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7.1 Social Baseline

This section presents an overview of the social baseline conditions for the Local Study Area (LSA) and Regional Study Area (RSA) and includes the following information:

- Summary of population and demographic conditions and trends within the LSA and RSA;
- Summary of regional and community infrastructure within the selected study area, focusing on municipal infrastructure and facilities, housing and temporary accommodation, and regional transportation;
- Overview of the current regional services available in the study area, including educational, health, social and protective services;
- Brief description of the community well-being conditions in the LSA and RSA;
- A summary of the publicly available baseline data describing non-traditional land and resource use (NTRLRU) occurring within the proposed study area; and
- Summary of the baseline characterization for visual resources.

This Social Effects Assessment of the proposed Blackwater Gold Project (the Project) is based on a Socio-economic Regional Study Area (SERSA) that consists of two areas, a LSA and a RSA as presented in **Figure 7.1.1-1** and described in **Section 4** Assessment Methodology.

The populations in the two study areas have different characteristics with regard to demographics, regional infrastructure, services, and family and community well-being. **Section 7.1.1** provides an overall summary of current Social Conditions in the SERSA with focus on demographics; regional and community infrastructure, including municipal infrastructure and facilities, housing and temporary accommodation and regional transportation; regional services, including health care, education, protective services and emergency services; and family and community well-being. The Social Baseline Report (**Appendix 7.1.1A**) provides a detailed review of the social context for the Project.

A summary of the publicly available baseline data describing NTRLRU occurring within the proposed study area is provided in **Section 7.1.2** Non-traditional Land and Resource Use (Baseline Summary). The Non-traditional Land and Resource Use Baseline Report (**Appendix 7.1.2A**) provides a detailed review of the land use context for the Project.

A summary of the baseline for current land and resource use for traditional purposes is provided in **Section 7.1.3** Current Land and Resource Use for Traditional Purposes (Baseline Summary).

A summary of the baseline characterization for visual resources is provided in **Section 7.1.4** Visual Resources (Baseline Summary). The Visual Resources Baseline Report (**Appendix 7.1.4A**) provides more detail on the visual context of the Project.

7.1.1 Social Conditions

The social baseline characterization, summarized in this section, focuses on identifying current social capacity and thresholds in the study area. A combination of published sources and key informant interviews provided the baseline data.

The detailed social baseline studies within the LSA and RSA is presented in The Social Baseline Report (**Appendix 7.1.1A**) and includes:

- Demographic conditions and trends within the region;
- Capabilities and capacity of existing regional infrastructure (e.g., municipal infrastructure and facilities, housing and temporary accommodation, and regional transportation);
- Description of regional services and capacity (e.g., educational, health, social and protective services);
- Measures of family and community well-being and human health; and
- Overview of the current transportation network in the study area.

The LSA consists primarily of Bulkley-Nechako Regional District Electoral Areas (RDEA) D and F, the Village of Fraser Lake, the District of Vanderhoof, and eleven populated Indian Reserves. The RSA comprises the Fraser-Fort George RDEA C, the Bulkley-Nechako RDEAs C and B, the City of Prince George, the Village of Burns Lake, the District of Fort St. James, and 11 populated Indian Reserves. **Table 7.1.1-1** lists all Indian Reserves presented in the LSA, and identifies whether they are populated or unpopulated.

Table 7.1.1-1: Indian Reserves in the Socio-economic Local Study Area

Count	Indian Reserve	First Nation	Populated ⁽¹⁾	Unpopulated ⁽¹⁾
1	Alexandria #10	?Esdilagh First Nation		X
2	Alexandria #11	?Esdilagh First Nation		X
3	Alexandria #3	?Esdilagh First Nation		X
4	Alexandria #3a	?Esdilagh First Nation		X
5	Baezaeko River #25	Nazko		X
6	Baezaeko River #26	Nazko		X
7	Baezaeko River #27	Nazko		X
8	Bishop Bluffs #10	LDN		X
9	Bishop Bluffs #5	LDN		X
10	Bishop Bluffs #6	LDN		X
11	Canyon Lake #7	NWFFN		X
12	Chief Morris #13	LDN		X
13	Clustalach #5	SFN		X
14	Coglistiko River #29	Nazko		X
15	Corkscrew Creek #10	SFN		X
16	Corkscrew Creek #9	SFN		X
17	Euchinico Creek #17	Nazko	X	
18	Euchinico Creek #18	Nazko		X
19	Euchinico Creek #19	Nazko		X

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Count	Indian Reserve	First Nation	Populated ⁽¹⁾	Unpopulated ⁽¹⁾
20	Fishpot Lake #24	Nazko		X
21	Fondeur #9	NWFN		X
22	Fraser Lake #2	NWFN		X
23	Holy Cross Lake #3	Cheslatta		X
24	Kloyadingli #2	LDN		X
25	Kluskus #1	LDN	X	
26	Kluskus #14	LDN		X
27	Knapp Lake #6	Cheslatta		X
28	Kushya Creek #12	LDN		X
29	Kushya Creek #7	LDN		X
30	Laketown #3	SFN	X	
31	Leon #14	Cheslatta		X
32	Lorin Meadow #9	?Esdilagh First Nation		X
33	Lower Fishpot Lake #24a	Nazko		X
34	Mckay Meadow #4	?Esdilagh First Nation		X
35	Michelle Creek #22	Nazko		X
36	Michelle Creek #23	Nazko		X
37	Murray Lake #4	Cheslatta		X
38	Nahlquonate #2	Nazko		X
39	Nautley #1	NWFN	X	
40	Nazco #20	Nazko	X	
41	Nazco #21	Nazko		X
42	Nazco Cemetery #20a	Nazko		X
43	Noonla #6	SFN		X
44	Old Country Meadow #4	SFN		X
45	Ormonde Creek #8	NWFN		X
46	Redwater Creek #30	Nazko		X
47	Sackanitecla #2	SFN		X
48	Seaspunkut #4	NWFN	X	
49	Sinkut Lake #8	SFN		X
50	Since-Tah-Lah #2	Lhtakoh Indian Band		X
51	Stellaquo #1	Stellat'en	X	
52	Stony Creek #1	SFN	X	
53	Sundayman's Meadow #3	LDN	X	
54	Targe Creek #15	Cheslatta		X
55	Tatelkus Lake #28 ⁽²⁾	LDN	X	
56	Tatuk Lake #7	SFN		X
57	Trout Lake Alec #16	Nazko	X	
58	Trout Lake Jonny #15	Nazko		X
59	Tsachla Lake #8	LDN		X
60	Upper Kluskus Lake #9	LDN		X
61	Yaladelassla #4	LDN		X
62	Yensischuck #3	NWFN		X

Note: ¹The Census suppresses data for those areas with incomplete enumerated Indian reserves or for data quality or confidentiality reasons. As a result, population data was not available for every Indian reserve.

²Tatelkus Lake #28⁽²⁾ was confirmed to be populated during execution of the baseline studies between 2011 and 2013

7.1.1.1 Demographics

The SERSA reported a small decrease in population from 2001 to 2011. The total population increased between 2006 and 2011, but still remains below 2001 levels (Statistics Canada, 2002; 2007a; 2012).

Birth rates across the SERSA, and specifically in the Nechako Local Health Area (LHA), were above the provincial average, as was teen pregnancy. Death rates across the SERSA were on a par with or below the British Columbia (BC) average. Population projections by BC Stats anticipate slow, sustained growth for the region, with the RSA growing slightly faster than the LSA (BC Vital Statistics Agency, 2011).

Between 2006 and 2011, the area has experienced a negative net migration. For the same period, the RSA reported a slightly higher rate of residential mobility than the LSA. Demographic mobility was notably low among the on-reserve Aboriginal population. The RSA had a higher concentration of visible minorities, while the LSA had a larger portion of Aboriginal residents.

Both the LSA and RSA report similar age populations, with Vanderhoof, Fort St. James, and the RSA on-reserve populations reporting the largest proportion of residents age 0 to 14, while Burns Lake and Vanderhoof reported the highest concentration of people age 75+. Most SERSA residents were married.

7.1.1.2 Regional and Community Infrastructure

Housing in the region is affordable and priced well below the provincial average. The available housing in urban centres and rural areas consists mostly of well-maintained single-family homes that are at least 24 years old. Housing on the reserves is typically newer but in need of major repairs. No significant residential construction has been completed in the region over the last five years; however, the communities of Vanderhoof and Prince George reported an increase in residential building permits in 2012 over 2011. The 2011 census reported 42,505 private dwelling units in the SERSA, approximately 6% more than in 2006. Of these, 38,421 (90.4%) were considered to be permanently occupied, suggesting that the rest were being used as temporary or seasonal residences, or were vacant (Statistics Canada 2007a, 2012). The majority of this housing was owned (73%), rather than rented (27%). Larger urban centres had the highest percentages of apartments and the lowest percentages of single detached houses.

The 2010 data indicate fluctuations in the number of temporary accommodation units available since 2000, but both numbers and associated revenues are on the upswing, partially in response to the demands for short-term accommodation associated with an increase in resource-based activity in the area. Key informants in the SERSA (Lytel, 2013; Romeo, 2013; Wall, 2013; Siemens, 2013; Friesen, 2013) indicate that a total of 46 temporary accommodation units, including hotels, motels, lodges, and/or inns, have a total of 2,395 rooms available in the SERSA.

The majority of urban communities rely on wells for potable water, with the exception of Fraser Lake that draws water from Fraser Lake. Vanderhoof and Prince George operate sewage

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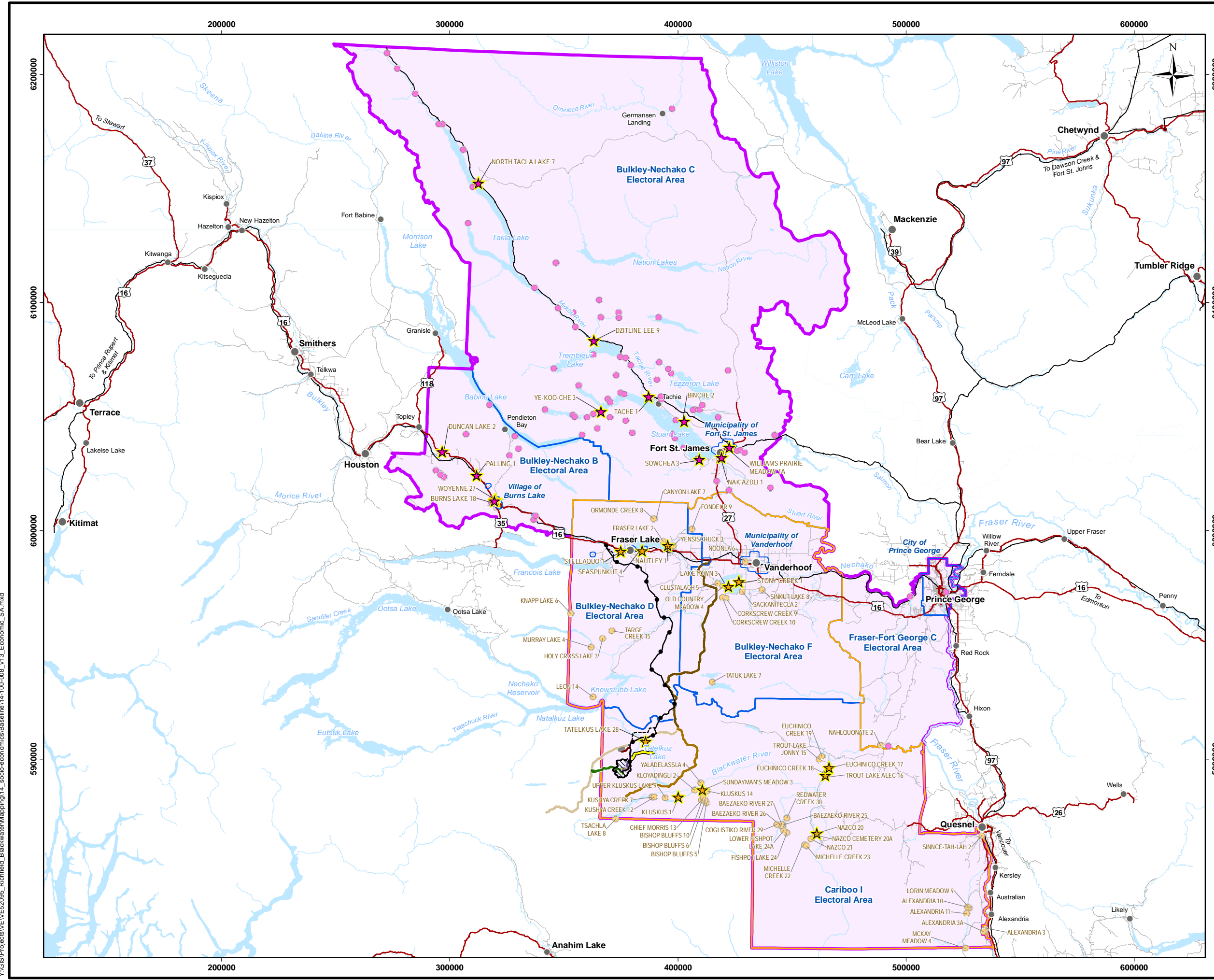
treatment facilities, while the other communities rely on lagoons/ponds for liquid waste. All systems operate well below maximum capacity (Martin, 2013; Hilman, 2013; Carver, 2013; McIntosh, 2013; Cloughton, 2013). Rural residents are responsible for their own water supply and liquid waste management.

All urban communities in the SERSA have telephone, Internet, and cellular telephone services, and community-based newspapers are available in most of the centres (Media in British Columbia, 2012; BC Cable, 2012; Bogh, 2012; Carlson, 2012; Wall, 2012; Bell, 2012).

Energy supply and infrastructure are not a limiting factor within the SERSA. Surplus gas supply and electrical supply capacity are capable of serving projected baseline growth and demand in the region (Schoberg, 2013, Sears, 2013). Capacity to service additional areas with electricity would depend upon the size and load demand required. (St. Onge, 2013).

