] The annual Gitanyow Food, Social and Ceremonial fishery is sanctioned under the terms agreed to in the Comprehensive Fisheries Agreement signed between the GHCO and Fisheries and Oceans Canada (DFO) in 1999 and administered by the GFA (2010).

Approximately 60 to 80% of the Nass River salmon spawn in the Hanna – Tintina watersheds (BC MFLNRO 2012). The area contains small, easily fished streams, and the surrounding wetland-brush-forest habitat provide high value food supply and habitat for grizzly bears. The area is of high cultural value to the Gitanyow huwilp and contains numerous TK/TU sites (Philpot 2007).

Of particular concern to Gitanyow is the preservation of grizzly bear, moose and deer habitats, as well as moose winter range (BC MFLNRO 2012). Moose have been less abundant in recent years, while caribou have either migrated away or been extirpated from Gitanyow traditional territory. The Gitanyow hold a trapline covering their traditional territory (Sterritt et al. 1998) and trapping is a relatively common practice, focused in particular on mink, marten, beaver and fox (Halpin and Seguin 1990).

Grizzly bear has multiple uses, although traditionally its main value to the Gitanyow is as a source of fat and oil in the winter. The Gitanyow further identified marmot, beaver, marten, wolverine, rabbit, and deer as species used regularly and critical to Gitanyow culture and livelihoods, either as a source of food, or for a variety of ceremonial or other cultural uses.

Mountain goats are also identified as a key species in the Gitanyow feast system, and are an especially important food resource for wilp Wii'litsxw. Displacement of goats is a particular concern because goats are easily disturbed. Some Gitanyow also raised the issue of potential displacement/disturbance of goats by the recent increase in human activity and, subsequently, the potential underestimation of goat populations in the area . Other key wildlife species of cultural and economic importance include marmot, beaver, marten, wolverine, rabbit and deer.

The Gitanyow harvest, Devil's club, hellebore, Labrador tea, water lily roots, nettles, soapberries, balsam bark, red alder bark, and wild mint for medicinal purposes (Marsden 2010). Seasonal berry picking is still actively pursued (G. Martin pers. comm. 2011) and is an important aspect of the seasonal harvest cycle. The Gitanyow gather a wide variety of plants with important cultural and use values, including blueberries, cranberries and soapberries used for food, and many other plants for their medicinal, properties or for use in art, construction or the creation of ceremonial implements and clothing (GHCO 2009; G. Martin pers. comm. 2011). In the past, controlled burns were used to enhance berry production; however, this practice has been banned since WWII (Daly 2005). Harvesting of pine mushrooms is an increasingly important economic activity (GHCO 2009; G. Martin pers. comm. 2011) .

In March 2012, Gitanyow Nation and the Province of British Columbia reached a reconciliation agreement (Gitanyow Huwilp Recognition and Reconciliation Agreement [GHRRA]). (Gitanyow Nation and Province of BC 2012). The agreement is intended to lead to shared decision-making and allow the Gitanyow to explore economic opportunities associated with the development of the NTL. One of the overarching goals of the agreement is the development of meaningful, shared decision making with respect to land and resources within Gitanyow traditional territory Lax'yip) and a collaborative approach to sustainable economic development.

Highlights of the GHRRA include: establishment of a Joint Resources Governance Forum, creating a one-window approach to consultations and decision-making for potential development

in the Gitanyow Nation traditional territory; providing $600,000 over three years for its implementation, the completion of an economic opportunities study, and the preparation of a socio-economic well-being strategy; and development of an alternative energy action plan for Gitanyow territory, as well as the development of a carbon-offset sharing system that will reduce greenhouse gases.

The GHRRA supports efforts to protect the 24,000-hectare Hanna Tintina area. The Province is proposing to establish the Hanna-Tintina Conservancy (23,702 ha) under the *Protected Areas of BC Amendment Act* (2013) as a result of the Nass South Sustainable Resource Management Plan and the GHRRA. At the timing of writing of the KSM Project Application/EIS, the Conservancy had not been legally established.

Contemporary Gitanyow fisheries interests have been formalized under a Comprehensive Fisheries Agreement signed between the Gitanyow First Nation and the Minister of Fisheries and Oceans in 1999. This co-management agreement gives the Gitanyow a role in the protection and enhancement of fisheries resources and fish habitat in the area, and provides for a seasonal 'food, social and ceremonial fishery' for the Gitanyow under a communal license. Commercial allocations of salmon have been awarded to the Gitanyow since 2009, and in 2012, an agreement was reached with DFO to transfer retired offshore commercial fishing licences for use in the Meziadin River. The 2011 commercial allocation of 3,000 salmon is expected to be increased to 10,000 or 12,000 in the future (M. Cleveland, pers. comm., 2012).

30.5.3 Gitxsan Nation

The Gitxsan traditional territory encompasses approximately 33,000 km^2 in northwestern BC spanning from the mid-Skeena just north of Terrace to the upper reaches of both the Nass and Skeena rivers in the north, and from the Nechako Plateau in the east to the Bell-Irving River in the West (Figure 30.2-3). No Project components are located in the Gitxsan traditional territory, including wilp Skii km Lax Ha territory.

The Bell-Irving River, a tributary of the Nass River, is located downstream of the Project. It flows through portions of the Gitxsan territory from the settlement of Bell II to its confluence with the Nass River, passing through lands claimed by wilp Skii km Lax Ha.

The Gitxsan communities are located about 230 km south of the TCAR turn-off from Highway 37, and are clustered in the vicinity of Hazelton, farther up the Skeena Valley along Highway 16.

Most of the Gitxsan traditional territory encompasses watersheds that are not connected to the Nass/Bell-Irving system, and will not be directly affected by the Project. However, portions of Gitxsan territory occupy the Bell-Irving River from its confluence with the Nass River northward to the settlement of Bell II, and the confluence of Snowbank Creek with the Bell-Irving River.

To the west of the Bell-Irving, the wilp territory of Skii km Lax Ha covers the Bowser Lake basin, terminating at Treaty Creek just to the south of the PTMA and the MTT. The Skii km Lax Ha themselves are asserting a larger territory (Figure 30.2-3)

30.5.3.1 Social, Cultural and Heritage Setting

The five Gitxsan reserve communities (Gitwangak, Gitsegukla, Gitanmaax, Glen Vowell [or Sik-e-dakh], and Kispiox) are situated in the mid-upper Skeena River area. Gitwangak, the closest Gitxsan community to the Project, is located approximately 240 km m south of the junction of Highway 37 with the proposed TCAR.

While the population of individual Gitxsan communities has fluctuated over the past several censuses, overall, the population in Gitxsan communities has been more stable than other communities in northwest BC in recent years. According to AANDC 2012 data, there were 6,460 registered on- and off-reserve members of the Gitxsan Nation as of 2012, with about 2,333 Gitxsan members residing in Gitxsan reserves communities (AANDC 2012a). The GCO (2008) estimates that there may be as many as 13,000 members of the Gitxsan Nation worldwide.

Gitxsan society is based on matrilineal descent and arranged around a wilp system identical to the Gitanyow First Nation. There are four Gitxsan clans (Wolf, Frog, Fireweed, and Eagle) and more than 50 huwilp ranging in size from about 20 to 250 members (Gitxsan Chiefs' Office 2010). Each wilp has its own house territory in which it has clearly defined rights and jurisdiction pertaining to the access and use of resources. Each wilp is led by an hereditary wilp chief who is the highest authority and spokesperson for the wilp. Gitxsan law holds that permission must be granted by the chief for any activity that is to take place within a wilp's territory (Morrell 1989; Gitxsan Chiefs' Office 2010).

At the band level, each of the five Gitxsan communities has their own elected chief and counsellors, who oversee the day to day administration of band-level and community affairs in accordance with the *Indian Act* (1985b). The broader collective interests of the Gitxsan Nation are represented by two entities. The GCO is an instrument of the Gitxsan Hereditary Chiefs, and acts as a spokesperson in matters dealing with resource management. This body engages with federal, provincial, regional and municipal governments, as well as resource companies in the EA process. The Gitxsan Treaty Society (GTS) was created under the *Society Act* of British Columbia to represent the Gitxsan Nation in the BC Treaty Process on behalf of the Gitxsan Hereditary Chiefs. At the time of writing, the Gitxsan Hereditary Chiefs had renewed the mandate of the GTS to "support the Simgiigyet (chiefs) and the Gitxsan people in their efforts to advocate for Gitxsan aboriginal rights in treaty negotiations and other forms of reconciliation with the Crown" (Gitxsan Chiefs' Office 2012).

Many dwellings in Gitxsan communities need repair, and average occupancy rates are high. Gitxsan agencies deliver water supply, treatment, distribution and storage, waste water collection, treatment and disposal, roads and drainage, subdivision development and fire protection. All communities have running water systems, and some are on community sewage systems. Some Gitxsan communities have wireless high speed Internet service, and all have cellular service. Recreation facilities for the Gitxsan communities are limited.

Gitxsan children receive K-7 schooling in their own communities or in New Hazelton, and high school students travel to Hazelton for schooling. High school dropout rates are high, although the proportion of Gitxsan holding apprenticeship trades certificates or diplomas tends to be above

average. Higher education needs are served by the GWES, located in Hazelton, which offers training, educational and cultural programs for people in the Gitxsan-Wet'suwet'en region, and also by the NWCC Hazelton campus. The NWCC is affiliated with the mining school in Smithers, and among other things, offers employment training courses focused on mining and heavy equipment operation, safety and the trades.

The GCFSS serves the communities of both the Gitxsan and Gitanyow, offering community and family social services. There are various childcare and pre-school facilities, "parent-child" services, as well as pregnancy support and a senior's housing facility in New Hazelton.

The language of the Gitxsan is known as Gitxsanimaax, part of the larger Tsimshianic language family. According to recent language surveys conducted by the Gitxsan, of the people who claim Gitxsan descent (including the Gitanyow), there are 444 fluent speakers of Gitxsanimaax. Nearly 2,300 people understand and speak the language somewhat, and 617 people identified themselves as "learning speakers" (FPHLCC n.d.).

The Gitxsan do not have a publically available heritage policy that outlines their heritage interests. However, as a result of Watershed Sustainability Planning in cooperation with BC MFLNRO, they have produced an atlas of each of the nine watersheds in their traditional territory, and cultural heritage values are one of the many types of information mapped in this atlas. Mapping information includes the locations of travel corridors, "cultural features", place names, camp sites and village sites, and fishing sites (BC MFLNRO 2007-2008).

GCFSS serves the communities of Gitxsan and Gitanyow, offering a variety of community and family social services. There are a number of childcare and pre-school facilities, "parent-child" services, pregnancy support and outreach services in the area, including a senior's housing facility in New Hazelton.

30.5.3.2 Economic Setting

The forest industry has historically been a mainstay for the economy of many Gitxsan communities but in recent years, the closure of several mills in the area has caused unemployment (A. Maitland, pers. comm.), with federal transfer funds playing an increasing prominent role in supporting the economy of Gitxsan communities (P. Weeber and B. Faasnidge, pers. comm.) Some Gitxsan businesses operate in the local tourism economy. Mining could become an important economic driver in the region, with potential benefits for Gitxsan people if appropriate levels of skills, training and experience can be acquired.

Labour force participation rates in the Gitxsan communities are relatively low. Unemployment in the five communities averaged 38.7% in 2006, well above the provincial rate of 6% for that year. Unemployment rates fell in Gitsegukla, Glen Vowell, and Gitanmaax between 2001 and 2006, but rose in Gitwangak and Kispiox.

For Gitanmaax, Gitsegukla, Gitwangak, and Kispiox, median earnings in 2005 averaged $10,868. Full-time earnings among the Gitxsan communities of Gitanmaax, Gitsegukla, Gitwangak, and Kispiox were markedly lower than for the province ($42,230), averaging $26,210 (Statistics Canada 2007)[3].

Gitxsan communities derived on average 60.3% of their community income from earnings, with another 36% derived from government transfers in 2005 (Statistics Canada 2007).

30.5.3.3 Health and Community Well-being

The Gitxsan Health Society provides a wide range of health programs and services to the three Gitxsan communities (Gitanmaax, Glen Vowell [Sik-e-dakh Health Center], and Kispiox), with more serious health issues and acute conditions treated at the Wrinch Memorial Hospital in Hazelton. Gitsegukla and Gitwangak have fewer health resources and services. BC Ambulance provides services to the area around the Hazeltons. The RCMP, based in Hazelton, provides services in and around the Hazeltons area. Fire services originate from Kitwanga.

The average AANDC CWBI score for the Gitxsan communities is 56 (range between 49 to 61), which is close to the average score for Aboriginal communities across Canada, and lower than the CWBI score for non-Aboriginal communities.

A recent health study conducted with residents of Glen Vowell, Kispiox and Gitanmaax reported a variety of health issues and concerns including arthritis, high blood pressure, smoking, obesity, and diabetes (Gitxsan Health Society 2012). Suicide, expecially among youth, is an issue of increasing concern. From June to November 2007, there were 59 reported suicide attempts in Gitxsan communities (CBC News 2007).

30.5.3.4 Current Use of Lands and Resources for Traditional Purposes

The Gitxsan collectively hold rights to hunt, fish, trap and harvest berries and other food and medicinal plants throughout their asserted territory. The Gitxsan use the land and aquatic natural resources to supplement household livelihood and diet, and to contribute to family income. The harvest, processing, and consumption are important cultural activities for Gitxsan people.

Within the Gitxsan traditional territory, sockeye salmon runs occur in the summer, and coho and steelhead runs in the fall. In the winter, some Gitxsan fish for char, Dolly Varden, and lake and cutthroat trout, while others with kinship ties to Nisga'a citizens fish on the Nass River, returning to the same sites year after year (Daly 2005). Hereditary chiefs have decision making responsibility including allocation of access, control of harvest methods, timing, and numbers, as well as adapting and responding to changing conditions or problems with the fishery (Morrell 1989).

Principal wildlife species harvested for subsistence purposes include deer, moose, mountain goat, and black and grizzly bears. In the past, mountain goat was hunted along the Skeena River and in

[3] Statistics Canada suppressed data for the Gitxsan community of Glen Vowell

the Stewart area, as well as in the upper Nass and Kisgaga'as areas. Marmots were trapped for their high value pelts in the Stewart area and along the upper Nass (Daly 2005). Beaver, mink, marten, fisher, fox, wolf, coyote, weasel, and otter were also trapped for their fur (People of 'Ksan 1980; Halpin and Seguin 1990). Other smaller animals were trapped for food, fur and grease. Trapping continues but at lower levels than in the past.

Historically, the Gitxsan conducted controlled burns to enhance berry production; however, the practice is now banned (Gottesfeld 1994). Gitxsan harvest Saskatoon berries, hazelnuts, chokecherries, rosehips, gooseberries, squash berries, raspberries, thimbleberries and soapberries were among those eaten by the Gitxsan (Rescan 2009a). They also collected wild crab-apples, swamp cranberries, Saskatoon berries, and soapberries in the valleys. Thorn-berry and rosehips were also taken (Daly 2005)..

The Gitxsan harvest berries in clear-cut areas opened by forestry and along roadsides (Daly 2005), including Saskatoon berries, hazelnuts, chokecherries, rosehips, gooseberries, squash berries, raspberries, thimbleberries and soapberries (Rescan 2009a). Gitxsan also collect wild crab-apples, swamp cranberries, Saskatoon berries, and soapberries in the valleys. Thorn-berry and rosehips are also harvested (Daly 2005). Medicinal plants gathered from wet areas at lower elevations include devil's club (late October to spring) and yellow pond lily root (autumn; Gitxsan Chiefs' Office 2010). Edible mushrooms are harvested, including pine mushrooms (primarily for export).

The Gitxsan are implementing watershed planning in nine watersheds. Several Gitxsan huwilp are involved in cooperative efforts to develop sustainable watershed development plans to incorporate considerations of Aboriginal title, employment, and capacity building to enhance socio-economic conditions (Gwaans 2007; Gitxsan Chiefs' Office 2010). A Gitxsan Strategic Watershed Analysis Team has been established to provide culturally appropriate ecological, land and resource use research, and training, education, map production and technical support to Gitxsan huwilp, and to advise non-Gitxsan communities and organizations in the case of overlapping activities (Collier and Rose 2007).

30.5.4 Skii Km Lax Ha

30.5.4.1 Population and Economy

Skii km Lax Ha membership is estimated to consist of approximately 15 to 30 people, most of whom live in Hazelton and New Hazelton (D. Simpson, pers. comm.). The Skii km Lax Ha do not have separate reserves or communities.

The Skii km Lax Ha own a contracting business, Tsesaut Ventures Ltd., which services the mineral exploration and mining sector. The company has become an important employer in the Hazeltons in recent years, creating over 100 jobs for local Aboriginal and non-Aboriginal residents in the area (Hume 2013).

30.5.4.2 Heritage

There is a provincially-designated heritage site (Borden number HcTj-1) at Graveyard Point, on the north side of Bowser Lake, located to the south the Project. The Skii km Lax Ha have a cabin in the area and also some of their ancestors are buried here. Graveyard Point is about 27 km to the south of the PTMA as the crow flies.

30.5.4.3 Current Use of Lands and Resources for Traditional Purposes

The Skii km Lax Ha assert rights to hunt, fish, trap and harvest berries and other food and medicinal plants throughout their asserted traditional territory. The Skii km Lax Ha have traditionally, and currently hunt/trap, fish, camp and harvest plants, berries and mushrooms in their asserted traditional territory. Current Skii km Lax Ha sites closest to Project infrastructure include a travel corridor used by the Skii km Lax Ha which passes through the Unuk River valley in the vicinity of the Mine Site. The MTT will pass under a Skii km Lax Ha trail and harvesting area that spans the Treaty Creek headwaters to Teigen Lake. There is also travel corridor along Treaty Creek. Moose is the most commonly hunted big game species, although black bears and grizzly bears are also hunted.

The Skii km Lax Ha historically had three cabins in the area between the north side of Mount Anderson and the Treaty Creek headwaters. These cabins were located at Gilbert Lake (along the Treaty Creek access road (TCAR) within the Land Use Local Study Area (LSA (see Chapter 23, Figure 23.1-1), Todedada Lake (eastern/central portion of the Land Use Regional Study Area [RSA]; Figure 23.1-1), and reportedly at the confluence of Treaty Creek and North Treaty Creek (south of the TMF within the Land Use LSA).

They also historically had cabins along the Bell-Irving River near Wildfire Ridge (eastern edge of the Land Use RSA), Hidden Lake (eastern edge of Land Use RSA), Teigen Lake (northern section of Land Use RSA above PTMA) and Taft Creek (eastern edge of Land Use RSA; Appendix 30-B, Figure 4.4-1). These cabins were used during harvesting trips. They were also used as stopping points while traveling from one area to another.

The Skii km Lax Ha Ha currently use three cabins, located at Skowill Creek (eastern edge/near Highway 37 of Land Use LSA), Bell Creek (or Spruce Creek) (eastern edge of Land Use RSA), and the outlet of Bowser Lake (eastern edge of Land Use RSA). The Skii km Lax Ha are planning to re-build cabins at Todedada Lake, Gilbert Lake, and Taft Creek. They are also planning to replace a cabin along Teigen Creek (located approximately halfway between the mouth of the creek and Teigen Lake).

Prior to 2009, the Skii km Lax Ha actively trapped along Highway 37 from the Cranberry River (outside Land Use RSA) to the Skii km Lax Ha cabin on Skowill Creek (eastern edge/near Highway 37 of Land Use LSA). This area was trapped for beaver, marten and wolverine. Wetlands are preferred trap locations (Rescan 2009). Two Skii km Lax Ha traplines (TR 617 T015 and TR 616 T011) overlap the Land Use LSA, encompassing the PTMA and the TCAR. The Skii km Lax Ha advise they have not recently trapped in the area due to the operation of Tsesaut Ventures Ltd.

Key fishing areas are located mostly downstream from the TMF, notably along the Bell Irving River from the confluence of Snowbank and Teigen creeks to Bowser Lake and the Bowser/Bell-Irving confluence. Salmon, steelhead and trout fishing is important to the Skii km Lax Ha. Preferred spring salmon fishing locations include the Cranberry River (outside the Land Use RSA The Cranberry River flows into the Nass River approximately 160 km downstream from the TCAR. Preferred spring salmon fishing spots include the Snowbank Creek/Bell-Irving River confluence, near Bell II, on the northeastern edge of Land Use RSA, and the Treaty Creek/Bell-Irving River confluence on the eastern edge of Land Use LSA. The Skii km Lax Ha also fish for spring salmon at Meziadin Lake and along other areas of the Nass River (both areas outside of Land Use RSA; Rescan 2009b).

Preferred steelhead fishing sites include the west side of the Bell-Irving River on the eastern edge of the Land Use RSA, and the stretch of the Bell-Irving River between Treaty and Wildfire creeks (for steelhead and rainbow trout), on the eastern edge Land Use LSA (Rescan 2009b). They use a fishing cabin located on Bowser Lake.

The Skii km Lax Ha collect berries (huckleberries, blueberries, cranberries and soapberries), mushrooms, and medicinal plants such as devil's club, within the Bell-Irving and Ningunsaw valleys, and around Bowser Lake (Rescan 2009b). Five of these areas are located outside of the Land Use RSA (Appendix 30-B), including the Ningunsaw valley, the east side of the Bell-Irving River north of Mehan Lake, Bell Creek (or Spruce Creek), Oweegee Creek, and Oweegee Lake. The sixth site at Bowser Lake is located on the eastern edge of the Land Use RSA, well south of the PTMA. None of these sites are anticipated to be impacted by the Project.

30.6 First Nations Consultation Activities and Identified Issues

This section provides a summary of consultations with First Nations and proposed plan for consulting First Nations during the Application/EIS review stage. The information in this section is taken from Chapter 3 and Appendices 3-M and 3-N. Issues identified by First Nations to date are summarized in Appendix 3-F. Responses to issues raised by First Nations are provided in Appendix 3-N.

30.6.1 First Nations Consultations – Pre-Application/Pre-Submission Stage

During the pre-Application/pre-submission stage, Seabridge has undertaken or been involved in the following information distribution and consultation activities involving First Nations:

- Seabridge met separately with First Nations in February and March 2008 to introduce the Project and meet representatives of each First Nation.
- Seabridge has participated in all meetings of the KSM Project Working Group, established by the BC EAO and CEA Agency to oversee the EA. Working Group members include representatives of First Nations, Nisga'a Lisims Government, Canadian federal and British Columbia agencies, local governments, and US federal and Alaska state agencies. The Working Group is a key mechanism through which Project information has been (and will continue to be) exchanged. Seabridge attended Working

Group meetings to provide information on the Project, provide responses on proposed baseline studies, potential Project effects, proposed mitigation measures and various Project-related reports.

- In addition to working group meetings, Seabridge has met separately with First Nations to discuss proposed fish habitat compensation plans, the Highway 37 and Highway 37A traffic effects assessment, TMF alternatives assessment, and other matters.
- Seabridge responded to comments from First Nations with respect to the draft AIR in 2009 and 2010, before they were finalized in January 2011.
- Seabridge, in 2008, provided notice of opportunities for employment of First Nations members in baseline field studies for the Project, and several First Nation members were employed between 2008 and 2011.
- Seabridge offered EA process participant funding to First Nations, leading to funding agreements with the Tahltan Central Council (TCC), Gitanyow Hereditary Chiefs' Office (GHCO), Gitxsan Chiefs' Office (GCO) and the Skii km Lax Ha.
- Seabridge arranged for three sessions of a "Mining 101: Mining for Non-miners" workshop for First Nations in 2010, as well as an Occupational First Aid course for Gitxsan band members in 2011.
- Seabridge arranged for helicopter visits to the Project site and a tour of the operating Highland Valley Copper Mine near Kamloops on June 23, 2011 and the closed Brenda Mine near Penticton on June 24, 2011. The Skii km Lax Ha visited the site in 2008. Representatives of the Tahltan Nation, Gitxsan Nation, and Gitanyow First Nation visited the Project site and participated on the June 23 and June 24, 2011 tours.
- Seabridge completed a *First Nations Consultation and Issues Summary Report* in January 2013, summarizing Seabridge's information distribution and consultation efforts during the pre-Application stage/pre-submission stage. The draft report was provided to First Nations for review and comment. The final report was submitted to the BC EAO.
- Since July 2008, Seabridge has emailed approximately 40 press releases to First Nations to provide updates on the Project.
- Seabridge has sponsored a variety of community events in Aboriginal communities. These are described in Chapter 3 (Information Distribution and Consultation).

Seabridge made a financial contribution ($100,000) to the BC Aboriginal Mine Training Association, a portion of which was made available for First Nations training initiatives focused on mining.

To date, the Skii km Lax Ha have had limited participation on the KSM Project EA Working Group. However, they have received information provided to the Working Group.

30.6.2 Proposed First Nations Consultation - Application/EIS Review Stage

The proposed plan for consultation with First Nations during the Application/EIS review stage is intended to meet the requirements of the BC EAO Section 11 and Section 13 orders, as well as the CEAA 1992. During the Application/EIS review stage, Seabridge will:

- distribute copies of the Application /EIS to First Nations for information and consultation purposes (per Section 20.1 of the Section 11 Order);
- write to each First Nation to identify the dates of the public comment period on the Application / EIS, and the dates, times and locations of BC EAO/CEA Agency open houses;
- within time limits set by the BC EAO and CEA Agency, provide a written report to First Nations, the BC EAO and the CEA Agency on the results of consultation activities with First Nations (per Section 20.5 of the Section 11 Order);
- within any time limits set by the BC EAO, consider and respond to issues that are identified in comments submitted by First Nations during the review of the Application / EIS (per Section 23.1 of the Section 11 Order);
- where requested by, and within any time limits set by, the BC EAO, provide specified additional information in relation to, or to supplement, the information provided in the Application / EIS (per Section 23.2 of the Section 11 Order);
- attend working group meetings organized by the BC EAO and the CEA Agency to provide information related to the Application / EIS and respond to questions on the Application / EIS;
- prepare a table that tracks issues raised by First Nations on the Application / EIS and responses to those issues;
- consider and prepare written responses to key issues raised by First Nations on the Application/EIS;
- by mutual agreement, arrange consultation meetings with First Nations to identify:
  - any specific Aboriginal interests which may be potentially affected by the Project, as identified in Aboriginal interest and use studies, traditional use studies or other sources of information; and
  - measures to avoid or mitigate potential adverse effects and/or to otherwise address or mitigate First Nations' concerns (per Section 20.4 of the Section 11 Order);
- implement additional measures for First Nations consultations and accommodations as required by the BC EAO (per Section 20.6 of the Section 11 Order); and
- undertake further consultations with First Nations as directed by the BC EAO (per Sections 17.3 and 20.6 of the Section 11 Order) and the CEA Agency.

Based on issues and concerns raised by First Nations during the Application/EIS review stage, and based on input from First Nations, Seabridge will consider other measures to respond to issues and concerns raised by First Nations.

30.7 Summary of Adverse Effects Relating to Aboriginal Interests

This section describes how adverse residual social, economic, heritage, and health effects of the construction, operation, closure and post closure phases of the Project on First Nations interests have been considered and addressed. Table 30.7-1 provides a summary of the issues raised by First Nations to date. An overview of key Project design changes that have been made to address First Nation concerns is provided below.

Table 30.7-1. Issues Identified by First Nations to Date

Topic	First Nations Issue (First Nation(s) Raising Issue)
Consultation and EA process	• request input on annual baseline studies *(Gitanyow First Nation, Tahltan Nation)*; • urge conservative approach to cumulative effects assessment *(Gitanyow First Nation, Gitxsan Nation)*; • take account of historical sites, trap lines and territory data *(Skii km Lax Ha)*; • want to be kept informed about Project progress and potential impacts on wilp Wii'litsxw and other downstream huwilp *(Gitanyow First Nation)*; • request funding to participate in EA, express interest in negotiating revenue sharing and impact and benefit agreements *(Gitanyow First Nation, wilp Wii'litsxw-Txawokw, Tahltan Nation, Gitxsan Nation, Skii km Lax Ha)*; • inadequate consultation of Gitxsan wilp Djogaslee/Axtii Tsex *(Gitxsan Nation)*; • potential infringement of constitutionally protected rights, possible need for accommodation of Aboriginal rights and title *(Gitanyow First Nation, Gitxsan Nation, Skii km Lax Ha)*; • want recognition of assertion that Skii km Lax Ha holds the only Aboriginal claim in Project area *(Skii km Lax Ha)*; • lack of dispute resolution mechanism to address EA process issues *(Tahltan Nation)*; and • implications of change in Project ownership *(Gitanyow First Nation, Tahltan Nation)*.
Project design and operation	• concern about size, mine life and short time frame for assessment *(Gitanyow First Nation)*; • concern about Project design and associated risks *(Tahltan Nation)*; • confirm analysis undertaken to assess economic and environmental feasibility of tunnel and PTMA infrastructure *(Tahltan Nation)*; • TMF lifespan *(Gitanyow First Nation)*; • TMF location and long-term risks *(Gitanyow First Nation, wilp Wii'litsxw)*; • reduce waste rock volumes to create space for tailing in Sulphurets Valley *(Tahltan Nation)*; and • storage and tonnage of PAG waste rock in the Treaty Creek drainage *(Tahltan Nation, Gitanyow First Nation)*; • design of TMF dam and surface diversions *(Gitanyow First Nation)*;

(continued)

Table 30.7-1. Issues Identified by First Nations to Date (continued)

Topic	First Nations Issue (First Nation(s) Raising Issue)
Project design and operation *(cont'd)*	• consider storing CIL tailing within pits, also examine paste backfill alternative *(Tahltan Nation)*; • quantity of lime to be stockpiled at Project site *(Gitanyow First Nation)*; • effects of developing access road and transmission line in Teigen Creek Valley (Tahltan Nation). • effects of transmission line on McTagg and Mitchell creeks *(Tahltan Nation)*; • need to confirm power requirements *(Gitanyow First Nation)*; • effects on glaciers, determination of recession rates *(Gitanyow First Nation)*; • status of Mitchell Glacier, effects of roads and dust on ice melting *(Tahltan Nation)*; • permit requirements for Frank Mackie Glacier access route *(Tahltan Nation)*; • camp operations and their sustainability *(Tahltan Nation, Gitxsan Nation, Gitanyow First Nation, Skii km Lax Ha)*; • concern that Meziadin landfill will be used for waste disposal (Gitanyow *wilp Wii'litsxw)*; • need for more monitoring and enforcement, suggest companies contribute to costs *(Gitanyow First Nation)*; and • want to participate in Project monitoring *(wilp Wii'litsxw)*;
Alternatives assessment	• lack of First Nation and stakeholder involvement in developing the multiple accounts for the TMF alternatives assessment *(Gitanyow First Nation)*; • favor keeping all Project infrastructure in one valley system *(Skii km Lax Ha)*; • storage of tailing in Mitchell or Sulphurets Creek valleys rather than in Bell-Irving watershed *(Tahltan Nation)*; • storage of tailing in upper Unuk River (*Gitanyow First Nation,* Tahltan Nation) • consider alternate Project access (e.g., tunnel access from Granduc mine area, road from south side of Bowser Lake, and/or possible winter road) *(Tahltan Nation)*; • option to transport ore along south side of Treaty Creek *(Skii km Lax Ha)*; • consider using pipeline to transport concentrate to Port of Stewart *(Tahltan Nation)*; • assess alternatives to cyanide for gold recovery *(Tahltan Nation)*; • consider combining four TMF alternatives at Mine Site and West Teigen Lake TMF alternative *(Tahltan Nation)*; • consider combining West Teigen Lake and Unuk Valley TMF alternatives *(Tahltan Nation, Gitanyow First Nation)*; • for TMF alternatives assessment, consider potential impacts on fisheries, since Gitanyow eat salmon that spawn directly below proposed TMF location *(Gitanyow First Nation)*; • consider using a pipeline to transport concentrate to the Port of Stewart (*Tahltan Nation*); • for TMF alternatives assessment, consider effects on fish genetics of isolating populations *(Gitanyow First Nation)*.
Air quality and climate	• effects of climate change, total atmospheric carbon generated by Project, and measures to offset and reduce carbon production *(Gitanyow Hereditary Chiefs Office)*; • potential for air emissions from the carbon regeneration process to contain mercury *(Tahltan Nation, Gitanyow First Nation)*; • effects on air quality downwind of Project area *(Gitanyow First Nation)*; • effects of windblown dust generated in the PTMA *(Gitanyow First Nation, wilp Wii'litsxw)*; and • effects of road dust control on glacier ice melt *(Tahltan Nation)*.

(continued)

Table 30.7-1. Issues Identified by First Nations to Date (continued)

Topic	First Nations Issue (First Nation(s) Raising Issue)
Water quality and quantity	• standards used to determine levels of pollutants that can be discharged into surface water and groundwater *(Gitanyow First Nation)*; • reliability of hydrology site data in estimating TMF dilution potential downstream of the Project *(Gitanyow First Nation)*; • need for baseline work relating to prediction of risks from ML/ARD to be completed to accepted BC and Canadian standards *(Gitanyow First Nation, Tahltan Nation)*; • potential for naturally occurring metal leaching within the Teigen Valley *(Gitanyow First Nation)*; • testing of borrow material for Water Storage Dam (WSD) for ARD *(Tahltan Nation)*; • geology and rock composition of MTT tunnel area *(Tahltan Nation)*; • Mitchell Pit acidity *(Tahltan Nation)*; • proposed seep testing that will form basis for pumping effluent for treatment *(Tahltan Nation)*; • mitigation measures to control ML/ARD *(Gitanyow First Nation)*; • should consider methods for preventing ARD such as capping waste rock or introducing limestone to waste rock storage area *(Tahltan Nation)*; and • water treatment facilities at Mine Site and PTMA *(Tahltan Nation)*; • water quality studies for TMF *(Tahltan Nation)*; • downstream effects of TMF *(Gitanyow First Nation)*; • concern about proposed TMF location and risks to water and fish values in Teigen and Treaty creeks, and the Bell-Irving and Nass rivers *(Gitanyow First Nation, Gitxsan Nation, Skii km Lax Ha, Tahltan Nation)*; • TMF water quality and effects on water quality in the Nass watershed *(Gitanyow First Nation, Gitxsan Nation, Tahltan Nation)*; • effects on Treaty and Teigen creeks flows *(Gitanyow First Nation)*; • ARD effects on Treaty Creek and Teigen Creek drainages *(Tahltan Nation)*; • disposal of PAG rock and tunnel rock in the Treaty Creek area *(Tahltan Nation)*; • potential for drainage from TMF into Skeena River *(Gitxsan Nation)*; • Metal leaching (ML)/acid rock drainage (ARD) effects of access road construction *(Tahltan Nation)*; • effects on Oweegee and Bowser lakes, and Bell-Irving, Hanna and Titian watersheds and the Meziadin River, given that water quality protection, aquatic habitat and fisheries have high priority *(Gitanyow First Nation, wilp Wii'litsxw, Skii km Lax Ha)*; • suggest including Mehan Lake, Awiigi Lake and Awiigi Creek in downstream effects studies, given their importance to salmon *(Skii km Lax Ha)*; • effects on Strohn Creek *(wilp Wii'litsxw)*; • management and mitigation of TSS *(Tahltan Nation)*; • water quality of glacier icecaps *(Tahltan Nation)*; • diversion of water from Mitchell Glacier *(Tahltan Nation)*; and • effects of Frank Mackie Glacier access route on glaciers and water quality *(Tahltan Nation)*.