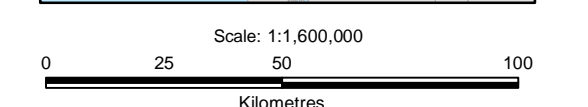
A variety of recreation opportunities are available within the communities in the SERSA, ranging from outdoor activities to curling rinks to museums and public libraries. Larger communities typically offer residents a greater variety of recreation facilities. Prince George has the most extensive range of facilities (Village of Burns Lake, 2012; Village of Fraser Lake, 2012; Fort St. James District, 2012; District of Vanderhoof, 2012; City of Prince George, 2012).

Based on fieldwork and interviews with community staff, housing, energy supply, communication and physical infrastructure in the region is readily able to meet the needs of current residents and projected growth.



- Populated Place
- Highway
- Local road
- Railway
- Kluskus FSR
- Kluskus-Ootsa FSR
- Kluskus-Blue FSR
- Electoral Boundaries
- Municipal Boundaries
- Project Components**
- Exploration Road
- Proposed Mine Access Road
- Proposed Transmission Line
- Proposed Transmission Line Reroute
- Proposed Fresh Water Pipeline
- Proposed Airstrip Access Road
- Proposed Airstrip Extent
- Social and Economic**
- Local Study Area (LSA)
- Regional Study Area (RSA)
- Indian Reserves**
- Socio Economic LSA**
- ★ Populated
- Unpopulated
- Socio Economic RSA**
- ★ Populated
- Unpopulated

Note:
Data based on population counts from
Statistics Canada for the 2006 Census



Reference
Atlas of Canada
BC Government GeoBC Data Distribution

CLIENT: newgold™		
PROJECT: Blackwater Gold Project		
Economic, Social and Human Health Study Areas		
DATE: February, 2015	ANALYST: WR	Figure 7.1.1-1
JOB No: VE52242	QA/QC: MY	PDF FILE: 14-100-008_v13_Economic_SA.pdf
GIS FILE: 14-100-008_v13_Economic_SA.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

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7.1.1.3 Regional Transportation

Highway 16, the Yellowhead Highway, is the primary east-west highway and trucking route to and through the SERSA. Highway 27 provides north-south highway access to and within the SERSA. Highway 16 between Prince George and Engen will be the primary route for transportation throughout the life of the project.

Highway 16 and 27 are single lane, undivided highways. There are short sections of Highway 16 with two lanes in each direction or occasional passing lanes. In 2012, average annual daily traffic (AADT) volumes recorded on Highway 16 immediately east of the intersection with Highway 27, and 21 km east of Vanderhoof, were 4,304 and 3,888 vehicles, respectively. These volumes represent a decrease compared to 2005 AADT volumes. The Highway 16 design capacity (maximum traffic volume that can accommodate) is 1,500 vehicles per hour per lane in each direction, and can range from 1,200 to 1,800 vehicles per hour per lane at different locations along the highway (Wong, pers. comm., 2012).

Motor vehicle accident data for 2007 to 2011 for Highway 16 between Prince George and Burns Lake showed an annual average of 381 motor vehicle accidents. Over this five year period 38% accidents (732) resulted in personal fatality or injury, while 62% (1,184) resulted only in property damage. Passenger vehicles were involved in 65% of the collisions, while commercial vehicles accounted for 30% of collisions (ICBC, 2013).

Road access from Highway 16 to the proposed mine site is available via a network of Forest Service Roads (FSRs), including the Kluskus FSR. AADT traffic on the Kluskus FSR in 2013 is estimated to be 29 return vehicle trips per day. Canfor accounted for about 78% of the return vehicle trips and the Proponent accounted for about 11% of the return vehicle trips on the Kluskus FSR in 2013. According to the RCMP detachment in Vanderhoof there was no motor vehicle accidents reported on the Kluskus or other FSRs south of Highway 16 during the three-year period from 2011 through 2013.

Rail freight service to and through the SERSA is provided by Canadian National Rail (CN Rail). CN Rail freight trains make regular stops at a staging yard in Prince George, as well as at sidings located in Vanderhoof, Engen, Fort St. James, Fraser Lake, and Burns Lake.

The Prince George Airport (YXS), functions as a regional hub, and is the only commercial airport in the SERSA. It is open year round, with daily direct flights to Vancouver, Kamloops, Kelowna, Smithers, Terrace, and Fort St. John via West Jet, Air Canada (Express), and Central Mountain Air. The airport is able to accommodate all sizes of commercial passenger and large cargo planes. The number of air passengers increased by 4% between 2001 and 2010 and a further 3% increase is anticipated over the next five years (Green, 2012).

7.1.1.4 Regional and Local Services

The SERSA has a range of educational, health, protection services, and social services for local residents. Available education and health services appear capable of meeting the current needs

of the communities, while protection services, specifically law enforcement, are operating at or near capacity, and social services would benefit from additional resources to better support those in need (Keays, 2012; Foster, 2012; Thalsofer, 2012).

Schools are currently operating at less than capacity and meet existing needs; as such, infrastructure is not a limiting factor. It is anticipated that a substantial number of teachers will be retiring within the next decade and will have to be replaced either by qualified resident teachers who do not currently work full time, or by new hires. A full range of post-secondary education options, from advanced university studies to private colleges, is available for SERSA residents.

Health care services are available throughout the communities in the SERSA. The smaller centres offer basic health care delivery (Pacheco, 2012; Edge, 2012; Hughes, 2012; Hunter, 2012; Collins, 2013). Infrastructure in Burns Lake and Vanderhoof is currently being upgraded. All health centres are able to meet current demand.

The Royal Canadian Mounted Police (RCMP) is responsible for policing in the region, with detachments located in all urban centres in the SERSA. Caseloads per RCMP members across both regional policing areas are high, but after peaking in 2005, crime rates have been steadily decreasing (BC Ministry of Justice, 2011). Both volunteer and career firefighters provide fire protection services in the various communities. The current physical infrastructure is adequate to meet demand (McBride, 2012; Balding, 2012; Pacheco, 2012; Bennett, 2012; Iverson, 2012). All communities in the SERSA have current and specifically tailored Emergency Preparedness Programs in place.

The provincial government, non-profit organizations, and local health authorities provide social services across the SERSA, supported by the RCMP. Social services staff are busy, with full case loads, but this is common across the province.

7.1.1.5 Family and Community Well Being

The overall assessment of well-being indicators shows that social conditions in the SERSA are variable. Income rates are below the provincial level (British Columbia Statistics, 2012g). Alcohol consumption is above the provincial average, except for the Burns Lake LHA, where annual consumption is below the provincial rate. The number of children and youth at risk is high across the region. Crime rates in the Nechako and Prince George LHAs are above the provincial average (BC Stats, 2012g).

In terms of the overall socioeconomic index developed by BC Stats for 2011, the Nechako, Burns Lake, and Prince George LHAs were ranked 10th, 16th, and 17th worst of the 77 LHAs in BC. This suggests that socioeconomic conditions in the study area LHAs are below the provincial average. The Canadian Well-Being Index (CBWi) developed by Aboriginal Affairs and Northern Development Canada (AANDC) using 2006 census data provides additional insight into well-being within the SERSA communities. It shows some variation among the communities; overall well-being was the lowest in Stony Creek and the highest in the Fraser Fort George RDEA C (AANDC, 2012).

7.1.1.6 Vanderhoof Social Conditions

Vanderhoof is located on Highway 16, a vital east-west road transportation corridor. In addition to the local municipal airport, the Prince George International Airport is less than 100 km away. In 2011, the population was about 4,500; although it is a small community, it is well equipped with key services and infrastructure expected in a larger community. Personal communications with key informants in Vanderhoof indicate the community has adequate capacity of community services and infrastructure and could support additional population (Carver, 2013; Keys, 2012; Pacheco, 2012; and Siemens, 2013).

The housing market is healthy and there is a wide variety of properties available, from urban single-family lots to five-acre parcels and larger. In 2012, the median single-family home sale price was \$183,500, and in 2013, the average home was assessed at \$199,965, about 20% of the cost for a house in Vancouver (District of Vanderhoof, 2013).

In terms of education services, there is a diverse range of educational institutions that offer a full range of educational services. Within the community, there are first-rate education facilities, including seven public schools and two private schools. For post-secondary education opportunities, the College of New Caledonia (CNC) operates a campus in the community, offering a range of programming including: foundation and apprentice-level trades programs, office administration, health care, human services, and university-level and business credit courses.

Vanderhoof has a full range of modern medical services. St. John's Hospital, a 24-bed facility, provides the region with a range of medical services, including 24-hour medical emergency services, a surgical unit, an oncology facility, and home support services. The community is also fully served by a number of medical service providers, including Omineca Medical Clinic, which is staffed by 14 local doctors. Private practitioners such as dentists, optometrists, chiropractors, massage therapists, physiotherapists, and pharmacists, as well as health food and holistic health service providers, are also available within the community.

The Northern Health Authority Health Unit provides public health services including drug and alcohol counselling services, mental health counselling for adults, prenatal and parenting classes, home visits for newborns, immunizations, health education, vision screening in schools, hearing testing for newborns, heart health and diabetes education, speech and physical therapy for children. In addition, CNC provides early intervention therapy services such as speech language pathology, physical therapy, and occupational therapy to children and families in the Nechako Region. These services are a combined effort of the BC Ministry of Child and Family Development, the Ministry of Health Services, and the Nechako Lakes School District (CNC, 2013).

In terms of other community services, there are several hotels and motels, restaurants, catering businesses, and meeting room facilities. Vanderhoof has a diverse range of recreation facilities including the Vanderhoof Memorial Arena, the Vanderhoof Sports Field, tennis courts, curling rink, golf course, bowling, and community trails. Other planned and under construction recreation facilities include an aquatic centre providing indoor year-round swimming and recreational opportunities (District of Vanderhoof, 2013).

Given its above described capacity, the District of Vanderhoof is developing an Ambassador Program for prospective and new residents and businesses, with an emphasis on support for new immigrants. The program provides volunteer ambassadors to support and assist newcomers to the community.

7.1.2 Non-traditional Land and Resource Use

The NTLRU baseline characterization, summarized in this section, focuses on identifying current land use in the study area.

Data sources used to compile the baseline and assessment of Project effects on NTLRU include:

- Information from various government websites and reports;
- Information from Geographic Information Systems databases such as British Columbia Government GeoBC Data Distribution;
- Stakeholders (i.e., tenure holders, individuals, and companies) familiar with the Project area;
- AMEC Environmental & Infrastructure (AMEC), Transportation and Access Management Plan (TAMP) (**Section 12.2.1.18.4.14**);
- Allnorth, Blackwater Gold Project – Airstrip Location Study ; and
- ERM Rescan, Blackwater Gold Project - Navigable Waters Baseline Report and Technical Assessment, 2014.

A description of applicable land use management objectives for the proposed Project area is presented (**Section 7.1.2.1**); land and resource uses considered in this section as well as provincially and federally designated lands including:

- Protected areas and parks (**Section 7.1.2.2**);
- Recreation/tourism use (e.g., all-terrain vehicle use) (**Section 7.1.2.3**);
- Hunting, trapping, and guide outfitting (**Section 7.1.2.4**);
- Fishing and aquaculture (**Section 7.1.2.4**);
- Mining exploration and mineral tenures (**Section 7.1.2.6**);
- Forestry and timber resource use (**Section 7.1.2.7**);
- Agriculture and grazing (includes range use) (**Section 7.1.2.8**);
- Land ownership¹ (**Section 7.1.2.9**);
- Surface water and groundwater resource use (**Section 7.1.2.10**);
- Recreational or commercial use of waterways (**Section 7.1.2.11**); and

¹ This includes private land and *Land Act* tenures.

- Traffic and access (**Section 7.1.2.12**).

Data gaps were not identified during the detailed desktop study due to the large amount of publically-available information related to land and resource use in the Project area. Consequently, no data gap review were conducted with relevant local and provincial government agencies.

Many NTLRUs overlap with the individual Project study areas associated with Project components including the mine site, mine site access road, airstrip (and access road), freshwater supply pipeline, transmission line, and Kluskus Forest Service Road (FSR), collectively referred to as the Project LSA (**Figure 7.1.2-1**).

The majority of the NTLRU occurs at the north end of the NTLRU RSA where both the transmission line and FSR study areas approach Highway 16 and Vanderhoof and Fraser Lake. The mine site, mine site access road, airstrip, and freshwater supply study areas fall within the Cariboo Regional District (CRD). The NTLRU RSA falls with the Regional District of Bulkley-Nechako (RDBN) and the CRD. The northern portion of transmission line and FSR study areas fall with the Vanderhoof Rural Official Community Plan (OCP), prepared by the RDBN, which is intended to be used to provide direction regarding planning and development within the Vanderhoof rural area.

Land uses are described below, and a baseline description of NTLRU within the LSA and RSA is provided in **Appendix 7.1.2A**.