(continued)

Table 30.7-1. Issues Identified by First Nations to Date (continued)

Topic	First Nations Issue (First Nation(s) Raising Issue)
Fish and aquatic habitat	• reliability of fish survey methodologies, since absolute salmonid population estimates are not possible without counting every fish *(Gitanyow First Nation)*; • sockeye spawning in Teigen Creek, Teigen Lake, and Treaty Creek *(Tahltan Nation)*; • importance of Todedada Creek for coho and sockeye spawning *(Tahltan Nation)*; • methodology for determining the amount of fish habitat impacted by TMF footprint *(Gitanyow First Nation)*; • locations of fish DNA analysis *(Gitanyow First Nation)*; • toxicology testing *(Tahltan Nation)*; • potential for water quality changes to affect the ability of salmon to use chemical receptors to locate home streams for spawning *(Gitanyow First Nation)*; • effects on Teigen Creek fisheries values *(Tahltan Nation)*; • effects on fish due to a dam breech *(Tahltan Nation)*; • effects on food, social and ceremonial fishing rights, Pacific salmon, economic fishery interests and fishing activity at the Meziadin/Nass river confluence *(Gitanyow First Nation)*; • effects on Hanna-Tintina spawning grounds along the NTL *(Gitanyow First Nation)*; • should include Mehan Lake in fisheries studies *(Skii km Lax Ha)*; • fish habitat compensation planning, including scale of proposed compensation, focus on chinook and coho, and assessment of water quality at proposed compensation sites *(Gitanyow First Nation)*; • fish density surveys at Todedada Creek to support Fish Habitat Compensation Plan *(Gitanyow First Nation)*; • chinook compensation in South Teigen Creek *(Tahltan Nation)*; and • monitoring of fish compensation projects *(Skii km Lax Ha)*.
Terrestrial ecosystems and wetlands	• use of native or agronomic seed mixes *(Gitanyow First Nation)*; • effects on sustainability of wildlife, berries, and medicines *(Gitanyow First Nation, wilp Wii'litsxw)*; • effects on Gitanyow pine mushroom picking areas *(Gitanyow First Nation)*; • introduction of invasive plants *(Gitxsan Nation, Tahltan Nation, Gitanyow First Nation)*; and • plans for timber in WSF area *(Tahltan Nation)*.
Wildlife and wildlife habitat	• wildlife habitat loss *(Gitanyow First Nation, Tahltan Nation, Gitxsan Nation)*; • effects on wildlife in the Cranberry Connector *(Gitxsan Nation)*; • moose and moose habitat, including winter range, critical habitat, and calving areas *(Gitanyow First Nation)*; • moose breeding areas, particularly in the area of the Teigen Creek Access Road *(Tahltan Nation)*; • suggest initiation of moose collaring program to provide data on migration *(Gitanyow First Nation)*; • displacement of moose *(Gitanyow First Nation)*; • concern that proposed access roads will cut off moose movement *(Tahltan Nation)*; • effects in winter when 15-foot-high snow drifts along roads trap moose *(Gitanyow First Nation)*; • mountain goat survey methods *(Gitanyow First Nation)*;

(continued)

Table 30.7-1. Issues Identified by First Nations to Date (continued)

Topic	First Nations Issue (First Nation(s) Raising Issue)
Wildlife and wildlife habitat *(cont'd)*	• development of a mountain goat population estimate and whether DNA work has been conducted *(Gitanyow First Nation)*; • displacement of goats *(Gitanyow First Nation)*; • effects on mountain goats in Gitanyow traditional territory *(Gitanyow First Nation, wilp Wii'litsxw)*; • direct loss of caribou habitat, and concern regarding effects from disease *(Gitxsan Nation)*; • compare grizzly bear concentrations, population density and ranges to those in other areas *(Gitanyow First Nation)*; • minimize bear-human conflicts *(Gitanyow First Nation)*; • groundhog distribution to assist determination of grizzly bear habitat *(Tahltan Nation)*; • effects on groundhogs (important to Skii km Lax Ha history and regalia), marmots and rabbits (relied upon in the winter) *(Skii km Lax Ha)*; • effects on marten, wolverine, ferrets and ermine *(Gitanyow First Nation)*; • effects on beavers *(wilp Wii'litsxw)*; • cross-contamination between sample sites from western toads that may be affected with fungus *(Tahltan Nation)*; • new road construction will open up the backcountry to hunters and predators, will alter migration routes *(Tahltan Nation)*; and • effects on Gitanyow hunting, trapping and moose population *(Gitanyow First Nation)*.
Social	• interest in capacity development and training *(Gitanyow First Nation, wilp Wii'litsxw, Gitxsan Nation, Skii km Lax Ha, Tahltan Nation)*; and • suggest that socio-economic and cultural indicators used to measure effects should be consistent across all projects *(Tahltan Nation)*.
Economic	• economic benefits from mine-related business and employment *(Tahltan Nation, Gitanyow First Nation, wilp Wii'litsxw, Gitxsan Nation, Ski km Lax Ha)*; • expectation to have the first right of refusal on employment opportunities related to the Project *(Skii km Lax Ha)*; and • importance of preserving the environment, which supports the Gitxsan Nation's tourism industry *(Gitxsan Nation)*.
Heritage and archaeology	• effects on culturally important Gitanyow sites *(Gitanyow Hereditary Chiefs Office)*; • Skii km Lax Ha not notified that artifacts have been found in their territory, nor given a say in where they will be stored *(Skii km Lax Ha)*; • consider heritage sites including cabins and burial sites in the Project area *(Skii km Lax Ha)*; • high potential for Skii km Lax Ha cultural artifacts in Gilbert Lake area, and interest in how artifacts will be mapped *(Skii km Lax Ha)*; • conduct archaeological work in accordance with Tahltan archaeological standards *(Tahltan Nation)*; • importance of high-elevation land use in Tahltan territory *(Tahltan Nation)*; and • address ice patch archaeology as part of EA *(Tahltan Nation)*.

(continued)

Table 30.7-1. Issues Identified by First Nations to Date (completed)

Topic	First Nations Issue (First Nation(s) Raising Issue)
Land use	• confirm Skii km Lax Ha cabin sites in Project area *(Skii km Lax Ha)*; • address subsistence activities including hunting, trapping (along Highway 37 corridor, Cranberry River to the cabin on Skowill Creek), fishing and gathering (plants, berries, mushrooms) *(Skii km Lax Ha)*; • Gilbert Lake and Treaty Creek are areas with high potential for Skii Km Lax Ha use *(Skii km Lax Ha)*; and • fishing activities have traditionally occurred at the confluence of the Meziadin and Nass rivers *(Skii km Lax Ha)*.
Human health	• effects on drinking water supply and sites, including the area downstream of the Project *(Gitanyow First Nation, wilp Wii'litsxw, Gitxsan Nation)*.
Project traffic	• additional information requested on travel peak times *(Gitanyow First Nation)*; • effects of increased traffic on Highway 37 *(Skii km Lax Ha, Gitanyow First Nation)*; • effects on public safety *(Gitanyow First Nation, Tahltan Nation)*; • fuel transportation plan and volume *(Tahltan Nation)*; • effects of hazardous materials transportation *(Gitanyow First Nation)*; • need to identify important salmon bearing streams crossed by highways 37 and 37A (e.g., Hannah Creek, Tintina Creek, Cranberry crossings, Bell-Irving River, Brown Bear Creek, Kitwanga River, Nass River) *(Gitanyow First Nation)*; • ensuring timely spill responses *(Gitanyow First Nation)*; • data gaps in traffic report related to wildlife kills *(Tahltan Nation)*; • cumulative effects of Project traffic on Nass moose *(Gitanyow First Nation)*; • effects on UWR in Cranberry area *(Gitanyow First Nation)*; • equip trucks with GPS to log time/location of moose sightings and road kills, use information to map locations, place good signage at these places *(Gitanyow First Nation)*; • effects of Project and related increased traffic on Gitanyow traditional medicines *(wilp Wii'litsxw)*; • commercial vehicle pull-outs near areas of interest *(Tahltan Nation)*; and • companies should collaborate in considering regional habitat enhancement *(Gitanyow First Nation)*.
Accidents, malfunctions and geohazards	• effects of floods on water management facilities *(Gitanyow First Nation)*; • effects of earthquakes, avalanches and floods of ability to safely operate the Project, particularly the TMF *(Tahltan Nation)*; and • risk of avalanches linked to blasting, and associated effects on TMF and wildlife *(Gitanyow First Nation)*.
Closure and reclamation	• closure and decommissioning plans *(Gitanyow Hereditary Chiefs Office)*; and • TMF closure plan *(Gitanyow Hereditary Chiefs Office)*.

30.7.1 Project Design Changes to Mitigate Effects on Aboriginal Concerns

Input from First Nations and other members of the KSM Project EA Working Group has informed the design of the Project and the EA. Based on comments from First Nations and other Working Group members, Seabridge has made several substantive changes to the Project to minimize potential environmental effects and impacts on Aboriginal interests including:

- Changing access to the PTMA from Highway 37 due to First Nations and Nisga'a concerns related to potential effects on wildlife, fish and fish habitat, and wetlands, Seabridge assessed two access options (*Assessment of Alternatives for the KSM Project Tailing Management Facility* [Appendix 33-B]), finding a net environmental benefit if the access went up the Treaty Creek Valley rather than the Teigen Creek Valley (see Table 30.7-2 for summary of benefits). Access to the PTMA is now proposed along the Treaty Creek Valley.
- Changing the Saddle portal design due to First Nations and Nisga'a concerns about potential wildlife effects. The Saddle portal original cut-and-cover design (1.1 ha surface disturbance) has been changed to be underground with only the portal remaining at surface after construction.
- Changing the TMF design due to Nisga'a Nation and First Nations about potential impacts on fish and fish habitat as follows:
  - redesign of the non-contact diversion ditches on both valley walls to flow north into the Teigen Creek watershed to supplement altered flows as a result of the TMF footprint;
  - change to direction of the TMF discharge to flow into Treaty and North Treaty creeks during TMF operation in order to protect fisheries values in Teigen Creek; and
  - discharge schedule designed to mimic the natural hydrograph of Treaty Creek to avoid low-flow periods and ensure receiving environment water quality standards will be met.

Table 30.7-2. Summary of Benefits Resulting From Access Road Changes to Processing and Tailing Management Area

Issue and Related Design Concern	Teigen Creek Valley	Treaty Creek Valley
Fish Habitat		
Number of road crossings affecting fish-bearing streams	24 crossings	13 crossings
Fish		
Number of fish species affected	8 species: Dolly Varden, rainbow trout, coastal cutthroat trout, bull trout, chinook salmon, sockeye salmon, and whitefish	1 species: Dolly Varden
Wildlife Habitat		
Area of affected mountain goat habitat	279 ha	97 ha
Western Toad Habitat		
Number of potential breeding ponds affected	> 30 potential breeding ponds	7 potential breeding ponds
Wetlands		
Area of wetland affected	42.6 ha	22.6 ha
Heritage	Avoided 11 archaeological sites in Teigen Creek area	

30.7.2 Social Effects

First Nations did not raise specific social issues or concerns, however, social concerns and issues are identified in Tahltan, Gitanyow and Gitxsan policy and planning documents and reports carried out by the First Nations themselves. Implicit in these documents is the identification of a number of issues in relation to the social effects of resource development, including:

- potential population increase and demographic change in the region in general and in First Nations communities in particular;
- higher resource industry incomes leading to more money and subsequently, more disposable income in communities; and
- the demanding nature of mine industry employment (high stress, long hours, isolated, technologically intensive) and work schedules which usually entail extended absence for shift rotations.

Although supportive of resource development as a source of employment, the Tahltan are concerned generally about the potential negative social impacts of rapid resource development within their traditional territory, which, if not properly managed and controlled, can result in negative social, cultural and environmental impacts that outweigh potential socio-economic gains.

For the Gitanyow, the social benefits of mine development are dependent on the Gitanyow being able to share in the benefits of resource development through revenue sharing.

The Gitxsan are concerned about mining "boom and bust" cycles, the potential strain placed by in-migrating people on community infrastructure and services, the impacts of mine employment, both positive and negative, on households and communities, and the negative effects on communities if a mine operation is suddenly shut down due to market conditions. The Gitxsan tie the socio-economic benefits of mining to considerations of local sustainability and revenue sharing.

While the Skii km Lax Ha did not specifically raise social effects concerns, it is likely that they share similar concerns to those raised by other potentially-affected First Nations.

30.7.3 Community Infrastructure and Services

Demand for infrastructure and services on local Aboriginal and non-Aboriginal communities will depend largely on the number of their members who obtain mine employment and the number of their members who decide to move to (or back to) their communities due to work on the Project. Most infrastructure and services in First Nations communities have the capacity to absorb the increase in demand from the relatively small influx of mine-related workers that is anticipated for any given community. Such an increase would be expected primarily during the operations phase of the Project. Housing is the exception for which most communities are expected to experience some minor residual, short-term, adverse effect until additional housing can be built.

Other services and infrastructure, such as education, recreation, health and emergency services, may also experience capacity challenges, but to a lesser degree, given that they are better able to accommodate increased demands. Over time, with planning and investment, service delivery and community infrastructure should catch up to increased demand.

30.7.3.1 Proposed Mitigation

The Proponent is committed to working with communities to mitigate and manage Project-related concerns related to potential pressures on community housing and infrastructure. The Proponent will work broadly with all communities in the region to share information and help them plan for (and manage) potential growth and change.

30.7.4 Education, Skills and Training

It is anticipated that the Project will have a beneficial effect on the capacity of local and regional educational facilities as their services grow to meet increasing demand for educational programs and services. Similarly, it is expected that the educational and skills profile of First Nations communities will gradually improve, in part due to education upgrading and skills training undertaken by Aboriginal peoples in order to pursue employment opportunities. The Proponent has already invested in regional education and training initiatives and is committed to do so in the future. Through such investments First Nations communities will see improvement in levels of education, skills, and training.

30.7.4.1 Proposed Mitigation

Seabridge has committed to develop a Workforce Training Strategy comprised of the following elements:

- support the development of worker training programs (to be provided by external education and training facilities);
- communicate Project workforce hiring schedules and skill/certification requirements to Aboriginal and non-Aboriginal communities in the region;
- develop strategic partnerships with post-secondary education institutions to deliver appropriate training within the region;
- provide in-house and on-the-job training and career development opportunities; and
- identify potential scholarships and bursaries for Aboriginal students.

First Nations' communities will be invited to provide input into the strategy.

Seabridge has also committed to develop a Labour Recruitment and Retention Strategy which includes developing measures to recruit skilled employees to the region and to train local residents.

30.7.5 Community Well-being

Potential effects of the Project on the well-being of Aboriginal communities are linked to migration and changes in community demographics, effects of increased income, and effects of during construction and operation work schedules. The social impacts of increased income and work schedules are likely to have both positive and negative outcomes resulting from individual choices, the Proponent's policies and actions, and the level of response and support from community leaders.

Potential negative effects such as domestic disturbance, substance abuse, or mental health issues may arise. Adverse social effects may be linked to stress, remote mine work, camp life and

extended absences from the home (which may undermine family relationships), all of which may contribute to social problems such as mental health issues or drug and alcohol abuse. The absence of the breadwinner of the household for extended periods of time potentially disrupts family dynamics and increases stress that can lead to breakdowns in familial relationships (Gibson and Klick. 2005). Mental health issues are a potential secondary effect related to increased stress, substance abuse, and/or absence from home (Chapter 22, Gibson and Klick. 2005).

Conversely, there are many well-documented positive social outcomes that flow, in whole or in part, from employment and from the income that is expected for those who find work with the Project. A key benefit of mine related employment for First Nations is the financial independence and access to goods and services afforded by stable and reliable income (Ritter 2006), and the countering of the adverse effects on unemployment, such as idleness and boredom, substance abuse and domestic problems. Secure employment is assumed to reinforce, and even heighten, individual self-esteem and self-worth[4]. Employment is also widely viewed as an effective remedy for many of the social problems that arise from unemployment, such as idleness and boredom, substance abuse, domestic problems, and potentially unlawful behaviour (Farrington et al. 1986; Ritter 2006).

During closure and post-closure, employment opportunities will be limited. If no alternate projects or other employment and business opportunities are available at the time, there may be a reversal in some social effects, both beneficial and adverse.

30.7.5.1 Proposed Mitigation

Potential effects on the well-being of First Nation communities will be mitigated by the Labour Recruitment and Retention Strategy (Economic Effects Assessment, Section 20.7.2.1). Components of this strategy relevant to community well-being include:

- provision of recreational facilities and activities for workers at the Project site;
- development of human resource polices that provide some flexibility for cultural and familial commitments;
- provision of financial management and life skills training for workers; and
- provision of an Employee Assistance Program for workers.

There will be a zero tolerance drug and alcohol policy for mine workers and mine suppliers at the Project site.

[4] For example: (i) people find value and self-worth in being able to contribute to their household livelihood, (ii) they experience personal improvements through the training, skills development, and personal dedication necessary to get hired in the first place, (iii) individual self-worth grows over time due to on-the-job training and ongoing education and skills development.

30.7.6 Project Traffic

During construction and operation, highways 37 and 37A will be used primarily to transport materials and personnel to and from the Project site and hauling concentrate to the Port at Stewart.

Traffic is predicted to affect public safety, including First Nations people who engage in traditional activities along the highways or adjacent waterways, or who use the highways to access traditional harvesting areas may be exposed to an elevated safety risk.

There is a general belief that as traffic volumes along highways 37 and 37A increase, so too does the risk of accidents. Project-related traffic volumes are estimated to amount to 22 one-way trips during construction, and 85 during operation). The highest percentage Project-related traffic increase is expected during operation, when, compared to 2004 to 2011 baseline traffic volumes, a 38% traffic volume increase is expected along Highway 37 between the TCAR and Meziadin Junction, and a 15% increase along Highway 37A. Percentage increases along other highway segments and during other Project phases range between one and ten percent.

A total maximum increase of 0.192 collisions (including 0.095 severe collisions) per year is predicted on certain sections of Highway 37 during operation. A negligible increase in severe collisions is predicted for Highway 37A. While the number of accidents may increase slightly, the severity of injury cannot be determined from the available data.

Traffic volumes on these highways were higher in the 1980s and 1990s due to the occurrence of log hauling trucks than in the 2000s, so proportionally, Project-related increases would be lower compared to the volumes witnessed during those earlier decades.

30.7.6.1 Proposed Mitigation

Measures to mitigate social effects of Project traffic include:

- year-round, 24-hour Project operation to even out the daily distribution of traffic volumes and avoid exacerbating daily “rush hour” peaks;
- optimizing of vehicle load rates to minimize the number of trips;
- enforcing speed limits on all roads, including company-controlled Project access roads, with speeds limits reduced to 50 km/h or other appropriate levels in designated residential areas;
- using noise suppression technologies, where possible, and avoiding the use of engine brakes and reversing alarms in residential areas;
- making information on weather and highway conditions available to all drivers before departure;
- requiring vehicle operators to take safe driver training courses;
- complying with the federal *Transportation of Dangerous Goods Act* (1992), provincial requirements and the Proponent’s Dangerous Goods and Hazardous Materials Management Plan in transporting hazardous materials, including using licenced haulage

contractors; and following the procedures identified in the Proponent's Traffic and Access Management Plan.

The Proponent will consider contributing to regionally-based monitoring initiatives where they replace proposed KSM Project-specific monitoring and are actively overseen by relevant provincial authorities.

30.7.7 Heritage Effects

30.7.7.1 Archaeological and Heritage Sites

There are 37 heritage sites within the Heritage RSA. The specific location of these sites is not identified in the Application/EIS due to the sensitivity of this information. Most of these sites are prehistoric subsurface lithic scatters or single artifact finds. Of the 37 sites, seven sites are located in the Heritage LSA. Five of the seven sites are in direct conflict with Project-related activity (four lithic scatters and one artifact find), while two sites may be indirectly affected (both are lithic scatters).

There is one heritage site (Borden number HdTj-1) outside of the Heritage LSA, which was designated heritage site under the *Heritage Conservation Act* (1996) on the effective date of the Nisga'a Final Agreement Act (2000). This 1-ha site is of special cultural and historic significance to the Tahltan and Nisga'a as it marks the location of a peace treaty that was reached between the two groups in the late 19th century.