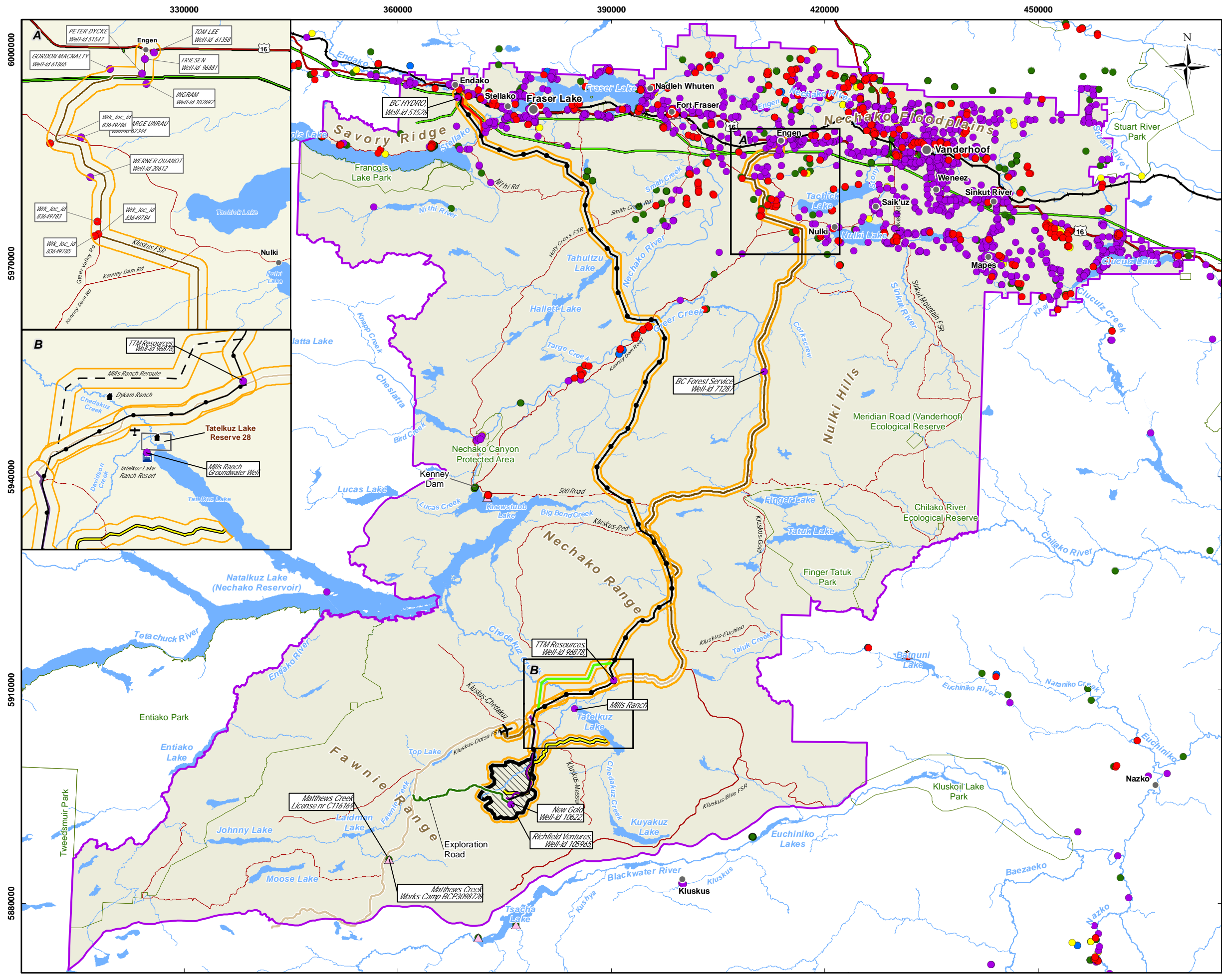
7.1.2.1 Land Use Management Planning

The Vanderhoof Land and Resource Management Plan (LRMP), approved by the Province in January 1997, encompasses the entire Project area. The LRMP divides the 1.38 million hectares into 20 different Resource Management Zones (RMZ).

The Province initiated a review of the LRMP in 2005 to update and incorporate new information due to the impact of the mountain pine beetle (MPB) epidemic and accelerated salvage operations. The Access Management Plan (AMP), being implemented by the Vanderhoof Forest District since 1998, was also reviewed to better manage values on the changing land base. The review indicated a need to: accommodate more motorized recreational activities (4X4, ATVs); provide certainty for a variety of recreational opportunities; manage access for wildlife values; and provide operational flexibility for effective management of MPB.

The majority of the transmission line and FSR study areas fall within those designated as Motorized Road Accessible in the AMP. Several areas identified as being more sensitive to motorized vehicles, such as Horne Lake and Boomerang Lake, are adjacent to the FSR study area. The mine site study area is within the Mt. Davidson and Davidson Creek AMP area, which is designated Semi-Primitive Non-Motorized.

Y:\GIS\Projects\VE\52049_17_non-traditional-res\Baseline\17-100-049_waterLic_v3.mxd



Legend

- Populated Place
- +— Railway
- Highway
- Existing Transmission Line
- Stream (>=4th Order)
- Waterbody (>= 100ha)

Forestry Service Roads

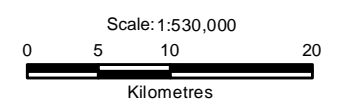
- Kluskus FSR
- Kluskus-Ootsa FSR
- Other FSRs
- Proposed Airstrip Access Road
- Exploration Road
- Proposed Mine Access Road
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Re-route)
- Proposed Transmission Line (Mills Ranch Re-route)
- Proposed Fresh Water Pipeline

Water Licenses Information

- Groundwater Well
- Water Licensed Works
- Water Reserve or Water Allocation Restriction
- Licensed Spring
- Current
- Active Application
- Pending
- ▲ Drinking Water Source (Surface Water POD)

Non-Traditional Landuse

- Regional Study Area
- Local Study Area



Reference
 BC Government GeoBC Data Distribution
 NRCAN Geobase
 Ministry of Forests, Lands and Natural Resource Operations

CLIENT: 		
PROJECT: Blackwater Gold Project		
Water Licenses Overlapping the Non-traditional Land Use Regional Study Area		
DATE: May, 2014	ANALYST: WR	Figure 7.1.2-1
JOB No: VE52420	QA/QC: SB	PDF FILE: 17-100-049_waterLic_v3.pdf
GIS FILE: 17-100-049_waterLic_v3.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	

7.1.2.2 Protected Areas and Parks

The Project does not cross or overlap any federal parks or protected areas. The Stellako River Wildlife Management Area, between Fraser Lake and François Lake, is intersected by the transmission line (main) study area. Finger Tatuk Provincial Park is approximately 3 km east of the access route study area.

No conservancy areas overlap the LSA or RSA. The closest conservancy is the Dean River Conservancy, which is located 104 km to the west of the Project along the western boundary of Tweedsmuir Park. Francois Lake Park and Francois Lake Protected Area are the closest park and protected area to the Project but do not overlap any project components. The eastern portion of the park is located approximately 5 km from the proposed transmission line, and the Francois Lake Protected Area is approximately 6 km from the proposed transmission line. The Stellako River Wildlife Management Area is located between Fraser Lake and Francois Lake, and is intersected by the transmission line.

7.1.2.3 Recreation and Tourism Use

The recreational features inventory showed that no recreational areas rated as having a high sensitivity to disturbance, and a high- or very-high significance, overlap the Project study areas. The recreational significance of the north section of the mine site study area is rated as having moderate sensitivity, moderate significance. Several recreational areas rated as having a high significance (moderate sensitivity) are crossed by the transmission line study area, including Chedakuz Creek, Greer Creek, the Nechako River, and the area east of the François Lake Protected Area. The FSR study area is primarily in an area rated as having a low sensitivity, moderate recreational significance. The majority of the freshwater supply pipeline study area crosses one rated as having a moderate sensitivity, moderate recreational significance, with a small area rated as having a moderate sensitivity, high recreational significance immediately south of the right-of-way.

There are no recreation sites or commercial lodges within 5 km of the mine site, mine site access road, or airstrip. There is a historic, non-motorized recreational trail, the Messue Wagon Road, 13 km directly east of the mine site, in a north-south direction, which would be crossed by the proposed freshwater supply pipeline from Tatelkuz Lake to the mine site at an existing resource road crossing. Tatelkuz Resort is 2 km south of the mine site access road study area and main transmission line study area, and approximately 8.5 km from the proposed mine site. The proposed freshwater supply at Tatelkuz Lake is between 600 m and 900 m from two recreation sites. Two recreation sites, Big Bend Meadow and Brewster Lake, proximate to the FSR study area, are intersected by the transmission line study area. The transmission line study area crosses the Nechako River in an area known as a popular canoe trail.

Twenty-three commercial lodges and several camping and forest recreation sites are within the NTLU RSA. Many of the lodges are associated with the guide outfitting companies operating in the area.

7.1.2.4 Hunting, Trapping, and Guide Outfitting

Nine guide outfitter areas and twenty registered traplines fall within the NTLRU RSA. Three guide outfitter areas and three registered traplines are overlapped by the mine site study area. Twenty-two traplines are intersected by the Project with the mine site overlapping 12% of one of the three traplines (the other two with approximately 1% of their total area overlapped). The area ranges between 1% and 14% for the 13 traplines falling within the transmission line (and Stellako and Mills Ranch re-routes).

7.1.2.5 Fishing and Aquaculture

A number of streams, rivers, and lakes are a short distance from Vanderhoof, and are accessed by paved roads or FSRs, while other more distant and less-accessible water bodies are accessed by kayak, canoe, boat, or float plane. Fishing areas proximate to the Project include: Nechako River and Reservoir (Knewstubb Lake), Tatuk Lake, Finger Lake, Top Lake, Stellako River, Chedakuz Creek, Big Bend Creek, and Euchineko River. A number of smaller lakes and streams are also found in the area and fished by anglers hiking in to the area (Government of BC, 1997). Anglers visiting less-accessible water bodies will often opt to camp overnight at nearby Forest Services' campsites, or at less established camping areas along the shores of lakes and rivers. Visiting anglers also have the option to stay at one of the many fishing lodges in the area, which offer guided fishing, rental boats, and equipment. Many of these lodges also offer floatplane excursions to more distant lakes and fishing spots. In the last 10 years, approximately six lakes have been stocked with rainbow trout within the NTLRU RSA. Section 3.7.3 in **Appendix 7.1.2A** provides details on aquaculture and commercial fisheries within the RSA.

7.1.2.6 Mining Exploration and Mineral Tenures

Active mineral tenures overlap 100% of the mine site and freshwater supply study areas and the southern portion of the transmission line and access route study areas. The Proponent holds mineral tenures or has agreements in place for all lands that would be used for the mine. The Proponent holds all of the mineral tenures intersected by the proposed mine site. Mineral exploration is occurring in the area proximate to the proposed mine site. A review of the MINFILE Mineral Inventory indicated that there are no past, active, or developed producers within the Project study areas. One active producer is within the NTLRU RSA; the Endako Mine (MINFILE No. 093K 006) is near Fraser Lake, approximately 65 km west of Vanderhoof. Two developed prospects are within the NTLRU RSA: Vanderhoof Limestone, and Capoose. Several mining prospects and showings are within the mine, transmission line, and access route study areas. One prospect, Blackwater-Davidson (MINFILE No. 093F 037), falls within the mine site study area and represents a portion of the Project study area being assessed as part of the Project.

7.1.2.7 Forestry and Timber Resource Use

The Kluskus FSR was built through this area in 1975 and timber harvesting in the area commenced in the late 1980s. No legal or non-legal Old Growth Management Areas have been identified within the NTLRU RSA. There is a variety of retired, active, and pending forest tenures in the Project

study area. No active forest tenures overlap the mine site study area. The Proponent holds several small tenures, one of which falls entirely within the mine site study area, and is identified as pending. The Project study area has been significantly affected by the MPB, and forestry management practices have been adjusted to facilitate recovery. A review of available information indicated that there are approximately 3,240 different forest/timber tenures (with a status of active, pending, or retired) within the NTLRU RSA; with 1,973 (61%) of the tenures retired between 2005 and 2011. There are no tree farm licences or community forests proximate to the Project study area. Several woodlots are intersected by the proposed transmission line (and Stellako and Mills Ranch re-routes) and FSR study areas. The Project intersects numerous active and pending forest tenures and retired cutblocks.

7.1.2.8 Agriculture and Grazing

Expansion of agricultural lands in the Vanderhoof District has been significant in the last two decades. The Vanderhoof Official Community Plan states that, whenever possible, the routing of future rural roadways and utility lines should avoid fragmenting agricultural lands by following alignments along section, boundary or property lines, road allowances, or existing utility corridors. Utility and road right-of-ways across Agricultural Land Reserve (ALR) lands will not proceed without approval of the provincial Agricultural Land Commission. No designated ALR lands fall within the mine site, mine site access road, airstrip, or freshwater supply pipeline study areas. Four ALR properties are overlapped a total of 86% by the transmission line study area (which accounts for less than 2% of total transmission line study area). Several ALR properties are also along the FSR. However, no ALR properties fall within the proposed Project footprint.

Eight active range tenures are intersected by the Project. One range tenure (RAN075154) is intersected by all of the Project study areas except for the Stellako and Mills Ranch re-routes. This range tenure occupies 27% of the mine site study area and 90% to 100% of the mine site access road, airstrip, and freshwater supply pipeline study areas. This accounts for a total of 31% of range tenure RAN075154. The transmission line study area intersects six range tenures.

7.1.2.9 Land Ownership²

The study area associated with the transmission line (and Stellako and Mills Ranch re-routes) and FSR intersects a variety of permits, and licences issued under the *Land Act*. Quarrying, agriculture, industrial, residential, environment, institutional, and communication tenures overlap the transmission line study area. A small area (0.1%) of the transmission line study area is overlapped by a federal Crown tenure with a total area of 7.7 ha. No *Land Act* tenures overlap the mine site study area or freshwater supply pipeline study area. There are no private lands within the mine study area. The transmission line Stellako re-route intersects private land (Figures 3.9-1 and 3.9-2, **Appendix 7.1.2A**).

² This includes private land and *Land Act* tenures

7.1.2.10 Surface Water and Groundwater Resource Use

The Crown, on behalf of the residents of the province, owns all water in BC. No licenced springs or water reserves/allocation restrictions occur within any of the Project study areas. Two groundwater wells, both owned by the Proponent, are registered within the mine site study area. No other water licences occur within the mine site study area, mine access road study area, airstrip study area, or freshwater supply pipeline study area. Two groundwater wells are registered within the transmission line study area. There is one domestic water well user at the Mills Ranch on Tatelkuz Lake within the RSA (**Figure 7.1.2-1**). The well is very shallow and located approximately 20 km from the Project; The FSR study area overlaps nine groundwater licences and four points of diversion for stockwatering.

7.1.2.11 Recreational and Commercial Use of Waterways

Information on the use of waterways was collected from stakeholder communications, literature research, and the navigable waters baseline report and technical assessment undertaken by ERM Rescan for the NewGold Blackwater Project (ERM Rescan, 2014).

The main water body that is used for navigation, recreation, traditional subsistence and cultural purposes in the water supply area is Tatelkuz Lake. The consultation record indicates navigational use of Chedakuz Creek by canoe or kayak.

7.1.2.12 Traffic and Access

Information about baseline conditions regarding traffic and access is provided in the Social Baseline Appendix 7.1.1A – Transportation and in **Section 7.2.3** – Regional Transportation.

Highway 16 (also known as the Yellowhead Highway) is the primary east-west highway and trucking route to and through the SERSA, while Highway 27 provides north-south highway access to and within the SERSA.