The Project has the potential to impact archaeological sites located along the CCAR and TCAR, in the area of the Mitchell Pit, and the Water Treatment and Energy Recovery Area. There is greater potential for direct effects on these sites during construction than during construction and operation. Direct effects are not anticipated during operation because known archaeological sites in conflict with Project components have been identified, and the effects mitigated prior to or during construction.

It is anticipated that archaeological sites within 50 m of the Project footprint could be directly affected by construction activity. Sites located between 50 m and 500 m from Project components may be indirectly affected through increased human presence during construction and operation. Archaeological sites beyond 500 m are not expected to be adversely effected by the Project.

30.7.7.2 Proposed Mitigation

Site avoidance is the preferred option for managing or avoiding impacts. Changes to Project design have helped avoid effects on archaeological sites as follows:

- changing the access to the PTMA from Highway 37 to follow the Treaty Creek Valley avoided impacting 11 sites (Sites HdTm-1 to HdTm-11);
- relocating Construction Camp 3 resulted in changing the impact on site HdTo-6 from direct to indirect; and

- switching the transmission line route from Teigen Creek to Treaty Creek avoided impacting site HeTl-2.

It is anticipated that it will be possible to avoid impacting archaeological sites HdTl-1 and HdTo-6, more than 50 m from Project developments, and also archaeological site HdTk-4, located within 50 m of the transmission line corridor.

It will not be possible to avoid some sites located within the Mine Site and PTMA. Five sites will likely be disturbed or destroyed, and two others could be disturbed.

All mitigation measures will be determined in consultation with the Archaeology Branch. Site Alteration Permits will be applied for under the HCA, and measures instituted to minimize any loss of scientific data resulting from site disturbance or destruction. Possible mitigation measures could include systematic data recovery, construction monitoring and/or site capping. Mitigation measures will be timed to occur prior to and/or during construction, and will address and mitigate any potential effects on archaeological sites located within, or very close to, the Project components. These measures are expected to ensure that there are no direct effects during operation, closure or post-closure phases. During closure, the CCAR and certain other Project roads will be decommissioned, and this will limit any potential indirect effects on archaeological sites due to increased human presence in the area during post-closure.

The Heritage Management and Monitoring Plan (Chapter 26.23) provides for ongoing protection of heritage sites. Any proposed revisions to the Project footprint over time will be subject to an archaeological review and, if necessary, an AIA will be conducted prior to any associated ground disturbance. The Heritage Management and Monitoring Plan includes a Chance Find Procedure, to mitigate potential effects on new archaeological sites found during construction and operation.

30.7.8 Economic Effects

30.7.8.1 Employment

The Project will generate considerable economic activity in the region over a prolonged period, generating direct, indirect and induced jobs, business activity and government revenue. The wages and benefits generated by these jobs will generally be considerably higher than most alternative sources of income that First Nations might otherwise be able to secure.

The distribution of employment effects has been defined to the regional level (the Economic RSA), but the economic modelling does not have the resolution to make reliable predictions at the community level. During construction, there will be an estimated average of 1,800 direct (on-site) jobs (full-time equivalent, FTE). For indirect jobs, there will be an estimated average of about 2,150 (FTE) jobs in BC and 4,770 jobs in Canada (including BC). The model projects that approximately 1,497 person-years of direct, indirect, and induced employment will be generated within the RSA. Averaged over the five year construction period this equates to about 272 regional jobs in any given year. Similarly for operation, taking the total of approximately 21,810 person-years of regional employment, averaged over the 51.5-year duration of the operation phase, the Project should generate about 423 jobs in any one year.

Unemployment rates are high in local Aboriginal communities, so there is interest in prospective employment with the Project. However, First Nations are concerned that the anticipated employment benefits of the Project may not accrue to their communities without proactive effort to ensure First Nations employment. Many First Nations workers lack necessary levels of education and/or skills training. Moreover, contemporary mining practices such as fly-in, fly-out camps and extended shift rotations also often conflict with First Nations' cultural and community needs(Howard, Edge, and Watt 2010). First Nations are also concerned about an economic downturn at the end of mining, adversely affecting employment levels and support industries and services.

The Proponent recognizes that proactive measures are needed to enhance employment of Aboriginal workers, and is proposing various strategies to facilitate worker training, recruitment and retention. The Proponent supports education and training initiatives that focus specifically on First Nations. In 2012, the Proponent provided $100,000 to the BC Aboriginal Mine Training Association (BC AMTA) and $100,000 to the NWCC in 2013 for a mobile trailer for trades. The Proponent has also begun developing relationships with regional post-secondary institutions in Smithers (NWCC) and Terrace, and with Aboriginal education bodies such as Wilp Wilxo'oskwhl Nisga'a Institute in Laxqalts'ap.

At closure an adverse economic effect is predicted. There will continue to be beneficial employment effects, but there will be a loss of total direct employment during the transition from operation. Decommissioning, reclamation, and ongoing operation/maintenance activities during closure and post-closure will provide some employment, although specific workforce requirements have yet to be determined. There are expected to be a small number of jobs associated with long-term environmental engineering, monitoring, and management. Long-term, post-closure effects are difficult to estimate based on uncertainty in predicting the state of the regional economy at that time. However, many of the skills gained at the mine will be transferable, enabling First Nations workers to apply at other mines or similar resource development or heavy industrial projects in the region.

30.7.8.1.1 Proposed Mitigation

The Proponent is committed to hiring a portion of its workforce from the region, but it will not give preferential treatment for employment opportunities to any one group or individual over another. The Labour Relations and Recruitment Strategy is intended to maximize Project-related employment benefits for local populations, but without discrimination.

The Labour Recruitment and Retention Strategy applies to all Project phases, and will consist of measures to assist workers to identify appropriate employment opportunities, obtain work, and ensure that, once hired, workers are both willing and able to retain their jobs.

The main goal of the Workforce Training Strategy, which is targeted primarily to the operation phase, is to maximize relevant work experience, education and skill levels within the regional workforce, including First Nations workers. First Nations communities will be engaged in the development of programs specifically designed to provide training to Aboriginal workers. Specific measures include communicating Project workforce hiring schedules and

skill/certification requirements to help tailor worker training programs offered by external education and training facilities, developing strategic partnerships with postsecondary education institutions to deliver appropriate training within the RSA, and providing in-house training and career development opportunities. In addition, the Proponent is working with, and has contributed to, Aboriginal mine training organizations to provide sector-related skills and training to Aboriginal peoples.

The Proponent's Workforce Transition Program will help address potential adverse effects on employment and income at the completion of mining, by helping workers to identify alternative job opportunities requiring complementary skills, as well as appropriate retraining opportunities.

Seabridge is also committed to negotiating benefit agreements with First Nations to help fulfill Project-related employment goals.

During construction, Project activities will be overseen and managed by an Engineering, Procurement, and Construction Management (EPCM) contractor. Although the Proponent will not have direct control of labour practices during construction, the EPCM will be expected to adhere to the strategies defined by the Proponent. Seabridge or its operator will directly implement the strategies for operation, closure and post-closure, including preceding work to prepare for operation.

30.7.8.2 Business Opportunities

The Project will generate business opportunities, primarily during construction and operation, to supply and service the mine and to cater to a range of service and retail demands induced by Project-related demand and spending in the region. Capital investment will increase in the region, which will further foster business productivity and competitiveness. First Nations are interested in such opportunities, but First Nations businesses face barriers linked to scale, equipment, capital and price. These constraints will be more evident in outlying communities that do not enjoy the same economies of scale and other efficiencies of larger competitors located in regional centres such as Smithers and Terrace.

The short duration, intense schedule and specialized requirements of the construction phase will likely mean that most goods and services will be sourced from outside the region. During operation, local businesses will have more lead time to develop relationships with the Project and its suppliers, and should increase their share of available business opportunities. Project effects on business activities within Aboriginal communities will depend on actions taken to identify specific opportunities and enhance current business capacities. The impacts of closure on First Nations' businesses within the region will depend on factors such as the overall condition of the economy at the time and the requirements of other projects potentially operating in the region.

At closure and post-closure, business opportunities will be diminished. The extent of the impacts on Aboriginal and non-Aboriginal businesses in the region will depend on a number of factors, including the size of supplier contracts, the overall condition of the economy at the time of closure, business flexibility and adaptability, and the presence of other businesses opportunities (e.g., demands for goods and services by other local projects). There will be local business opportunities associated with closure and post-closure activities, such as removal of infrastructure,

site reclamation, and environmental engineering, monitoring, and management; however, an estimate of the employment and expenditures of closure and post-closure is not yet available.

30.7.8.2.1 Proposed Mitigation

The Proponent's Procurement Strategy is intended to give preference to local or regional suppliers, including First Nations businesses, in the procurement of goods and services, in cases where these suppliers can meet procurement requirements and are competitive with other suppliers in terms of quality and price. It will help ensure that procurement expectations are transparent, consistent and well-understood by all potential suppliers. The strategy should benefit Aboriginally-owned businesses in regional centres such as Terrace or Smithers and those with equipment and capacity to provide contractor services such as trucking or road maintenance services. It is likely to produce less effect for other First Nations businesses that may be located in smaller communities or on reserves. They may experience some induced effects linked to the overall increase in economic activity generated by the Project, and cumulatively, by other projects in the region as well.

30.7.9 Health Effects

30.7.9.1 Country Foods

Any potential contamination of country foods would be linked to elevated metals in soil (sediment) and water in the TMF, the Mine Site (including Sulphurets Creek and Unuk River), and possibly soils in the RSFs at the Mine Site. Airborne "dusting" may also affect soils and vegetation at distant locations, but any effects would likely be of small magnitude. Potential sources of contamination of country foods would remain post-closure associated with metals in the water and the submerged sediments found in various parts of decommissioned mine infrastructure, in wetland vegetation, in aquatic invertebrates that could may colonize the TMF and potentially also in Sulphurets Creek and the Unuk River.

The country foods most likely to experience potential metal uptake include moose, snowshoe hare, grouse and berries. The quality of non-migratory edible fish (such as Dolly Varden downstream of the PTMA) could also be affected, vegetation is not predicted to be significantly affected. However, modelling concluded that the quality of country foods would not decline substantially from baseline conditions during either operation or closure, and Project-related health effects are considered negligible.

30.7.9.1.1 Proposed Mitigation

Mitigation to reduce effects on human health linked to the consumption of country foods is comprised primarily of those measures planned more generally to reduce effects on air quality, water quality, soil quality, vegetation and wildlife.

In addition, access management measures provided for in the Proponent's Traffic and Access Management Plan (Chapter 26.25) will mitigate some of the risk of effects on human health by preventing direct public access to the Mine Site and PTMA.

Fugitive dust levels will be mitigated and managed in accordance with the Air Quality Management Plan (Chapter 26.11), which is intended to ensure that ambient air quality meets Canada-wide Standards (or NAAQOs - EC 1999) and BC Ambient Air Quality Objectives (BC MOE 2009) and Pollution Control Objectives (BC MOE 1979).

Monitoring of soils, water and vegetation will be conducted at all Project phases. The Environmental effects monitoring required for the Project under the Metal Mining Effluent Regulation (MMER; SOR/2002-222)and the Follow-up Program (Chapter 38 required under the CEAA (1992) includes monitoring of both surface water quality and levels of metals and other contaminants of potential concern (COPCs) in mine-disturbed soils. The Terrestrial Ecosystems Management and Monitoring Plan (Chapter 26.20) provides for monitoring of terrestrial plant tissue metal concentrations.

If concentrations of metals or other COPCs are shown to increase over time in water, soils or vegetation as a result of Project-related activities, the need for further country foods risk assessments will be evaluated. Adaptive management measures will be implemented if monitoring and modeling indicate an unacceptable level of risk to human health.

30.7.9.2 Air Quality

Project-related criteria air contaminant (CAC) emissions could affect ambient air quality during the construction and operation phases. There will be negligible air quality impacts during the closure and post-closure phases.

Construction phase emission sources will include generators (Saddle and adit areas, PTMA, Mine Site construction and camps) and incinerators (camps), vehicle tailpipe emissions, fugitive dust associated with land clearing and burning of debris and emissions from explosives used in blasting. Operation-phase emissions sources will include camp incinerators, vehicle tailpipes along the TCAR and Highway 37, MTT exhaust, dust emissions from baghouses at the Treaty Ore Processing Complex, blasting emissions, and fugitive dust along paved and unpaved roads.

Small and insignificant increases in human exposure to air pollutants, especially in small particulate matter ($PM_{2.5}$), are expected in the Saddle Area and the PTMA. No exceedances were predicted along the TCAR or Highway 37.

First Nations members will not have access to the PTMA, the TCAR or the Saddle Area during construction or operation. Off-site receptors, such as hunting and trapping cabins, will experience minor and insignificant increases in exposure endpoints. As the Proponent is legally required to maintain the quality of air and drinking water based on established federal and provincial guidelines, no residual effects are anticipated on these indicators. With regards to the safety of country foods, effective mitigation and monitoring programs will be undertaken to measure changes in soil, water and air toxicity. Adaptive management practices will be implemented if monitoring and modelling indicate an unacceptable level of risk to human health. The residual effect of the Project on these indicators is rated as negligible.

30.7.9.2.1 Proposed Mitigation

Mitigation to reduce effects on human health linked to the inhalation of air contaminants is comprised primarily of those mitigation measures planned to reduce air quality effects in general. The intent is to apply mitigation at the sources of air emissions, including fugitive dust sources. Under the umbrella of the Proponent's Air Quality Management Plan (Chapter 26.11), both an Emissions Management Plan (Chapter 26.11.1) and a Fugitive Dust Emissions Management Plan will be implemented to meet BC MOE AAQOs.

Emission control systems such as scrubbers, baghouses and filters will be installed on stacks and relevant ventilation systems to reduce emissions. Vehicles will be maintained regularly, low-sulphur diesel will be used in vehicles and equipment, and catalytic converters and diesel particulate filters will be installed on diesel engines. A no-idling policy will be implemented for vehicles. Dusting of access roads and on-site roads will be controlled with water sprays.

Concentrate haul trucks will travel with their loads covered. The drop-down distances between conveyer belts and stockpiles will be reduced as much as practicable and/or dust skirts will be used. Ore stockpiles will be covered and the processed ore stockpiles will be enclosed, providing dust control efficiency levels of approximately 80% during handling of the material.

Mitigation of air quality health effects on human receptors will include the monitoring of air quality and fugitive dust emissions during construction and operation under the Air Quality Management Plan. Vehicle and equipment emissions will be monitored and equipment tested to ensure that their emissions are meeting the levels predicted with mitigation. Fugitive dust will be monitored at ten key locations over 30-day periods during summer and fall, in conjunction with other air quality monitoring. Adaptive management policies will be implemented where monitoring identifies a risk to human health linked to air emissions.

30.7.9.3 Drinking Water Quality

Recreational users of areas downstream of the Project are unlikely to encounter bacterial contamination due to treatment and disinfection of wastewater prior to effluent being discharged into recreational waterbodies. Regular monitoring and maintenance will be conducted, reducing the likelihood that bacteria will enter the environment and affect human health due to ingestion of, or contact with, surface water.

Seasonal, short-to-medium-term users of the region may obtain drinking water from downstream surface waters. Based on both water modelling results and the temporary and seasonal nature of the land use, there is no concern for human health effects from the consumption of metals in surface water from the Teigen and Treaty creeks downstream of the PTMA, or in the Unuk River downstream of the Mine Site, during either operation, closure, or post-closure.

30.7.9.3.1 Proposed Mitigation

Mitigation to reduce effects on human health linked to the ingestion of drinking water is primarily comprised of those measures planned more generally to reduce effects on water quality, especially effects downstream of the Mine Site and the TMF. Additional mitigation

measures to address human health issues are not considered necessary. All contact and waste water, as well as tailing slurry water, will be treated to meet permitted discharge criteria.

Aboriginal people and non-Aboriginal hunters, trappers and outdoor recreationists may accidentally or deliberately ingest water from waterbodies located downstream of the Project at all Project phases. Access to the Mine Site and the PTMA during and after operation will be controlled. However, levels of use of these areas, including remaining Project roads, by Aboriginal and non-Aboriginal hunters, trappers and outdoor recreationists, could increase after mine closure and site reclamation.

The potential for people to consume or be exposed to TMF water is expected to be low during operation. Upon closure, TMF water quality will be monitored for wildlife mitigation purposes. If, contrary to predictions, water quality deteriorates in the TMF after mine operation, creating a risk that COPC concentrations in downstream creeks could exceed government drinking water guidelines, additional mitigation may be implemented, including the possibility of a risk assessment to determine if human use of water from downstream creeks is safe.

As a basis for quantifying any residual risk to human health linked to metals of concern in surface waters downstream of the Mine Site, water quality monitoring will be conducted in accordance with the Proponent's Aquatic Effects Monitoring Plan (Chapter 26.18.02) and Closure and Reclamation Plan (Chapter 27), to ensure that WTP effluent meets discharge permit limits.

30.8 Potential for Residual Effects to Impact Aboriginal Rights

This section presents information on *how* Project-related residual effects may impact Aboriginal rights related to fishing, hunting (includes trapping), and gathering. A summary of the key mitigation measures used to accommodate impacts on rights is provided. An assessment of whether anticipated impact on Aboriginal rights is expected to be low, moderate, or high is evaluated below in Section 30.9 along with a description of the assessment methodology.

30.8.1 Fishing

Fish species of importance to Aboriginal groups include pacific salmon (for subsistence purposes and to support cultural practises), Dolly Varden, bull trout, rainbow trout/steelhead, and cutthroat trout for subsistence purposes.

Within the TMF footprint, Dolly Varden is the only fish species present in North Treaty Creek and in South Teigen Creek (upstream of the falls). Downstream of the TMF footprint in South Teigen Creek (downstream of the falls), fish species include bull trout, rainbow trout and mountain whitefish. Pacific salmon species (coho, chinook and sockeye) are also present in Teigen and Treaty creeks.

Baseline studies found that Teigen Creek has a higher productive capacity, a greater diversity in fish species and habitat, and greater population abundance than Treaty Creek, linked to differences in water temperature, turbidity and channel stability. Treaty Creek is more affected by upstream glaciation.

At the Mine Site, Dolly Varden is the only fish species present in Sulphurets Creek below the cascades, while Dolly Varden, rainbow trout/steelhead and Pacific salmon are all present in the Unuk River.

30.8.1.1 Fish Habitat Loss

The Project will lead to harmful alteration, disruption or destruction (or HADD) of Dolly Varden habitat beneath the TMF seepage dams, access road and transmission line crossings. Two separate fish habitat compensation plans have been developed to regulate the deposition of tailing and other waste matter into natural fish-bearing waters (per Section 36 of the federal *Fisheries Act* [1985a] and the MMER - SOR/2002-222) and to regulate the loss of fish habitat due to Project infrastructure (per Section 35 of the *Fisheries Act*). The plans were developed according to the DFO's policy of a 2:1 habitat gain-to-loss ratio to ensure that overall net productive capacity is maintained. Habitat lost to the TMF will not affect Pacific salmon species.

In the Mine Site area, Mitchell, McTagg and Gingras creeks, and Sulphurets Creek above the cascades found 500 m from the Sulphurets/Unuk confluence, are all classified as non-fish-bearing streams, and no HADD is anticipated due to Project development. These creeks have low quality aquatic habitat, with low densities and diversity of primary producers and benthic invertebrates during baseline studies. Sediment quality in these creeks is also poor, with concentrations of naturally-occurring metals that were greater than sediment quality guidelines.

30.8.1.2 Surface Water Quantity Effects on Fish

Water management in the PTMA is not expected to significantly affect downstream baseline discharge rates within Teigen and Treaty creeks, although locally, flows could be modified by diversions, and nutrient inputs to wetlands could be reduced. Some habitat degradation in North Treaty and South Teigen creeks is anticipated.

At the Mine Site, modelling indicates that streamflows within Mitchell Creek, Sulphurets Creek upstream of Mitchell Creek, and Gingras Creek will be modified by Project development. Changes to Sulphurets Creek flows downstream of the confluence with Gingras Creek are anticipated to be less than 1% of baseline flows during construction, operation and post-closure, but to amount to 8% below baseline at the outlet of Sulphurets Creek during the closure phase.

Measures to avoid and reduce adverse effects on surface water quantity include diverting non-contact water around the Project to minimize the design capacities of storage and treatment facilities, increasing the WTP's capacity to allow for staging of discharge to the natural hydrograph, staging TMF discharge to the natural hydrograph of Treaty Creek, increasing diversion channel efficiency to reduce water losses, and re-aligning the PTMA diversion systems to protect high fisheries values in Teigen Creek.

30.8.1.3 Surface Water Quality Effects on Fish

In the Mine Site area, baseline concentrations of some metals found in surface waters around the proposed Project footprint are elevated above freshwater aquatic life guidelines, particularly in the Sulphurets Creek drainage, and also elsewhere in the Surface Water Quality RSA. Considerable management effort has been implemented to address Project-related ML/ARD at

the Mine Site, linked to mining contact water and naturally poor-quality seeps, which reduce the assimilative capacity of Sulphurets and Mitchell Creeks.

Based on modelling, selenium concentrations in effluent from disturbed areas at the Mine Site are predicted to exceed both baseline levels and water quality guidelines for the protection of freshwater aquatic life in Sulphurets Creek (site SC3) and in the Unuk River (site UR1). However, at the Canada-US border (site UR2), 35 km downstream of the Mine Site, selenium levels are predicted to satisfy water quality guidelines, although they will be higher than baseline conditions.

A key surface water quality mitigation measure is diversion of non-contact water away from the Mine Site, and storage of contact water in the Water Storage Facility for treatment in the WTP. Treated water will be discharged to Mitchell Creek at flow rates designed to mimic the natural hydrograph. The Kerr Pit waste rock, which is predicted to be higher in selenium, will be backfilled into the Sulphurets Pit in lined benches, and pit drainage will be treated at a Selenium Treatment Plant. Effluent monitoring and performance monitoring of waste rock, tailing and pit walls will be performed as described in the Proponent's Aquatic Effects Monitoring Program, the ML/ARD Management Plan (Section 26.14), and Water Management Plan.

Based on modelling of metal concentrations in the TMF discharge to the receiving environment during operation, closure and 50 years into the post-closure phase, all water quality parameters are predicted to be below water quality guidelines for the protection of aquatic life or receiving environment targets in creeks downstream of the TMF.

Predictive water quality model results indicate that discharges from the TMF will meet BC water quality guidelines for the protection of freshwater aquatic life or receiving environment water quality targets. Even so, a monitoring program will be implemented to ensure the protection of freshwater aquatic life.

Modelling did predict increases in nitrogenous compounds (relative to background levels) in areas receiving TMF discharge, which could lead to changes to productive capacity in areas downstream of the TMF. Increased biomass due to increased nitrogen availability is possible, but the effects will be influenced by the amount of time between flood events, top-down grazing by instream invertebrates, temperature, light, and water quantity. Phosphorus loadings downstream of the TMF were predicted to stay at baseline levels or decline. The Aquatic Effects Monitoring Plan provides for implementation of monitoring for changes in (non-fish) aquatic life biomass and community structure.

Dolly Varden are present in Sulphurets Creek below the cascades, and Dolly Varden, rainbow trout/steelhead and Pacific salmon are all present in the Unuk River.

Aquatic habitat degradation may occur in Sulphurets Creek and the Unuk River due to the water quality effects of the Mine Site Water Treatment Plant discharge on Mitchell Creek, with selenium water concentrations predicted to increase. Increases in selenium concentrations relative to baseline conditions may lead to additional uptake of selenium by organisms at lower trophic levels, which are relatively resistant to selenium toxicity, and the subsequent

bioaccumulation of selenium in fish via the food chain. In aquatic organisms at higher trophic levels, selenium has been associated with reproductive and developmental toxicity, particularly in egg-laying vertebrates such as fish.

It is probable that fish tissue residues of selenium will increase due to Project development, although it unclear whether the higher tissue concentrations will be of concern to fish in the lower Sulphurets or Unuk systems, as the fish currently have naturally elevated levels. The Proponent's Aquatic Effects Monitoring Plan will investigate this by monitoring water quality, sediment quality, periphyton, benthic invertebrate and fish tissue metal concentrations, and where necessary, implementing adaptive management strategies.

Water quality modelling also predicted increased concentrations of nitrogenous compounds (e.g., nitrate and ammonia) in areas receiving discharge from the Mine Site WTP, while phosphorus loadings would be unchanged or would decline. While associated changes in productive capacity, such as increased biomass, are possible, again, they are also influenced by several other factors. The significance of residual effects on productive capacity downstream of the Mine Site WTP was ranked not significant (minor). The Aquatic Effects Monitoring Plan provides for implementation of monitoring for changes in (non-fish) aquatic life biomass and community structure.

30.8.1.3.1 Spills

Project traffic is not predicted to affect fish and aquatic habitat. However, accidents involving spills from Project traffic may affect fish species. Potential effects on fish and aquatic habitat would be localized, and short in duration, and low in magnitude. Fish species harvest rates are not predicted to be affected.

30.8.1.4 Wetland Effects

Wetland extent and function in South Teigen and North Treaty creeks will be affected by TMF development. Project development will entail some alteration (69.5 ha) and loss (59 ha) of wetlands, primarily in the PTMA, with smaller-scale effects at or near the Mine Site.

30.8.1.5 Proposed Mitigation for Fishing

To minimize potential effects on fisheries and aquatic resources, the Proponent will implement compensation plans (see Chapter 15, Appendix 15-Q and 15-R) for activities causing fish habitat, alteration, destruction or degradation (HADD) under the *Fisheries Act* (1992) and MMER (SOR/2002-222) so as to ensure DFO's policy of 'no net loss of fish habitat' is met. For indirect effects on fishery spawning habitat associated with the loss of wetland extent, a Wetland Habitat Compensation Plan (Chapter 16, Appendix 16-B) will be implemented to offset these losses at a ratio of 1.5.

The Proponent will also implement the following EMPs to minimize and manage Project risks to fisheries:

- a ML/ARD Management Plan (Chapter 26.14);
- a Fish and Aquatic Habitat Management Plan (Chapter 26.18);

- an Aquatic Effects Monitoring Plan (Chapter 26.18.02);
- a Fish Salvage Plan associated with the construction of the TMF (Chapter 26.18.03);
- a Water Management Plan (Chapter 26.17); and
- an Erosion Control Plan (Chapter 26.20).

Each of these EMPs has associated monitoring programs and compliance reporting requirements that will be met to ensure maximum environmental protection is achieved where possible.

The proponent will comply with BMPs identified in guidelines and operational statements issued by the DFO, the BC MOE and other parties. These include:

- Land Development Guidelines for the Protection of Aquatic Habitat (DFO 1993);
- Standards and Best Practices for Instream Works (BC MOE 2004);
- Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky 1998);
- Fish-Stream Crossing Guidebook (BC MOF 2002); and
- DFO's operational statements for temporary ford stream crossings, clear-span bridges, and overhead line construction (DFO 2010).

While potential effects may occur in the immediate vicinity of an accidental spill site, the Spill Prevention and Emergency Response Plan will limit the temporal and spatial effects of the spill. Potential spills were assessed as unlikely to occur and negligible to moderate in severity due to their small size and since mitigation and management plans will reduce the magnitude of any potential spill. Beyond the localized area affected by the spill, effects are expected to be negligible.

30.8.2 Hunting

The wildlife effects assessments concluded that no significant residual Project-specific or residual cumulative effects are predicted for black bear, American marten, hoary marmots, bats, raptors and western toad. Therefore these species are not considered in the discussion below.

30.8.2.1 Moose

The Nass moose population has declined to between one quarter and one third of its size in the last 12 years. Predicted Project-related residual effects on moose include habitat loss, disruption of movement, direct mortality, indirect mortality, and chemical hazards are predicted for moose.

Approximately 20 moose are killed per year due to vehicle collisions along Highway 37 between Kitwanga and the Wildlife RSA. Cumulative project traffic will increase the volume of traffic along the highways and direct mortality to moose is possible. Due to the current status of the Nass moose population (i.e., with a history of declining numbers), and the potential habitat along Highway 37, potential effects of vehicle-related direct mortality on moose were evaluated using a population viability assessment, and a moose-vehicle collision model. With mitigation and

monitoring, the residual effect of moose mortality from vehicle-wildlife collisions is anticipated to be not significant (moderate). For cumulative risks and assuming all proposed projects in the northwest are developed (high likelihood development scenario), the residual effect severity is increased to major, as modelling results suggested that an additional increase in mortality, above what is expected due to KSM Project traffic, could cause the population to decline.

Between 1991 and 2010, there were 29 reported vehicle accidents with bears (average 1.5 bears/year) along Highway 37 near the KSM Project. Cumulative project traffic will increase the traffic volume along the highways and direct mortality to bears is possible.

30.8.2.2 Grizzly Bear

Predicted residual Project effects on grizzly bears are linked to habitat loss and alteration, disruption of movement, direct mortality, indirect mortality and attractants.

Individually, the significance of each of these residual direct Project effects is rated not significant (minor), although collectively, the overall residual direct Project effect on the local grizzly bear population could cause a shift from baseline conditions. This is not expected to adversely affect the viability of the local grizzly bear population.

30.8.2.3 Wetland Birds

Chemical hazards could potentially result in a Project-related residual effect on migratory wetland birds because of the potential for wetland birds to bio-accumulate COPCs when consuming vegetation and aquatic insects in the Unuk River and North Treaty Creek, and from ponds in the WSF (during all Project phases) and the TMF (during operation and closure) that they are using for staging.

Assuming that wetland birds will forage for a substantial amount of time on insects and vegetation with elevated concentrations of COPC is a “worst case” assumption, since much of the breeding habitat for wetland birds occurs in areas where they will not be exposed to elevated COPCs.

30.8.2.4 Mountain Goats

Project effects on mountain goats include functional habitat loss through sensory disturbances (from blasting, road traffic and helicopter use), direct habitat loss to Project infrastructure and movement barrier effects. Mountain goats are generally sensitive to noise and helicopter traffic. Activities such as blasting may cause mountain goats to leave otherwise suitable habitat surrounding the Project. Approximately 1,150 ha of high-quality mountain goat winter habitat, and 550 ha of Ungulate Winter Range, will be permanently removed or altered through Project construction.

30.8.2.4.1 Sensory Disturbance Effects

Considerable, but localized, noise will be generated by road and helicopter traffic, heavy equipment, haul trucks and personnel transportation vehicles. This noise may affect the behaviour of moose, grizzly bears, black bears, mountain goats, small fur-bearing mammals, wetland, forest and alpine birds, and other species, thereby affecting their availability to

Aboriginal harvesters. These effects will occur during construction and operation and diminish during closure and post closure.

Helicopter, heavy equipment and road traffic noise will be greatest during construction and closure, primarily focused around specific components such as access roads, tunnels and the TMF. Supply vehicles and trucks hauling concentrate will be the main source of noise during operation, experienced along the TCAR.

30.8.2.5 Proposed Mitigation for Hunting

The Wildlife Management Plan (Chapter 26.21) and Traffic and Access Management Plan (Chapter 26.25) are intended to manage potential Project effects on wildlife and wildlife habitat.

Mitigation measures for wildlife habitat loss and disruption of movement include partial deactivation of some mine components and their partial re-vegetation post-closure. Bridges and roads will be designed to minimized movement obstruction. At closure, non-essential roads will be deactivated and traffic will be greatly reduced. A "no hunting" prohibition will be implemented for Project staff and contractors. All vehicles will obey traffic signs so as to reduce vehicle-wildlife collisions. Adaptive management measures will be implemented to deter wetland birds from accessing these areas, should they be observed during monitoring using these Project facilities.

Measures to mitigate sensory disturbance on wildlife include prescribed road safety management practices and avoidance of critical habitat by helicopter traffic by implementing helicopter flight plans to avoid critical mountain goat winter habitat.

30.8.3 Gathering

"Culturally important plants" refers to those plant species or groups identified by First Nations as having social, economic or traditional use importance, including cedar (*Thuja plicata* and *Chamaecyparis nootkatensis*), pine mushrooms (*Tricholoma nauseosum*), medicinal plants, and various edible berries. Cedar was excluded as a valued component because it is relatively uncommon in the Project area (Pojar, Klinka, and Demarchci 1991; Banner et al. 1993). Pine mushroom habitat is assessed as a separate valued component.

Approximately 4,050 ha of vegetation will be lost or degraded as a result of Project construction and operation in the Project area. The proportion of lost and degraded vegetation unavailable for traditional harvesting and subsistence activities is very small compared to areas available for harvest in First Nation traditional territories.

30.8.3.1 Proposed Mitigation for Gathering

Mitigation measures to minimize effects on culturally important plants include avoiding vegetation losses through Project facility location and design choices that do not require disturbance of ecosystems containing culturally sensitive plants, and, where avoidance is not possible, minimizing impact by using low-impact clearing practices, implementing erosion control and prevention measures, using techniques to reduce wind throw along forest edges, managing invasive species and post-closure reclamation of impacted areas. Implementation of

the Terrestrial Ecosystems Management and Monitoring Plan (Chapter 26.20) will contribute to minimizing effects on culturally important plants through provisions for vegetation clearing, invasive plant management, transmission line management and monitoring for terrestrial plant tissue metal concentrations.

30.8.4 Access to Areas of Importance to Aboriginal Groups

The availability of wildlife, aquatic, and plant resources to support traditional activities could be reduced by the construction of access and haul route roads (e.g., the TCAR, transmission line, and the CCAR), causing habitat loss and the elimination of resources. During post-closure, unregulated public access into the PTMA area could increase thereby affecting resource availability because of increased hunting and fishing pressures. Such effects on access would primarily affect the Skii km Lax Ha and the Tahltan Nation as the Project falls within their asserted territories. Access restrictions will be necessary along some roadways and within the mine footprint, linked to safety issues. It is possible, but unlikely, that such restrictions would curtail First Nations ability to carry out subsistence activities and traditional practices. Relative to the size of First Nations' traditional territories, the Project footprint is small, thus the significance of Project effects on access to traditional resources is ranked not significant.

Public access to the Project site will be restricted during construction, operation, and closure and post closure. Some Project components will stay in place permanently (e.g., the TMF, the TCAR, the WSF and the Mine Site Water Treatment Plant. Some of the Project's access roads will be decommissioned, although the TCAR and transmission line will remain in place.

Public access to (and use of) the Project area during the post-closure phase is anticipated along (and to either side of) the transmission line right-of-way and other cleared rights-of-way. However, the area is relatively remote, and such incidents will likely be infrequent, and should not lead to a significant effect on subsistence resources and their availability to First Nations users. Residual effects on subsistence resources and use is expected to be negligible.

There is limited navigation currently in the vicinity of the Project. The Skii km Lax Ha seasonally use the Bell-Irving River, as well as Bowser Lake and the Bowser River, for navigation to harvest areas. Restricted or lost access to navigable waters will occur as a result of the elimination of a stream or stream reaches due to the presence of Project infrastructure or significant diversion of water flows. Waterbodies will be completely or partially eliminated at both the Mine Site and within the PTMA. Construction of the TCAR bridge crossing over the Bell-Irving River (historically used as a bridge crossing site) is expected to create residual effects on navigation related to access and safety. However, as this crossing will be permanent once built, residual effects will be temporary and limited to construction. First Nations harvesters may be adversely affected by any temporary changes in navigation at this crossing. However baseline studies and consultation during pre-Application indicate that First Nations do not currently use these waters for navigation.

Based on the subsistence use information provided by the Skii km Lax Ha, access to Treaty Creek in the area of the TCAR and TMF will be marginally impacted. However, given the low population of this group and the large size of their asserted traditional territory, the potential impact on their asserted rights is anticipated to be low.

To date, the Tahltan have not advised how they currently use the area of their traditional territory adjacent to or overlapping the Project footprint. The Tahltan have identified areas of historical use and knowledge in southern portions of their traditional territory in the Project, including major wildlife corridors such as the Ningunsaw and Bell-Irving valleys. The Tahltan traditionally utilized wildlife, fish, plant and berry resources near the eastern, northern and western boundaries of the Project study area in the past, and still do so (TCC and IISD 2004; THREAT 2010).

There are no Project components in the Gitanyow and Gitxsan traditional territories. Only northbound traffic bearing supplies for the mine could affect harvesting areas south of Meziadin Junction, while traffic travelling in both directions could affect harvesting areas between the TCAR and Meziadin Junction.

Gitanyow concerns related to the effects of Project-related traffic on their members harvesting along Highway 37 is discussed in Section 30.4.3.

30.8.4.1 Proposed Mitigation for Access

Measures to mitigate unregulated access are described in the Traffic and Access Management Plan including:

- installing gates and signs at entranceways to the TCAR, the CCAR, the Temporary Frank Mackie Glacier access route and the transmission line corridor, to prohibit the entry by non-authorized vehicles (including snowmobiles and ATVs), particularly in the construction and operation phases of the Project;
- requiring authorized users to immediately report any observed unauthorized users;
- having appropriate personnel notify unauthorized users of trespass; and
- deactivating all non-essential roads, including the temporary Frank Mackie Glacier access route (by the end of construction) and the CCAR (at closure).