Highway 16 and Highway 27 are single lane, undivided highways. However, within the SERSA, there are short sections of Highway 16 where there are two lanes in each direction. In addition, there are occasional passing lanes on Highway 16 in hilly terrain. The posted speed limits are 100 km/h for Highway 16 and 90 km/h for Highway 27. Within and in the immediate vicinity of urban centres located on these highways (Prince George, District of Vanderhoof, Village of Fraser Lake, Village of Burns Lake, and District of Fort St. James), the posted speed limits are 50 km/h.

The design capacity (maximum traffic volume that the highway can accommodate) on Highway 16 is generally 1,500 vehicles per hour per lane in each direction, but it can range from 1,200 to 1,800 vehicles per hour per lane at different locations along the highway, due to such factors as road geometry and terrain (Wong, pers. comm., 2012).

Road access from Highway 16 to the proposed mine site is available from a network of Forest Service Roads. Six possible access routes to the proposed mine site are available from five locations along Highway 16.

Rail freight service to and through the SERSA is provided by Canadian National Rail (CN Rail). CN Rail freight trains make regular stops at a staging yard in Prince George, as well as at sidings located in Vanderhoof, Engen, Fort St. James, Fraser Lake, and Burns Lake. The train stops at these locations are based on customer demand and deliveries (CN Rail, 2012). CN Rail operates freight services from Prince George to Cache Creek on a spur line that parallels Highway 97. From Cache Creek, freight can be transferred to the Canadian Pacific (CP) Rail network that runs west to Vancouver or east to Calgary, Regina, Winnipeg, and beyond.

The Prince George Airport, YXS, functions as a regional hub, and is the only commercial airport in the SERSA. It is open 365 days a year, with daily direct flights to Vancouver, Kamloops, Kelowna, Smithers, Terrace, and Fort St. John via West Jet, Air Canada (Express), and Central Mountain Air. It also handles international flights, and has customs services. The airport is able to accommodate all sizes of commercial passenger and large cargo planes (Green, 2012). The number of air passengers using the Prince George airport increased from 402,000 in 2010 to 420,000 in 2011. YXS is anticipating a further 3% increase in passengers over the next five years (Green, 2012). The airport facilities have recently been updated.

The communities of Vanderhoof (CAU4), Fort St. James (CYJM), Fraser Lake (CBZ9), and Burns Lake (CYPZ) operate registered airstrips that are used for air emergency medical transportation, small private jets, and single and dual engine private and charter aircraft carrying passengers and cargo. The local communities maintain the runways at these airstrips, and all feature paved landing and taxiing surfaces.

7.1.3 Current Land and Resource Use for Traditional Purposes

This section of the Application provides a summary of the Current Land and Resource Use for Traditional Purposes (CLRUTP) by Aboriginal peoples potentially affected by the Project. This baseline summary provides a high level overview of CLRUTP for each Aboriginal Group. **Section 14** (Aboriginal Groups Background Information) of the Application presents more detailed background information for each First Nation.

The EIS Guidelines and the section 11 Order from the BC EAO identify eight First Nations and one Métis Nation that may be potentially affected by the Project. **Figure 7.1.3-1** presents the traditional territories of the First Nations in relation to the CLRUTP study areas.

For each Aboriginal group, current land use information available may vary depending on the participation of the particular Aboriginal group in the EA Process. A range of sources were used to compile the available baseline information:

- Project-specific Traditional Land Use (TLU) and Traditional Knowledge (TK) studies or other Project-related information provided by Aboriginal groups;
- Ethno-historical, and ethnographic literature;
- Semi-structure interviews; focus groups and community meetings with Aboriginal
- Groups representatives; and

- Results from consultation with Aboriginal groups.

A summary of the social baseline information is presented in this section, and more detailed information is presented in **Section 7.2.7** and **Section 14** Aboriginal Groups Background Information.

For each First Nation whose traditional territories overlap with the Project, available information on current land use may vary depending on the participation of the particular First Nation in the preparation of the EA. Other TK/TLU studies funded by the Proponent and currently underway will be integrated into the Project design, execution, management plans, permitting and monitoring in subsequent stages of the Project development including the Application review phase, the permitting phase, and the Project construction, operations, closure, and post-closure phases.

Baseline information is presented for each First Nation and Métis Nation in the order in which they appear in the section 11 Order from the BC EAO.

Current use of lands and resources for traditional purposes may or may not be linked to the exercise of asserted or established Aboriginal or treaty rights (Aboriginal Interests) by Aboriginal people; they may have originated before or after the critical dates related to assessment of Aboriginal interests, and may make use of locations inside or outside the boundary of an asserted traditional territory. For each First Nation whose traditional territories overlap with the Project, available information on current land use may vary depending on the participation of the particular First Nation.

7.1.3.1 Lhoosk'uz Dene Nation

The Lhoosk'uz Dene Nation (LDN) Traditional Territory is overlapped by the Project by 4,777 ha (0.34%) in the mine site area and along the southern portions of the Kluskus FSR (**Figure 7.1.3-1**). Historically, the LDN used their land for all traditional use activities including hunting, trapping, fishing, and plant harvesting. The people living at Kluskus Indian Reserve (IR) #1 refer to themselves as “traditional bushpeople” who continue to follow traditional activities, including hunting, gathering, and fishing, as well as using hides to create traditional clothing (Indigenous Work Force, 2013).

There are two areas of land within the Traditional Territory overlapped by the LSA that are managed by LDN families: Jimmy and Baptiste/Cassam. Only one of these areas is actively used for traditional purposes.

Hunting is important to LDN people. A range of species is harvested, including moose, deer, beaver, duck, grouse, and smaller mammals such as squirrel, muskrat, and rabbit. In the spring and fall, harvesting includes muskrat, beaver, and duck.

The Project overlaps with two traplines that are registered to LDN members within the LSA. Trapline TR0512T014 continues to be used today, although the economic return is low (Trapline TR0512T014 pers. comm.). Trapline TR0512T027 has not been used for 20 years.

Tatelkuz Lake and Davison Creek are fishing locations for LDN people, particularly for residents of IR #28. Fish harvested in Tatelkuz Lake include trout, Kokanee, and suckers. Other waterbodies used for fishing include Kuyakuz Lake, Twin Lakes, and a small creek (not named by interviewees) near the Kluskus FSR (LDN Elders pers. comm.).

Plant gathering remains important to LDN people. Plant harvesting is done 'as needed' around Tatelkuz Lake and towards the river to the east of Tatelkuz Lake in the LSA. Plant gathering is also conducted along trails, including the Messue Wagon Trail within the LSA (LDN Elders pers. comm.).

The Proponent has provided funding to the LDN for the completion of a TK/TLU study within the RSA and/or LSA, and this information has been used to identify historical and current uses by the LDN. The Proponent is committed to integrating additional relevant information should it become available into Project design, execution, management plan development, permitting and monitoring.

Detailed current traditional land use information for the LDN is described in **Section 7.2.7.2** and shown on **Figure 7.2.7-2**. Detailed background information for the LDN is provided in **Section 14.3.1**.

7.1.3.2 Nadleh Whut'en First Nation

The Nadleh Whut'en First Nation (NWFN) Traditional Territory is overlapped by the Project by 237 ha (0.04%) along the proposed transmission line from the Nechako River north to the substation connection point at Endako (**Figure 7.1.3-1, Table 7.1.1-1**). The Nadleh Whut'en reside in three reserves between Fraser Lake and the Nechako River, along the banks of the Nadleh River, and another reserve on the south shore of Fraser Lake. Historically, the NWFN were semi-nomadic people, often moving throughout their Traditional Territory with the seasons. Typically, this was dictated by the availability of primary food sources, such as salmon, moose, caribou, deer, small game, and nuts and berries (School District 91: Nechako Lakes, n.d.).

NWFN members hunt throughout their traditional territory (PTP ASEP Training Society, 2010; Carrier Sekani Tribal Council, 2006; PTP, 2007; Coastal GasLink Pipeline, 2014). Hunting provides traditional food staples for the NWFN people. Animals hunted include moose, deer, bears and small game (PTP ASEP Training Society, 2010; Carrier Sekani Tribal Council, 2006; Hudson, 1983; Cranny, 1986).

The proposed transmission line alignment will transect Trapline TR0712T036. The trapline holder noted that the trapline is currently not in use. The NWFN has advised that the information collected by the Proponent with respect to TR0712T036 does not represent Nadleh use of their traditional territory for trapping purposes.

Fishing is an important NWFN traditional activity (CSTC, 2006; Coastal GasLink, 2014). Fish are a primary traditional food staple for the Nadleh Whut'en people and this harvesting helps to sustain members over the winter (PTP ASEP Training Society, 2010; Hudson, 1983; Cranny, 1986).

BLACKWATER GOLD PROJECT

APPLICATION FOR AN
ENVIRONMENTAL ASSESSMENT CERTIFICATE /
ENVIRONMENTAL IMPACT STATEMENT
ASSESSMENT OF POTENTIAL SOCIAL EFFECTS

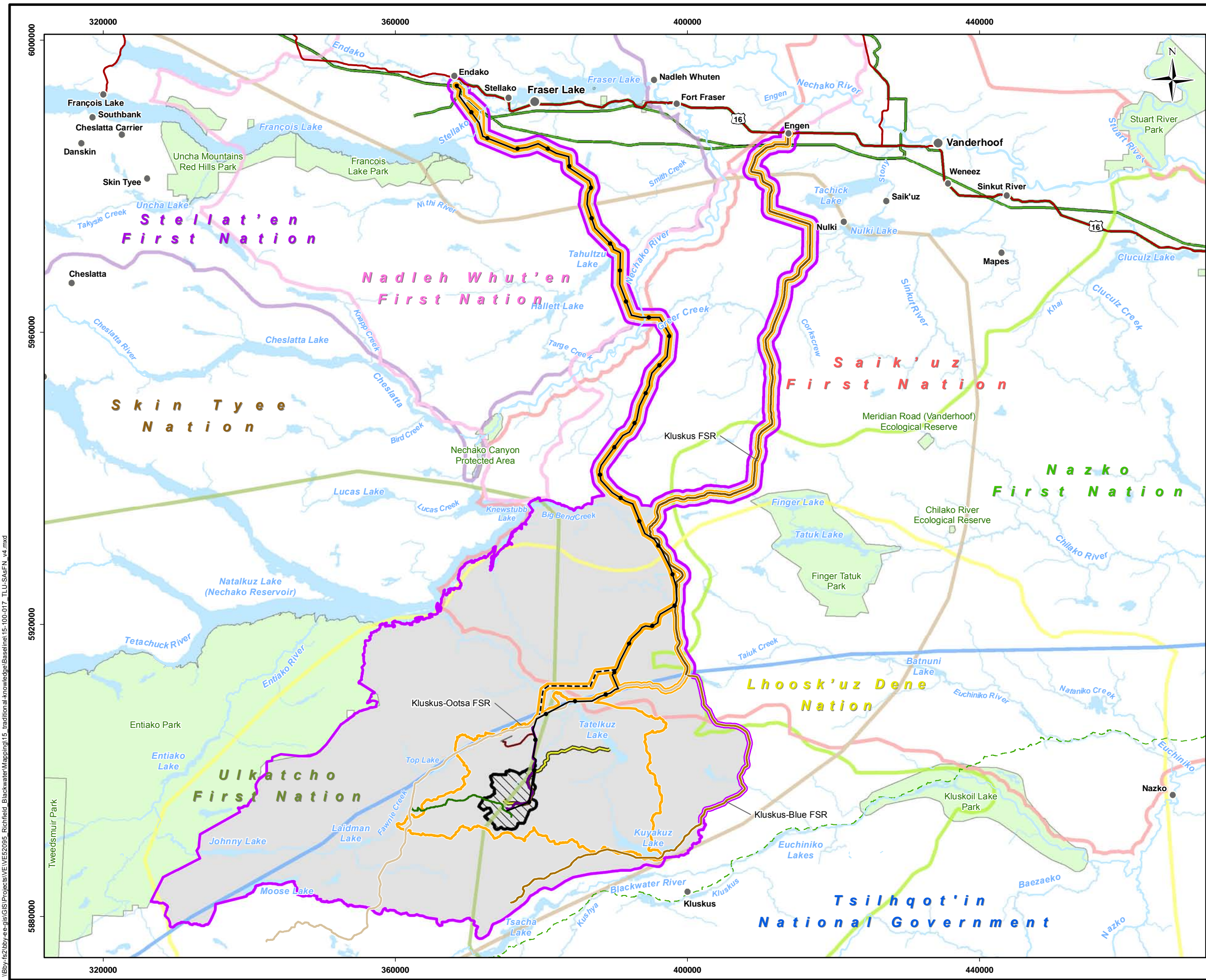


NWFN members use their traditional territory to gather plants, primarily berries which help to sustain them over the winter (CSTC, 2006; PTP ASEP Training Society, 2010; Coastal GasLink, 2014; CSTC, 2006). Service berries are a mainstay but other plants are collected for their leaves, bulbs and roots (Hudson, 1983).

The Cheslatta Trail is a traditional trail that proceeds approximately 54 km north to south between Cheslatta and Fraser Lakes. This trail is located within NWFN traditional territory and will be crossed by the proposed transmission line.

The Proponent is committed to working with NWFN in understanding their TK/TLU information within the RSA or LSA and integrating additional relevant information into Project design, execution, management plan development, permitting and monitoring.

Additional current traditional land use information for the NWFN is described in **Section 7.2.7.2** and shown on **Figure 7.2.7-3**. Detailed background information for the NWFN is provided in **Section 14.3.2**.



Legend

- Populated Place
- 16 Highway
- Kluskus FSR
- Kluskus-Ootsa FSR
- Kluskus-Blue FSR
- Railway
- Existing Transmission Line
- - - Alexander Mackenzie Heritage Trail
- Parks & Protected Areas

Project Components

- Exploration Road
- Proposed Mine Access Road
- Proposed Transmission Line
- - - Proposed Transmission Line Reroutes
- Proposed Fresh Water Pipeline
- Proposed Airstrip Access
- Proposed Airstrip
- Proposed Mine Site

First Nations Boundaries

- Lhoosk'uz Dene Nation
- Nadleh Whut'en First Nation
- Nazko First Nation
- Saikuz First Nation
- Skin Tye Nation
- Stellat'en First Nation
- Tsilhqot'in National Government
- Ulkatcho First Nation

Current Land and Resource Use for Traditional Purposes

- Regional Study Area
- Local Study Area

Scale: 1:500,000
0 5 10 20 Kilometres

Reference

Context layers: BC Government GeoBC Data Distribution

Traditional Territories:

- Carrier Chilcotin Tribal Council - <http://www.carrierchilcotin.org/>
- Lhoosk'uz Dene Nation; Ulkatcho First Nation Carrier Sekani Tribal Council - <http://www.carriersekani.ca/>
- Nadleh Whut'en; Stellat'en and Saik'uz First Nations BC Treaty Commission - <http://www.bctreaty.net/>
- Nazko First Nation
- Tsilhqot'in Framework Agreement, 2011
- Tsilhqot'in National Government Amended Agreement Among the Province of BC, the Tsilhqot'in Nation and the Tsilhqot'in National Government.

CLIENT: **newgold™**

PROJECT: **Blackwater Gold Project**

First Nations Territories and Current Land and Resource Use for Traditional Purposes Study Areas

DATE: October, 2014	ANALYST: WR	Figure 7.1.3-1
JOB No: VE52277	QA/QC: LR	PDF FILE: 15-100-017_TLU-SAsFN_v4.pdf
GIS FILE: 15-100-017_TLU-SAsFN_v4.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

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7.1.3.3 Saik'uz First Nation

The Saik'uz First Nation (SFN) Traditional Territory is overlapped by the Project by 575 ha (0.59%) along portions of the Kluskus FSR and portions of the proposed transmission line (**Figure 7.1.3-1**). The SFN main community is located on Stony Creek IR #1, 9 kilometres (km) southeast of Vanderhoof.

SFN members residing in the area have identified that traditional land use and subsistence living is of great importance. Members participate in hunting, fishing, and gathering (SFN Chief and Council representatives pers. comm.; SFN member pers. comm.). Representatives noted that, for many people, participating in the traditional economy is necessary for their ability to sustain themselves.

Moose, deer, bear, and elk are the species most often hunted by SFN members. Some of the best moose hunting in the area is close to the Stony Creek area, although interviewees noted that too much hunting pressure from external (non-Aboriginal) hunters is affecting the moose population (SFN Elder pers. comm.). SFN members also harvest black bear and grouse.

Trapping is also important to SFN members; species harvested include beaver, mink, lynx, marten, muskrat, wolverine, rabbit, and squirrel. The Project overlaps with two traplines held by SFN members: TR0711T007 and TR0711T009.

Fishing occurs in the Nechako River, which is crossed by the Project's proposed transmission line, for spring salmon and other species of salmon, while Kokanee are fished in a variety of lakes. Some ice fishing occurs during winter.

Some members engage in plant gathering. Plants harvested include huckleberries, soapberries, strawberries, and medicinal plants such as elderberry. Indian tea is typically harvested in marshy areas. Labrador tea is harvested and brewed by members, and used to thin the blood and reduce high blood pressure (SFN Elder, pers. comm.).

The Proponent has provided funding to SFN for the completion of TK/TLU studies. The Proponent is committed to integrating relevant information when available into Project design, execution, management plan development, permitting and monitoring.

Additional current traditional land use information for the SFN is described in **Section 7.2.7.2** and shown on **Figure 7.2.7-4**. Detailed background information for the SFN is provided in **Section 14.3.3**.

7.1.3.4 Stelat'en First Nation

The main Stelat'en First Nation (StFN) Traditional Territory is overlapped by the Project by 219% (0.03%) along the north section of the proposed transmission line from the Nechako River to the connection at Endako (**Figure 7.1.3-1**). The StFN community of Stellako is located 160 km west of Prince George.

Traditionally, the economic mainstay in this area was fish, especially salmon species, which were smoked and stored for the winter in large numbers. Hunting and trapping of deer, caribou, moose, elk, black bear, beaver, and rabbit provided meat, fur for clothing, and bones for tools (StFN, 2009). Although many Stelat'en people now have jobs and otherwise participate in the non-traditional economy, fish, game, and berries still constitute a major portion of their diet.

The Proponent has provided funding to StFN for the completion of TK/TLU studies within the RSA or LSA. The Proponent is committed to integrating relevant information into Project design, execution, management plan development, permitting and monitoring.

Additional current traditional land use information for the StFN is described in **Section 7.2.7.2** and shown on **Figure 7.2.7-5**. Detailed background information for the StFN is provided in **Section 14.3.4**.

7.1.3.5 Uikatcho First Nation

The Uikatcho First Nation (UFN) Traditional Territory is overlapped by the Project by 3,232 ha (0.11%) in the mine site area and activities in the western portion of the LSA (**Figure 7.1.3-1**). The main UFN community and Band Office is located at Anahim Lake, which is approximately 350 km west of Williams Lake (Quesnel Museum).

Traditionally, the UFN used the land within the RSA and surrounding areas for fishing, trapping, hunting, berry and mushroom picking, and plant gathering. Many members continue to supplement their incomes and feed their families through careful use of the food resources surrounding Anahim Lake (UFN, 2012).

Hunting and trapping occur with some intensity near Kayakuz Lake, Mount Davidson, and near Moose Lake. The UFN have identified lynx, squirrel, timber wolf, beaver, moose, caribou, and deer as mammals that are hunted and trapped within the LSA. They also noted ducks and geese as waterfowl that are hunted within the LSA (DMCS, 2013).

Fishing continues in many areas throughout the UFN Traditional Territory. The UFN identified Kuyakuz Lake, Moose Lake, and Johnny Lake as areas of intensive use within the RSA. Species fished within the RSA and LSA include suckers, lingcod, salmon, and trout (DMCS, 2013).

UFN members continue to pick berries and collect medicinal and food plants at Kuyakuz Lake, Moose Lake, and Johnny Lake. The UFN have specifically identified wild celery and blueberries as gathered within the RSA. During interviews, the UFN have identified mushroom picking as an activity of some importance.

The Proponent has provided funding to UFN for the completion of a TK/TLU study within the Project area and this information has been used to identify historical and current uses by the UFN. The Proponent is committed to integrating additional relevant information should it come available into Project design, execution, management plan development, permitting and monitoring.

Additional current traditional land use of the UFN is described in **Section 7.2.7.2** and shown on **Figure 7.2.7-6**. Detailed background information for the UFN is provided in **Section 14.3.5**.

7.1.3.6 Nazko First Nation

The Nazko First Nation (NFN) Traditional Territory is overlapped by the Project by 57 ha (0.004%) along a portion of the Kluskus FSR (**Figure 7.1.3-1**). The NFN reserves are located around the community of Nazko.

The Euchiniko and Blackwater watersheds (to the south and east of the RSA and LSA) are areas used by NFN people, as noted in a letter to the BC EAO in 2013 (NFN, 2013). The letter states that Nazko people have a long-standing history of use in the northwest corner of their Traditional Territory.

The Proponent is committed to working with NFN in understanding their TK/TLU information within the RSA or LSA. The Proponent is committed to integrating additional relevant information into Project design, execution, management plan development, permitting and monitoring.

Additional current traditional land use of the NFN is described in **Section 7.2.7.2** and shown on **Figure 7.2.7-8**. Detailed background information for the NFN is provided in **Section 14.3.6**.

7.1.3.7 Skin Tyee Nation

The Skin Tyee Nation (STN) Traditional Territory is overlapped by the Project by 5,167 ha (0.14%) along almost the entire section of the proposed transmission line and mine access road (with the exception of northern portions) as well as the entire mine site area (**Figure 7.1.3-1**).

Like many Aboriginal peoples, the STN have a special relationship to their surrounding environment, with the human relationship to the land and animals being governed by their spiritual beliefs. Traditional foods play a critical role in STN life as sources of food, medicine, and cultural practices (Enbridge, 2010).

Hunting, typically of moose and elk, is important to the STN. Trapping is no longer a viable livelihood due to the decline of furbearers (Enbridge, 2010).

Fishing is important to the culture and sustenance of the STN, and members typically use the Morice River and its tributaries (Enbridge, 2010).

Plant gathering is also important to the STN, who rely on a wide variety of plants for traditional purposes.

The Proponent has provided funding to STN for the completion of TK/TLU studies within the RSA or LSA. The Proponent is committed to integrating relevant information into Project design, execution, management plan development, permitting and monitoring.

Additional current traditional land use information for the STN is described in **Section 7.2.7.2** and shown on **Figure 7.2.7-9**. Detailed background information for the STN is provided in **Section 14.3.7**.

7.1.3.8 Tsilhqot'in National Government

The Tsilhqot'in Traditional Territory is overlapped by the Project by 4,595 ha (0.05%) along almost the entire section of the proposed mine site area (**Figure 7.1.3-1**).

Established in 1989, the Tsilhqot'in National Government (TNG) aims to re-establish a strong Aboriginal political structure and assert Aboriginal rights and title to the lands the First Nations call *Tsilhqot'in*, to meet the needs of its members, and to represent the *Tsilhqot'in* communities (TNG, 2006).

TNG representatives consider the Project to be outside of the TNG's interest area and therefore CLRUTP information is not expected from the TNG. If CLRUTP information becomes available, the Proponent will integrate it into Project design, execution, management plan development, permitting and monitoring.

Additional current traditional land use of the TNG is described in **Section 7.2.7.2** and shown on **Figure 7.2.7-10**. Detailed background information for the TNG is provided in **Section 14.3.8**.

7.1.3.9 Métis Nation British Columbia

The Métis Nation of BC (MNBC) report that the Métis have had a presence in parts of BC since the earliest explorers arrived in the 1800s (MNBC, 2014). The Métis in BC are connected to the historic Métis families who migrated from the east with the fur trade and to the mixed Aboriginal communities that resulted from the intermarriage of Europeans and First Nations during the colonial era.

The Métis people involvement in the fur trade industry went beyond trapping. Other Métis activities associated with the fur trade included picking berries, making pemmican, and manufacturing canoes. Métis people from northern BC harvest deer, elk, moose, fish, medicinal plants, berries, small game, timber, and firewood, as well as bear, birds, bison, caribou, and sheep (BC Hydro, 2013).

Three Métis communities have been identified that may access the RSA to continue traditional harvesting. There are community associations affiliated with the MNBC in Prince George and Quesnel. There is also a population of Métis near the town of Fort St. James.

Discussions with the MNBC are taking place to identify hunting, trapping, and plant gathering rights that may be affected by the Project. Additional current traditional land use information for the MNBC is described in **Section 7.2.7.2**. Detailed background information for the MNBC is provided in **Section 14.3.10**.

7.1.4 Visual Resources

7.1.4.1 Introduction and Methods

7.1.4.1.1 Scope and Objectives

The baseline analysis of visual resources describes the setting, whether or not a visual resource is present, and why it qualifies as a visual resource. An inventory of existing visual features is presented. The visual resources potentially affected by the Project have been identified by a variety of measures including the following:

- An inventory of visual and aesthetic resources is compiled following the review of the appropriate LRMPs which may include recreational values, protected areas, and areas identified as scenic;
- Internet databases (e.g., GeoBC) and available information on tourism, recreational use, scenic areas, and aesthetic resources are reviewed;
- Various individuals familiar with the area; and
- The perspective of potential viewers based on the locations of proposed Project components is developed.

A summary of the information sources used is provided in **Section 7.1.4.1.2**.

Visual Resources support a range of outdoor activities including recreational pursuits and general appreciation of nature. Project effects on visual resources may influence acceptance of the project, by some members of the public. Viewshed analyses were generated to delineate representative study areas where line of sight may occur with project facilities, and to ensure potential Project effects on visual resources are adequately captured.

Due to the remote location of the mine site, the relatively low number of users and residents, and the intensity of existing impacts of prevailing land uses, the baseline focussed on locations where users are expected to congregate. Accordingly, viewpoints were identified near permanent residents, Indian Reserves, commercial operations, and recreation sites. These viewpoints serve as potential sensitive receptors during the effects assessment. In addition, selected locations representative of general conditions in the Vanderhoof Forest District (VFD), were included to accommodate passing viewers. Photographs were taken and baseline characteristics of views were described in terms of bearing, main components, current land uses, scenic quality, visibility, and viewer sensitivity to create an accurate setting to assess baseline conditions.

Visual resources considered in this section include a review of:

- Parks, protected areas and conservancy areas;
- Documented recreational and tourism locations/areas;
- Other land uses occurring in the area;

- Visual Landscape Inventory (visual sensitivity);
- Recreational Features Inventory (recreation significance, view lines and points); and
- Established visual quality objectives.

The goal of compiling the visual resources baseline is to gather sufficient information about current visual resources, to understand the value, and determine the location of landscape features supporting recreational and cultural activities. Specific objectives were:

- Identify areas where the Project may affect the current scenic quality in the area;
- Take photographs from strategic viewpoints where visitors and residents congregate; and
- Document landscape character and scenic quality to serve as a baseline for the EA.

7.1.4.1.2 Information Sources

This section was compiled using information provided in reports from other disciplines, such as the NTLRU Baseline Report (**Appendix 7.1.2A**), and Social Baseline Report (AMEC, 2013) (**Appendix 7.1.1A**), as well as Project Overview (**Section 2.2**).

Data was gathered from a variety of databases including:

- BC Government GeoBC Data Distribution;
- NRCan Geobase; and
- BC Ministry of Forests, Lands, and Natural Resource Operations (BC MFLNRO).

Additional information sources were examined to provide direction on regional land use objectives and traditional use areas:

- The Vanderhoof Land and Resource Management Plan delineates Resource Management Zones (RMZs) that describe specific resources and detail objectives and management strategies guiding integrated resource management;
- Vanderhoof Access Management Plan;
- British Columbia Ministry of Community, Sport, and Cultural Development (BC MCSCD);
- Discussions with First Nations residents in the RSA revealed the landscapes and waterbodies of particular interest; and
- NTLRU and transportation reports provide information on existing land uses and traffic volumes.

Data was gathered during summer and winter field visits to catalogue site conditions and to take photographs from identified viewpoints.