Under the Traffic and Access Management Plan, mitigation measures to control the behaviour of authorized personnel include:

- implementing and enforcing a “no hunting” and “no fishing” policy for employees and contractors while on-site;
- prohibiting possession of personal firearms within the Project area by employees and contractors;
- setting and enforcing speed limits along Proponent-controlled roads; and
- bussing personnel from communities or central collection sites during mine construction and operation.

30.9 Assessment of Impacts on Aboriginal Rights

This section provides an assessment of the *level* of impact key residual effects of the Project are anticipated to have on Aboriginal rights. Impacts on rights related to fishing, hunting, gathering, and the exercise of customs and practices will be evaluated and presented for each Aboriginal group.

30.9.1 Assessment Methods

The evaluation of potential impacts on Aboriginal rights is founded upon an assessment of changes in current use and reasonably anticipated future use of land and resources by Aboriginal people for traditional purposes. These resource uses include activities associated with the exercise of asserted or established Aboriginal rights, including fishing, hunting/trapping, gathering and exercise of customs and practices. Effects on access to areas that support these traditional activities are also considered. Traditional use/traditional knowledge studies undertaken for each First Nation inform this assessment (see Appendices 30-A to 30-D).

Significance criteria described in the CEA Agency's (1994) document "A Reference Guide for the Canadian Environmental Assessment Act – Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects (1994) are adapted to support the assessment of impacts on rights. Considerations of *magnitude* (i.e., severity) of key residual effects and resulting impact on rights, *duration* of effects and length of time the right(s) is/are anticipated to be affected, *geographic extent* of effects and overlap with traditional territories, frequency of use by Aboriginal groups (both historical, current, and future) in the potentially affected area of their asserted traditional territories, and *reversibility* (i.e., are environmental effects that cause an impact on rights reversible in the short, medium, or long-term, or are they permanent) will be discussed in the assessment. Refer to Chapter 5, section 5.2.11 for additional detail on significance methodology and definitions of criteria. The level of impact on rights will be evaluated as either low, moderate, or high, and will include a consideration of the following questions:

- Will customs and practices (i.e., the ability to exercise rights) be unaffected, modified, or completely restricted?
- What is the level of impact on rights practiced in the vicinity of the KSM Project (i.e., the regional area) compared to those practiced (if any) in the immediate Project footprint?
- Will long-term or displacement of access to use and occupy lands affect Aboriginal rights?

30.9.2 Context

The Project footprint (including the Mine Site, the PTMA, the Saddle Area, TCAR and CCAR) overlaps with the asserted traditional territories of the Skii km Lax Ha and Tahltan. The Project is located outside of the traditional territories of the Gitanyow First Nation and Gitxsan Nation. The Mine Site ultimately drains to the Unuk River and the PTMA ultimately drains to the Nass River.

Aside from subsistence harvesting of animals, fish, and plants, First Nations did not identify any other customs or cultural practices being exercised in the Land Use RSA (see Figure 23.1-1, Chapter 23). However, there are two known heritage sites designated under the HCA

(see Sections 30.5.2.1 and 30.7.7 above): Treaty Rock and Graveyard Point. Treaty Rock is located approximately 27 km southeast from the TMF and 19 km southeast of the TCAR. Graveyard Point is about 27 km south from the PTMA as the crow flies. Both sites are too far from the Project to be at risk of being disturbed by Project activities and will not be considered further in this assessment.

With the exception of Skii km Lax Ha, First Nations provided limited geographically-specific information related to their traditional and current subsistence use of resources in the local and regional areas of the Project. Based on the information provided, the level of subsistence use of land and resources by potentially-affected First Nations in the Land Use LSA is generally considered to be low to negligible. This issue is considered further in the discussion of each First Nation below.

The Proponent has committed to implement a follow-up program designed to verify the environmental effects predictions made during the EA, and to confirm whether mitigation measures have achieved the desired outcomes. Valued components that will be monitored as part of a Follow-up Program include: groundwater quality and quantity, surface water quantity, surface water quality, fish and aquatic habitat, wetlands, and wildlife environmental effects.

The Proponent also wishes to negotiate Benefit Agreements (BAs) with each First Nation. Areas for discussion would include compensation to the Skii km Lax ha for impacts on traplines, and negotiating access agreements with the Tahltan and Skii km Lax ha with respect to use of the TCAR and/or the CCAR.

30.9.3 Tahltan Nation

As described above in section 30.5.1.4, the Tahltan collectively hold rights to hunt, fish, trap and harvest berries and other food and medicinal plants throughout their asserted territory. The harvesting of fish, wildlife and plants sustains the non-wage economy and is an important food source for most households.

The southernmost extent of the Tahltan traditional territory overlaps with the PTMA, a portion of the MTT and the TCAR and adjoining service roads. Although the territory does not encompass the Mine Site, Mitchell and Sulphurets creeks drain into the Unuk River, portions of which mark the southern boundary of Tahltan traditional territory. The main Tahltan communities of Telegraph Creek and Iskut are roughly equidistant from the Project, which lies approximately 140 km (straight line distance) to the south of these communities. To date, the Tahltan have not provided any information on the use of land and resources in or near the Project area. Available information identifies the majority of fishing, hunting, trapping, and gathering activity as occurring in other more northerly areas of their territory, for example, near the confluence of the Tahltan and Stikine rivers (Appendix 30-B). Given the overlap of Tahltan territory with the Project on the PTMA side, in addition to a slightly higher level of use by the Tahltan (as compared to resources on the Mine side), the following discussion and assessment on rights will largely be based on residual effects occurring on the PTMA side.

30.9.3.1 Impact on Fishing Rights

Salmon feature prominently in Tahltan cultural identity and practice, with numerous fish-bearing river systems running through Tahltan traditional territory. The traditional summer fisheries are currently located in the mid-Stikine, upper Nass and upper Skeena basins. Other culturally important species include Pacific salmon (chinook, coho and sockeye), steelhead, Dolly Varden, mountain whitefish, bull and rainbow trout.

The Unuk and Bell-Irving rivers are large river systems with diverse fish communities and cultural values. They provide spawning routes for Pacific salmon (*Oncorhynchus spp.*), anadromous steelhead (*O. mykiss*), and cutthroat trout (*O. clarkii clarkii*), and serve as habitat for resident rainbow and cutthroat trout, Dolly Varden (*Salvelinus malma*), bull trout (*S. confluentus*), and mountain whitefish (*Prosopium williamsoni*). A brief summary of fish distribution in the Unuk and Bell-Irving watersheds is provided below. The life history of each of these fish species is summarized in Table 15.5-4, Chapter 15 Fish and Aquatic Habitat.

Dolly Varden

Dolly Varden is the only fish species that occurs in nearly all streams in the vicinity of the Project and is currently the most common species in Treaty Creek. Due to the high composition of glacial fine substrates and high flows during the spawning season, South Teigen Creek provided poor to non-existent spawning habitat for Dolly Varden. All reaches provide good overwintering habitat for Dolly Varden. Dolly Varden is the only species present within the proposed TMF area.

Rainbow Trout/Steelhead

Rainbow trout is the second most common species found in the Unuk and Bell-Irving watersheds. In the Bell-Irving watershed, Teigen and Treaty creeks support summer-run populations of steelhead (LGL 1995; Bocking, Parken, and Atagi 2005).

Bull Trout

Very low densities of Bull trout have been observed in Treaty and Teigen Creeks (Chapter 15, Appendix 15-C), with no presence in remaining areas of the Project. Bull trout spawn and rear in Teigen Creek, and in the lower reach of South Teigen Creek.

Chinook salmon

Chinook salmon spawn in the Teigen Creek mainstem (upstream of the Snowbank Creek confluence), but not in the TMF footprint or Mine Site. Past studies have shown that the Teigen Creek chinook salmon make up less than 8% of Nass River chinook salmon stocks, based upon estimated escapement data (Koski, Alexander, and English 1996). The estimated escapement of chinook salmon for the Bell-Irving River was 4,831. Teigen Creek chinook salmon comprised approximately 42% of Bell-Irving River Chinook salmon stocks.

During the peak spawning period in 2010, 285 adults were observed in Teigen Creek during spawning surveys (Figure 15.1-4, Chapter 15). In the Treaty Creek watershed, chinook salmon spawned in Todedada and Gilbert creeks based upon the presence of rearing fry.

Sockeye salmon

Sockeye salmon spawned in Teigen Creek based upon baseline fieldwork conducted in 2008, 2009, and 2010. Teigen Creek supported a low escapement of sockeye salmon based upon baseline spawning survey data (fewer than five individuals observed during spawning surveys). Sockeye salmon were not present in Teigen Lake based upon an extensive review of existing literature, provincial databases (FISS), and baseline fieldwork in 2008, 2009, and 2010. Sockeye salmon spawned in East Todedada Creek, a tributary of Treaty Creek. East Todedada Creek supported a low escapement of sockeye salmon based upon baseline spawning survey data (i.e., 15 individuals observed during spawning surveys).

Coho salmon

Coho salmon were observed spawning in side channels and wetland outlets along the Teigen Creek floodplain. During the 2010 peak spawning period, eight adults were observed in Teigen Creek side channels and wetland outlets. Based upon spawning survey baseline data, habitat data, observation, and professional expertise, Snowbank Creek (a tributary of Teigen Creek) had a higher productive capacity for coho salmon production relative to that of Teigen Creek. The most recent DFO mean annual escapement estimates (from 1980 to 1989) estimate mean annual coho salmon escapement for Snowbank and Teigen creeks at 245 and 17, respectively.

Coho salmon spawned in Todedada, East Todedada, and Gilbert creeks, which are tributaries of Treaty Creek. Based upon coho salmon spawning survey baseline data and habitat data, the primary coho salmon spawning tributary for the Treaty Creek watershed is East Todedada Creek where a maximum count of 42 coho was observed during coho salmon spawning surveys. There is no data from DFO on mean annual escapement estimates for Treaty Creek. Coho salmon habitat capability models for smolt production and escapement goals were developed for Teigen and Treaty creeks (Bocking and Peacock 2004). Maximum annual smolt production for Teigen/Snowbank and Treaty creeks was estimated at 116,430 (upper limit) and 97,030 (upper limit), respectively. Estimated escapement spawners to seed available habitat for Teigen/Snowbank and Treaty creeks was estimated at 6,190 and 5,158, respectively.

Effects on fish that could impact the Tahltan's fishing rights in the area of the PTMA are the result of Project activities that cause changes in surface water quantity (annual, monthly, low, peak flows), surface water quality (e.g., nutrients, chemistry), aquatic resources (i.e., sediment, productivity), impacts on fish and fish habitat (e.g., habitat loss, alteration, degradation or destruction, toxicity, noise, spills), and wetlands (loss of wetland extent and function).

Surface Water Quantity

Surface water quantity effects that could in turn affect fish and fish habitat are anticipated from changes in streamflows in the PTMA and in the Bell-Irving River from construction of diversion tunnels, the Tailing Management Facility (TMF), and other Project components (e.g., camps, concentrate storage areas etc.). In the PTMA, changes in streamflow are predicted to have an overall not significant (moderate) effect, lasting into the far future, with a continuous frequency, reversible in the long-term and of a localized extent (i.e. restricted to the Project footprint). In the regional area (i.e., downstream into the Bell-Irving River), an overall effect on surface water quantity is predicted to be minor and regional in extent, with the remaining criteria ranked the

same as the PTMA. Similar results were predicted for stream flow changes in the Mine Site (moderate, localized effects) and the Unuk River (minor, regional effects; see Chapter 13, Tables 13.8-2 to Tables 13.8-5). Flow related effects (i.e. loss of fish habitat and decrease in the productive capacity of aquatic habitat) in the PTMA are being compensated for through the implementation of the HADD Fish Habitat Compensation Plan (Appendix 15-R) and the MMER Fish Habitat Compensation Plan (Appendix 15-Q). Other measures to mitigate flow related effects include implementation of the Water Management Plan (Chapter 26, Section 26.17), and designing Project components (e.g., diversions, tunnels) to follow the natural hydrologic regime.

Surface Water Quality

Fish may also be affected by residual water quality effects from nutrient loading (i.e., nitrogen), sedimentation, and metal leaching/acid rock drainage (ML/ARD) in the Treaty watershed (North Treaty and Treaty Creeks) and in Teigen watershed (South Teigen and Teigen Creeks). Effects downstream of the TMF are predicted to be not significant (minor), with a medium duration, sporadic frequency, reversible in the short-term and of landscape extent (see Chapter 14, Table 14.8-2). Based on the Proponent's predictive water quality modelling results of metal concentrations in the TMF discharge to the receiving environment during operation, closure and 50 years into the post-closure phase, all water quality parameters are predicted to be below water quality guidelines for the protection of aquatic life (including fish) in creeks downstream of the TMF. No cumulative effects related to water quality (having regard to the Proponent's mitigation commitments for water treatment and water management during all project phases) are predicted.

Effects on Fish and Aquatic Habitat

Fish species (i.e., bull trout, Dolly Varden, rainbow trout/steelhead, Pacific salmon, mountain whitefish) in the Treaty and Teigen watersheds have the potential to be affected by the TCAR, TMF, and transmission line. Potential residual effects on fish include direct mortality, noise, erosion and sedimentation, and water quality degradation (metals from point sources, metals and process chemicals from the TMF or Mine Site WTP, petroleum products, and nitrogen or phosphorus).

Proposed activities associated with the Project will result in a loss of fish habitat in North Treaty and South Teigen creeks. As a mitigation measure, it is proposed that Dolly Varden from the proposed TMF be relocated from North Treaty and South Teigen creeks to the mainstem of Treaty Creek. Treaty Creek is an ideal system for release due to the healthy existing population of Dolly Varden and its proximity to the salvage areas. The presence of existing members of the species indicates appropriate habitat for all life stages. The risk of an unsuccessful transfer due to differences in life history traits or behaviour has been mitigated by identifying a nearby waterbody for release, as the Treaty Creek, North Treaty Creek, and South Teigen Creek populations are genetically similar, and the three waterbodies have similar climate and habitat attributes (Appendix 15-C). Relocations over short distances and between similar populations and geographic areas are more likely to be successful, because closely related populations are more likely to have similar habitat requirements (Williams 1988). Habitat compensation plans for the loss of fish habitat are proposed in Appendices 15-Q and 15R.

Pacific salmon and rainbow trout/steelhead will only be affected by the TMF if there is a catastrophic dam rupture because of the large distance from the TMF to Teigen Creek. The distance from the TMF to Teigen Creek and Treaty Creek (downstream of Todedada Creek confluence) is 5 km and 8.1 km, respectively. If the appropriate management plans (e.g., Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters [Wright and Hopkey 1998]; Fish and Aquatic Habitat Protection and Mitigation Plan; ML/ARD Management Plan; Water Management Plan; Erosion Control Plan) are adhered to, effects on fish in the Bell-Irving watershed are predicted to be minor, of short to long-term extent, occurring sporadically, of localized geographical extent, and are considered reversible over the long-term.

Wetlands

Wetlands can provide spawning and rearing habitat for fish and aquatic species. Loss of wetlands in the PTMA area due to TMF construction are predicted to be not significant (moderate), of localized extent, and irreversible; however, the Wetland Habitat Compensation Plan (Appendix 16-B) will offset these losses at a ratio of greater than 1:1 within the regional area.

Key Project design changes and mitigation measures that were made to accommodate potential impacts on rights include:

- redirecting the TMF discharge to Treaty Creek, instead of to South Teigen Creek, to avoid impacts on salmonid values;
- re-routing of non-contact water diversion ditches around the TMF to supplement altered flows in the Teigen Creek watershed; and
- development of a discharge schedule to mimic the natural hydrograph of Treaty Creek, in order to avoid creating low-flow periods and to preserve receiving environment water quality standards.

Conclusion

The Project is predicted to have a low level of impact on Tahltan fishing rights as a result of effects on fish species of concern to the Tahltan. A low level of impact is concordant with the findings of the above analysis which demonstrates:

- the severity of the key residual effects affecting fish are mostly of minor concern or severity;
- the geographic extent of the majority of the effects are predicted to be localized to the Project footprint which occupies a very small proportion of Tahltan territory;
- the effects are anticipated to be reversible in the long-term;
- historical and current use of fishery resources in the affected localized area by the Tahltan is very low; and
- despite restrictions on access (for safety and jurisdictional reasons) during construction, operation, and closure to areas near the PTMA, alternate fishery resources in the broader regional area exist.

Customs and practices related to fishing are not expected to be affected, now or in the future, nor will the construction of the TMF and related Project facilities significantly displace Tahltan's ability to access fishery resources in their territory.

30.9.3.2 Impact on Hunting Rights

Traditional hunting ranges of the Tahltan include the watersheds of the Tuya and Tahltan rivers, and the Dease Lake basin, all in the general vicinity of the communities of Dease Lake and Telegraph Creek. To the east, traditional harvesting regions encompass parts of the Spatsizi Plateau and adjacent headwaters of the Skeena, Nass, Spatsizi, and Klappan rivers. Bisecting these areas and extending into the southern portion of the traditional territory is the Iskut River system, also used by the Tahltan for hunting and other traditional activities (MacLachlan 1981; TCC 2010a).

Wildlife species of importance to the Tahltan include mountain goat, moose, grizzly bear, black bear, wolves, marten, fisher, lynx, river otter, snowshoe hare, porcupine, red and flying squirrels, mink and wolverine, all of which have cultural and livelihood importance as a source of food and/or materials for traditional implements. Wolf, mink, and wolverine in particular were traditionally held in high regard for their fur. Moose have effectively replaced caribou as a game species for the Tahltan, as they have for other Aboriginal groups in the region. Mountain goat is culturally important for Tahltan for both its meat and hair. Within the Wildlife RSA, the Teigen-Snowbank-Ningunsaw corridor was identified as important to the Tahltan for its wildlife values.

The wildlife effects assessment concluded that no significant residual Project-specific effects are predicted for black bear, American marten, hoary marmots, bats, raptor and western toad. Therefore, the Project is not expected to impact the Tahltan's right to harvest these species.