Data gaps were identified to supplement desktop information. Statistics on attractions, facilities, and visitor numbers were sourced from local tourism agencies to inform the identification of photo viewpoints. Commercial lodges and ranchers were approached to provide information on ways in which surrounding scenery supported their activities. BC MFLNRO visual resource specialists were approached to source information on visual sensitivity units near the project and include regulations from the provincial Visual Landscape Design Manual. On 13 February 2014, the Proponent presented baseline information and results of the visual resources assessment to BC MFLNRO and BC EAO. Methodologies, EA results, and mitigation measures were considered reasonable to the group, given the impacts from current land uses and small number of permanent residents near the project. BC MFLNRO recommended that the Proponent assesses whether the Project will meet or exceed the visual quality objectives of scenic areas near the Project.

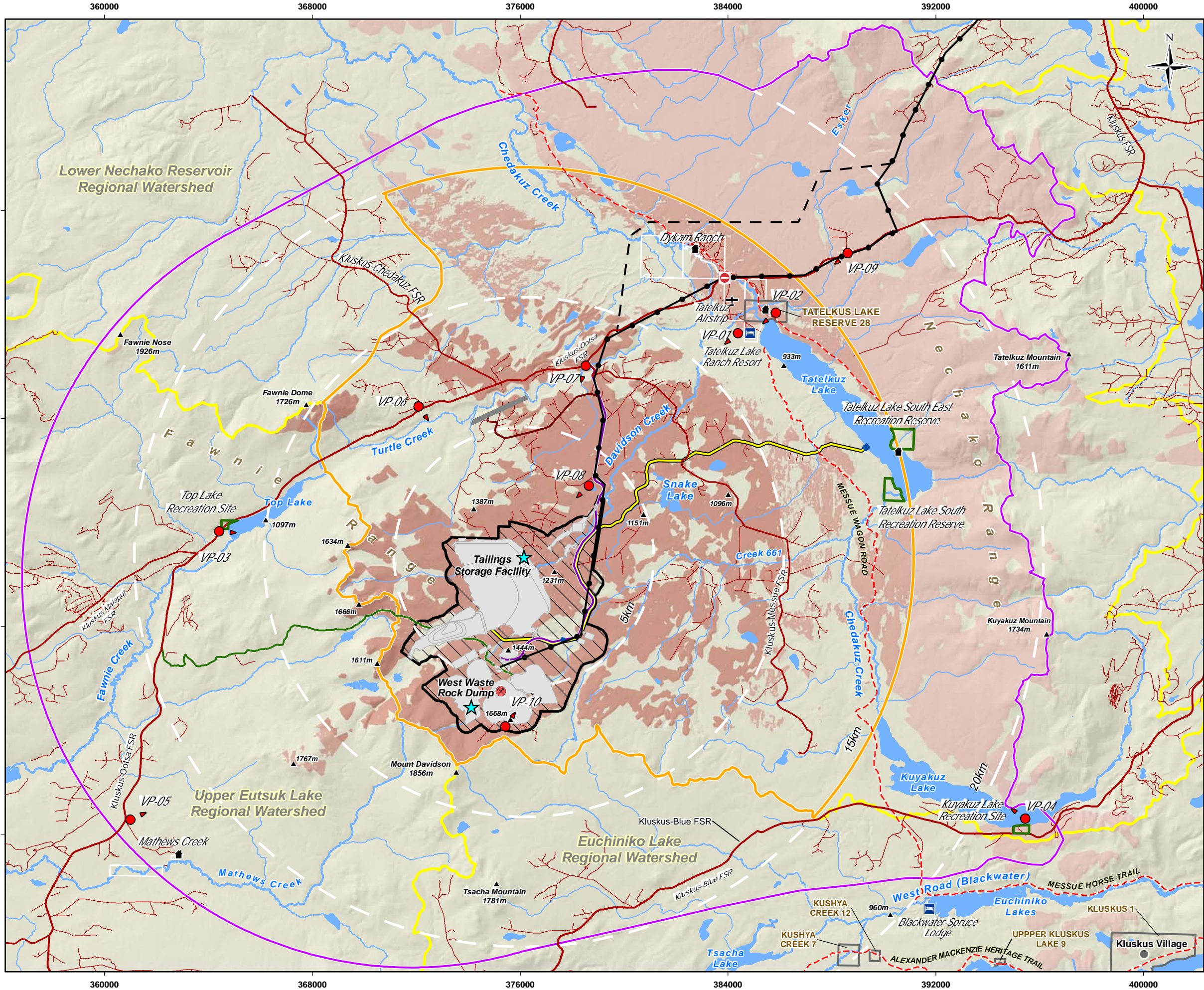
7.1.4.1.2.1 Study Area Rationale

The following distinct study areas were delineated, identifying LSAs where the Project may affect existing land uses and scenic quality, and of RSAs from where specific viewpoints or recreation sites may be affected at a greater distance:

- Mine site LSA and RSA;
- Transmission line LSA and RSA;
- Fresh water pipeline LSA;
- Kluskus FSR access road LSA; and
- Airstrip LSA and RSA.

7.1.4.1.2.2 Viewshed Analysis

Modelling was performed using the Spatial Analyst extension of ArcGIS 10, generating viewshed analyses of the most prominent features in the mine site area as well as proposed linear features (**Figure 7.1.4-1**). This tool identifies locations that can be seen from strategic observation points at specific offset heights and distances.



Legend

- Populated Place
- ▲ Spothights
- ⊘ Restricted Access
- Forestry Service Roads
- Logging Roads
- - - Recreation Trails
- ▭ Recreation Sites
- ▭ Private Land
- ▭ Indian Reserves
- ▭ Regional Watersheds

Project Components

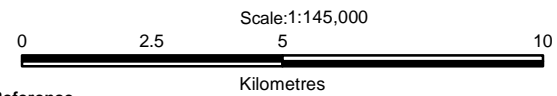
- ⊘ Blackwater Camp
- Exploration Road
- Proposed Mine Access Road
- Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Fresh Water Pipeline
- Proposed Airstrip Access Road
- ▭ Proposed Airstrip Extent
- ▭ Proposed Fresh Water Pipeline Intake
- ▭ Proposed Mine Site
- ▭ Mine Site Facilities

Visual Resources

- ▭ Local Study Area (Mine Site)
- ▭ Regional Study Area (Mine Site)

Viewshed Analyses

- ★ Viewshed Observer Points
- ▭ Line-of-site up to 10km
- ▭ Line-of-site up to 15km
- ▭ Line-of-site beyond 15km
- ▭ Screened
- Photographic Survey Locations



Reference
 BC Government GeoBC Data Distribution
 BCGOV FLNRO Recreation Sites and Trails Branch

CLIENT: **newgold**

PROJECT: **Blackwater Gold Project**

Viewshed Analyses of Selected Mine Site Facilities

DATE: December, 2013	ANALYST: WR	Figure 7.1.4-1
JOB No: VE52095	QA/QC: SB	
GIS FILE: 19-12_BLSummaryVSMS_v4.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

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7.1.4.1.2.3 *Mine Site Study Area*

The mine site LSA incorporates an area where direct effects on visual resources from the Project may affect current land uses, permanent residents, and public activities. The most prominent feature of the mine site from a visual perspective is the West Waste Rock Dump, which will be the highest component on the upper slopes of Mount Davidson. The maximum elevation of the West Waste Rock Dump will occur at Year 17 of operations, at which point it is planned to be 1,590 metres above sea level (masl). In comparison, Mount Davidson peak elevation is 1649m. This location and the offset height were used as an observer point to generate a viewshed analyses to identify mine site study areas within the upper Chedakuz Creek valley.

A second mine site feature, the Site D Main Dam of the TSF, was selected due to its size and location along the lower slopes of Mount Davidson. A viewshed analysis was generated using the planned maximum height of 1,339 masl. This analysis incorporated areas north of the Kluskus-Ootsa FSR and areas to the south around Kuyakuz Lake. Areas located within line of sight with these two components were included in the LSA up to a radius of 15 km, beyond which visual impacts are limited to colour-contrast.

The mine site RSA includes landscapes in the Nechako Range, east of Tatelkuz Lake, up to the skylines of Kuyakuz Mountain and Tatelkuz Mountain. Areas beyond the regional watersheds to the southwest were included to accommodate the potential effects of artificial light. A complete description of project components is provided in the Visual Resources Baseline Report (**Appendix 7.1.4A**).

7.1.4.1.2.4 *Linear Features Study Areas*

The proposed transmission line will route from Endako, along Highway 16, crossing Nithi Mountain, the Nechako River and north section of the Nechako Range to the mine site. Local and regional study areas were identified to assess baseline conditions. The standard height of a 230 kV wood H-frame structure (21.3 m) was used as an offset parameter for the viewshed analysis of effects on visual resources. Due to the undulating nature of the terrain and dense forest cover along the alignment of the transmission line, the analysis was limited to a 5 km buffer for the LSA and 10 km buffer for the RSA. Viewpoints were identified near permanent residents, recreation sites, ranches and lodges, as well as crossing points of major rivers and access roads.

The fresh water pipeline will route from the east shore of Tatelkuz Lake, along existing logging roads towards the mine site. After crossing the Kluskus-Messue FSR, it routes along the south bank of Davidson Creek until it reaches the plant site. The freshwater pipeline LSA includes an area within a buffer distance of 1 km, focusing on areas with line of sight to the proposed route to evaluate potential effects on surrounding land uses during all phases of the Project (**Appendix 7.1.4A**, Visual Resources Baseline Report, Figure 2.2-5).

To address impacts associated with increased traffic, a 500 m buffer defines the Kluskus FSR access road LSA. The study area focuses on the section between the Greer Creek Falls and

Chutanli Lake, where a number of trailheads are located next to the FSR from where trails lead to recreation sites within hiking distance (**Table 7.1.4-1** and **Figure 7.1.4-2**).

Table 7.1.4-1: Total Area of Theoretical Visibility for Each Study Area

Study Area	Rationale	Total (ha)
Kluskus FSR Access Road LSA	Include trailheads along FSR leading to Recreation Sites within 500 m	6,666
Airstrip Access Road LSA	Include areas within a 1 km buffer	1,410
Airstrip LSA	Include areas within a 1 km buffer around the footprint	873
Airstrip RSA	Include areas within a 3 km buffer around the footprint	4,411
Mine Access Road LSA	Include areas within a 1 km buffer around the proposed ROW	3,520
Mine Site LSA	Include areas delineated by a viewshed analyses of the most prominent mine site components up to 15 km	42,000
Mine Site RSA	Include areas beyond 15 km to surrounding regional watersheds	111,127
Transmission Line LSA	Include areas along the proposed alignment within a buffer distance of 5 km, focusing on areas falling within line of sight	141,467
Transmission Line RSA	Include areas up to 10 km along the alignment	265,949
Fresh Water Pipeline LSA	Include areas within a 1 km buffer around the proposed ROW	4,739

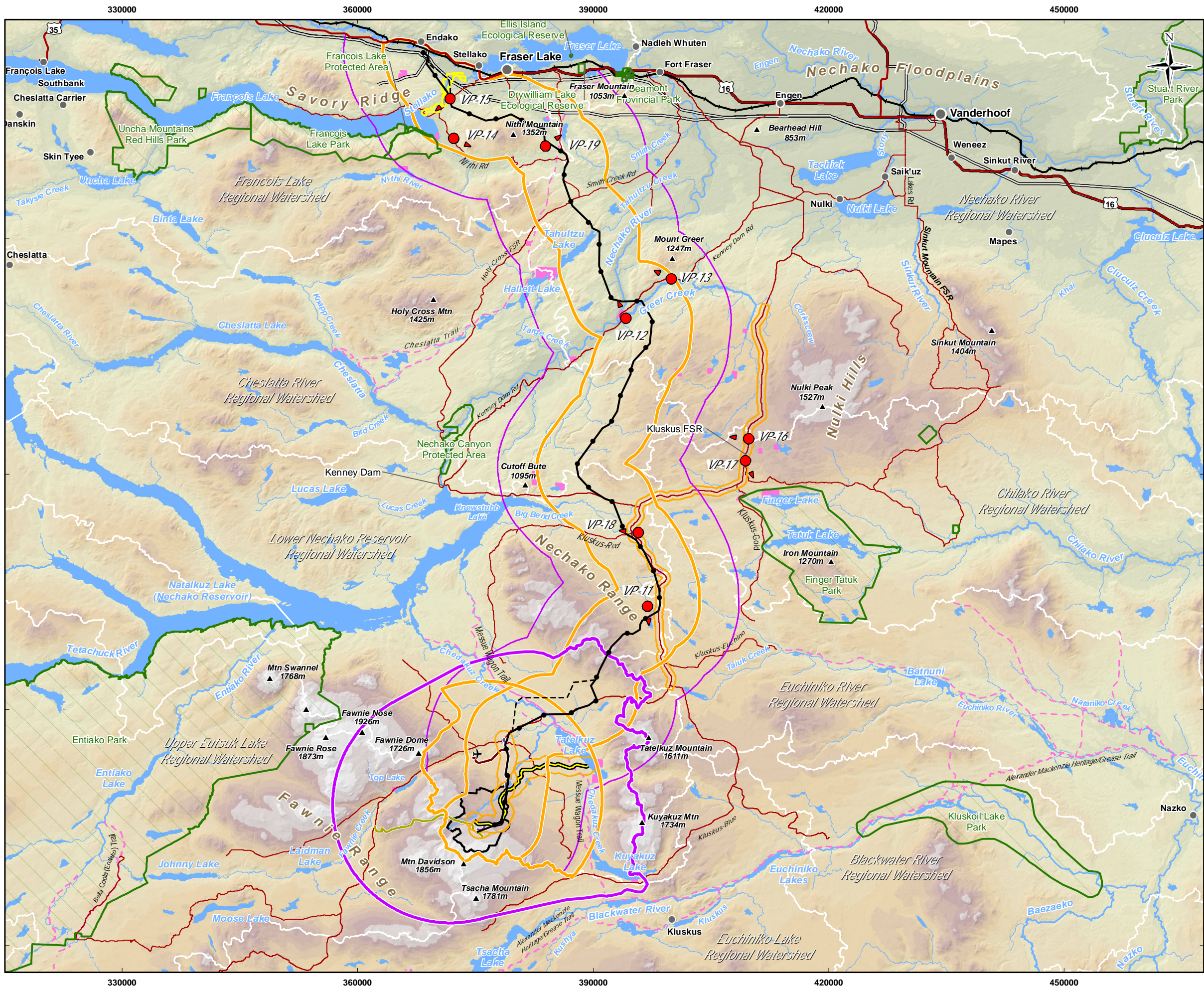
Note: Area in hectares included for the purposes of the baseline summary. Key factors are however line of sight and proximity.

7.1.4.1.2.5 Mapping of Known Recreation Locations and Values

Existing BC MFLNRO inventories were mapped to obtain an understanding of recreational significance and viewer sensitivity. The Visual Landscape Inventory (VLI) delineates areas of visual sensitivity near communities and travel corridors that could give rise to concern if their visual appearance were altered by forest practices or other resource development activities. Visual Sensitivity Classes (VSCs) are assessments of the likelihood that carrying out forest practices or other resource development activities in Visual Sensitive Units (VSUs) would give rise to some degree of concern (BC MOF, 1997) (**Appendix 7.1.4A**, Table 2.2-2).

The Recreation Features Inventory (RFI) identifies areas of land and water encircling a recreational feature or combination of features that support one or more recreational activities. In the proposed transmission line study areas a combination of recreational significance and recreational sensitivity was used to map recreation values (**Appendix 7.1.4A**, Table 2.2-3).

Recreation Sites and Trails: These sites generally fall within integrated resource management settings where the land base is managed for a variety of uses. Sites are managed through partnership agreements, thus no fees are charged. Recreation Sites can be a recreation reserve (no facilities) or a recreation site (rustic facilities). Hiking trails provide access to recreation sites, some of which have heritage value.



Legend

- Populated Place
- 16 Highway
- Railway
- Forestry Service Road
- Existing Transmission Line
- Recreation Trail
- Recreation Site
- Stellako Wildlife Management Area
- Park, Protected Area, Ecological Reserve *
- Regional Watershed

Project Components

- ✈ Proposed Airstrip
- Proposed Airstrip Access Road
- Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Mine Access Road
- Proposed Fresh Water Pipeline
- Exploration Road
- Proposed Mine Site

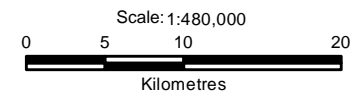
Elevation (meters)

- 1,542 - 1,930
- 1,381 - 1,541
- 1,321 - 1,380
- 1,261 - 1,320
- 1,201 - 1,260
- 1,141 - 1,200
- 1,081 - 1,140
- 1,022 - 1,080
- 962 - 1,021
- 902 - 961
- 842 - 901
- 782 - 841
- 723 - 781
- 663 - 722
- 624 - 662

Visual Resources

- Local Study Areas
- Regional Study Areas
- Photographic Survey Locations

* There are no Conservancies in the map extent. Nearest one is the Dean River Conservancy, 104km to the West.



Reference
 BC Government GeoBC Data Distribution
 Ministry of Forests, Lands and Natural Resource Operations

CLIENT: **newgold™**

PROJECT: **Blackwater Gold Project**

Visual Resources Study Areas

DATE: December, 2014	ANALYST: WR	Figure 7.1-4-2
JOB No: VE52420	QA/QC: MY	PDF FILE: 19-34_BLSummaryTL_v6.pdf
GIS FILE: 19-34_BLSummaryTL_v6.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

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7.1.4.1.2.6 Mapping of Known Protected Areas

No Conservancy Areas overlap the visual resource study area. The closest conservancy is the Dean River Conservancy, which is located 104 km to the west of the Project along the western boundary of Tweedsmuir Park. Francois Lake Park and Francois Lake Protected Area overlap the visual resources study area. Approximately 57 ha of the eastern boundary of Francois Lake Park overlap the edge of the transmission line LSA. The eastern boundary of the park is located approximately 5 km from the proposed transmission line. The visual resources RSA also overlaps Francois Lake Park and the Francois Lake Protected Area which is located approximately 6 km from the proposed transmission line.

7.1.4.1.2.7 Photographic Survey

Viewpoints were identified in the various study areas based on the following criteria: Proximity to public roads; locations with recreational value; locations near protected areas; homesteads of permanent residents; Indian Reserves, commercial activities such as ranches and lodges; locations representative of site conditions reflecting impacts of current land uses; and potential views over larger portions of the landscape.

Photographic images and panoramas were captured and GPS coordinates were recorded (**Table 7.1.4-2** and **Table 7.1.4-4**) from viewpoints during a summer and winter field visits to accommodate seasonal variations in character, visibility, and use. Photograph viewpoint baseline views were summarized for each photo location based on the following criteria: topography, vegetation cover, water features, existing disturbances, and proximity to important features **Table 7.1.4-2** and **Table 7.1.4-4**). A panel consisting of a visual resources professional, a landscape-planning engineer and a local forest management service provider populated tables in the field based on objective observations. Ratings were reviewed by vegetation, wildlife, and archaeology specialists, who visited the study areas on multiple occasions and captured data for their own baseline reports.

Viewer sensitivity and scenic quality were also described for each viewpoint (**Table 7.1.4-3**, **Table 7.1.4-5** and **Appendix 7.1.4A**, Table 3.4-2). Viewer sensitivity was expressed as a measure of public concern for scenic quality influenced by the number and considerations of potential observers. Scenic quality was expressed as the measure of appeal of a tract of land. Information pertaining to visitor numbers and expectations were obtained from local ranchers and users of recreation sites, the Vanderhoof tourism office, and the NTLU baseline report.

7.1.4.1.2.8 Artificial Light

The occurrence of excessive and misdirected artificial light is considered at a regional scale as it may alter natural and existing artificial light levels in the outdoor environment (**Appendix 7.1.4A**, Figure 2.2-8), for example:

- Diminish the capacity to observe stars, and thereby degrade astronomical activities;
- Intrude on otherwise natural or low-light settings, affecting ecotourism; and

- Disrupt ecosystems by disorienting wildlife and insects through unnatural stimuli.

Table 7.1.4-2: Photo Viewpoint Baseline Views in the Mine Site Study Areas

No.	Viewpoint Name	View Description	Baseline Characteristics	GPS Coordinates	
				X	Y
VP-01	Tatelkuz Lake Ranch Resort	Looking southwest towards the Fawnie Mountain Range from the lodge	Agricultural setting with fields, paddocks, and sheds. Forest cut blocks visible on surrounding hillsides	384,845	5,907,313
VP-02	Tatelkuz Lake IR 28	View from location near the reserve looking southwest to Mount Davidson		385,744	5,907,871
VP-03	Top Lake Recreation Site	Looking east towards the Fawnie Mountain Range from the recreation site	Forestry setting with cut blocks visible on the surrounding slopes. Water features dominate immediate view; mountains frame outward views	364,761	5,899,901
VP-04	Kuyakuz Lake Recreation Site	Looking northwest towards the Fawnie Mountain Range from the recreation site	Natural setting. Water features dominate immediate view; mountains frame outward and distant views. No forest cut blocks visible from the area	395,186	5,888,325
VP-05	Mathews Creek Private Land	Looking northeast towards Mount Davidson from the turnoff to the property	Forestry setting. Mountains frame outward views (Fawnie Range, Mount Davidson). Cleared forest cut blocks visible on the surrounding slopes	362,739	5,887,146
VP-06	Kluskus-Ootsa FSR (Turtle Creek Valley)	Looking southeast towards Davidson Creek from the FSR	Forestry setting with overriding effects of logging practices (active FSRs, differing stand heights, clear cuts, root and off cut piles, and erosion). Mountains framing outward views (Fawnie and Nechako ranges)	371,675	5,904,048
VP-07	Kluskus-Ootsa FSR (proposed mine access road)	Looking south towards the undulating hills of the Davidson Creek basin		378,581	5,906,214
VP-08	Davidson Creek (Fawnie Range View)	Looking southwest towards the Fawnie Mountain Range		378,700	5,901,687
VP-09	Kluskus-Ootsa FSR (Nechako Range)	Looking southwest towards the Fawnie Range along the FSR		390,574	5,911,263
VP-10	Mount Davidson (Nechako Range View)	Looking northeast across Davidson Creek Basin towards Tatelkuz Lake	Forestry setting with surrounding areas a patchwork of clear cuts. Fawnie Range framing outward views; Nechako Range framing distant views	375,285	5,893,185

Table 7.1.4-3: Landscape Rating for Photo Viewpoints in the Mine Site Study Areas

No.	Viewpoint Name	Rationale (Potential Viewers & Relevance)	Visibility	Viewer Sensitivity	Scenic Quality
VP-01	Tatelkuz Lake Ranch Resort	Permanent resident and commercial operation	Enclosed: Densely forested; ridgelines blocking view outside immediate viewshed	Very Low	Low
VP-02	Tatelkus Lake IR 28	Permanent resident and historic settlers	Partially Enclosed: Surrounded by patches of forests; mountain ranges visible in the distance	Low	Low
VP-03	Top Lake Recreation Site	Recreation site utilized by visitors for picnics, camping, kayaking, fishing, and hunting in the mine site RSA	Partially Enclosed: Surrounded by patches of forests with hills; some views in specific directions	Low to Moderate	Moderate
VP-04	Kuyakuz Lake Recreation Site		Unrestricted views across water body up to nearest ridgeline	Moderate	High
VP-05	Mathews Creek Private Land	Permanent resident	Forested with numerous clear cuts resulting in open views	Low	Low to Moderate
VP-06	Kluskus-Ootsa FSR (Turtle Creek Valley)	Strategic location illustrating general character and visibility of landscapes as well as current land use in the mine site LSA	Forested with numerous clear cuts resulting in open views	Low to Moderate	Low
VP-07	Kluskus-Ootsa FSR (proposed mine access road)		Forested with numerous clear cuts along road resulting in relatively open views	Low to Moderate	Very Low
VP-08	Davidson Creek (Fawnie Range)		Forested with some clear cuts resulting in relatively open views	Low	Very Low
VP-09	Kluskus-Ootsa FSR (Nechako Range)		Forested with numerous clear cuts resulting in open views	Low	Low
VP-10	Mount Davidson (Nechako Range View)		Open vegetation at relatively high altitudes resulting in unrestricted views across lower lying areas	Low	Low to Moderate

Table 7.1.4-4: Photo Viewpoint Baseline Views along the Proposed Transmission Line

No.	Viewpoint Name	View Description	Baseline Characteristics and Visibility	GPS Coordinates	
				X	Y
VP-11	Brewster Lake Recreation Site	Looking southeast across Brewster Lake from the main viewpoint	Undisturbed forests adjacent to natural lake with sloping and staggered tree lines covering surrounding ridges. No forest cut blocks visible from the area; Nechako Range framing views in the distance.	397,168	5,921,561
VP-12	Greer Creek Recreation Site	Looking north down the Nechako River from the main viewpoint	Pastoral setting, homesteads, fence lines. Moving water features (Nechako River) visible and dominant with natural and forested banks.	393,437	5,960,125
VP-13	Crystal Lake Ranch and Resort	Looking northwest along the Kenney Dam Road	Agricultural setting with fields, paddocks, and sheds. Mostly natural forests covering nearby Mount Greer.	399,606	5,964,949
VP-14	Steiner Ranch	Looking east down the Nithi River Valley towards Nithi Mountain	Agricultural setting with homesteads, fields, and paddocks.	371,756	5,983,154
VP-15	Francoise Lake Road	Looking southwest towards Francois Lake	Residential/Agricultural setting with main roads, homesteads, fields, paddocks and sheds.	371,790	5,987,966

Table 7.1.4-5: Landscape Rating for Photo Viewpoints along the Proposed Transmission Line

No.	Viewpoint Name	Rationale (Potential Viewers & Relevance)	Visibility	Viewer Sensitivity	Scenic Quality
VP-11	Brewster Lake Recreation Site	Recreation site utilized by visitors for picnics, camping, kayaking, fishing, and hunting	Enclosed: Densely forested; ridgelines blocking views	High	High
VP-12	Greer Creek Recreation Site		Enclosed: Steep valley slopes limiting views	Moderate to High	Moderate
VP-13	Crystal Lake Ranch and Resort	Permanent resident and commercial operation in the proposed transmission line LSA	Fields adjacent to road resulting in views towards Mount Greer	Moderate to High	Low to Moderate
VP-14	Steiner Ranch	Permanent resident and commercial operation	Open areas and rangeland resulting in open views	Low	Low to Moderate
VP-15	Francoise Lake Road	Permanent resident	Dense forested areas limiting views to along the road	Low	Low

7.1.4.2 Results/Discussion

7.1.4.2.1 Local and Regional Land Use Planning

7.1.4.2.1.1 Vanderhoof Land and Resource Management Plan

LRMPs guide and limit the utilization of natural resources that affect scenic quality and recreation resources. In addition, they shape the expectation visitors may have of solitude and interaction with nature. Various RMZs have been delineated and are managed for a wide array of resource

values. The Project is located within the Davidson Creek RMZ, placing emphases on resource development. The transmission line traverses through various resource development emphasis and multi-value zones, as well as the Upper Nechako River special RMZ, identified to retain recreation values.

7.1.4.2.1.2 Vanderhoof Access Management Plan

The Vanderhoof AMP described in **Section 12**, provides an indication of viewer sensitivity and expectations of scenic quality. In addition, it sets limitations to the level of access to areas with recreational significance. Semi-primitive non-motorized zones (SPNM) are delineated in the mine site RSA in the Davidson Creek basin, higher elevations of Mount Davidson, Kuyakuz Mountain, and Chedakuz Lakes. SPNM zones are designated for low impact, hike-in only recreational experiences. Semi-primitive motorized zones (SPM) are delineated along the Messue Trail, Tatelkuz Lake, and the lower Chedakuz Creek. SPM zones are designated for high quality motorized nature-based experiences. The proposed transmission line traverses through the Mount Greer, Crystal Lake, Bigbend Arm, Chedakuz, and Tatelkuz SPM zones, as well as the Davidson Creek SPNM zone.

7.1.4.2.1.3 Government Actions Regulation Orders – Scenic Areas and VQOs

There are currently no regulations in BC that govern the effects of industrial development on visual resources. However, Section 150.3 of the *Forest and Range Practices Act (FRPA)* enables the designation of scenic areas. Though specific to forest harvesting, the qualitative and quantitative Visual Quality Objectives (VQOs) provide a defensible and established basis on which to evaluate baseline conditions and potential effects on the study area's visual quality. VQOs reflect the desired level of visual quality, based on the physical characteristics and social concern for the area. Objectives are set to define the acceptable amount of visual alteration caused by man-made structures and activities ranging from Retention, Partial Retention, Modification to Maximum Modification.