Moose

The residual, direct Project effect of most concern is vehicle/moose collision mortality along Highway 37, which could exacerbate the recent decline in the regional moose population, although the Proponent's population viability assessment of the Nass moose population concluded that KSM Project traffic alone would not cause a regional moose population decline. Even with the addition of Project traffic, the level of traffic on the highways will remain well below historical levels, and the predicted incremental collision risk is very small. Incremental Project-related traffic/moose collision events, by themselves, are not predicted to cause any additional decline in regional moose population numbers. However, when a range of other projects, their associated cumulative traffic and the resultant mortality were added to the modelled population, the current population size is predicted to decline under worst case "high development/high traffic" scenarios (which is considered unlikely to occur), and in this case is considered a significant, major effect. This scenario is unlikely given the capital investment required to build a mine and numerous other challenges in bringing a mine into production. The moose-related issues raised by First Nations and other Working Group members related to Highway 37 extend beyond the ability of any one proponent to address and manage. The Province has recently established a working group comprised of industry, provincial government and First Nation representatives to discuss traffic-related issues along Highway 37 and Highway 37A on a regional basis. The Proponent has been invited to participate on the Working Group.

According to the Proponent's assessments, overall effects on the moose population are of medium magnitude, and could persist into the far future. Direct Project effects may be experienced at the landscape level, but could extend to the regional level when the potential cumulative effects of other reasonably foreseeable future projects are taken into account, depending on how many of these other projects proceed. Moose population resilience is considered low, but the overall residual direct Project effects on are reversible in the long term. With mitigation, the overall significance of the combined direct Project-related residual effects on moose (habitat loss, disruption of movement, direct mortality, indirect mortality and chemical hazards) is ranked **not significant (moderate)**.

The potential effect of external harvesting pressure from outsiders enabled by Project access roads and rights-of-way is not expected to have adverse residual effects due to effective control of back country access during construction and operation. During closure and post-closure, there is expected to be some residual effect; however, it is not projected to be significant.

Grizzly Bear

Direct Project effects on grizzly bears include habitat loss and alteration, disruption of movement, direct mortality, indirect mortality and attractants. These effects are predicted to be of low magnitude and local extent, although extending into the far future. They are considered reversible over the long term, following mine closure. The overall significance of the combination of individual residual direct effects on grizzly bear populations in the RSA is ranked **not significant (moderate)** and are not anticipated to adversely affect the viability of the local population. The regional grizzly bear population is considered healthy and stable, and the broader population base is expected to act as a buffer to any localized residual adverse effects.

Conclusion

The Project is predicted to have a low level of impact on Tahltan gathering rights as a result of effects on culturally important plant species in the PTMA. A low level of impact is concordant with the findings of the above analysis which demonstrates:

- the severity of the key residual effects affecting vegetation are of minor concern or severity;
- the geographic extent of the majority of the effects are predicted to be restricted to localized areas, occupying a very small proportion of Tahltan territory;
- historical and current use of vegetation resources in the affected localized area by the Tahltan is very low; and
- the effects are anticipated to be reversible in the short-term.

Customs and practices related to gathering are not expected to be affected, nor will Project components and activities significantly displace Tahltan's ability to access plant resources in their territory.

30.9.3.3 Impact on Gathering Rights

The harvesting of plants and berries for medicinal and subsistence purposes continues to be an important traditional Tahltan activity. The Tahltan harvest approximately 25 species of berries and numerous wild green vegetables, roots and plants which are used to treat a variety of minor ailments (Albright 1984; School District 87 2000). See Appendix 17-C, *Assessment of Culturally Important Plants* for more details. Soapberries and blueberries are commonly eaten (GMG Consulting 2009). Several species of edible mushrooms are found within the Tahltan traditional territory. Pine mushroom gathering is economically important, especially for Iskut Band members. Anecdotal observations of land use licence holders suggest that areas near the Eskay Creek Mine Road may be utilized by Tahltan members for pine mushroom harvesting. Tahltan members harvest mushrooms in remote areas adjacent to the Eskay Creek Mine road outside of the Land Use RSA.

Impacts on gathering rights (i.e., changes in harvesting practice) could result from changes in the quality of country foods due to mining operations that alter the natural metal concentration in environmental media within and surrounding the mine footprint. Loss of plant resources through the removal of vegetation to support Project construction activities could also impact Tahltan's ability to gather plants.

Country Food

Mining operations can alter the natural metal concentration in environmental media within and surrounding the mine footprint. Metals in fugitive dust will be deposited at a distance from mine operations onto plants, soils, and surface water. Mine Site effluent may lead to an increase in some metal concentrations in the receiving aquatic environment (Chapter 14), which can be taken up by plants from soils and water. Contaminants of Potential Concern (COPC) affecting the quality of plant resources (and potentially human health) that were included in the Human Health assessment for the Application/EIS included the following metals: aluminum, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, tin, vanadium, and zinc. These metals were selected based on their baseline and/or modelled concentrations being higher than guideline concentrations in water and sediments during operation and closure of the PTMA (Table 25.7-12, Chapter 25).

During operation, soil quality is predicted to be affected at the TMF, OPC, and RSF. Airborne deposition of contaminants in dust from the PTMA and Mine Site is predicted to occur in a highly localized manner during construction and operation (Chapter 7 Air Quality). Based on similar assessments (Intrinsik Environmental 2010), it is not expected that country foods at the PTMA and near the Mine Site will have elevated metal concentrations due to dusting. "Dusting" may affect soils and vegetation, but is likely of small magnitude relative to changes in water metal concentrations. Access to the PTMA for harvesting purposes will not be permitted.

Changes in the quality of plants and other country foods will be mitigated by implementing a number of Environmental Management Plans. Fugitive dust will be mitigated and managed according to the Air Quality Management Plan (Section 26.11). This plan ensures that the ambient air quality meets the Canada Wide Standards (Environment Canada 1999) and BC Ambient Air Quality and Pollution Control Objectives (BC MOE 2009). In addition, monitoring

activities in soils, water, and vegetation in these areas will be undertaken during construction, operation, closure, and post-closure phases of the Project. The Follow-up Program for the KSM Project (Chapter 38) includes monitoring of surface water quality and the Terrestrial Ecosystems Management and Monitoring Plan (Section 26.20) provides a description of the terrestrial plant tissue metal concentrations monitoring program that will be conducted.

Effects of dustfall contaminating vegetation are predicted to be minor, low to negligible magnitude, short duration, sporadic in nature, and reversible in the short-term.

Vegetation Loss

Construction of the TMF in the PTMA is predicted to decrease pine mushroom habitat from baseline conditions by approximately 6% (see Figure 17.7-4a, Chapter 17 Terrestrial Ecosystems). Loss of potential pine mushroom habitat includes areas of mature and old forest that will be cleared along portions of the Coulter Creek and Treaty Creek access roads (Table 17.6-2). Smaller areas of potential habitat loss could result from development of Camp 7: Unuk North Camp and the access road for the Mitchell operating camp. By adhering to the general management considerations within the Vegetation Clearing Management Plan (Chapter 26.20.1) effects on potential pine mushroom habitat will be minimized. The residual effect of the Project on loss of pine mushroom habitat is expected to be minor, localized in extent, and lasting into the far future but eventually reversible.

Conclusion

The Project is predicted to have a low level of impact on Tahltan gathering rights as a result of effects on culturally important plant species. A low level of impact is concordant with the findings of the above analysis which demonstrates:

- the severity of the key residual effects affecting vegetation are of minor concern or severity;
- the geographic extent of the majority of the effects are predicted to be restricted to localized areas, occupying a very small proportion of Tahltan territory;
- the effects are anticipated to be reversible in the short-term;
- historical and current use of vegetation resources in the affected localized area by the Tahltan is very low; and
- despite restrictions on access (for safety and jurisdictional reasons) during construction, operation, and closure to areas near the PTMA, alternate plant resources in the broader regional area exist.

Customs and practices related to gathering are not expected to be affected, nor will Project components and activities significantly displace Tahltan's ability to access plant resources in their territory.

30.9.3.4 Assessment of Overall Impacts on Tahltan Rights

Considering the above analysis and that the proponent has committed to implementing a range of comprehensive mitigation measures, effects are anticipated to be minor and geographically localized, the overall impact on Tahltan rights with respect to fishing, hunting, and gathering activities is expected to be low. The Project is not expected to affect the ability of present and future generations to exercise their rights, or modify their customs and practises related to fishing, hunting, and gathering.

30.9.4 Gitanyow First Nation

The Gitanyow territory is located in the Nass and Skeena watersheds. The territory does not overlap with any Project components. The wilp Wii'litsxw territory is closest to the Project footprint, approximately 58 km downstream of the TMF, extending south of Bowser Lake to just south of Meziadin Lake, and includes sections of the Bell-Irving River between Bowser Lake and the Nass River, and the watersheds of Hanna and Tintina Creeks. Highway 37 traverses the Hanna-Tintina area. The reserve community of Gitanyow is located on Highway 37, some 201 km south of the entrance to the TCAR.

The Gitanyow collectively hold rights to hunt, fish, trap and harvest berries and other food and medicinal plants throughout their asserted territory. Traditional subsistence activities such as hunting, fishing, and plant gathering remain important in the daily life of Gitanyow. Huwilp continue to actively hunt within their traditional house (wilp) territories.

Gitanyow members typically consume country foods gathered from their territories, including fish, moose meat and berries. Ninety percent of Gitanyow adult wilp members possess at least some of the skills necessary to harvest, preserve, and prepare wild foods and medicines, and consumption of traditional foods is widespread. One-quarter of Gitanyow wilp members consume traditional foods on a daily basis, and over 50% consume traditional foods once or twice a week. Twenty percent of Gitanyow wilp members have cabins or smokehouses in their house territories. More than two-thirds of those who did not have cabins or smokehouses said they would build one if they had the financial means and/or the support of the hereditary chief (Marsden 2010).

30.9.4.1 Impact on Fishing Rights

Fish species important to the Gitanyow include salmon (chinook, coho and sockeye), steelhead, Dolly Varden, and mountain whitefish. Contemporary Gitanyow fisheries interests have been formalized under a Comprehensive Fisheries Agreement signed between the Gitanyow First Nation and the Minister of Fisheries and Oceans in 1999. This co-management agreement gives the Gitanyow a role in the protection and enhancement of fisheries resources and fish habitat in the area, and provides for a seasonal 'food, social and ceremonial fishery' for the Gitanyow under a communal license. Commercial allocations of salmon have been awarded to the Gitanyow since 2009, and in 2012, an agreement was reached with DFO to transfer retired offshore commercial fishing licences for use in the Meziadin River. The 2011 commercial allocation of 3,000 salmon is expected to be increased to 10,000 or 12,000 in the future (M. Cleveland, pers. comm., 2012).

Fisheries located along the Kitwanga and Nass rivers, as well as in the Gitanyow and Meziadin Lakes areas, are important for seasonal salmon harvests (GFA 2010; Skeena Fisheries Commission N.d.)[5]. The Gitanyow place a very high priority on preserving water quality and quantity and ensuring fisheries survival in the Bell-Irving River and the Hanna-Tintina watershed, the Oweegee and Bowser Lake areas, and the Meziadin Lake area, which includes the confluence of the Meziadin and Nass Rivers.

Among the most significant areas for Gitanyow traditional land use are the watersheds of the Hanna and Tintina creeks (south of the Boswer River), and the confluence of the Meziadin basin and Nass River. Both areas are highly valued for salmon spawning and harvesting Nass River sockeye salmon (GHCO 2008; Gitanyow Nation and Province of BC 2012). Along the Bell-Irving watershed, Bowser and Oweegee lakes also have high fisheries value (M. Cleveland and G. Rush pers. comm. 2008; T. Martin pers. comm. 2010b). Gitanyow consider that streams located in close proximity to swamps, wetlands, and high-water tables function as high value fish spawning habitat (GHCO 2008). The protection of salmon spawning habitat is of particular importance to Gitanyow huwilp.

Approximately 60 to 80% of the Nass River salmon spawn in the Hanna – Tintina watersheds (BC MFLNRO 2012). The area contains small, easily fished streams, and the surrounding wetland-brush-forest habitat provides high value food supply and habitat for grizzly bears. For an overview of fish species distribution in the vicinity of the Project, refer to Section 30.9.3.1 above.

The potential for impacts on Gitanyow rights and interests largely relates to the TMF / PTMA which is located in the Bell-Irving (upper Nass) watershed. The Project has the potential to adversely impact Gitanyow rights to fish due to surface water quality degradation downstream of the TMF and potential spills along the Project's transportation route. Although fish species of importance to the Gitanyow are present in the upper Nass watershed, effects on fish in the Bell-Irving watershed are predicted to be minor, of short to long-term duration, occurring sporadically, of localized geographical extent, and reversible over the long-term. Effects on water quality and aquatic resources in the PTMA are anticipated to be minor, regional in extent, and in compliance with receiving environment water quality criteria.

The Project is predicted to have a low level of impact on Gitanyow fishing rights as a result of effects on fish species of concern to the Gitanyow. A low level of impact is concordant with the above analysis which demonstrates:

- the severity of the key residual effects affecting fish are mostly of minor concern and avoid fisheries highly valued by the Gitanyow;
- the effects are anticipated to be reversible in the long-term;

[5] The annual Gitanyow Food, Social and Ceremonial fishery is sanctioned under the terms agreed to in the Comprehensive Fisheries Agreement signed between the GHCO and Fisheries and Oceans Canada (DFO) in 1999 and administered by the GFA (2010).

- although the geographic extent of some of the effects (e.g. water quality) are predicted to be regional, the majority of the effects on fish are localized to the Project footprint which is outside of the Gitanyow territory; and
- historical and current use of fishery resources in the affected area by the Gitanyow is very low.

Given the considerable distance of Gitanyow communities downstream of the PTMA, and that subsistence fishing in the local or even regional areas of the Project are not activities that are known to be heavily practised by the Gitanyow, the effects of the Project on Gitanyow's fishing rights are expected to be low. Customs and practices related to fishing are not expected to be affected, nor will the construction of the TMF and related Project facilities significantly displace Gitanyow's ability to access fishery resources in their territory.

30.9.4.2 Impact on Hunting Rights

Of particular concern to Gitanyow is the preservation of grizzly bear, moose and deer habitats, as well as moose winter range (BC MFLNRO 2012). The Gitanyow hold a trapline covering their traditional territory(Sterritt et al. 1998) with a focus on harvesting mink, marten, beaver and fox (Halpin and Seguin 1990).

Grizzly bear has multiple uses, although traditionally its main value to the Gitanyow is as a source of fat and oil in the winter. The Gitanyow further identified marmot, beaver, marten, wolverine, rabbit, and deer as species used regularly and critical to Gitanyow culture and livelihoods, either as a source of food, or for a variety of ceremonial or other cultural uses. High value grizzly bear habitat is also found in the Hanna and Tintina drainages, and to the north along the Bell Irving towards Surveyors Creek. As discussed above in Section 30.9.3.2, direct Project effects on grizzly bears are predicted to be **not significant (moderate)**.

Mountain goats are also identified as a key species in the Gitanyow feast system, and are an especially important food resource for wilp Wii'litsxw. However, because the Gitanyow territory does not overlap with any areas of the Project where effects on mountain goats are anticipated, mountain goats will not be considered further in the assessment.

The Project has the potential to adversely impact the Gitanyow right to hunt moose due to the Project's transportation route (highways 37 and 37A), which bisects Gitanyow territory. See Section 30.9.3.2 above for a discussion on traffic related effects on moose which are anticipated to be **not significant (moderate)** under a likely, low development scenario and significant (major) under an unlikely, high development scenario where all Projects proceed. The moose-related issues raised by First Nations and other Working Group members related to Highway 37 extend beyond the ability of any one proponent to address and manage. The Province has recently established a working group comprised of industry, provincial government and First Nation representatives to discuss traffic-related issues along highways 37 and 37A on a regional basis. The Proponent has been invited to participate on the Working Group.

The wildlife effects assessment (Chapter 18) concluded that no significant residual Project-specific effects are predicted for black bear, American marten, hoary marmots, bats, raptor and

western toad. Therefore, the Project is not expected to impact the Gitanyow's right to harvest these species.

Measures to mitigate potential effects on wildlife are described in Chapter 18, Section 18.8, and in EMPs (e.g., the Wildlife Management Plan, Section 26.21, and the Traffic and Access Management Plan, Section 26.25).

The Project is predicted to have a low level of impact on Gitanyow hunting rights as a result of effects on wildlife species of concern to the Gitanyow. A low level of impact is concordant with the above analysis which demonstrates:

- the severity of the key residual effects affecting wildlife are mostly of minor concern or severity and avoid high value grizzly bear habitat near the Hanna and Tintina drainages, and to the north along the Bell Irving towards Surveyors Creek;
- the effects are anticipated to be reversible in the long-term;
- although the geographic extent of some of the effects are predicted to be regional (e.g., moose and Highway 37), the majority of the effects on wildlife are localized to the Project footprint which is outside of the Gitanyow territory; and
- historical and current use of wildlife resources in the vicinity of the Project by the Gitanyow is very low.

Given the considerable distance of Gitanyow communities downstream of the PTMA, and that hunting and trapping in the vicinity of the Project are not activities that are known to be heavily practised by the Gitanyow, the effects of the Project on Gitanyow's hunting rights are expected to be low. Customs and practices related to hunting are not expected to be affected, nor will the Project facilities displace Gitanyow's ability to access wildlife resources in their territory.

30.9.4.3 Impact on Gathering Rights

The Gitanyow gather a wide variety of plants with important cultural and use values, including blueberries, cranberries and soapberries used for food, and many other plants for their medicinal, properties or for use in art, construction or the creation of ceremonial implements and clothing (GHCO 2009; G. Martin, pers. comm. 2011). Seasonal berry picking is still actively pursued (G. Martin pers. comm. 2011) and is an important aspect of the seasonal harvest cycle. Harvesting of pine mushrooms is an increasingly important economic activity (GHCO 2009; G. Martin, pers. comm. 2011).

No impacts to Gitanyow harvesting of plants is anticipated as the Project does not overlap their traditional territory. It is also assumed that the Gitanyow would harvest plants in areas closer to their communities.

30.9.4.4 Assessment of Overall Impacts on Gitanyow Rights

Given the above analysis, the fact that the proponent has committed to implementing a range of comprehensive mitigation measures, and in conjunction with the sizeable distance of the Gitanyow territory from the Project, residual effects of the Project are not expected to

significantly impact Gitanyow's rights with respect to fishing, hunting, and gathering activities. The Project is not expected to affect the ability of present and future generations to exercise their rights, or modify their customs and practises related to fishing, hunting, and gathering.

30.9.5 Gitxsan Nation

The Gitxsan collectively hold rights to hunt, fish, trap and harvest berries and other food and medicinal plants throughout their asserted territory. The Gitxsan use the land and aquatic natural resources to supplement household livelihood and diet, and to contribute to family income. The harvest, processing, and consumption of country foods are important cultural activities for Gitxsan people.

The Gitxsan traditional territory encompasses approximately 33,000 km^2 in northwestern BC spanning from the mid-Skeena just north of Terrace to the upper reaches of both the Nass and Skeena rivers in the north, and from the Nechako Plateau in the east to the Bell-Irving River in the West (Figure 30.2-3). No Project components are located in the Gitxsan traditional territory, including wilp Skii km Lax Ha territory.

Most of the Gitxsan traditional territory encompasses watersheds that are not connected to the Nass/Bell-Irving system. However, portions of Gitxsan territory are situated within the Bell-Irving River from its confluence with the Nass River northward to the settlement of Bell II, and the confluence of Snowbank Creek with the Bell-Irving River. Gitxsan communities are located about 230 km south of the TCAR turn-off from Highway 37, and are clustered in the vicinity of Hazelton, farther up the Skeena Valley along Highway 16.

30.9.5.1 Impact on Fishing

Species of importance to the Gitxsan include chinook, coho, and sockeye, steelhead, char, Dolly Varden and lake and cutthroat trout. Within the Gitxsan traditional territory, sockeye salmon runs occur in the summer, and coho and steelhead runs in the fall. In the winter, some Gitxsan fish for char, Dolly Varden, and lake and cutthroat trout, while others with kinship ties to Nisga'a citizens fish on the Nass River, returning to the same sites year after year (Daly 2005).

Effects on fish that could impact the Gitxsan's fishing rights are the result of indirect effects of Project activities that cause changes in surface water quantity (annual, monthly, low, peak flows), surface water quality (e.g., nutrients, chemistry), aquatic resources (i.e., sediment, productivity), fish and fish habitat (e.g., habitat loss, alteration, degradation or destruction, toxicity, noise, spills), and wetlands (loss of wetland extent and function). Types of effects are described in detail above in section 30.9.3.1. and in Chapter 15 Fish and Aquatic Habitat.

The Project is predicted to have a low level of impact on Gitxsan fishing rights as a result of residual effects on fish species of concern to the Gitxsan. A low level of impact is concordant with the findings of the above analysis which demonstrates:

- the severity of the key residual effects affecting fish are mostly of minor concern or severity and are predicted to meet receiving environment criteria downstream of the Project (e.g., water quality in the Bell-Irving River);

- although the geographic extent of some of the effects (e.g. water quality) are predicted to be regional, the majority of the effects on fish are localized to the Project footprint which is outside of the Gitxsan territory and approximately 240 km away from the nearest community (meaning First Nations are more likely to practise traditional activities closer to their community);
- the effects are anticipated to be reversible in the long-term; and
- historical and current use of fishery resources in the vicinity of the Project by the Gitxsan is low.

Given the considerable distance of Gitxsan communities downstream of the PTMA, and that subsistence fishing in the local areas of the Project are not activities that are known to be heavily practised by the Gitxsan, the effects of the Project on Gitxsan's fishing rights are expected to be low. Customs and practices related to fishing are not expected to be affected, nor will the construction of the TMF and related Project facilities significantly displace Gitxsan's ability to access fishery resources in their territory.

30.9.5.2 Impact on Hunting

Principal wildlife species harvested for subsistence purposes include deer, moose, mountain goat, and black and grizzly bears. In the past, mountain goat was hunted along the Skeena River and in the Stewart area, as well as in the upper Nass and Kisgaga'as areas. Marmots were trapped for their high value pelts in the Stewart area and along the upper Nass (Daly 2005). Beaver, mink, marten, fisher, fox, wolf, coyote, weasel, and otter were also trapped for their fur(People of 'Ksan 1980; Halpin and Seguin 1990). Other smaller animals were trapped for food, fur and grease. Trapping continues but at lower levels than in the past.

The Project has the potential to adversely impact the Gitxsan right to hunt moose due to the Project's transportation route (highways 37 and 37A), which bisects Gitxsan's territory. See Section 30.9.3.2 above for a discussion on traffic related effects on moose which are anticipated to be not significant (moderate) under a likely, low development scenario and significant (major) under an unlikely, high development scenario where all Projects proceed. The moose-related issues raised by First Nations and other Working Group members related to Highway 37, extend beyond the ability of any one proponent to address and manage. The Province has recently established a working group comprised of industry, provincial government and First Nation representatives to discuss traffic-related issues along Highway 37 and Highway 37A on a regional basis. The Proponent has been invited to participate on the working group.

Measures to mitigate potential effects on wildlife are described in Chapter 18, Section 18.8, and in EMPs (e.g., the Wildlife Management Plan, Section 26.21, and the Traffic and Access Management Plan, Section 26.25).

The Project is predicted to have a low level of impact on Gitxsan hunting rights as a result of effects on wildlife species of concern to the Gitxsan. A low level of impact is concordant with the above analysis which demonstrates:

- the severity of the key residual effects affecting wildlife are mostly of minor concern or severity and avoid known hunting areas;
- the effects are anticipated to be reversible in the long-term;
- although the geographic extent of some of the effects are predicted to be regional (e.g., moose and Highway 37), the majority of the effects on wildlife are localized to the Project footprint which is outside of the Gitxsan territory; and
- historical and current use of wildlife resources in the vicinity of the Project by the Gitxsan is very low.

Given the considerable distance of Gitxsan communities downstream of the PTMA, and that hunting and trapping in the vicinity of the Project are not activities that are known to be heavily practised by the Gitxsan, the effects of the Project on Gitxsan's hunting rights are expected to be low. Customs and practices related to hunting are not expected to be affected, nor will the Project facilities displace Gitxsan's ability to access wildlife resources in their territory.

30.9.5.3 Impact on Gathering

The Gitxsan harvest berries in clear-cut areas opened by forestry and along roadsides (Daly 2005), collecting Saskatoon berries, hazelnuts, chokecherries, rosehips, gooseberries, squash berries, raspberries, thimbleberries and soapberries (Rescan 2009a). Gitxsan also collect wild crab-apples, swamp cranberries, Saskatoon berries, and soapberries in the valleys. Thorn-berry and rosehips are also harvested (Daly 2005). Medicinal plants gathered from wet areas at lower elevations include devil's club (late October to spring) and yellow pond lily root (autumn; Gitxsan Chiefs' Office 2010). Edible mushrooms are harvested, including pine mushrooms (primarily for export).

No impacts to Gitxsan harvesting of plants is anticipated as the Project does not overlap their traditional territory and it is assumed the Gitxsan would harvest plants in areas closer to their communities.

30.9.5.4 Assessment of Overall Impacts on Gitxsan Rights

Given the above analysis and that the Proponent has committed to implementing a range of comprehensive mitigation measures, coupled with the considerable distance of the Gitxsan territory from the Project, residual effects of the Project are not expected to significantly impact Gitxsan's rights with respect to fishing, hunting, and gathering activities. The Project is not anticipated to affect the ability of present and future generations to exercise their rights, or modify their customs and practises related to fishing, hunting, and gathering.

30.9.6 Skii km Lax Ha

The Skii km Lax Ha asserted traditional territory covers the Mine Site and PTMA. The Skii km Lax Ha assert rights to hunt, fish, trap and harvest berries and other food and medicinal plants throughout their traditional territory. The Skii km Lax Ha have traditionally, and currently hunt/trap, fish, camp and harvest plants, berries and mushrooms in their asserted traditional territory. Current Skii km Lax Ha sites closest to Project infrastructure include a travel corridor

used by the Skii km Lax Ha which passes through the Unuk River valley in the vicinity of the Mine Site. The MTT will pass under a Skii km Lax Ha trail and harvesting area that spans the Treaty Creek headwaters to Teigen Lake. There is also a travel corridor along Treaty Creek. There are plans to rebuild cabins at Todedada Lake, Gilbert Lake, and Taft Creek and at Teigen Creek (located approximately halfway between the mouth of the creek and Teigen Lake).

Historical use of Skii km Lax Ha's asserted territory is described in Section 30.5.4 and is documented in Appendix 30-B.

30.9.6.1 Impacts on Fishing Rights

As discussed above in Section 30.5.4.3, key fishing areas used by the Skii Km Lax Ha are located mostly downstream from the PTMA and TMF, along the Bell Irving River from the confluence of Snowbank and Teigen creeks to Bowser Lake and the Bowser/Bell-Irving confluence. Salmon, steelhead and trout fishing is important to the Skii km Lax Ha. Preferred spring salmon fishing locations include the Cranberry River. The Cranberry River flows into the Nass River approximately 160 km downstream from the TCAR. Preferred spring salmon fishing spots include the Snowbank Creek/Bell-Irving River confluence, near Bell II and the Treaty Creek/Bell-Irving River confluence. The Skii km Lax Ha also fish for spring salmon at Meziadin Lake and along other areas of the Nass River (both areas outside of Land Use RSA; Rescan 2009b).

Preferred steelhead fishing sites include the west side of the Bell-Irving River, and the stretch of the Bell-Irving River between Treaty and Wildfire creeks (for steelhead and rainbow trout)(Rescan 2009b). A fishing cabin located on Bowser Lake is used to support the on-going practise of these traditional activities.

Fish species (i.e., bull trout, Dolly Varden, rainbow trout/steelhead, Pacific salmon, mountain whitefish) in the Treaty and Teigen watersheds have the potential to be affected by the TCAR, TMF, and transmission line. Potential residual effects on fish include direct mortality, noise, erosion and sedimentation, and water quality degradation (metals from point sources, metals and process chemicals from the TMF or Mine Site WTP, petroleum products, and nitrogen or phosphorus).

Key Project design changes and mitigation measures that were made to accommodate impacts on rights include:

- redirecting the TMF discharge to Treaty Creek, instead of to South Teigen Creek, to avoid impacts on salmonid values;
- re-routing of non-contact water diversion ditches around the TMF to supplement altered flows in the Teigen Creek watershed; and
- development of a discharge schedule to mimic the natural hydrograph of Treaty Creek, in order to avoid creating low-flow periods and to preserve receiving environment water quality standards.

Effects on fish in the Bell-Irving watershed are predicted to be minor, of short to long-term duration, occurring sporadically, of localized geographical extent, and are considered reversible

over the long-term based on a consideration of the Fish Habitat Compensation Plan and effective implementation of the proponents EMPs.

Conclusion

The Project is predicted to have a low level of impact on Skii km Lax Ha fishing rights as a result of effects on fish species of concern to the Skii km Lax Ha. A low level of impact is concordant with the findings of the above analysis which demonstrates:

- the severity of the key residual effects affecting fish are mostly of minor concern;
- the geographic extent of the majority of the effects are predicted to be localized to the Project footprint, minimizing effects in areas of higher use in the Skii km Lax Ha traditional territory;
- the effects are anticipated to be reversible in the long-term;
- historical and current use of fishery resources in the vicinity of the Project by the Skii km Lax Ha is relatively low (due to Skii Km Lax Ha's population size); and;
- despite restrictions on access (for safety and jurisdictional reasons) during construction, operation, and closure to areas near the PTMA, alternate fishery resources in the broader regional area exist.

Customs and practices related to fishing are not expected to be affected, now or in the future, nor will the construction of the TMF and related Project facilities significantly displace Skii km Lax Ha's ability to access fishery resources in their territory.

30.9.6.2 Impacts on Hunting Rights

Prior to 2009, the Skii km Lax Ha actively trapped along Highway 37 from the Cranberry River to the Skii km Lax Ha cabin on Skowill Creek. This area was trapped for beaver, marten and wolverine. Wetlands are preferred trap locations (Rescan 2009b). Two Skii km Lax Ha traplines (TR 617 T015 and TR 616 T011) overlap with the Project, encompassing the PTMA and the TCAR. Since the operation of Tsesaut Ventures Ltd, trapping activity in the area by the Skii km Lax Ha has ceased.

Moose is the most commonly hunted big game species, although black bears and grizzly bears are also hunted.

Potential direct and cumulative effects on grizzly bears, mountain goats and wetland birds, depending on the species, could include habitat loss and alteration, disruption of movement, direct mortality, indirect mortality, sensory disturbance, attractants and the bioaccumulation of COPCs, but all are predicted to be manageable.

The Project has the potential to adversely impact Skii km Lax Ha's right to hunt moose due to the TCAR, and transportation along highway 37. See Section 30.9.3.2 above for a discussion on traffic related effects on moose which are anticipated to be not significant (moderate) under a likely, low development scenario and significant (major) under an unlikely, high development scenario where all Projects proceed. The moose-related issues raised by First Nations and other

Working Group members related to Highway 37, extend beyond the ability of any one proponent to address and manage. The Province has recently established a working group comprised of industry, provincial government and First Nation representatives to discuss traffic-related issues along Highway 37 and Highway 37A on a regional basis. The Proponent has been invited to participate on the working group.

Measures to mitigate potential effects on wildlife are described in Chapter 18, Section 18.8, and in EMPs (e.g., the Wildlife Management Plan, Section 26.21, and the Traffic and Access Management Plan, Section 26.25).

The Project is predicted to have a low level of impact on Skii km Lax Ha hunting rights as a result of effects on wildlife species of concern to the Skii km Lax Ha. A low level of impact is concordant with the above analysis which demonstrates:

- the severity of the key residual effects affecting wildlife are mostly of minor concern and avoid more active use areas;
- the effects are anticipated to be reversible in the long term;
- although the geographic extent of some of the effects are predicted to be regional (e.g., moose and Highway 37), the majority of the effects on wildlife are localized to the Project footprint minimizing effects in Skii Km Lax Ha territory;
- historical and current use of wildlife resources in the vicinity of the Project by the Skii km Lax Ha is relatively low (given Skii km Lax Ha's population size); and
- despite restrictions on access (for safety and jurisdictional reasons) during construction, operation, and closure to areas near the PTMA, alternate wildlife resources in the broader regional area exist.

Customs and practices related to gathering are not expected to be affected, nor will Project components and activities significantly displace Skii km Lax Ha's ability to access wildlife resources in their territory.

30.9.6.3 Impacts on Gathering Rights

The Skii km Lax Ha collect berries (huckleberries, blueberries, cranberries and soapberries), mushrooms, and medicinal plants such as devil's club, within the Bell-Irving and Ningunsaw valleys, and around Bowser Lake (Rescan 2009b). Five of these areas are located outside of the Land Use RSA (Appendix 30-B), including the Ningunsaw valley, the east side of the Bell-Irving River north of Mehan Lake, Bell Creek (or Spruce Creek), Oweegee Creek, and Oweegee Lake. The sixth site at Bowser Lake is located on the eastern edge of the Land Use RSA, well south of the PTMA. None of these sites are anticipated to be impacted by the Project.

Impacts on gathering rights (i.e. changes in harvesting practice) could result from changes in the quality of country foods due to mining operations that alter the natural metal concentration in environmental media within and surrounding the mine footprint. Loss of plant resources through the removal of vegetation to support Project construction activities could also impact Skii km Lax Ha's ability to gather plants.

Airborne deposition of contaminants in dust from the PTMA and Mine Site is predicted to occur in a highly localized manner during construction and operation (Chapter 7 Air Quality). Based on similar assessments (Intrinsik Environmental 2010), it is not expected that country foods at the PTMA and near the Mine Site will have elevated metal concentrations due to dusting. "Dusting" may affect soils and vegetation, but is likely of small magnitude relative to changes in water metal concentrations. Access to the PTMA for harvesting purposes will not be permitted.

Changes in the quality of plants and other country foods will be mitigated by implementing a number of Environmental Management Plans. Fugitive dust will be mitigated and managed according to the Air Quality Management Plan (Section 26.11). Monitoring activities in soils, water, and vegetation in these areas will be undertaken during construction, operation, closure, and post-closure phases of the Project. The Follow-up Program for the KSM Project (Chapter 38) includes monitoring of surface water quality and the Terrestrial Ecosystems Management and Monitoring Plan (Section 26.20) provides a description of the terrestrial plant tissue metal concentrations monitoring program that will be conducted.

Effects of dustfall contaminating vegetation are predicted to be minor, low to negligible magnitude, short duration, sporadic in nature, and reversible in the short-term.

Vegetation Loss

Construction of the TMF in the PTMA is predicted to decrease pine mushroom habitat from baseline conditions by approximately 6% (see Figure 17.7-4a, Chapter 17 Terrestrial Ecosystems). Loss of potential pine mushroom habitat includes areas of mature and old forest that will be cleared along portions of the Coulter Creek and Treaty Creek access roads (Table 17.6-2). Smaller areas of potential habitat loss could result from development of Camp 7: Unuk North Camp and the access road for the Mitchell operating camp. By adhering to the general management considerations within the Vegetation Clearing Management Plan (Chapter 26.20.1) effects on potential pine mushroom habitat will be minimized. The residual effect of the Project on loss of pine mushroom habitat is expected to be minor, localized in extent, and lasting into the far future but eventually reversible.

Conclusion

The Project is predicted to have a low level of impact on Skii km Lax Ha gathering rights as a result of effects on culturally important plant species. A low level of impact is concordant with the findings of the above analysis which demonstrates:

- the severity of the key residual effects affecting vegetation are of minor concern or severity;
- the geographic extent of the majority of the effects are predicted to be restricted to localized areas, minimizing effects in Skii Km Lax Ha territory ;
- the effects are anticipated to be reversible in the short-term;
- historical and current use of vegetation resources in the affected localized area by the Skii km Lax Ha is relatively low (given the small population size); and

- despite restrictions on access (for safety and jurisdictional reasons) during construction, operation, and closure to areas near the PTMA, alternate plant resources in the broader regional area exist.

30.9.6.4 Assessment of Overall Impacts on Skii km Lax Ha Rights

Given the above analysis and that the proponent has committed to implementing a range of comprehensive mitigation measures, residual effects of the Project are not expected to significantly impact Skii km Lax Ha's rights with respect to fishing, hunting, and gathering activities. The Project is not expected to affect the ability of present and future generations to exercise their rights, or modify their customs and practises related to fishing, hunting, and gathering.

30.10 Summary

Through consultation activities initiated with the Tahltan, Gitanyow, Gitxsan, and Skii km Lax Ha since 2008, issues that been raised include, but are not limited to, surface water quality, fish and aquatic habitat, land use, heritage, traffic, social effects, risks of accidents and malfunctions and alternatives assessment. Residual effects related to social, economic, health, heritage, and current use of lands and resources components that are anticipated to occur have been extensively mitigated by using a diverse array of strategies (e.g., Project design changes, EMPs) to accommodate Aboriginal concerns. The proponent is also interested in supplementing mitigation by exploring opportunities to negotiate Impact Benefit Agreements as required.

Residual effects of the Project are expected to have a low level of impact on Aboriginal rights. Customs and practises associated with traditional activities of fishing, hunting, and gathering are not expected to be significantly altered.

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