VQOs were established for the Vanderhoof Forest District (VFD) on 15 December 2005 and applied to the Scenic Areas (**Appendix 7.1.4A**, Table 3.1-1). Scenic areas with a Partial Retention VQO are located within the mine site RSA along the west facing slopes of Kuyakuz Mountain and Tatelkuz Mountain, and areas surrounding Tatelkuz Lake. Scenic areas with Modified VQOs have been identified in the Fawnie Range, including the east slope of Mount Davidson and the higher elevations of the Fawnie Dome.

Scenic areas with a Retention VQO are located in the transmission line LSA in the Stellako River valley and hills near the headwaters of the Greer Creek. Scenic areas with a Partial Retention VQO are located on the west slope of Nithi Mountain, the Nechako River Valley, south slope of Mount Greer, and the Brewster Lake area. Modified VQOs are located along the Francoise Lake Road, Greer Creek Valley, and the south slope of the Nechako Range.

7.1.4.2.2 Mine Site Study Area

Topography: The mine site is located in the southern parts of the Nechako Plateau. Glacial drift is widespread as the ice occupied the plateau, which in moving across marked the surface with incised valleys and drumlin-like ridges, resulting in the present day undulant nature of the terrain with lakes forming in the depression (Holland, 1976).

The proposed mine site is situated within the Lower Nechako Regional Watershed on the east slope of the Fawnie Mountain Range, directly below Mount Davidson. Various streams drain these slopes, including the Davidson and Turtle Creeks, and flow east where they converge with the Chedakuz drainage system. This drainage system emerges from the south slope of Kuyakuz Mountain and Kuyakuz Lake, and flows into Tatelkuz Lake.

East of Tatelkuz Lake, the Nechako Range stretches northwards to Knewstubb Lake, delineating the catchment boundary with the Euchino Lakes Regional Watershed. South of Mount Davidson, the Fawnie Range recedes towards the Blackwater River and Kluskus Lakes with a distinctive ridgeline extending to Kuyakuz Lake. Several high-lying peaks follow the spine of the Fawnie Range from Mount Davidson north towards the Fawnie Nose (**Figure 7.1.4-1** and **Figure 7.1.4-2**).

Visibility: The spine of the Fawnie Range and ridgeline receding towards Kuyakuz Lake generally confines visibility inside the Davidson Creek basin. Due to its elevated location within the viewscape, the slopes of the Nechako Range are within line of sight of the mine site, but beyond 15 km where visual impacts dissipate substantially with increasing distance.

7.1.4.2.2.1 Current Land Use and Site Conditions

Appendix 7.1.4A describes in detail the nature and extent of land use activities. The following human activities are deemed relevant to provide a context for the consideration of project effects on visual resources of the study area:

Forestry: The most dominant land use in the VFD is timber harvesting. The allowable harvest rate has increased three-fold since the Mountain Pine Beetle (MPB) outbreak. This is having a negative impact on scenic quality having increased the intensity of forestry practices. During winter the impacts of clear cuts increases, with stark contrast between snow-covered clear cuts and tree covered older blocks. This is particularly evident in the higher elevation slopes of the Fawnie and Nechako Ranges (**Appendix 7.1.4A**, Figure 3.2-2).

Livestock and Tourism: The Davidson Creek RMZ has few permanent residents. The area is managed under access restriction with traffic restricted to logging trucks and inhabitants of ranches north of Tatelkuz Lake. Mills Ranch operates a resort for visitors interested in activities in and around Tatelkuz Lake, with the main lodge facing east towards views of Tatelkuz Lake.

Hunting and Adventure: The area is a popular destination for hunters and trappers, with good wildlife habitat and various traplines and guide outfitter areas. Motorized recreational activities common to the area include the use of snowmobiles and all-terrain vehicles.

7.1.4.2.2 Recreation Locations and Values

The VLI identifies an area of Very High visual sensitivity at the north section of Tatelkuz Lake with areas surrounding the lake and along the lower slopes of the Nechako Range identified as High Visual sensitivity. Higher peaks in the Nechako and Fawnie Ranges are designated with Moderate visual sensitivity with a higher lying section of the east slope of Mount Davidson identified as Low visual sensitivity.

The RFI identified areas with High Recreation Significance in the lower Chedakuz Creek Valley north of the Kluskus-Ootsa FSR. Areas with High Recreation Significance are located along the higher elevations of the Nechako Range, Tsacha Mountain, and the higher elevations of Mount Davidson, as well as the Fawnie Creek Valley. Moderate Significance is designated in the Davidson Creek basin (**Appendix 7.1.4A**, Figure 3.2-1).

British Columbia Ministry of Community, Sport, and Cultural Development (BC MCSCD) recreation sites are associated with major lakes where forestry activities are carefully managed to maintain a higher scenic quality rating with the following areas identified in the mine site LSA and RSA. Views generally focus on lakes with rest areas and rustic picnic facilities offered to self-serve visitors (**Appendix 7.1.4A**, Figure 3.2-2): Top Lake, Kuyakuz Lake, Tatelkuz Lake South, and Tatelkuz Lake South East.

7.1.4.2.3 Photographic Survey

Project team members gathered photographic documentation of the Visual Resources of the study area during site visits. The focus of these activities was to gather views from various viewpoints in the direction of the Project's facilities. **Section 7.1.4.1.2.6** and **Appendix 7.1.4A** provide further details regarding the methods used in determining baseline characteristics, scenic quality, and viewer sensitivities. Determination of visibility, viewer sensitivity, and scenic quality involved observation of current land use context, local knowledge, and professional judgment.

7.1.4.2.3 Transmission Line Study Area

Topography: The transmission line route traverses through the Nechako Plateau. The Blackwater River bounds the plateau in the south. Low mountains surround Francois Lake (Nithi Mountain, 1,352 m) with peaks at a comparable elevation in the Nulki Hills (Mount Greer, 1,247 m). The Nechako River cuts through the Nechako Canyon from the Kenney Dam wall below the Nechako Reservoir onto floodplains below Fraser Lake (refer to **Figure 7.1.4-1** and **Figure 7.1.4-2**).

Visibility: Forest cover is dense throughout the area. Due to the undulating nature of the terrain and vegetation cover, visibility is often limited to the immediate viewshed along the main FSRs with views over the larger region opening up on higher ridges and/or when a cut block is cleared next to the road. When larger views open, it is at a distance where texture and detail are absent from the view.

7.1.4.2.3.1 *Current Land Use and Site Conditions*

The following human activities are deemed relevant to provide a context for the consideration of project effects on visual resources along the proposed transmission line route:

Forestry: Forest tenures, cut blocks, and FSRs are located throughout the VFD. Forestry activities described for the mine site also apply to the transmission line study areas.

Livestock and Tourism: Due to accessibility along Highway 16, an increased number of cattle ranches are located in the north where various range tenures span Crown land. The north sections of the proposed transmission line study areas are utilized more intensively for tourism activities, with various routes branded and advertised by billboards along the Kluskus FSR.

Private Land: Private land parcels are clustered around major lakes (Francois Lake, Fraser Lake, Tachik Lake, and Nulki Lake) and adjacent to a major river and creeks in the study area (Nithi River, Smith Creek, Tahultzu Creek) where farmsteads, local roads, power lines, and fence lines combine to create a pastoral setting.

Hunting and Adventure: As in the mine site study areas, various traplines and guide outfitter areas are located along the proposed transmission line alignment. In addition, groups of private individuals kayak and canoe along the Nechako River Canoe Trail.

7.1.4.2.3.2 *Recreation Locations and Values*

Recreation Values: The RFI identifies areas that support recreation. Prominent landscapes such as mountain ranges and rivers receive a high significance rating. The following recreation values are located along the alignment of the transmission line (**Appendix 7.1.4A**, Figure 3.3-1):

- Endako to the Stellako River (Moderate sensitivity/Low significance);
- Nithi Mountain (Moderate sensitivity/High significance);
- Mount Greer (Low sensitivity/High significance);
- Nechako River (Moderate sensitivity/High significance);
- Kenney Dam Road (Low sensitivity/Moderate significance);
- East section of Knewstubb Lake (Moderate sensitivity/High significance); and
- Nechako Range (Moderate sensitivity/Moderate significance).

Recreation Sites: The following areas were identified in the transmission line LSA (**Figure 7.1.4-1** and **Figure 7.1.4-2**): Big Bend Meadow, Brewster Lake, Casey Lake, Chief Gray Lake, Foster Lake, Greer Creek, Hobson Lake, Nithi River, and Veronica Lake.

7.1.4.2.3.3 *Photographic Survey*

Photo viewpoints (baseline) and photo ratings for photo viewpoints along the proposed transmission line are presented in

Table 7.1.4-4 and Table 7.1.4-5.

7.1.4.2.4 Kluskus FSR Access Road Study Area

The Kluskus FSR, built for industrial purposes, is a managed access road where radio communication procedures are mandatory. The topography is classified by undulating terrain, rising in elevation to the south towards the Nulki Hills. Visibility is constrained by vegetation cover, with numerous forest cut blocks either side of the right-of-way (ROW). However, clear cutting is extensive when views open up to valleys and ridgelines in the distance.

A series of BC MCSCD recreation sites are located along the Kluskus FSR between the Nulki Hills and the Nechako Range. Trailheads are located adjacent to the road where visitors park their vehicles and follow trails leading to recreation sites (**Appendix 7.1.4A**, Figure 3.4-1): Greer Creek Falls, Johnson Lake, Home Lake, Home Lake Northeast, and Gluten and Secord Lake.

The following recreation sites have no trails leading to them; however, they are along or near the Kluskus FSR: Arthur Lake, Big Bend Meadow, Brewster Lake, Chutanli Lake, and Finger Lake. In addition, the northwest corner of Finger Tatuk Park is located 2 km from the Kluskus FSR (**Appendix 7.1.4A**, Tables 3.4-1 and 3.4-2).

7.1.4.2.5 Fresh Water Pipeline Study Area

The proposed pipeline will be buried, and the analysis is focused on the ROW created along the alignment, indicating disrupted line of sight with increasing visibility lower down the slope, narrowing to areas closer to the alignment as it nears Tatelkuz Lake (**Appendix 7.1.4A**, Figure 3.6-1). Pump stations at the intake along the route were used as observation points for the viewshed analyses. The fresh water pipeline is aligned through Crown land that is used mainly for forestry and related activities. With the exception of 1.6 km, the route follows existing logging roads. The east section of the alignment crosses the Messue Trail in an area with High recreation significance and High visual sensitivity. The Tatelkuz Lake Southeast recreation reserve is located directly opposite the lake from the pipeline inlet and pump house.

7.1.4.2.6 Artificial Light – Current Conditions in Southern BC and at the Project Site

Major cities and towns in BC (e.g., Prince George) currently reflect levels of artificial and natural sky brightness of up to 27 magnitudes per square arcsecond (mags/sq arcsec), indicating less than 100 stars will be visible. Smaller towns in the NTLU RSA, such as Vanderhoof and Fraser Lake, measure only 3 mags/sq arcsec, resulting in the Milky Way being visible but not crisp, with modest to serious impacts to sky observation and imaging. The majority of the Visual Resources study areas falls within 0.01-0.11 mags/sq arcsec, indicating good potential for astronomical activities (**Appendix 7.1.4A**, Figure 3.6-1).

Within the mine site RSA and LSA, artificial light sources are located at homesteads of permanent residents and the Blackwater prospecting camp on the east facing slopes of Mount Davidson

(1400m elevation). Lights from the camp can be seen, along with nighttime drilling activities requiring illumination, from lower elevations near Tatelkuz Lake. **Figure 7.1.4-3** illustrates the view of the camp from the intersection of the Kluskus-Ootsa and Kluskus-Messue FSRs.

During winter, the effects of artificial light may increase when low-level cloud cover is present. In summer, sources of artificial light will only be seen from vantage points with line of sight.



Figure 7.1.4-3: View of the Camp from the Intersection of the Kluskus-Ootsa and Kluskus-Messue FSRs

7.1.4.2.7 Airstrip and Airstrip Access Road Study Areas

The proposed airstrip footprint is located in the Turtle Creek Valley near the Kluskus-Ootsa FSR. The surrounding area is utilized for timber harvesting with forest cut blocks overlapping the footprint. No scenic areas overlap the airstrip and airstrip access road LSAs. One VSU with a Moderate sensitivity rating is located in the southwest section of the airstrip RSA.

7.1.4.3 Conclusion

The Visual Resources study areas are located on the Nechako Plateau, where sub-mountain ranges (Fawnie, Nechako, Telegraph) prominent river valleys (Chedakuz Creek, Greer Creek, Nechako River), and late-glacial lakes (Tatelkuz, Kuyakuz, Knewstubb) combine with low population densities to result in a relatively natural setting.

However, the influence of forestry land uses and activities are pervasive throughout. Forest cutblocks, clear cuts, logging roads, differing stand heights, and monoculture patterns are evident

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in most landscapes not designated as scenic areas by the VLI. The effects of clear-cutting are more evident during the winter months when clear-cuts are covered with snow. This is especially evident along the higher lying mountain ranges.

Scenic areas are located within VSUs with a Moderate to Very High visual sensitivity along the higher lying mountain ranges. Operations are adapted to manage scenic quality within the viewscapes of recreation sites, in particular Brewster Lake and Kuyakuz Lake, where near scenic viewscapes are available over adjacent lakes, surrounding tree lines and hills. Viewer sensitivity is relatively high at recreation sites due to their popularity amongst locals and visitors.

Recreationally significant areas are located within the mine site study area along the Nechako Range, Tsacha Mountain, Fawnie Creek Valley, and southwest slopes of Mount Davidson. Visually Sensitive areas are located around Tatelkuz and Kuyakuz Lakes and the higher elevations of the Nechako and Fawnie Ranges.

Visibility is limited within the transmission line study areas to viewsheds along the main roads, opening up to some extent at the ridgelines along the regional watershed, when passing by clear cuts next to the road. Visibility within the mine site study area is contained by the southern and western boundaries of the Lower Nechako regional watershed boundaries; viewscapes extend to the east from the mine footprint towards the slopes of the Nechako Range.